Cultural Landscape and Production of Space at the Alum Industrial Heritage Place in Fanshan Town, China

De Lan

A Thesis Submitted in Partial Fulfillment of Requirements for
degree of Doctor of Philosophy in Fine and Applied Arts Research and Creation
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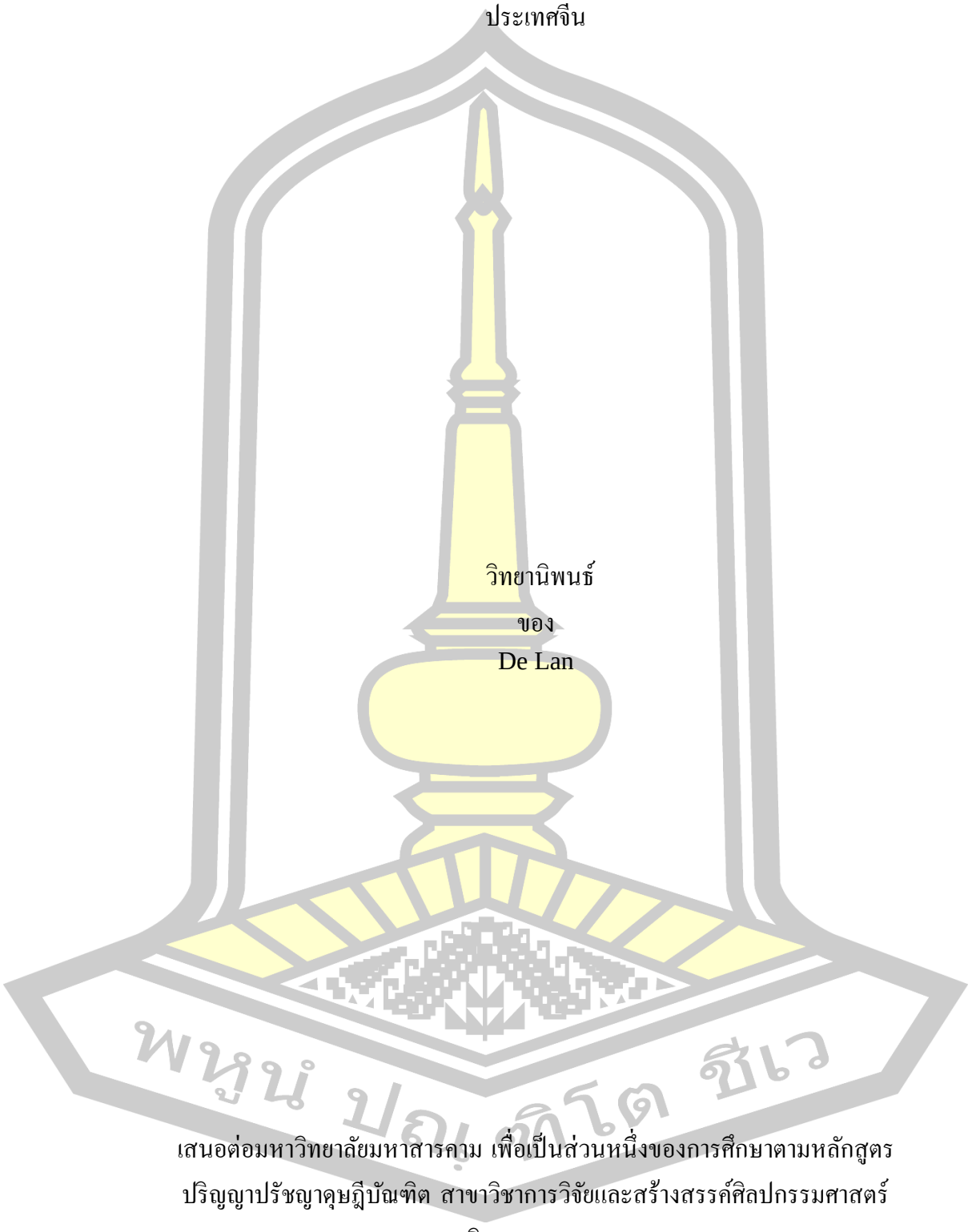
ของ

De Lan



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The examining committee has unanimously approved this Thesis, submitted by Mr. De Lan , as a partial fulfillment of the requirements for the Doctor of Philosophy Fine and Applied Arts Research and Creation at Mahasarakham University

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ABSTRACT

This study used a qualitative analysis method, Introduce the theoretical framework of cultural landscape and space production in the field of humanities and social sciences, Establish the following four research objectives: 1) To study the historical development trajectory of the Fanshan industrial cultural landscape; 2) To study the aesthetic perspective of the Fanshan industrial cultural landscape; 3) To study the meaning change of the production of Alum industrial heritage place space; 4) To study the sustainable production of the Alum industrial heritage place space.

Research findings indicate that within the grand context of China's social development, the Fanshan industrial heritage cultural landscape spans nearly 1,300 years, transitioning from the handicraft era to the industrial mechanization era and then to the information age. During this transformation, Fanshan evolved into a significant social space reflecting cultural phenomena of survival and practice, continuously shaping and influencing local residents' aesthetic views. The study thoroughly and comprehensively achieved its research objectives. 1) Regarding the historical development trajectory of the Fanshan industrial cultural landscape, an extensive review of literature and on-site investigations meticulously documented the transformations of the Fanshan industrial heritage place from ancient times to the present. Special attention was given to key events and crucial junctures of different historical periods, reconstructing the complete development trajectory of the industrial heritage place. 2) Concerning the aesthetic perspective of the Fanshan industrial cultural landscape, an in-depth analysis was conducted using art history theories and modern aesthetic standards. This analysis elucidated the inherent aesthetic value and cultural significance of Fanshan's unique industrial architecture and production scenes. 3) On investigating the meaning shift in the spatial production of the Alum industrial heritage place, a systematic comparison between historical documents and current usage conditions clarified how the Alum industrial heritage place evolved from a singular production space to a multifunctional social and cultural complex, revealing the changes in spatial significance across various historical periods. 4) In terms of the sustainable production of the Alum industrial heritage place's space, the research team, drawing on domestic and international sustainable development cases, proposed a series of practical conservation and utilization recommendations. These

aim to ensure that the heritage place can achieve coordinated economic, social, and environmental benefits while preserving its integrity.

This research not only enriches the historical and cultural understanding of Fanshan and the Alum industrial area but also provides a scientific basis for future heritage conservation and regional development.To sum up, this study adopts the interdisciplinary culture research method, the relationship between Alum industrial heritage place cultural landscape and space production of the social and cultural level of aesthetic reflection, aims to criticize the homogeneity space power of nature, and from the perspective of space justice, focus on the space production and re-production, explore the sustainable development of diversification, differentiation space possibilities.

Keyword : Cultural Landscape, Production of Space, Alum Industrial Heritage, Fanshan Town, Cultural Aesthetics

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This thesis was completed on the foundation of previous theoretical research and practical exploration. I hereby express my sincere thanks to all the authors, designers, and the creators of the referenced and cited articles, pictures, and cases within this document.

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Introduction

Background of research

In his book Das Kapital, Karl Marx, a social theorist and the master of social production theory and economics, emphasized the importance of production to human society, believing that production is the basis for the realization of human material needs and social progress (Marx, 2020). The history of human civilization refers simply, to put it bluntly, to the continuous utilization of natural resources in various places and the repeated process of space production and re-production. Production practice not only promotes the overall development of society, but also gives birth to a rich and colorful cultural landscape and adds the diversity of spatial connotation. On the contrary, the study of the space production in the cultural landscape heritage is the key to the objective understanding of the human social history and life style, and the scientific evaluation of social problems. Industrial heritage places are identified and repackaged as sites of historical, technological, social, architectural, or scientific value (TICCIH, 2003). Although this concept may have different interpretations in different application contexts, its basic concept is deeply rooted in the continuous restoration, reconstruction, interpretation and repackaging of the cultural landscape, giving it renewed significance.

This study is based on the spatial production theory from the perspective of survival and practice, Learn from and learn from the academic resources for the protection and utilization of contemporary Chinese and Western industrial heritage, With the Chinese Fanshan industrial heritage cultural landscape as the core of the analysis, Using an interdisciplinary research approach, To explore culture as a unique spatial production model, In the interaction of humans, nature, society, and time, How to continuously develop the spatial conception, spatial practice and spatial life, endow space with unique vitality and social, historical and cultural significance, Clarify the deep connection between spatial production and cultural landscape representation of industrial heritage places.

Under the grand background of China's social development, Fanshan Town, located in Lujiang County, China, is rich in natural mineral resources. During the Tang Dynasty, it was discovered and began to mine ore here. After processing, a chemical called Alum was extracted. Because of its wide use, it is closely associated with people's daily life. With the evolution of the historical process, the demand for Alum is increasing day by day, and its mining and processing technology has also changed from the handicraft stage to the era of industrial mechanization. However, severe environmental damage has occurred due to the lag of mining technology and inefficient waste utilization. After nearly 1,500 years of production history, the Alum stone mining activities had to be terminated and turned into industrial sites. With the advent of the information age, it has brought new space production opportunities for Alum industrial heritage. On the basis of strengthening environmental governance, local residents and the government have developed ecological agriculture and tourism, and explored the possibility of diversified and differentiated spatial transformation of sustainable development. By December 2020, Fanshan industrial heritage Cultural Landscape has been officially listed in the fourth batch of National Industrial Heritage List (MIIT, 2020). This process not only makes it develop into a social space with a specific scale, but also reflects the cultural phenomenon of survival and practice, and to shape and influence the aesthetic concepts of local residents.

For further research on the cultural landscape and spatial production of Fanshan industrial heritage place in China, it is necessary to explain the identity of the key cultural objects related to the research topic, so as to preliminarily clarify the issues of "what to study" and "who is related to study".

1. Alum

Alum, a chemical compound, is mainly Aluminum-hydrated bisulphate. The chemical formula is XAl(SO4)2·12H2O, where X represents a monovalent cation, such as potassium or ammonium (Shreve & Austin, 1984). Usually, when you hear about Alum, it refers to Potassium Alum, which is the hydrated form of potassium and Aluminum potassium sulfate, and the chemical expression is $KAl(SO_4)_2 \cdot 12H_2O$. However, any of the compounds with the empirical formula $AB(SO_4)_2 \cdot 12H_2O$ are considered to be an Alum (Helmenstine, 2022). In Chinese, it is called "Fan", and there are also Potassium Alum and other nicknames. It is a colorless transparent cubic

crystal, glass-like luster, sweet taste. It is often sold and used in the form of powder. Upon heating to about 200℃, the Alum is melted and converted to an anhydrous salt.

Figure 1: Finished Alum Sample
Source: Photographed by the Author

Alum has multiple domestic and industrial uses. Potassium Alum is most commonly used, although Ammonium Alum, iron Alum, and soda Alum can be used for many of the same purposes. Alum has been widely used in chemical industry, printing and dyeing, paper making, leather, decoration, medicine and food industries because of its cold and antibacterial, convergence, astringent and astringent characteristics. For example, as recorded in the book of Bencao Gangmu, Alum stone has four major effects on treating diseases: the astringent effect of phlegm, drink, diarrhea, leakage, eye and other symptoms, and the treatment of blood pain, anal prolapse, Yin and sore, or detoxifying throat pain, ulcer, insect, snake and insect bite (S.Li & Luo, 2003). Alum block can also be directly used as a deodorant, antiperspirant. In Southeast Asia, Potassium Alum, known under the brand "Tawas", is widely used in antiperspirant and deodorant (Pusat Kajian Bahasa, Kesusasteraan & Kebudayaan Melayu, Fakulti Sains Sosial & Kemanusiaan, Universiti Kebangsaan Malaysia & Muhd Norizam Jamian, 2021).

In addition, Alum contains Aluminum composition, which was once the raw material of Aluminum smelting in the early military industry. However, Aluminum element has a certain toxicity, should not be excessive intake. Historical records show that in the Victorian era, Alum was used along with other substances such as gypsum to mix foods, especially bread, to increase the whiteness of lower-grade flour, thus reducing production costs. This practice increases the weight of the bread by retaining water, allowing traders to raise the price. However, excessive Alum content in bread may be toxic to the human body, causing chronic diarrhea, and in severe cases can kill

children. With the advancement of industrial technology, these applications of Alum are gradually replaced by other more environmentally friendly products. This transformation is also a key factor in the development of Fanshan industrial heritage land and the prosperity to the decline of Alum mining industry.

Figure 2: Uses of Alum Are Widespread
Source:Photos related to the Baidu website, compiled by the author

2. Lujiang Alum Mine

Fanshan Town (hereinafter referred to as Fanshan), as China's Alum Mine industrial cultural landscape heritage place, has rich mineral resources and a long history of industrial production of Alum.The places and enterprises that produce Alum in its territory are often called Lujiang Alum Mine

Geographically, Fanshan is located in the southeast of Lujiang County, Hefei City, Anhui Province, east of Wuwei City, Wuhu City, Wuyang County Qianpu Town, Tongling City, southwest of Luohe Town, west of Nihe Town, north of Longqiao Town, the administrative area of 128.24 square kilometers (RSESD, 2022). Fanshan is located in a hilly area surrounded by green mountains and has a pleasant view. The proven underground mineral resources include Alum, iron, copper, kaolin and more than 10 kinds, including kaolin reserves of 20 million tons, iron ore reserves of 20 million tons, copper reserves of 2 million tons. In particular, Alum stone has proved reserves of 132.348 million tons, and rich mining reserves of up to 61.1 million tons (L. Li & Wu, 2014).

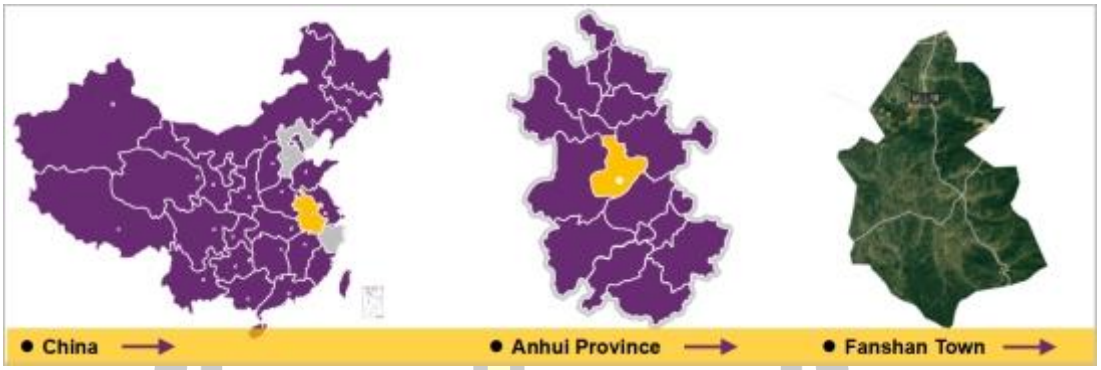

Figure 3: Geographic Location of Fanshan Town
Source: Illustrated by the Author

China in the Western Zhou Dynasty, the ancestors found the use of Alum. The origin of the Alum Mine, according to the exact historical records, can be traced back to the reign of Li Xian (684-710 years), the two brothers surnamed Ban discovered Alum in Lujiang Alum mountain, which has a history of more than 1,300 years(Association, 1990). Early ore mining methods mainly from walking back and forth in the mountain gullies to look for ore, observe the lines and spots of the ore, knock it open with a hammer, judge and select Alum stone by experience, build a kitchen on the spot frying, where the ore is dug up, and move to other places. Soon, people began to mine ore and refine Alum here.

From 779 to 804 years of Tang Dynasty, China implemented the policy of monopoly of Alum industry. The use of Alum for water purification and medicine gradually became widely known and became a tribute, and its importance made the court appoint Alum officials in the Alum producing area and implement the policy of monopoly of Alum industry. In the Song Dynasty, Alum was not only used in medicine, water purification, dyeing and weaving, but also entered the palace of art, joined the ranks of handicrafts, and even affected painting techniques. Demand rose sharply, was included in the five daily trading goods by the government, the establishment of Fanshan Kunshan Alum market monopoly agency, specializing in the management of Alum trading. Fanshan Alum refining field has developed to dozens, and gradually formed the large-scale production of Lujiang Alum Mine, with an annual output of 750,000 kilograms. Alum production is particularly high, clean, transparent characteristics, at home and abroad began to have a small reputation. In the flourishing period, the number of workers here can reach four or five thousand, and Lujiang Alum Mine ushered in the first high-yield period in the development

history. Lujiang Alum Mine has developed into the third largest Alum producing area in China, and Fanshan Town has thus become one of the six major towns in Fanshan. In the Yuan Dynasty, Lujiang Alum Mine was still the only high producing area among the 7 Alum producing areas in the country, occupying a pivotal position and being a unique and large taxpayer of Alum mining industry. During the Qing Dynasty, the Alum kiln and Alum field changed from official monopoly to individual operation, and Lujiang Alum Mine rapidly developed to more than 1,000 households with an annual production of 1.8 million kilograms. The Alum output ranked first in the country with high quality. Lujiang Alum Mine ushered in the second high production period in the development history. In 1754, triAlumina was first prepared from Alum in the human laboratory, and Alum Mine stone was studied as a raw material for potassium and Alumina and applied to the manufacture of weapons and equipment. This opens up a new situation for Fanshan Alum to export to all parts of the world.

After the founding of New China, Fanshan entered a new era of development. In 1950, the Fanshan Mining Bureau was established, which successively established factories and mines in large and small Fanshan, and organized the resumption of production. In 1956, Fanshan Mine took "local state-owned industrial and agricultural Alum factories" as the main body, integrated 48 private Alum factories, realized the public-private partnership of the whole industry, and the large-scale enterprise operation of Fanshan Mine was officially born, opening a new chapter in Fanshan history. An end to a millennia-long history of piecemeal and unplanned mining by the private sector. Alum mining to improve economic benefits as the center, established the "old mining old technology transformation and new products and technology development, natural resources and intellectual resources development of equal importance" development policy, the implementation of the "five system" as the center of the enterprise reform, has completed the mine transformation and Alum production system innovation, the construction of production auxiliary facilities and welfare facilities. To achieve the matching of mine mining and Alum smelting production capacity, and rely on scientific and technological progress, to carry out comprehensive utilization of waste, develop new products, expand the business field, and establish a product self-marketing network. In a long period of time, its production of Alum in the domestic market retention rate of up to one-third. By the beginning of the 21st century, it has developed into a medium-sized comprehensive

chemical enterprise. With an annual output of 20,000 tons of Alum and more than 3,000 workers, it has become a key backbone enterprise of the Ministry of Chemical Industry and Anhui Province. Its products with bright, clean, transparent characteristics of the world reputation, special grade potassium Alum and special grade ammonium Alum won the Ministry of Chemical Industry and Anhui Province, respectively, "quality products" title. It has made indelible contributions to China's industrial construction and economic prosperity.

For thousands of years, the generations of Alum miners have made great contributions to the development of China's Alum industry with diligence and wisdom, with the "Miners' Spirit" of "Not afraid of hardships, not afraid of sacrifice, and constantly moving forward". The space production of Lujiang Alum Mine is not only a life history written with blood, sweat and life, but also a history of development that has experienced vicissitudes and perseverance.

3. Alum industrial heritage

After 1500 years of Alum production history, with the updating of production equipment and the continuous improvement of production technology, the problems of overcapacity and environmental damage in Lujiang Alum Mine have become increasingly serious. In February 2001, in order to implement the latest national environmental protection policy, Lujiang Alum Mine completed its historical mission, stopped production, and became a cultural heritage that witnessed the development of China's Alum industry. The Fanshan government began to turn to the road of ecological governance and rural revitalization and development.

With the decline of Alum Mine, the loss of talents and funds, and the migration of enterprises, the development of Fanshan region has ushered in great challenges. In the face of difficulties, the residents of Fanshan region got rid of the extensive development mode that lasted for thousands of years, and with the determination to survive and the spirit of self-dedication, on the one hand, actively formulated the restoration and management plan of Alum Mine, promoted the environmental management and ecological restoration of Alum Mine, and reshaped the development environment. On the other hand, it actively explores new industrial development paths, takes advantage of its ecological and industrial heritage resources, and focuses on developing characteristic industries such as cultural tourism, opening a new journey of ecological revitalization and industrial transformation in Fanshan region.

At present, the protection and utilization of industrial heritage has achieved phased results, and a series of important industrial heritage has been effectively protected and utilized, forming some typical development experience, and is forming a good social atmosphere that attaches importance to the protection and utilization of industrial heritage. In November 2007, Lujiang Alum Mine was listed in the first batch of county-level intangible cultural heritage in Lujiang County, followed by the first batch of municipal intangible cultural heritage in Chaohu City in December 2007, and was included in the second batch of provincial intangible cultural heritage in Anhui Province in December 2008. This series of honors represents the determination and will of local residents and governments to promote the protection and utilization of industrial heritage, innovate its revitalization and utilization model, and strengthen local ecological governance. As a recognition of its work, Fanshan has been awarded a number of honors such as "the first batch of pilot towns in Anhui Province to expand power", "the second batch of millennium towns in Anhui Province", "the civilized towns in Anhui Province to create advanced towns", "civilized towns in Hefei City", "ecological towns in Anhui Province".

In December 2020, Lujiang Alum Mine was included in the fourth batch of national industrial heritage list (MIIT, 2020). The significance of the designation of Lujiang Alum Mine as a National Industrial Heritage is not only an official recognition of the historical and cultural value of the industrial development of Alum in a Fanshan region, but also a recognition that helps to preserve and pass on the technical, architectural and cultural heritage since the Industrial Revolution. This recognition also means that these properties will receive protection and support at the local and national levels, including financial input, restoration and conservation measures, as well as use in education, tourism and cultural communication, thereby enhancing public awareness and respect for the value of industrial history and cultural heritage. In addition, the recognition of the national industrial heritage of Lujiang Alum Mine is also conducive to promoting the sustainable development of local economy and society, and bringing new development opportunities to the local area through protective development.

Today, Fanshan has initially broken away from the negative impact of Alum Mine pollution, and is committed to protecting, excavating and displaying Alum

industrial cultural heritage, and transforming towards green and sustainable development (Statistics, 2022).

Research objectives

1. To study the historical development trajectory of the Fanshan industrial cultural landscape.

2. To study the aesthetic perspective of the Fanshan industrial cultural landscape.

3. To study the meaning change of the production of Alum industrial heritage place space.

4. To study the sustainable production of the Alum industrial heritage place space.

Research questions

1. The development of the Fanshan industrial heritage landscape underwent a historical process. What cultural landscapes were formed during various historical periods?

2. The aesthetic characteristics of the Fanshan industrial cultural landscape are identifiable. How have these characteristics influenced and shaped the aesthetic views of the local residents?

3. During the industrial era, what does the spatial production transformation of Alum industrial heritage places at different periods signify? What factors influenced the changes in spatial production?

4. In the information age, what drives the sustainable spatial production of Alum industrial heritage places, and what effects have been generated?

Research methodology

This research falls under the category of "basic research", using an exploratory approach of "qualitative research" designed to gain a deeper understanding of the nature of human behavior, experience, motivation, and socio-cultural phenomena. Focus on expanding the field of knowledge or improving the understanding of natural phenomena. The classification of the study methods is described as follows.

1. Population and group

1.1 Key groups

This study focused on the following main groups: Alum Mine workers, local residents, and researchers.

1.1.1 Alum Mine workers

Refers to the staff and management directly involved in Lujiang Alum Mine mining, transportation, sales and construction. This group saw the entire cycle of Aluminum boom to decline to closure. They hold a deep and complex emotion towards Lujiang Alum Mine, and show a positive enthusiastic attitude towards promoting local Alum Mine culture, protecting Alum Mine, the site and its cultural environment.

1.1.2 Local residents

Refrefers to the residents living in Fanshan area, whose living culture is deeply influenced by Alum industrial heritage, forming a unique cultural social structure. Most of the residents' ancestors had relied on Alum mining for a living. Facing the transformation and development of local economy, they have confidence and expectation for the re-creation of industrial heritage and cultural landscape.

1.1.3 Researchers

Alum industrial heritage place, the cultural landscape has been recorded in different historical stages, and several researchers have constructed a set of relatively clear historical track through combing through these records. In addition, the field has attracted the attention of many scholars across the country, including cultural researchers, sociologists, archaeologists, architects, and writers. Their research work has greatly enriched the understanding and understanding of the value of Alum industrial heritage's core cultural landscape.

1.2 General participating groups

The general participation groups of this fieldwork survey mainly include: exhibition hall staff and government officials, etc.

1.2.1 Exhibition hall and staff

In order to show the glorious history, carry forward the "Alum Mine spirit", and educate the future generations, the Fanshan People's Government decided to build the Fanshan Historical and Cultural Exhibition Hall in the autumn of 2020. The museum, originally the office building of the Mining Bureau, was built in 1956 as a representative building of the fourth batch of national industrial heritage, showing the typical Soviet style. Because the main body of the building is made of red brick, so it is commonly known as the "Red Building". It not only carries the "red memory" of several generations of Lujiang Aluminum miners, but also witnesses the "passion burning years" of Aluminum miners. After renovation and maintenance, it has now become the Fanshan historical and cultural exhibition hall displaying the "past and present lives" of the ancient capital for thousands of years. At present, the exhibition hall has 3 staff members familiar with the Fanshan Alum industrial heritage cultural landscape.

1.2.1 Government officials

Government officials here include those at the local and national levels. They play a key role in the formulation and implementation of policies, making the Alum industrial heritage cultural landscape a local cultural heritage. At present, they play a role of decision-making, guidance and supervision in the space production, including all aspects related to cultural tourism.

1.3 Related groups

Groups involved in the fieldwork include tourists and local builders.

1.3.1 Tourists

Tourists from all over the country went to Fanshan to visit the Alum industrial heritage cultural landscape. Here, they have the opportunity to learn and understand the history, craft technology, architectural culture and art activities related to the Alum industrial heritage cultural landscape, and to express their views and opinions on it.

1.3.1 Local building company

With the start of the Lujiang Aluminum Mine cultural landscape protection project, the related construction projects have entered the planning and construction stage. Local builders are involved in the production process of the Lujiang Industrial

heritage space, and they have a personal understanding of and thinking about the history of Lujiang Alum Mine and its future.

2. Data collection

2.1 Field work and data collection

Interview: including formal interviews, informal interviews, and focus group interviews.

Observation: use regular or random observation, participatory observation and collection of literature.

2.2 Collection of historical literature research data

The collection methods mainly include the in-depth analysis and comprehensive utilization of historical archives, old maps, industrial archives, historical photographs, early research reports, and related books and journal articles. These materials can provide detailed information about the industrial heritage and its surrounding environment in different historical periods, including the industrial development process, architectural characteristics, social and economic background, and spatial layout changes. Including access to libraries, archives, museums and other institutions that keep historical materials, through the review, replication and analysis of these documents, to build a historical understanding and understanding of the industrial heritage of Fanshan and its spatial production process. Furthermore, a review of the work of early researchers helps to reveal the evolution of the research field and current knowledge gaps, indicating directions for subsequent research.

Figure 4: Collection of Literature Related to Research Concepts
Source: Illustrated by the Author

2.3 Data Collection Tools and Equipment Use film (such as cameras, video recording equipment), sound recording equipment, and field research notebooks as the main tools.

3. Data synthesis and analysis

This study used the research framework as a guiding classification tool to synchronize data integration during data collection. Subsequently, the data were organized in detail according to the outline of each section of the study report. Next, data analysis through study concepts. This study mainly uses two core concepts: "cultural landscape" and "production of space" to explore the relationship between the protection and utilization of cultural landscape of Alum industrial heritage.

4. Research representatives

4.1 Full text of the complete research paper: Conduct a descriptive analysis.

4.2 Academic papers: international research articles, such as Scopus, Eric, or ISI level research papers.

Research scope

1. Research field

The main object of this paper is the cultural landscape and production space of Alum Mine development in different periods, forming the Fanshan industrial cultural

heritage. Through reading the research materials, the research vision gradually expanded from Fanshan to other domestic Alum industrial production, and then to the global industrial production. The research content gradually focuses on the cultural landscape, industrial heritage, and Lujiang Alum Mine. Conduct comparative and critical research from local, ethnic, globalization and other perspectives to scientifically summarize the problems. The research field is based on the production of cultural space, and involves many dimensions such as history, humanities, society, economy, politics and aesthetics. This field of research not only focuses on how to preserve and maintain the material and intangible values of industrial heritage, but also explores how to transform them into dynamic cultural landscapes through innovative design and planning means, thus promoting the economic development and social integration of the region. At the same time, the research also focuses on the influence of industrial heritage on the shaping of local community identity and aesthetics, and how to maintain its uniqueness and diversity in the context of globalization.

1.2 Key position

The study area was Fanshan, Lujiang County, Anhui Province, China. It is the spatial production place of Alum industrial heritage cultural landscape and will be studied as a key location.

Fanshan Located in the central part of Anhui Province, China, it belongs to Hefei City. Located at the junction of the middle and lower reaches of the Yangtze River plain and the Dabie Mountains, it has a unique geographical location. Chaohu Lake is in the north, Wuwei in the east, Lujiang county in the west and Dabie Mountain in the south. Therefore, geographically, it is connected by mountains and rivers and plains and mountains. Fanshan town is famous for its rich Alum stone resources. It has a long history of mining of Alum stone and is one of the important producing areas of Alum stone in ancient China, hence the name "Fanshan Mountain" (Baidu, 2021). The town is not only rich in natural resources, but also has many historical and cultural relics, such as the ancient buildings of Ming and Qing Dynasties, the ancient Alum Mine site, etc., which is an important place to explore the mining and processing history of ancient Alum stone in China. These special resources and geographical location make Fanshan Town not only have special economic significance, but also be a valuable window for the study of ancient Chinese industry and cultural history. In

November 2007, Fanshan was listed in the first batch of county-level intangible cultural heritage list in Lujiang County. In December 2007, it was included in the first batch of municipal intangible cultural heritage list of Chaohu City. In December 2008, it was listed in the second batch of provincial intangible cultural heritage list in Anhui Province. In 2016, Fanshan was selected into the second batch of millennium ancient towns in Anhui Province, and in December 2020, Lujiang Alum Mine was selected into the fourth batch of national industrial heritage (MIIT, 2020).

Therefore, this study is targeted and representative.

1.2 Related location

Fanshan Town, Cangnan County, located in the southeast of Zhejiang Province, China, belongs to Cangnan County, Wenzhou City, is an industrial heritage place related to the development of Fanshan Town, Lujiang County, and also has Alum industrial heritage cultural landscape.

Fanshan Town, located in the central part of Cangnan County, faces Chixi Town and Fengyang She Township in the east, Diling She Township in the south, Qianqi Town, Fuding City, Fujian Province in the west, lingxi Town and Zaoxi Town in the north, with a total administrative area of 92.06 square kilometers. By the end of 2019, the town's registered population was 45,145 people (Baidu, 2024). Fanshan town is famous for its rich resources. It not only has world-class Alum stone reserves, but also various mineral resources such as sulfur ore, kaolin, silver limestone, graphite, as well as diversified agricultural and sideline products, cash crops and Marine products, so it has the reputation of "Alum capital of the world". The town of Alum Alum stone mining and refining has a long history, dating back to the Ming Dynasty Hongwu years, has been more than 600 years. In the early days of liberation, the private Alum factory and individual mining site in Fanshan town completed the socialist transformation in accordance with the party's policy. On January 1,1956, Zhejiang Pingyang Alum Factory and mine United Company was formally established, and its initial GDP accounted for about 38% of the total industrial output value of Wenzhou area. In 1998, approved by the city of Wenzhou People's Government, Zhejiang Pingyang Alum Mine was renamed "Wenzhou Alum Mine". The site won the "Honorary Award for the Asia-Pacific Region Cultural Heritage Protection" issued by

UNESCO, and was selected into the first batch of "National Industrial Heritage" and the fourth batch of "National Mine Park" creation list.

2. Research time

On the basis of field research and in-depth research and combing of relevant documents and materials, the development process of Alum industrial heritage place is summarized into six "historical changes" periods and three "cultural landscape formation" stages from different perspectives.

Six periods of "historical changes", that is, six consecutive historical eras, respectively correspond to important periods in Chinese history: feudal society period (683-1919), semi-colonial and semi-feudal society period (1919-1949), socialist revolution and construction period (1949-1978), economic reform and opening up period (1978-2000), new urbanization period (2000-2020), and Chinese-style modernization (2020-2050). This division based on the development of Chinese history, from the perspective of historical evolution to help from the macro national level to deepen the understanding of Alum culture history process, help to study more accurately define Alum industrial heritage place experienced specific historical period, and through the longitudinal comparison period of cultural landscape development, and horizontal contrast different regions and era of cultural landscape, reveals the Alum industrial heritage place in history of unique position and value.

The three stages of "cultural landscape development" can also be understood as the three historical periods of handicraft industry, machinery industry and information modernization. Cultural landscape productivity is not only helpful to record the historical activities of human beings, but also becomes a key symbol to show the cultural diversity and social progress. From the perspective of promoting the production of social space, based on the in-depth investigation of the development process of Alum industrial cultural landscape, this classification reveals the complex dynamics of its interaction with the natural environment and human activities. Therefore, the three "cultural landscape development" stages correspond to the formation, prosperity and transformation stages of Alum industrial cultural landscape respectively.

3. Study of social structure

In the process of discussing the formation and development of Fanshan Alum industrial heritage, it is necessary to consider the production and composition of Fanshan social space, which is not only the collection of social patterns, but also the key factor to determine the pattern of social structure. Therefore, the composition of Fanshan social system involves various groups and role sets closely related to the industrial structure of Alum ore, so as to achieve specific functions, meanings or goals. Lujiang Alum Mine Through the production of space, the continuous introduction of new social structure content, such as family, community, legal system, economic relations and class structure.

Moreover, insight into the internal logic and reasons for the formation of this particular social structure is an important part of this study. This structure finally constructs the social framework on which Lujiang Alum Mine depends, which standardizes the interaction mode between the relevant institutions of Alum Mine, and also shapes its own development trajectory and future trend.

Through in-depth analysis of the social structure of Alum industrial heritage place, it will be more clearly realized that the social structure is not only the mirror image of social relations, but also the driving force for social change and development. The economic activities, legal norms, political power and cultural inheritance of Fanshan area all interact and influence each other under the framework of this social structure, jointly shaping the unique historical and cultural appearance of Fanshan Aluminum industrial heritage.

4. Analysis unit

In the framework of this paper, the selection of analysis units is a crucial link. At the macro level, countries are often seen as the basic unit for the analysis of social structure and processes. In the middle level, the focus turns to the common observation unit of group, organization and institution; at the micro level, the focus is on the individual. For the research related to the cultural landscape and spatial production of the industrial heritage in Fanshan Town, a multi-dimensional analysis methodology is adopted, and five levels of analysis units are defined: individual, group, community, system and social system. These levels will be explored and explored throughout the study.

This multi-level analysis method allows researchers to understand the complexity and multi-dimension of the industrial heritage from different perspectives and scales. From individual experience and behavior, to the interaction mode between group and community, to the construction of system and the overall operation of social system, these analysis units are connected with each other, providing a comprehensive and detailed analysis framework for revealing the deep significance of industrial heritage in Fanshan Town in the process of social culture and space generation. Through this research method, the history, current situation and development trend of the industrial heritage in Fanshan town can be more accurately understood and explained, so as to provide scientific basis and theoretical support for the related protection, utilization and research.

Definition of terms

1. Industrial heritage

The concept of industrial heritage, as an emerging topic in the field of interdisciplinary research, has been widely recognized by the international academic community since the signing of the International Industrial Heritage Protection Commission (TICCIH) under the Lower Target Charter in Russia in 2003. The Charter clearly defines industrial heritage as " industrial heritage is a relic of industrial civilization with historical, technological, social, architectural or scientific value."Its scope covers buildings, machinery and equipment, workshops, factories, mines and their areas, storage facilities, energy production and distribution sites, transportation and infrastructure, as well as social living places closely related to industrial activities, such as housing, religious and educational facilities (TICCIH, 2003).

Industrial heritage can be divided into broad sense and narrow sense according to its broad connotation. The industrial heritage in the broad sense includes not only the industrial society and its previous handicraft, mining, processing and metal smelting, but also the important production facilities in history, such as the aqueduct project in ancient Rome, the Dujiangyan water conservancy project in ancient China, and even the ancient production sites of the Stone Age. In the narrow sense, the industrial heritage specifically refers to the industrial relics marked by large-scale chemical plants and mechanized production after the industrial Revolution in Britain in the 18th century.

The international interest in and research on industrial heritage originated from the deep study of industrial history, especially the study of industrial archaeology, which began in Britain, the birthplace of the Industrial Revolution. Industrial heritage is also known as the "nostalgic landscape", often regarded as the "place of memory", is the precipitation of history and culture. These industrial cultural relics are identified, reinterpreted, and protected as sites of significant historical, technological, social, architectural, or scientific value (Pasquino, 1986). The understanding of industrial heritage may vary for different conservation purposes, but its core ideas are deeply rooted in the postmodernist perspective, as the restoration, reconstruction, interpretation and repackaging of the industrial landscape constantly gives it a sense of being regenerated and reborn.

2. Aesthetic culture

Aesthetic culture, as a representational cultural form, reflects the deep penetration and interaction of people's aesthetic concepts in their daily life and cultural entertainment activities. In the spatial practice of aesthetic communication, aesthetic culture is presented as a unique fusion of aesthetic subject and aesthetic context interwoven, reflecting the two-way influence of aesthetic concept in the dimension of custom and tradition. On the one hand, aesthetic culture can transcend the boundaries of myth culture, religious culture, language culture, historical culture, science and culture, and focus on the forms of spiritual activities and their products; On the other hand, these spiritual activities and products are widely distributed in people's daily life, transforming life itself into an all-inclusive aesthetic practice (Yichuan, 2004).

Aesthetic culture dominates the social perceptual culture with people's spiritual experience and aesthetic form production as the core. This kind of culture is based on the continuous development and perfection of the traditional cultural system, especially the social and philosophical cultural system. It marks the evolution of human culture and civilization to the direction of aesthetics, and is more and more close to the real life state of human beings. From the macro perspective of human civilization and cultural evolution, aesthetic culture represents the third important form of the development of human culture, after tool culture and social rational culture. This form not only reflects the accumulation process and qualitative leap of cultural aesthetic wisdom, but also is the advanced stage of the progress of human

culture and civilization, revealing the core position and important role of aesthetic wisdom and aesthetic production in promoting the development of human society.

Through the research and exploration of aesthetic culture, we can have a deeper understanding of the close connection between culture and aesthetics, and how aesthetics plays an irreplaceable role in shaping our world outlook, values and lifestyle. Aesthetic culture not only enriches the spiritual world of human beings, but also promotes the harmonious development of the society, enhances people's pursuit and appreciation of the quality of life, and has become an indispensable part of the modern society.

3. Social change

As an academic concept, "social change" extensively covers the change and evolution of social phenomena in multiple dimensions. Its research scope not only includes the change of social structure from macro to micro level, but also involves the vertical progress and decline of social development, as well as the process of horizontal differentiation and integration. In addition, social change also includes the normal and abnormal changes of social structure, the dynamics of social quantitative and qualitative change, the evolution of social relations, the transformation of lifestyle, the renewal of behavioral norms and the remodeling of values (Waters, 1994). As a broad and continuous phenomenon, social change has the potential to guide the society to the direction of more complex transformation or fundamental change. The content of social change is not limited to the progress and regression of the society, but also includes the social integration and division and other forms. The focus of social change focuses on both the process of social change and the results of social change. As a continuous phenomenon, social changes are particularly significant in modern society, which stimulates people's in-depth curiosity and exploration about the nature of social changes, and thus promotes the development and progress of modern sociology (Kavanagh, Lightfoot, & Lilley, 2021).

In the process of in-depth analysis of "social change", we can not only have an insight into the evolution trajectory of social structure and social relations, but also understand the transformation of individual and collective behavior patterns, and the reshaping of values that accompany these changes. This systematic understanding of social changes helps us to grasp the context of social development, foresee the possible social forms in the future, and provide theoretical basis and practical

guidance for coping with social changes. Therefore, social change is not only one of the core topics of sociological research, but also an important theoretical basis for revealing the law of social development and guiding social practice activities.。

4. Social crisis

From the perspective of social philosophy, social crisis comes from the sharp opposition of social basic contradictions, which is reflected in the extremely unbalanced state of social structure. This state not only leads the social operation to deviate from the normal track, but sometimes even leads to the pause or even regression of social development. In fact, the human society inevitably faces various potential or realistic social crises at every stage of its development. From this point of view, the development history of human society can be regarded as a series of practices to deal with social crises, and these practices constantly promote the progress of society (Bauman & Bordoni, 2014).

The research of social crisis starts with the origin of human society, but it is the product of systematic and professional research and the formation of theoretical system, which is essentially the product of modern society. Generally speaking, the modern western academic research on social crisis and its governance aims at two aspects: one is the internal goal, that is, to maintain social stability by alleviating the government crisis and avoiding economic recession and social unrest; the other is the external goal, that is, to strengthen the national status by maintaining national security and maintaining diplomatic advantages. Western countries calculate the probability of crisis through "data analysis, and comprehensively evaluate the possibility of crisis events with rigorous logical thinking". In the modern sense, the western theory of social crisis response initially focused on natural disasters, but after World War II, the relationship between major powers and national security became the new focus of the research on social crisis response, and the research field has gradually expanded to ecological crisis, risk society and other fields. According to different disciplines, the social crisis-related forms discussed in this paper mainly include the livelihood deterioration, ecological destruction and labor shortage that affect the quality of life of the local people in different periods.

The "livelihood" associated with the social crisis is a concept deeply embedded in social justice, based on culture and identity, which in turn depend on the landscape and the ecological environment. The Oxford Dictionary defines it as "the means of

obtaining the necessities of life" (Morse & McNamara, 2013). livelihoods are linked to communities and property rights, not just about income creation, but also about dignity, control, empowerment and sustainability. A person's livelihood means access to basic necessities (such as food, water, shelter, and clothing) (Wedgwood, 1855). Therefore, livelihood is not only a way of survival, but also a way to provide resources to improve and enjoy life. The importance of livelihood is evident when viewed as a means of supporting quality of life or well-being. In the social sciences, the concept of livelihood has been expanded to include social and cultural means —— i. e. individuals, families, or other social groups control the income and resources that meet their needs. This may include information, cultural knowledge, social networks, and legal rights, as well as tools, land, and other material resources (Wisner, 2014)."Livelihood deterioration" refers to the deterioration of people's ability to live and conditions, the consequences of which may include increased poverty, hunger and malnutrition, migration and social instability. This term has applications in many fields, including economics, sociology, anthropology and environmental science.

In addition, the concept of "ecology" related to the social crisis was proposed by The German biologist Ernst Heikkel in 1866. Ecology focuses on the interrelationship between organisms and their surrounding environments (including abiotic and biological environments). And "environmental damage" refers to the ecosystem degradation caused by human activities and the environmental problems caused by it, which not only changes the structure and function of the environment, but also has a negative impact on the survival and development of human beings and the environment itself. In essence, ecological destruction is a crisis of human survival, which interacts with multiple factors such as human concept, humanity, industrial civilization, modern science and technology, and free market economic system. Many environmentalists and ethicists around the world have warned about not doing self-destruction.

The concept of "labor force" is also closely related to the social crisis."Labor force" in economics refers to people's ability to work, including the sum of mental and physical strength (Bowen & Finegan, 2015). The production process of material data is the process of combining labor force with the means of production. Without labor force, the means of production itself cannot create any value; and in the production

process of material materials, the play of labor requires certain production experience and labor skills or cultural and scientific knowledge, but also has a certain amount of means of production, otherwise, the production process of material materials cannot be carried out."Labor shortage" means that the initial demand in the labor market exceeds the effective supply, which is also known as excessive labor demand. Labor shortage is likely to lead to a series of social problems, such as the tight labor market, leading to the increase in operating costs and higher prices of products and services, leading to inflation. At the same time, the shortage of labor force may also lead to labor vacancies in some industries or positions, which will affect the normal operation of social services and production, and further aggravate social inequality and intergenerational contradictions, thus posing a challenge to social stability. In addition, in response to the labor shortage, the development of automation and intelligence may be accelerated, thus exacerbating the structural employment problems in the short term and having an impact on low-skilled workers.

Concepts and conceptual frameworks

1. Research concept

1.1 Cultural landscape

The concept of "cultural landscape" has a long and diverse origin, including a variety of manifestations of the interaction between human beings and their natural environment (Jones, 2003), but as a trait of aesthetic wisdom, it has been ignored and underestimated by people for a long time. As a definition of an academic term, its usage and interpretation change over time and space and receiving early attention from studies in the geographical community. Cultural landscapes were first proposed by the German geographer Friedrich Latzer in 1895, The American geographer Carl Ortwin Sauer was the first to transfer the German term "Kulturlandschaft" to the English-language geographic literature, In 1925, in the Form of the Landscape, he proposed that " culture is the actor, Natural areas are the media, Cultural landscape is the result ", Believe that the cultural landscape is shaped by the cultural groups on the basis of the natural landscape, Seeing as an expression of complex interactions between human thought, social structure, and physical features of the human environment, Implied in the force of human aesthetic wisdom. German geographer Carl Georg Ritter used the word "cultural landscape" in "Geography Related to Nature and Human History", believing that the struggle of the people's wild power is the

reason for the high development of the cultural landscape, and people's aesthetic sense is endowed with positive connotations. Since the 1960s, the term cultural landscape has been increasingly adopted by other disciplines.

Cultural landscape has become an important part of the world culture. The UNESCO (UNESCO) and the International Commission on Monuments and Sites (ICOMOS) are the international authorities for the protection and management of world heritage places. Since industrial heritage is different from traditional culture and nature in scale, industry, content and characteristics, the International Commission for the Protection of Industrial Heritage was established in Sweden in 1978. In 2000, ICOMOS signed an agreement with TICCIH to designate it as ICOMOS's consultant and evaluation consulting unit in the field of industrial heritage. Currently, the TICCIH is the world's largest international industrial heritage protection organization, with more than 40 member states, among which China and Japan are members of Asia.

In 1992, the World Heritage Convention became the first international legal document to recognize and protect the cultural landscape. At the sixteenth session, the Commission adopted the guidelines for its inclusion on the World Heritage List. The Committee recognizes that the cultural landscape is a "combined work of nature and humanity" under article I of the Convention. They demonstrate the evolution of human societies and settlements over time under the physical constraints and opportunities imposed by a range of external and internal social, economic and cultural forces (Centre, 1992).

Cultural landscapes are shaped from the natural landscape by cultural groups. Culture is the subject, the natural area is the medium, and the cultural landscape is the result (McKnight & Hess, 2008). The term "cultural landscape" includes many manifestations of the interaction between humans and their natural environment. Cultural landscapes often reflect specific techniques for sustainable land use, considering the characteristics and limitations of the natural environment in which they are located, and the specific spiritual relationships with nature. The conservation of the cultural landscape contributes to modern technology for sustainable land use and can maintain or enhance the natural value of the landscape. The continuation of traditional land-use practices supports biodiversity in many parts of the world.

Therefore, the conservation of traditional cultural landscapes helps to maintain biodiversity.

At the same time, cultural landscape is an important part of social development and has important social value. Cultural landscape is not only the witness of social history and culture, but also the carrier of social life and cultural inheritance. Each cultural landscape has a unique social value that helps us understand the lifestyles and cultural customs of different societies. The social and historical memory of the cultural landscape plays an important role in the development of human society. Social memory communicates between the past and the present, and has the function of inheriting history and creating history. Fanshan industrial heritage It is not only an important witness of major historical events, historical figures and industrial changes in China, but also an important symbol of industrial development and technological progress. At a specific level, it also reflects the special memory and changes at a specific period. Only through the development of historical process research and the form of cultural landscape dissemination, can memory be prevented from melting and communication and interaction be realized. The key is to integrate industrial culture into the way of social production in line with the needs of The Times (Bloemers & Bodemarchief, 2010).

Therefore, with the help of the concept of cultural landscape, the sustainable management and protection of heritage resources is particularly critical. Alum industrial, the evolution of space production experienced, from the handicraft era to the machine industry, and finally into the modernization stage, jointly shaping a unique cultural landscape. These abandoned industrial sites are not only the embodiment of the utilization value of cultural landscape, but also provide an excellent opportunity for the development and promotion of leisure activities and cultural and artistic innovation space, and are considered to be the effective extension of industrial heritage culture and its consumption mode. By adopting the perspective of cultural landscape, we can closely link many aspects of cultural heritage, such as historical buildings, regional material resources and local architectural technology, with the corresponding identity and concept of place (Drury & McPherson, 2008). This perspective can bridge the tangible and intangible heritage, see the risks hidden in the dynamics of complex systems, and shift the focus of protection from simple preservation of past structures to active management of future changes. It provides an

important tool for practicing people-centered governance strategies to support the promotion of ownership and participation in cultural sites in local communities. This paradigm incorporates the concept of historical environmental management with contemporary environmental governance, the latter being deeply inspired by the perspective of cultural landscape and emphasizing core values such as spatial production, sustainable development, ecological governance and aesthetic wisdom.

By deeply exploring the concept of the cultural landscape, we are not only able to more fully dissect the value of heritage resources, but also able to identify and implement effective conservation and management strategies to ensure the long-term sustainability of these resources. As a unique form of spatial production, cultural landscape reflects the complex and subtle interaction between human beings and the natural environment, which not only shapes the material environment of human beings, but also enriches the human spiritual world. In this process, the concept of sustainable development and ecological governance has become the guiding ideology, guiding the importance of seeking a balance between human activities and the natural environment. At the same time, the application of aesthetic wisdom is not only conducive to enhancing the aesthetic value of cultural landscape, but also promotes the social identification and protection consciousness of heritage resources. Therefore, the research and protection of cultural landscape is the respect and preservation of the past, but also the contribution to the sustainable development of the future. It requires us to protect the heritage, but also to actively think and practice how to make these heritage resources serve the contemporary and even future society.

1.2 Production of the space

"Production of space" is a concept that involves the creation, change and use of space by social, economic and political processes in a particular geographical location (Janzen, 2002). It is based on the theory of the French sociologist Henri Lefebvre, emphasizing that space is not only the product of social relations, but also the place where these relations occur and develop. This process involves not only the construction and renovation of physical space, such as urban planning, architectural design and infrastructure development, but also the perception of space and lifestyle influences, and how space in turn shapes social practice and identity. Spatial production emphasizes that space is not a neutral or fixed background, but a dynamic,

interactive process that participates in and reflects power relations, cultural significance, and social changes.

In the early 20th century, Henri Lefebvre was the first research scholar to focus on space theory. His spatial research work "The Production of Space" has always been regarded as a classic of space analysis, which realized the research from time to space and made people gradually realize the importance of space (Allen & Pryke, 1994). Henri Lefebvre It once said: " In the so-called modern society, space is playing an increasingly important role, which is undeniable."(Lefebvre, 1992) Henri Lefebvre mainly interprets spatial research from the perspective of sociology and political economy. Since then, the research field of space theory has gradually expanded, and the phenomenon of intersection and integration with various disciplines and literary theories has appeared. It integrates aesthetics, cultural geography, post-colonial theory, feminist theory and other disciplines and literary theory. It can be seen that space research is becoming more and more important in modern society.

Henri Lefebvre Combining spatial analysis with globalization, urbanization and daily life has created a new vision of spatial research. It is worth noting that Henri Lefebvre's discourse of space begins with the study of Marx's ideological system; his theory of space production also runs through the Marxist methodology; before then, no Marxist scholars have given theoretical and political attention to the social nature of space and the production of capitalist space. The systematic combing of Henri Lefebvre's spatial production theory is of important reference significance for us to re-understand the spatial dimension and its contemporary value in Marx's ideological system.

Henri Lefebvre Closely combine space with social production, draw lessons from Marxist theory, and endow the previous "empty" space with social attributes. He calls the space, not only refers to the experiential setting of things in a certain place or in a certain scene, but also refers to an attitude and habitual practice. Space is a real society, "space permeates social relations; it is supported not only by but also by and generated by social relations". In this way, the space of Henri Lefebvre is no longer the lifeless, empty physical or geographical space that people have been ignoring, but a form of space that contains social relations and social production. Henri Lefebvre The "production of space" proposed actually has dual meanings: the production of

space and the productive space, which emphasize the ontological nature of space. Not only production practice and social relations exist in space, but the production practice of individual life in space can reproduce space. In the act of creation and being, the space is shown and contained. This reflects the ontological features of the space. The concept of spatial ontology is proposed to deepen people's understanding of space and eliminate the prejudice against space in the past.

In the production of space, Henri Lefebvre divides space into three forms: spatial practice, spatial representation, and representational space. Space practice refers to the practice of space itself, which can be understood from two aspects of space ontology: space production and productive space. It refers to the flow, transfer and interaction of nature and material occurring in space and through space to ensure the needs of production and social production. Can be defined as a certain spatial production process. Thus, as the manufacturing process of material forms of social space, spatial practice has not only emerged as a medium of human activities, behavior, and experience, but also as a consequence of them. The practice of maintaining social production and re-production and ensuring the normal operation of society led by ideology and social relations has produced urban space. Space is not only a specific place of practice behavior, but also a specific product of practice. Spatial practices can reflect the physical properties of space (Watkins, 2005).

Henri Lefebvre The triple spatial dialectics is not mutually separable and runs through the whole history of space. Spatial dialectics is to reveal, analyze and criticize the relations of production and social relations carried by the space, sublate and transcend the contradictory space of capitalism, and finally move towards the ideal socialist space. In this regard, the exploration process of China's socialist revolution and construction is also striving to create and produce new space. In this process, although we have blazed a path of socialism with Chinese characteristics and created new space for development, our current spatial practice of urbanization and globalization still faces many difficulties and obstacles. Therefore, Henri Lefebvre's analysis and criticism of the spatial contradictions of capitalism and his assumption of what the socialist space should be are of positive reference significance for the construction of a new socialist space with Chinese characteristics today.

As a pioneer in the study of space theory, Henri Lefebvre's spatial thought provides ideological sources and theoretical value for later spatial studies. Therefore,

the thought of Chinese localization is mainly reflected in the ternary space theory applied to analysis of China's rapid urbanization of space transformation, social contradictions and cultural practice and other complex problems, aims to explore suitable for China's social and economic development background of space production and management strategy, so as to promote a more fair and sustainable and conducive to the overall well-being of social space planning and use. Through the influence of this idea, it not only triggers in-depth discussions in Chinese academic circles, but also provides new perspectives and tools for local planning and social policies in China.

Fanshan industrial heritage Cultural landscape, as the material carrier of human culture, conveys the history of people's use of resources and financial resources for economic activities for thousands of years. Through the exploration of the existing economic and cultural value of industrial heritage, the potential social and cultural, function and economic value can be further explored and utilized. It can be said that it is the combination and reconstruction of the continuous continuation of social space and various potential values of industrial heritage. The concept of space re-production bears the dual significance of development and innovation. The re-production process not only covers the protection and inheritance of the original value, but also includes the adaptive transformation of the object in the new environment, reflecting the importance of development and innovation. The core of re-production lies in the transformation and rebirth of object value, in which protection and inheritance focus on the continuation of original value, while development and innovation focus on the exploration and creation of new value. There is a close and complex connection between original value and new value.

2. Conceptual framework

The concept of this study is based on the study of the "cultural landscape" and "spatial re-production" problems of Fanshan industrial heritage, and the application and demonstration logical structure of the concept are as follows.

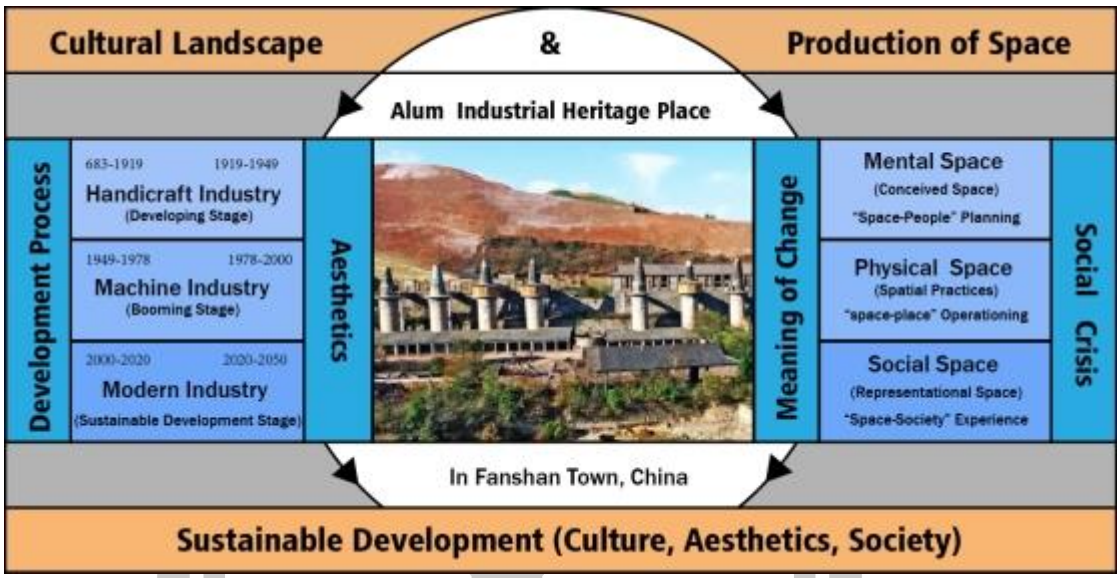

Figure 5: Conceptual Framework Diagram of the Thesis
Source: Illustrated by the Author

Literature review

In the process of production research and practical exploration of industrial heritage cultural landscape space in China, there is a fact that academic research lags behind the case practice, and the relevant research also starts with the introduction of reuse cases and practical exploration. In this section, the literature review, starting from the development process of industrial heritage at home and abroad, we will pursue the time clues, focus on the academic achievements and various research views in the past 20 years, and review the annual research review. The disciplines involved in the reuse of industrial heritage include philosophy, history, sociology, culture, economics, aesthetics, art, architecture, etc. The subjects evolved from the history of Lujiang Alum Mine to the case of spatial production and extended to the spatial re-production of the Alum industrial heritage cultural landscape.

1. Overview of the development process and theoretical research of foreign industrial heritage

1.1 Development process of foreign industrial heritage

The long industrial history has deposited a large number of industrial heritages that have written glorious chapters in the industrial history of cities. Highly developed productive forces constantly promote the change of production relations. After the middle of the 20th century, the government began to change the pattern of the

industrialization era, and then stepped into the society of the information age, transforming from the industrial form to the post-industrial society in the middle and late period of the 20th century. New way of production, transportation and technology appear in the process of industrial manufacturing and production, computer information technology and communication began to be widely used, followed by great changes have taken place in social form, including the world economic performance system and coordination of all kinds of urban relations between economic and social production, after most of the western developed countries gradually into the industrial society, the urban function gradually from industrial production to service, the original structural dominance of the second industry is gradually replaced by the third industry. In this process, many western traditional industrial cities relying on coal, steel and other resources or heavy industries have experienced a process from prosperity to decline due to the depression of industrial structure, and then returned to prosperity through industrial transformation. This stage is embodied in the dual transformation of industrial structure and urban space, the city enters the disorderly expansion, the industry enters the post-industrial period, accompanied by the rapid development of large-scale urban reconstruction. From the reconstruction and reconstruction of the spatial structure of the urban noumenon, to the research on the study is the necessary way to establish the thought of urban renewal.

At the end of the 20th century, the sustainable living environment of good development was paid more and more attention in the evolution of the thought of human city. More and more deeply realized that the history and culture of the city should be protected, so that it and the renewal city adapt, interdependent and promote each other. Most of the western developed countries in the post-industrial era are building new living areas, while the original old urban areas are also lonely and even disappeared. A large number of new industries are located in a large number of units or enterprises of primary and secondary industries in the urban center or migrated to the suburban areas after a certain period of time. A large number of old industrial areas and old factory buildings are facing renewal and space re-production. And become a representative of its spatial transformation. Since some western countries entered the 1950s and 1960s, industrial construction heritage and industrial planning land have become the factors difficult to ignore in the behavior of urban development

reconstruction. At the same time, the protection study of industrial heritage also precedes the theoretical study of reuse.

In different research or historical development stages, people's ideological cognition will also change differently. Some western developed countries study the industrial architectural heritage with the support of slightly different theoretical ideas. In the face of industrial structure transformation and the revitalization of declining industrial zones, western countries, from the perspective of historical heritage and practice the protection and reuse of industrial heritage from the perspective of archaeology, have accumulated a lot of academic theories and empirical experience in the process of industrial heritage reuse over many years (Ploska, 2009).

According to the historical data of previous research, the academic research activities in this field began in Britain and the industrial revolution. In the 1960s, Donald Dudley took the lead to propose "industrial archaeology" for the industrial heritage (Hudson, 1981). After 1955, the British scholar Michael Rix made the first article on the concept of "industrial heritage" in the magazine. In 1963, Kenneth Hudson completed the compilation of a Brief Introduction to Industrial Archaeology. At this point, a brand-new independent research field of industrial archaeology was born. The research methods and research paths in this field are also constantly developing accordingly. At the same time of academic activities, a number of organizations have emerged in major western developed countries, which have a common purpose of the research and protection of industrial heritage.

The first industrial Archaeology commission entered the world's academic platform in 1968 as the Industrial Archaeology Society of London. The organization records London industrial history and advises local governments on the protection of industrial buildings and equipment of historic value. That same year, the Industrial Archaeological Clerk was established in Australia. Due to the close exchanges between Britain and the United States, the American Industrial Archaeological Society was born in 1971. The British study of industrial heritage began in Shropshire and Iron Bridge Canyon heritage, and the pace of research in the United States followed the exploration of the steel industry and textile industry heritage. In 1978, in this year, the international organization established the International Industrial Heritage Protection Committee in Switzerland. TICCIH complies with the in-depth of the concept framework of industrial heritage protection and the widespread

dissemination influence of the protection agency, and marks that the industrial heritage protection has entered the vision and stage of globalization. In 1983, the International Council of Monuments and Sites established April 18 as the "International Day of Monuments and Sites". The protection of industrial heritage undoubtedly became the theme of the anniversary. The Day also inevitably inspired scholars and researchers in various fields and departments around the world to attach great importance to and think deeply (Qing Mei, 2020).

Since then, the related research in the field of industrial archaeology has been carried out around the world, and the protection mode of industrial heritage has been explored from various angles. This is mainly due to the late 1990s, the World Heritage Committee's attention to industrial heritage from the balance of world heritage types. In 1994, with the rapid development of the field, the UNESCO published the Global Strategy for a Balanced, Representative and Trusted World Heritage List. In particular types of heritage, several specific types of heritage include industrial heritage. In 2000, ICOMOS signed an agreement with TICCIH to designate it as ICOMOS's consultant and evaluation consulting unit in the field of industrial heritage. Currently, the TICCIH is the world's largest international industrial heritage protection organization, with more than 40 member states, among which China and Japan are members of Asia. In 2003, the International Commission for the Protection of Industrial Heritage made an important historical contribution to the exploratory introduction of the Lower Target Charter, which elaborated the basic definition and research methods of industrial heritage and the time span respectively (TICCIH, 2003).

With the deepening of the study of industrial heritage, reuse related research also, it is influenced by the social development background, after the energy crisis, the urban renewal, sustainable urban development concept, brown field development management concept and the influence of movement, for the urban economy, social, ecological environment, to increase employment opportunities, improve the urban environmental quality, expand the tax source. The reuse of industrial heritage has become an inevitable choice for many western cities to realize the sustainable development strategy. In 2011, at the 17th session of the International Council on Monuments and Sites, the members of the organization adopted the THE DUBLIN PRINCIPLES, in which the principles of jointly protecting the cultural and noumenon

structure and landscape of the region where the industrial heritage is located were selected as the most basic rules that the relevant departments and units of all member states around the world must follow. In November 2012, TICCIH held the 15th General Assembly and Academic Symposium in Taipei, China, and adopted Taipei Declaration for Asian Industrial Heritage " (Taipei Declaration for short). The declaration held that the industrial heritage of Asia is different from other regions, and that the definition of industrial heritage needs to be expanded, and should include the industrial heritage before the Industrial Revolution. The industrial heritage of Asia strongly shows the relationship between man and land, and this cultural particularity should be highlighted in the concept of protection. In addition, most of Asia's industrial heritage is related to colonial forces and cultural losers, which should be protected.

Course	Time Stage	Signal Event
Emergence	1950-1970	1944, Council For British Archaeology, CBA Established 1955, Michael Rix Proposes the Concept of "Industrial Archaeology" 1963, Kenneth Hudson's "Industrial Archaeology: An Introduction" Published 1968, The Great London Industrial Archeology Society, GLIAS Established
Development	1970-1980	1973, The Association for Industrial Archaeology, AIA Established 1978, The International Committee for the Conservation of the Industrial Heritage, TICCIH Established in Sweden
Globalization	1980-2010	In 1983, ICOMOS Designates April 18 as International Day for Monuments and Sites (IDMS) 2000, ICOMOS Signs Agreement with TICCIH, Appointing TICCIH as Its Advisor and Assessment Consultant in the Field of Industrial Heritage 2003, TICCIH Adopts The Nizhny Tagil Charter for the Industrial Heritage
Personalization	2010-Present	2011, ICOMOS Adopts The Joint ICOMOS–TICCIH Principles for the Conservation of Industrial heritage places, Structures, Areas, and Landscapes, The Dublin Principles 2011,TICCIH Adopts The Taipei Declaration for Asian Industrial Heritage

Table 1: World Industrial Heritage Development History
Source: Compiled by the Author

1.2 Overview of theoretical research on foreign industrial heritage

In the past few decades of international scope, the research on the protection and reuse of industrial heritage has experienced an evolution process from exploring its protection significance, to the emphasis on technology development and sustainable utilization, to the globalization, thematic, ecological development and the combination with diversified industries. It is widely believed that the pioneering case

of the protection and research of industrial heritage appeared in Britain, and the industrial archaeological research in 1955 started the exploration of this field. In the early 1960s, cases of industrial heritage reuse, though rare, laid the foundation for subsequent practice. In the face of the challenge of industrial heritage reuse, western developed countries adopted different reuse standards, modes and concepts according to their development level and geographical differences. Their development trend started from traditional industrial powers such as The United Kingdom, the United States, Germany, France, etc., and gradually spread to the world.

In the 1970s and 1980s, industrial heritage protection and reuse entered a new stage of development, especially in the context of urban renewal in the 1980s, such reuse projects began to attract wide attention. After years of practice and exploration, western countries have shifted their focus from the original modernism and historical, cultural and artistic value to the common focus on the multi-dimensional value of industrial heritage reuse, including the protection and renewal of industrial land itself and the attention to all kinds of industrial heritage. At the same time, the "spatial theory turn" in the western cultural and ideological circles has promoted the reflection of spatial issues from cultural geography and urban sociology to the height of philosophical theory, which has had a significant impact on the contemporary western social life, cultural politics and academic thought. In 1974, The Production of Space written by the French philosopher Henri Lefebvre and the Text and Context of Different Spaces published by Michel Foucault in 1984 have laid a solid theoretical foundation for the in-depth discussion of space issues. Foucault Claim that the contemporary society has entered an era with space as the core, emphasizing the fundamental relationship between anxiety and space in our era, and going beyond the relationship with time. The great concern of these two thinkers on space problems marks that the "spatial turn" becomes the focus of contemporary philosophy. David Harvey Early on, he quoted and spread Lefebvre's views, innovatively incorporated the production of space into the theoretical framework of Marxism, and realized the spatialization of Marxism. As a student of Henri Lefebvre, Soja inherited his spatial ideas and was deeply influenced by his spatial theory achievements. Soja distinguishes the concept of "space" from "space sex" and proposes the concept of social space dialectics. In Postmodern Geographies: The Reassertion of Space in Critical Social Theory, Soja is based on his criticism of historical determinism, emphasizing space as the theoretical basis of social criticism, and combining with the

urban practice of Los Angeles. In Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places, Soja constructs a dialectical existence ontology of history-society-space, replacing the concept of Lefebvre's production space trinity.

At the same time, the acceleration of globalization, marketization and information technology makes the regional practice of space production break through the limitation of distance, and the production of space scale becomes increasingly significant. Swyngedouw, Cox, Brenner and other scholars use the concept of spatial scale to discuss the relationship between globalization and national spatial production, reveal the responses and strategies of countries in the face of the impact of globalization, and believe that spatial scale restructuring is the strategy of countries in the new spatial production and governance. Brenner Criticized the theories of "national centrism", "global regionalism" and "deterritories", constructing a new national space theory, believing that contemporary countries are turning into multi-scale entities under the background of economic globalization, and global localization and local globalization show mutually unified dynamics in this process.

At the beginning of the new century, economic globalization has deepened international exchanges. In 2003, TICCIH adopted the The Nizhny Tagil Charter for the Industrial Heritage, as a basic document in the field of industrial heritage protection, which for the first time comprehensively defined the value of industrial heritage, the significance of appraisal records and research, legal protection, maintenance and protection, education and training, display and interpretation. TICCIH It is clear that industrial heritage is composed of industrial cultural relics with historical, technical, social, architectural or scientific value, marking the consensus of the international community on the protection of industrial heritage (TICCIH, 2003). Since then, the effective protection and activation of industrial heritage has become a topic of global concern. As can be seen from the literature published by UNESCO WHC, ICOMOS and TICCIH, scholars mainly discuss the protection and innovative transformation of industrial building heritage. Tim Edensor Industrial Ruins: Space, Aesthetics and Materiality studies the relationship between New York's industrial heritage and cultural and creative industries from an aesthetic perspective, Chang B. Lee analyzed the policy significance of the reuse of Liverpool, England, Clemens With Marilyn's Industrial Evolution, Ross M's Planning and the Heritage, and Carol Berens's Redeveloping industrial sites: a guide for architects,

planners, and developers And other works all detail the reuse method of industrial sites from the perspective of transformation strategy, Niall Kirkwood Manufactured Sites Rethinking the Post-Industrial Landscape explores the characteristics and reuse strategies of industrial sites from a multidimensional perspective.

The arrival of the information age has promoted a large number of documents on the landscape design, protective development, sustainable reuse and ecological transformation of industrial heritage. In terms of sustainable reuse of industrial heritage, France, Spain, Belgium, the United Kingdom, the Netherlands and Sweden, Japan in Asia, and the United States and Canada in the Americas have achieved remarkable results.Ian L. McHarg In Design with Nature, landscape design and ecological theory are first proposed in combination, and Charles Waldheim's The Landscape Urbanism Reader emphasizes the application of ecological theory in urban planning, especially the importance of landscape ecological restoration in industrial sites. In Nature based solutions for contaminated land remediation and brownfield redevelopment in cities: A review, Niall Kirkwood, professor of Landscape Architecture and Technology, discusses in depth the treatment of contaminated sites and the path to sustainable development of landscapes (Y. Song et al., 2019).

2. Overview of the development process and theoretical research of Chinese Industrial heritage

2.1 The development process of Chinese industrial heritage

China's industry has a long history, but it is more reflected in the development of manual manufacturing industry. Influenced by the unbalanced development of modern society and history, the development of modern machine industry in China has not been developed due to the occurrence of the first worldwide industrial revolution.

The protection of historical and cultural heritage in China began with the archaeological research on the protection of individual cultural relics in the early 20th century. In 1930, the then National government promulgated the Antiquities Preservation Act. After 1949, with the founding of new China, the cultural heritage protection system in China's history was gradually formed, which experienced about a century of development. In the 1960s and 1970s, under the influence of the change of productivity, the industrial structure of the society changed. Many European and

American countries were generally faced with the problem of urban renewal, and the protection and reuse of industrial heritage emerged at the same time. At this time, China was still in the early stages of machine industrialization.

After the reform and opening up, the process of urban urbanization has accelerated. With the rise of emerging industries, especially the information industry, the city internal some traditional manufacturing face upgrading, although China is still in the middle of the industrial stage, but in the coastal cities and central cities and some traditional industrial city economic and social structure are undergoing fundamental changes, massive urbanization began, further population in the city, the original factories, factories or be eliminated, or forced out of the city.

In the mid and late 1990s, with the gradual decline of a large number of traditional industries built in modern times, Chinese cities entered the development stage of renewal and transformation. Especially in the demand of rapid urbanization development and economic interests, industrial heritage for the urban development suffered demolition cases, record urban development of urban industrial culture carrier, a large number of valuable industrial heritage, or due to the lack of funds, not effectively management and face demolished disappear or due to the lack of targeted research and technology and face the plight of inappropriate reuse, this situation is common in many cities in China.

In the new century, with the wave of post-industrial reuse in the world, some artists and contemporary architects engaged in the field of architectural renewal have carried out the renewal practice in the exploration mode and context of modernism or historicism. The reuse practice of industrial heritage has gradually emerged to the government and all sectors of society, and gradually carried out throughout the country. The management system, regulations and technical routes related to the reuse practice have been enriched and improved, and even the national industrial heritage planning has been compiled. These practical explorations have injected more vitality into the reuse of industrial heritage and made great achievements, making the protection and reuse of industrial heritage walk out of the static form of formalin protection, adding more vitality to the industrial heritage in the process of practice, and also endows it with new life in social life.

Time	Location / Unit	Content / Meaning
2005	State Administration of Cultural Heritage	The Notice on Strengthening the Protection of Industrial Heritage marks that the reuse practice of industrial heritage has entered a new stage and become a rapidly developing vanguard army in the field of building renewal.
2006	Wuxi, China	The first "China Industrial Heritage Protection Forum" with the theme of "Industrial Heritage" was held. The China Council for the Protection of Monuments and Sites drafted and issued the "Wuxi Proposal —— Pay attention to the Protection of Industrial Heritage in the Period of rapid Economic Development" (referred to as "Wuxi Proposal"), which can be regarded as a milestone in China's industrial heritage cause.
1996	Tunxi, Huangshan City, China	A seminar on historical district protection was held to point out the important role of historical district protection in the protection of historical and cultural heritage. The protection system of historical and cultural protection areas has been established, forming a multi-level historical and cultural heritage protection system with the focus shifting to historical and cultural heritage protection areas. Formed a point to the surface system to protect China's material cultural heritage and intangible cultural heritage.
2008	Chongqing city, Taiyuan City	Pilot out the "four-gauge overlap"
2008	Shanghai Municipality	Pilot "two plans in one"
In 2010,	Wuhan, China	The Urban Planning Society of China drafted and issued the Wuhan Proposal
In 2010,	Academic committee member of Industrial Architectural Heritage of Architectural Society of China	China's first academic organization for industrial heritage protection was established. Through the "Beijing Initiative", the proposal points out that under the background of rapid urbanization process and rapid economic development, the industrial heritage is damaged more and more seriously due to the construction, and the attention to the industrial construction heritage should be the attention of the whole society.
In 2012,	Chinatown Association Historical and Cultural City Committee, Hangzhou Municipal People's Government	The "China Industrial Heritage Protection Seminar" passed the "Hangzhou Consensus". And the protection plan of industrial heritage should be formulated and connected with the statutory planning; carry out the industrial heritage survey and establish the corresponding registration system; increase the leading and supporting role of the government in the protection and utilization of industrial heritage.
In 2012,	Xi Jinping	The Speech at the Central Economic Work Conference proposed to provide a highly coordinated and unified spatial planning system for national economic and social development planning, land use planning, urban and rural planning, and ecological planning, and to provide authoritative and authoritative spatial planning guidance for "one blueprint to the end".
In 2014,	Ministry of Industry Information Technology	The establishment of the Industrial Culture Development Center of the Ministry of Industry and Information Technology marks the official recognition of industrial culture in China.
In 2016,	Ministry of Industry Information Technology	The establishment of the China Industrial Heritage Alliance aims to promote the protection of industrial heritage, develop industrial culture and inherit the spirit of craftsmanship. And began a nationwide survey of industrial heritage and industrial museums.
In 2017,	Ministry of Industry Information Technology	Eleven "National Industrial Heritage lists (the first batch)" were published

In 2018,	General Office of the CPC Central Committee and General Office of the State Council	Several Opinions on Strengthening the Reform of the Protection and Utilization of Cultural Relics has issued five batches of 194 national industrial heritage places, protecting a number of important industrial heritage containing excellent traditional culture, continuous red genes, witnessing the industrial development of New China and inheriting the industrial spirit.
In 2018,	The Research Institute of Innovation Strategy of China Association for Science and Technology and China Urban Planning Society jointly	The "China's Industrial Heritage Protection List (the first batch)" was published, with 100 industrial enterprises on the list, and the relationship between industrial heritage and inventors and industrialists was established.
In 2020,	The National Development and Reform Commission, the Ministry of Industry and Information Technology	The Implementation Plan for Promoting the Protection and Utilization of Industrial Heritage in Old Industrial Cities was issued, proposing to integrate industrial culture into people's lives, indicating that the unique cultural value of industrial heritage needs to be further highlighted.
In 2023,	Ministry of Industry and Information Technology of the People's Republic of China	The Measures for the Administration of National Industrial Heritage were issued for the effective protection, rational utilization and scientific management of national industrial heritage. The main contents of the measures include the definition, protection principles, management system, protection measures, utilization methods and supervision and management of industrial heritage. By clarifying the protection responsibility of industrial heritage, establishing the protection mechanism, and promoting the activation and utilization of industrial heritage.

Table 2:Development History of China's Industrial Heritage
Source: Compiled by the Author

2.2 Overview of theoretical research on Chinese Industrial Heritage

China's industrial development has a long history, mainly traditional mining and metallurgy production. After the industrial revolution, the number of heritage is small, but the overall number of remains is rich and the preservation is relatively complete. And because the development of machine industrialization in China lags behind the West, the research of industrial heritage protection and renewal is relatively late. However, for a long time, the industry staff and scholars have ignored the architectural ontology value and location value of the architectural industry heritage. At the same time, there is also a lack of understanding of the value, including historical context value and social and economic value, followed by technical value and aesthetic value. It was not until the beginning of this century that consensus was reached on the concept and value of industrial heritage, and protection and reuse were the core research issue. Similarly, the domestic research on space production is relatively late, and it was not until the late 1990s that scholars began to introduce it sporadically. Using China's national knowledge infrastructure to retrieve academic trends, taking "space production" as the key word, analyzing the development trend of

academic attention, the results found that after 2000, the academic circle began to pay more attention to space production. According to the trend of the academic circle's attention to space production and the overall background of domestic academic development, the domestic space production research can be divided into three stages, namely, the translation introduction stage (1998-2008), the understanding and application stage (2009-2015), and the dialogue and reflection stage (2016-present).

The earliest papers to translate and introduce the theory of foreign space production in China are "Postmodernity and Geography and Politics" and "Modernity and Space Production", Introduce the idea of Henri Lefebvre, the founder of the space production theory, follow, The Commercial Press, Nanjing University Press and other publishing houses have successively translated and published related works of Henri Lefebvre, Harvey, Suya Space and others, Including "Harvey's space" the condition of postmodernity: the root of cultural change, sujia "postmodern geography: reiterated in critical social theory space" sujia's the third space: journey to Los Angeles and other real and imagination, Harvey's hope space, Henri Lefebvre "space and politics" and so on. It is worth mentioning that some scholars in Taiwan have also compiled or published works on space production earlier. For example, Xia Zhujiu (1988) introduced the classical theories related to space production in his Cultural Form and Social Theory of Space; the classics of modernity, Paris; and Wang Zhihong reviewed two other books on space production, Neoliberal Space: Theory of unequal inequality.

At the same time, the relevant domestic journals also introduce the achievements of foreign space theories and concepts in the form of special topics and columns. The first issue of Overseas Theory Dynamic in 2006 made a special introduction to the production of space: Wang Min'an took Henri Lefebvre, Foucault, Harvey, three representative theorists as examples to implement his space theory. After summary and arrangement, indicate the politics and economy behind the generation of space; Huang Xiaowu translated the "postscript" written by Harvey for the English version of Henri Lefebvre "Production of Space", providing background information for further understanding of "production of space". At the same time, the magazine published the first article "The Production of Space" written by Zhao Wen in the new "key words" column, and made a general introduction to Henri Lefebvre's "trinity" of space production theory. In the second issue of 2007, Jianghai Journal published a series of written articles to reflect and promote the theory of space production: Ren

Ping analyzed the space of capital production and the space production of new globalization, pointed out the Sinicization of Marx, Hu Daping explored the space shift of social critical theory, pointed out the theoretical connotation and political value of space shift for historical materialism; the production theory indicates that China's new urbanization should be the urbanization in line with spatial justice, and put forward policy support and institutional basis.

During this period, a few scholars carried out a preliminary practical application on the basis of absorbing and drawing lessons from the space production theory. Bao et al took the bar on Hengshan Road in Shanghai as an example to illustrate the space production and logic in the context of globalization. Zhou Daming and Li Cuiling found that the dump was shaped by the government, scavengers, scavengers and local villagers. The power logic behind the dump dominates the production of space; examining and analyzing how socialism and its mode of production connect the urban reconstruction and the daily life world of workers in the sense of space production; Chen Yingfang took the urban renewal of Shanghai since the 1980s as an example to analyze the major demolition projects. The urban social reform brought by the demolition projects and the resettlement base reveals the production process and mechanism of various urban space.

The translation of the above works and the introduction of the scholars have played a good role in promoting the popularization and dissemination of the foreign classical production space theory, and also laid a foundation for the next understanding and application of the production space theory. The domestic academic research on "space production" is deepening in both the research horizon and the research methods, and the research standpoint and conclusion are becoming more and more fair and objective. The early study of space began with geography, then sociology participated in space research, and finally all social sciences entered into the attention of "space production", and the research methods of "space production" became increasingly diversified.

Before 2003, the research on industrial heritage and reuse only attracted the attention of a few scholars, but after this to 2006, the academic research increased year by year, and after 2006, the research popularity soared. In her 2003 book, The Survival Strategy of Architectural Heritage: Protective Utilization Design Practice, Changqing explored the regeneration measures of architectural heritage, including

industrial heritage. Two protective transformation measures are also proposed. Since with the development of industrial tourism in 2003, industrial heritage with the development of tourism "resource" attribute, the industrial heritage of tourism development research, in view of the rise of international industrial heritage reuse concept, this period of research mainly focused on the introduction of foreign successful cases, analysis and discussion of its management.2004 tsinghua university He Wang in his master's thesis after industrial landscape analysis, studied the ecological strategy and landscape design method to promote industrial wasteland landscape renewal and industrial heritage resources protection and reuse problem, summarizes the development of industrial landscape and industrial park design mode, from the perspective of the landscape of the industrial heritage protection and reuse. Around 2008, there were many studies on the design and transformation techniques of industrial heritage reuse, and we also began to pay attention to some problems in the protection and reuse in the process of industrial heritage reuse. For example, Wang Yuan's Research on the Reconstruction and Recycling Design of Old Industrial Buildings and Nie Bo's Research on the Protection and Regeneration of Modern Concrete Industrial Buildings in Shanghai studied the characteristics of concrete industrial buildings, updated the design mode and the design strategy from the technical level. In Zhang Yu's "Research on Creative Industry Cluster", the related strategies of industrial heritage reuse under the overall and local renewal mode are studied. Around 2009, the research on the reuse of industrial heritage in Beijing, Shanghai, Hebei, Wuhan, Shaanxi, Chongqing, northeast old industrial zone and other places was increasing, and the third-tier industrial heritage in Guang'an of Sichuan province also began to receive attention. Most of the research on the reuse of industrial heritage in the old industrial zone in Northeast China is still based on the industrial tourism, industrial heritage museum and other economic disciplines, for example, the research on the development mode and selection of industrial tourism in Liaoning Province in Li Miaoyan's doctoral thesis Research on Chinese Industrial Tourism Development Model of Wuhan University of Technology. Research of mining heritage have bao jie, Lu Lin mining and metallurgy heritage tourism development research: in Anhui Tongling mining heritage tourism, Zeng Lei, Zeng Hui the mining land industrial heritage tourism development empirical research: in Hebei wuan shimen mining area as an example, for example ", Beijing, Shanghai and other places for this period of the Olympic Games and the world expo, from the

perspective of planning and sustainable attention of industrial heritage reuse heat, such as Wang Ke, MoTianWei the 2010 Shanghai world expo venues" thick plate workshop " reuse transformation practice, Qiu Yue, WenAiPing from the perspective of urban planning after Beijing coking plant industrial protection and development and utilization of the Olympics.

In recent years, with the rapid development of economy and society and the strong development of industrial tourism, the research work of domestic industrial heritage and cultural landscape tourism has developed rapidly, and a number of research results have also appeared. Due to the different time points of industrial development and the different specific national conditions of structural transformation, the direction and focus of research at home and abroad are also very different. Li Xiaobo and Qi suggested to highlight the cultural connotation of the ancient salt industry site through the theme display of the museum, and play the role of site protection and tourism education. Taking resource-based cities as an example, Ma Xiao, Kong Yuanyuan and others believe that the development of industrial heritage tourism should highlight nostalgia, highlight local culture, activate industrial sites, and enhance the vitality of the city. Niu Chengzhe, Wu Shengshi and others believe that the theme of industrial heritage tourism should be fully highlighted, the characteristic cultural articles should be strengthened, and the recognition and science popularization function of tourism should be enhanced. Wang Min analyzed the spatial perception of the industrial heritage of Guangzhou Red Brick Factory, and believed that when recognizing the important role of creative elements, it is especially necessary to balance the relationship with the original industrial elements in the sense of space, so as to better achieve the purpose of display.

3. Comparison of domestic and foreign industrial heritage research

There are similarities in the social background of industrial heritage reuse at home and abroad, but due to the relatively late stage of urban renewal and industrial development in China, the reuse of industrial heritage is later than that in the West. Through the combing of previous research and practice, it can be seen that the research and practice of industrial heritage reuse in China generally show a trend of being in line with international standards.

The rich practical activities abroad also provide a precedent for the practice of industrial heritage reuse in China, and the mature industrial heritage reuse technology

can be used for reference. Then, the development process of industrialization and urbanization inevitably determines the development trend of industrial heritage reuse. In view of the unique characteristics of China's industrialization development and urbanization development, China's industrial heritage reuse has its own unique characteristics, and the foreign research and practical conclusions are not necessarily all suitable. The above research breaks through the traditional and closed single research mode, organically integrates philosophy, political science, sociology, geography, urbanology, culture science, literature and art science and other disciplines, and pays attention to the interdisciplinary nature of spatial research. In particular, the interdisciplinary integration of contemporary space theory research, changed the traditional geography, urban sociology of objective and neutral positivism research, expand and deepen the traditional discipline research horizon, highlight the value orientation of political care, reverse the philosophy, political science and sociology theory system because of the abstract loss of reality interpretation ability, the philosophical theory reflection back to such as urban problems, geopolitics, media landscape of contemporary society must face the reality of the field.

China's industrial history is a long period, experienced many historical stages, among which the handicraft industry is the longest compared with other industries, in the middle and late nineteenth century, the real sense of the industrial age and large machine production. Industrial heritage has not been paid attention to for quite a long time. Most of the industrial heritage listed in the heritage protection list is the handicraft heritage before modern times, and insufficient attention is paid to the modern industrial heritage.

On the whole, the domestic space production theory research is still in its infancy, and there are many deficiencies and deficiencies. Due to the relatively backward domestic space research compared with foreign countries, the current research mainly focuses on the relevant foreign documents. How to digest and understand the advanced theoretical achievements of foreign countries and transform them into theoretical tools to analyze Chinese local problems has become an urgent problem to be solved in the current space research institute. But from the perspective of space, China's reform and opening up in the new era is also a process of large-scale spatial restructuring and spatial opening. With the rapid development of socialist

market economy, urbanization as the main symbol, China's space production changes dramatically and unprecedented complex morphology, domestic academia began to pay close attention to urban space, urban and spatial culture research increasingly highlighted, the study of space is gradually promoted to the level of theory.

From what we can see to stand now, Literature related to the reuse of industrial heritage, Rich in reuse cases at home and abroad, Covering an extremely wide range of areas, Many are from the perspective of the discipline itself, such as architecture, building technology, town planning, Landscape design and other studies on the reuse process or pattern of different types of industrial heritage, The study subjects are mainly the industrial heritage in the city, The research focuses on the combination of art and industrial environment, Or focus on the use of technology in the reuse process, The spatial scale of the main body of the industrial architecture heritage, stock option, structural strengthening, valuation, Research with unique aspects of maintenance management, It is more than the research of the common systematic and hierarchical technical strategies and theoretical framework in the reuse of industrial heritage. But combined with foreign space production theory of actual industrial heritage, project case historical development, aesthetic value, humanistic spirit of multiple perspectives, space production of social crisis has not yet been established, and from the space of human survival and civilization development of social crisis view in the process of cultural landscape and space production research is also very weak.

Benefit of research

In the past 40 years, with the deepening of China's international exchanges, influenced by the progress of western industrial heritage protection, people began to pay attention to the protection of domestic industrial history and industrial cultural heritage, and how to better develop and utilize industrial heritage has become a consensus. Industrial heritage is an important part of the world cultural heritage. Industrial structures, technological processes and production tools, as well as industrial sites, landscape features and intangible cultural heritage, are all of great value.

The formation of Fanshan Alum industrial cultural heritage in China has crossed the historical dimension of nearly 1,500 years. It has experienced from the handicraft era to the industrial mechanization era, and then to the formation of the industrial heritage spatial form. The development, prosperity and closure of Alum Mines led to

unique scale spatial practice and cultural influences. As a national industrial heritage place, the current academic research on the relationship between Alum cultural landscape and space production is not comprehensive enough. Therefore, by summarizing the development, aesthetic concept and production space characteristics of Alum culture in different historical stages, this study aims to deepen people's understanding of Fanshan industrial heritage social value and cultural connotation, explore the development potential of Alum cultural landscape in the new era, and provide sustainable value and methods for the protection and development of local industrial heritage.

1. Fanshan Cultural landscape, as a treasure of national industrial heritage, is an important witness of local history, economy and development. This study improves the specific manifestations of Alum industrial heritage cultural landscape through the early investigation, helping people to understand the value of protection and reuse from the material and spiritual aspects of Alum industrial heritage cultural landscape, which is conducive to enhancing the local historical cognition and cultural identity of the young generation.

2. This study applies western space production theory to the Chinese industrial heritage protection and utilization, from the perspective of anthropology, sociology and aesthetic, analyzed the public aesthetic consciousness of cultural landscape formation, reveals the aesthetic wisdom brings new meaning to industrial heritage space production, and long effect in the development of local harmonious coexistence of man and nature.

3. in this study by revealing the root cause of the social crisis of Alum industrial heritage, essence, mechanism and consequences, and put forward the effective protection principles and measures, will help the academic from a new cultural perspective to review the industrial cultural heritage space re-production of Chinese model, is advantageous to the Fanshan local government in the Alum industrial heritage cultural landscape space to create planning formulate reasonable policies and strategies.

New knowledge after research

With the advent of the information age, the research field of cultural landscape and space production has gradually expanded to the profound influence of virtual

space and digital culture on the physical space. In particular, how social media, virtual reality (VR) and augmented reality (AR) technology shape modern people's cognition and interaction mode of cultural landscape spatial re-production, and then have a fundamental impact on local spatial conception and spatial practice, has become a focus of research. This kind of technology not only reshaped people's spatial perception, but also reinterprets and creates urban space on the level of aesthetic wisdom, reflecting the new trend of combining science and technology with aesthetics.

At the same time, the industrial heritage cultural landscape, space governance and sustainable development have also received unprecedented attention in the background of information. This not only involves how to maintain the uniqueness of local areas and cultural diversity in the constantly integrated world, but also includes how to realize the strategy of ecological civilization, ensure the security and inheritance of cultural heritage in the process of modernization, and ensure the realization of cultural continuity and the sustainability of space.

In the discussion of space production, the issue of how power, capital and technology shape space is further deepened. The research reveals that under the framework of the information age, the industrial heritage place space is not only the physical existence, but also the product of the interaction between social relations, economic power and political power. These factors together influence the construction of social structure and individual identity, reflecting the important role of spatial governance in coping with social crisis, promoting social justice and promoting social integration.

In conclusion, using these new research perspectives and knowledge advances to deepen the understanding of the more complex and dynamic cultural landscape and space production, and also provides us with profound thinking and strategies on how to effectively maintain the sustainability of culture and space in a rapidly changing world. By integrating the multi-dimensional perspectives of aesthetic wisdom, space governance and social crisis response, it can better understand and shape the future urban space, and promote the harmonious and sustainable development of the society.

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Chapter II:

The Historical Development Process of Cultural Landscape

Introduction

This chapter mainly explores the development process of the Alum cultural landscape. The development process, as an important cultural expression of historical memory, not only demonstrates the shared memory characteristics among different individuals but also promotes the understanding of the cultural landscape's value, making it an important cohesive force for enhancing local cultural development.

In this process, tracing the "historical memories" that contain Alum cultural landscape cultural identity and aesthetic value orientation, and exploring how these memories find the symbols and social significance behind through their interrelationships. In other words, linking memories with experiences, constructing a structure that can shape aesthetic values and express cultural identity, is an important foundation for studying the development process of the Alum cultural landscape as a discourse of historical memory, and an indispensable category of significance in research that reproduces the past, integrates the present, and looks to the future through historical memory.

Therefore, the first part of this chapter mainly defines the historical process division of the development of the Ming Alum industrial cultural landscape. By elucidating the development characteristics of each historical stage, it provides a solid theoretical basis and research perspective for periodization. The second part focuses on studying the evolution of the Ming Alum industrial cultural landscape in different historical periods.

By organizing the preliminary field research data, this chapter detailedly describes the key events of different historical periods, providing a solid historical background for the theoretical analysis in subsequent chapters.

Part 1. Historical process division of cultural landscape development

From the perspective of the research characteristics of the "historical staging method", the historical staging method is regarded as a subtle research methodology. Relying on the regular analysis of the time axis, the evolution of the industrial heritage is decomposed into a series of epoch-making nodes (Gans, 2000). The essence of this methodology is a more systematic and in-depth excavation and interpretation of the historical value contained in the industrial heritage. With the help of historical staging method, identify and analyze how the cultural landscape contributes its unique value and evolves over time with higher accuracy, so as to deepen the understanding of the role and influence of industrial heritage in shaping regional culture and social structure. Specifically, the use of historical staging method through the development of industrial heritage and microscopic investigation, build a multi-dimensional analysis framework, not only includes the linear flow of time, also involves the technological innovation, productivity development, labor organization, social class change, economic model transformation and the evolution of cultural ideology and so on multiple levels.

Through this lens of historical staging, we can more deeply explore the power of industrial heritage to shaping social structure and cultural identity in different historical stages, and how they are preserved, inherited or reinterpreted in the long river of history. Tracing how cultural elements are preserved, adjusted or altered in historical rivers, providing further insight into the contribution of industrial heritage to social values and its role in shaping regional cultural identity and historical memory. The application of historical staging method can not only promote people's clear understanding of the development context of industrial heritage, but more importantly, reveal the profound significance of industrial heritage to the society in different historical periods.

Focusing on the historical development characteristics of Alum industrial heritage, it is found that in the early stage, the production and processing activity of Alum was deeply rooted in the local cultural tradition and social structure, which was manifested as a small-scale production form of handicraft. With the acceleration of industrialization, Alum industrial heritage may have experienced a fundamental shift from manual workshop to mechanized production, which not only significantly improves production efficiency, but also causes major changes in social organization

structure and labor relations. In the practice of industrial heritage reuse, it is of great significance to study the development process in historical stages, grasp the overall development trend of industrial heritage reuse in China and identify the existing problems.

On the basis of field research and in-depth research and combing of relevant documents and materials, the development process of Alum industrial heritage place is summarized into six "historical changes" periods and three "cultural landscape formation" stages from different perspectives.

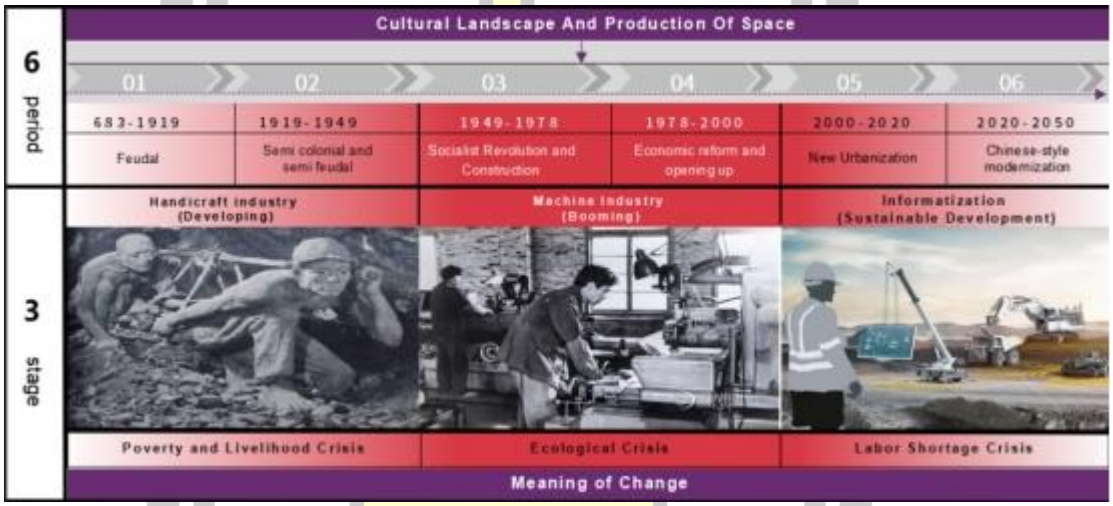


Figure 6: Study Model of Historical Periodization
Source: Illustrated by the Author

1. Six periods of "Historical Change"

Six periods of "historical changes", that is, six consecutive historical eras, respectively correspond to important periods in Chinese history: feudal society period (683-1919), semi-colonial and semi-feudal society period (1919-1949), socialist revolution and construction period (1949-1978), economic reform and opening up period (1978-2000), new urbanization period (2000-2020), and Chinese-style modernization (2020-2050). This division based on the development of Chinese history, from the perspective of historical evolution to help from the macro national level to deepen the understanding of Alum culture history process, help to study more accurately define Alum industrial heritage place experienced specific historical period, and through the longitudinal comparison period of cultural landscape

development, and horizontal contrast different regions and era of cultural landscape, reveals the Alum industrial heritage place in history of unique position and value.

The first stage of historical change, the feudal society period. The concept of Chinese feudal society varies in different historical stages and academic discussions, but usually refers to a social structure based on agriculture, separation of land ownership and use rights, and strict hierarchy and patriarchal system. A centralized state ruled by the emperor has a distinct social structure and family and clan relations had a profound influence on the identity and status of individuals. In Chinese history, the concept of feudal society was often used to describe the whole period from the Zhou Dynasty (about 1046 BC-256 BC) to the Qing Dynasty (1644-1911 AD), especially in the Zhou Dynasty and the Qin and Han dynasties, when the feudal system was more obvious. At the same time, because of the differences between China's social structure and the traditional western feudal concepts, this division has some academic controversy. The current recorded history of Alum cultural landscape can be traced back to 683 AD, so the historical change stage of Alum culture also began from this period of the Tang Dynasty. But in fact, the production and application of Alum is older than this time node.

The second stage of historical change, the semi-colonial and semi-feudal society period. It is an important stage in China's modern history. It refers to the oppression and aggression by imperialist powers from the end of the 19th century to the middle of the 20th century, and at the same time, there are remnants and characteristics of the feudal society. During this period, although China maintained its nominal independence, it had actually lost many sovereignty and was forced to sign many unequal treaties, which led to the western powers to enjoy concessions and consular jurisdiction in China, which were manifestations of semi-colonial territory. At the same time, Chinese society still retains many characteristics of the feudal system, such as the exploitation of the peasants by the landlord class, and the strict social hierarchy and patriarchal clan system, which together constitute the so-called semi-feudal nature. Therefore, the semi-colonial and semi-feudal society refers to a mixed social and economic form presented in China under the joint action of the external imperialist pressure and the internal feudal remnants. In this context, the people, but also to the industrial cultural heritage of Alum brought serious livelihood deterioration crisis.

The third stage of historical change, the socialist revolution and construction period. This period refers to the historical stage in which the Communist Party of China aimed to establish a socialist social system through a series of socialist revolutions and construction activities in order to completely change the old face of the semi-colonial and semi-feudal society after the establishment of the People's Republic of China in 1949. This period covers the land reform, public-private partnership, the people's commune movement and a series of major social changes, and the subsequent economic construction, such as the great leap forward, science and technology education development and cultural revolution, these measures fundamentally changed China's social structure and economic outlook, promote the country to the direction of socialism. During this period, China ended a long-term and large-scale war and entered a relatively stable economic growth stage. It was also an important transformation era of Alum industrial heritage place from traditional handicraft industry to large machine industry, and the "Lujiang Alum Mine" that symbolizes the masters of the working people and the dominant power of survival, was born.

The fourth stage of historical change, economic reform and opening up period. This period refers to the historical stage that began in 1978, under the leadership of Deng Xiaoping, China implemented a series of reform measures aimed at transforming the economic system and transition from the planned economy to the market economic system. During this period, China relaxed the restrictions on foreign economic exchanges, attracted foreign investment and created a special economic zone, and promoted the substantial growth of domestic and foreign trade and investment. Internal reforms including the disintegration of agricultural collectivization, the promotion of household contract responsibility system, the reform of state-owned enterprises, and the rise of the private economy have greatly stimulated economic vitality and promoted the rapid growth of China's economy, making China one of the largest economies in the world. Alum industrial heritage place, the "Lujiang Alum Mine" benefits from the dividend of the national policy. After experiencing a long-term and rapid development, it was forced to close because of the serious social and ecological crisis brought by the environmental damage, and the Alum cultural landscape has become an industrial heritage.

The fifth stage of historical changes, the new type of urbanization is a historical stage that China has just completed. This stage aims to achieve resource sharing, service co-construction, and market integration by promoting the coordinated development of cities and rural areas. The strategy emphasizes the importance of improving the quality of urban development, ensuring and improving people's livelihoods, optimizing urban layout and functions, promoting industrial transformation and upgrading, and avoiding resource wastage and environmental damage seen in traditional urbanization processes. Through this integrated development model, the new urbanization aims to break the urban-rural dual structure, narrow the urban-rural gap, promote comprehensive, coordinated, and sustainable economic and social development, and enhance the overall quality of life and development level of society. During this period, the Alum industrial heritage places strictly adhere to national environmental governance standards and requirements to actively improve local living environments, while also seeking new paths for sustainable development through the spatial re-production of industrial heritage cultural landscapes.

The sixth historical stage of transformation is the period of Chinese-style modernization. This phase represents a stage that China is currently undergoing and will continue in the foreseeable future.

2. Three stages of "Cultural Landscape Development"

The three stages of "cultural landscape development" can also be understood as the three historical periods of handicraft industry, machinery industry and information modernization. Cultural landscape productivity is not only helpful to record the historical activities of human beings, but also becomes a key symbol to show the cultural diversity and social progress. From the perspective of promoting the production of social space, based on the in-depth investigation of the development process of Alum industrial cultural landscape, this classification reveals the complex dynamics of its interaction with the natural environment and human activities. Therefore, the three "cultural landscape development" stages correspond to the formation, prosperity and transformation stages of Alum industrial cultural landscape respectively.

The first stage, the handicraft era, is also the development period of Alum industrial cultural landscape. During this period, the initial form of the cultural

landscape was shaped by the special natural environment and early human activities. With the passage of time, human influence on the natural environment has become increasingly profound, giving birth to the unique mode of production and life and social organization structure. At this stage, the cultural landscape is gradually enriched, and then evolved into the cultural characteristics with distinctive regional characteristics.

In the second stage, in the mechanical industrial age, the Alum industrial cultural landscape reached the peak of its prosperity. On the basis of long-term evolution, the cultural landscape has formed a stable state, and its features such as architectural style, land use mode and traditional customs are more prominent, and they have become the core elements of regional cultural identity. During this period, the cultural landscape may also be rapidly adjusted and changed quickly due to social and economic changes, technological innovation or the impact of foreign culture, and the alternation of old and new elements and functional transformation become its characteristics.

In the third stage, in the information age, Alum industrial heritage place has also stepped into the transition period of the cultural landscape. At this stage, the cultural landscape may be transformed into an industrial cultural heritage due to a specific historical background. With the increasing attention to the value of cultural heritage, the protection and restoration of cultural landscape has become an important issue. National and local governments protect and manage cultural landscapes of historical, cultural and aesthetic value through legislation, policy making and public participation to prevent their degradation or disappearance. At the same time, the protection work should consider the innovation and adaptation of the cultural landscape in the inheritance, so as to ensure that it can meet the social needs of the new era and respond to the environmental changes.

By comparing the above three key periods of historical development, it can be observed that each period is accompanied by the crisis under its specific social structure. Therefore, from the perspective of "cultural landscape development", it is helpful to summarize the historical inducement of social crisis by using the concept of spatial production. In the handicraft age, due to the limitations of productivity, the society is widely faced with the risk of deteriorating living conditions. Entering the age of machine industry, despite the economic boost and the improved living

standards of local residents, this change is seen as a sign of social progress. However, this progress comes at the cost of excessive exploitation and consumption of natural resources, thus raising new challenges on another level, with the catastrophic consequences of environmental degradation and severity. Realizing this, society must pause its reckless steps and actively explore and transform new modes of production. While moving towards the information age, we should not only solve the remaining historical problems, but also use more advanced intelligent technologies and strategies to promote the development of local economy. In this context, the concept of sustainable space production development has brought new opportunities for the cultural landscape revival of industrial heritage. How these opportunities will be transformed into actual production activities, and how these activities will shape the new cultural landscape everywhere, are important topics for current research and practice.

The development of cultural landscape also represents the significance of local space production, so from the perspective of "cultural landscape development", it is helpful to perspective the historical turning law of space production with the help of productivity knowledge. As early as the last century, western scholar Henri Lefebvre, from the perspective of social space production, discussed how capitalism influenced and changed the production of space, which includes the transformation from agricultural society to industrialized society and the subsequent change of urban space. Henri Lefebvre Believe that the industrial society is not the final stage of the development of human society, but a historical stage of the transition to the urban society, in which the industrial revolution paved the way for the arrival of the urban revolution (Stanek, 2011). Henri Lefebvre The theory of spatial production has promoted the productivity status of cities in promoting the change of The Times, emphasizing that cities are the best spatial combination of mechanization, technological innovation and economies of scale. The development of industrial society is more and more dependent on urban society, which means that cities begin to play a leading role in industrial production and organization. At the same time, he also criticized the inequality and alienation in the process of urbanization under capitalism. However, due to the limitation of historical conditions, the theory somehow amplifies the role of cities in promoting space production, and puzzles people to find effective ways to solve social and economic inequality. From a broader historical perspective, cities are only one of a variety of productivity tools in the

information age. In the contemporary society, the effective use of information technology has become the key to realize the social modernization. Learning China in the development of industrial heritage cultural landscape reuse, can be found that the reuse of industrial heritage is usually based on historical and cultural memory of sorting and development, which is the activation of industrial heritage and local space architecture, aesthetic and space correlation research laid the foundation, thus affect the feasibility of industrial heritage activation reuse theory study. Furthermore, it will be of great significance for the re-production of Alum industrial heritage cultural landscape space located at the junction of urban and rural areas, combined with the development trend of new urbanization, and for recognizing its unique geographical, humanistic and aesthetic thoughts from the perspective of historical development.

Part 2. Evolution of cultural landscapes in different historical periods

The use of Alum in Europe dates back to the ancient Egypt. Although ancient Egypt, ancient Rome and ancient Greece are three different civilizations, but they have a certain overlap in time, but also have mutual influence. The ancient Egyptian civilization has a very long history, starting from the early dynasty around 3100 BC, until it was conquered by Alexander the Great in 332 BC, when Egypt became a Hellenized ruling region. The origin of ancient Greek civilization dates back to the Mycenaean civilization around 1100 BC, and its peak period is usually considered to be the 5th to fourth century BC, the classical period. During this period, the Greek city-states, such as Athens and Sparta, had made great achievements in politics, philosophy, art, and science. The ancient Greek civilization gradually declined after being conquered by the Roman Republic in 146 BC. The origin of the ancient Roman civilization is usually set in 753 BC, the date of the traditional establishment of the city of Rome. The Roman Republic began in 509 BC until the end of the Roman Republic in 27 BC (Scullard, 2013).

Alum was recorded by the ancient Egyptians, ancient Romans and ancient Greeks. The first written record of Alum, dating back to the 5th century BC. Known as the "father of history" the ancient Greek historian Herodotus (484 BC-425 BC), his book History detailed the Egyptian culture and customs he saw and heard, including the making of the mummy. Herodotus mentions Egyptian Alum as a valuable commodity that has been applied to human life. For example, Alum may be used as a dehydrator and preservative in mummy preservation in ancient Egypt, and it may use

Alum in leather processing and dyeing, etc. (Drozdov, 2007). But there is no conclusive scientific evidence that Alum is widely used in the preservation of the ancient Egyptian mummy. Pliny the Elder (23 or 24-79 AD) The book Naturalis Historia also mentions that Alum (Alumen) can be used to treat skin diseases, as well as as a detergent for washing clothes and other items.

Alum stone was found in China during the Western Zhou Dynasty in the 11th century BC. In the pre-Qin period (Paleolithic period ~ 221 BC), there are records of Alum stone in the ancient book The Classic of Mountains and seas, and there are two "Nie Stone" mentioned in the book. According to the Classic of Mountains and Seas · The Classic of Beishan, " It is another 350 miles east of Yangshan that there is a mountain named Benwen Mountain. There are a lot of gray jade on the mountain, there are a lot of yellow soil can be used as coating decoration, and can be used as black dye nirvana stone."According to the nine Classics records," East 150 miles, to the wind and rain mountain. The top of the mountain has a lot of platinum, and the hillside has a lot of stone."The original text of the Classic of Mountains and Seas is mysterious, full of ancient myths and legends and strange geographical descriptions, which is difficult for later readers to understand. Therefore, in the Eastern Jin Dynasty, Guo Pu annotated the original text of the Classic of Mountains and Seas. It makes this ancient book easier to read and understand. His notes not only explain the difficult words and sentences in the text, but also provide rich historical and cultural background information, which greatly promotes the dissemination and research of the Book of Mountains and Seas. Guo Pu explained the name of Alum stone as a mineral in different regions, saying that " the people of Chu are called Jieshi, the people of Qin are called feather nirvana, and the herbal scriptures are also called nirvana. (Guo, 2020)."Shi Ya" in the book "Stone Nie" and "Nie Stone" made a more detailed division, that: "coal namely graphite, namely Stone Nie; Nie Stone is also the present Alum Stone". Further proved the ancient book "mountain and sea classics" recorded in the Nie Stone is Alum Stone.

It is concluded that although human use of Alum has a long history, human understanding of the function and value of Alum before the advent of handicraft age is relatively vague, coupled by the level of productivity at that time, Alum was not mined and used on a large scale, but only a small and scattered application in people's daily life. Therefore, after human beings entered the handicraft era, with the passage

of time, the gradual development of mining technology, and the tools and methods used became increasingly advanced, so Alum was gradually promoted and used on a large scale. At the same time, it also had a significant impact on the change of human life style and the long-term development of industry.

1. Handicraft Era

The handicraft age usually refers to the period before the industrial revolution, when the production mode was mainly manual labor. In Europe, the handicraft age dates roughly back to the Middle Ages (476-1453) and continued until the industrial Revolution from the late 18th to the early 19th centuries. Alum mining was particularly important in the medieval period. The Volterra and Monti della Tolfa mountains of Italy, and the Bohemian region of Eastern Europe are famous for Alum stone mining. These Alum deposits had a significant impact on European economic and industrial development during the Middle Ages and the Renaissance. Especially in the textile industry, Alum acts as a medium to help the dye to attach firmly to the cloth. As a result of this discovery, Europe acquired an important local source of chemical substances, which helped to reduce dependence on eastern trade routes and promoted a thriving local economy.

In China, the handicraft age can be traced back to ancient times, in the Spring and Autumn Period and the Warring States Period (770 BC-221 BC), and continued to the early modern times. China's handicraft industry has historically reached a very high level, especially in the fields of textile, ceramics, metal processing, paper making and printing. Ancient Chinese handicrafts are famous for their exquisite craftsmanship and unique style, such as silk and porcelain. In the whole handicraft era, the production of Alum stone in China developed gradually with the progress of handicraft technology and the growth of social and economic demand. In addition, the development of handicraft industry also promotes the refinement of social division of labor and the rise of market economy. However, due to the relatively low production efficiency, with the rise of the industrial revolution and the promotion of mechanized production mode, the status of the traditional handicraft industry was gradually weakened.

Characteristic	Cause

Small production scale	Production activities are mainly conducted in families or small workshops, in contrast to large-scale factory production during the industrialization of machines.
labor intensive	Due to the lack of advanced machinery and equipment, production relies on manpower, especially craftsmanship.
Individual or family management	The production unit is usually operated by individuals or families, different from the later company or business form.
Technology and tools are simple	The techniques and tools used were relatively simple and primitive, without the complex machinery of the later industrial period.
Low production efficiency	Due to technical limitations, the production efficiency in the handicraft era is relatively low and the output is limited.
Product features	The products have a strong personalized and handicraft characteristics, according to local conditions, reflecting the local culture and skills.

Table 3: Characteristics of Alum Production in the Handicraft Era
Source: Compiled by the Author

1.1 Feudal Society

Chinese feudal society refers to the Warring States Period in ancient China, and lasted from 475 BC to 1840 AD, and lasted as long as 1315 years. China's feudal society is the early stage of China's handicraft era, and the semi-feudal and semi-colonial era together constitute China's handicraft era. The historical characteristics of China's feudal society are largely reflected in the development of its handicraft industry. During this period, the rectification of social structure was still based on agriculture, and handicraft industry, although important, was inferior to agriculture. Under the feudal system, most of the land was owned by the feudal landlords, while the peasants were attached to the landlords and made a living by renting the land. They often form guilds or workshops, who not only provide necessities for the region, but also contribute a lot of luxury goods to the country. With the passage of time, the development of handicraft industry promoted the prosperity of commerce and the rise of cities, and gradually formed a certain market economy. However, due to the bondage of the feudal system, the development speed and innovation ability of the handicraft industry were limited, and the improvement of productivity was relatively slow. On the whole, the historical characteristics of China's feudal society were based on agriculture. Although the handicraft industry and commerce developed, they were restricted by the system. The social stratification was obvious, and the feudal landlords and the imperial power occupied the dominant position in the society and politics.

In the Han Dynasty of China, there have been records of the collection and application of Alum ite."Shennong Materia Medica"Alum is called "nirvana stone",

has the therapeutic effect, " its taste is sour and cold, can treat cold heat leakage, white wo Yin erosion, malignant trauma, eye pain, strengthen the bones and teeth. After refining, can be light body."To the Northern Wei Dynasty," Qi Min Yaoshu " has preliminarily recorded the collection, processing and application of Alum stone, Alum stone is mainly used as medicinal materials, water purification agents, dyeing agents and other handicrafts production materials. It shows the knowledge and utilization technology of ancient Chinese people.

If it only focuses on the historical record of Fanshan Alum mining and utilization in Lujiang County, China, it officially started from the Tang Dynasty of China. Therefore, in 684 AD, it was a special period when Fanshan Alum was discovered and went to production.

1.1.1 Tang Dynasty

In The Tang Dynasty (618 to 907), it lasted for 289 years. The Tang Dynasty reached the peak of the ancient Chinese society in terms of politics, economy, culture and military affairs. It was a golden age in Chinese history and had a far-reaching influence on the later generations. During the Tang Dynasty, the productive forces developed significantly. Progress in agricultural production technology, such as the promotion of the "Two-ripening method" of rice, and the improvement of agricultural production tools, have greatly increased grain output. In the handicraft industry, the Tang Dynasty also made remarkable achievements. Ceramic technology reached a high development, Tang tricolor is the most famous representative; silk and brocade exquisite craftsmanship, become an important export commodities; metal processing technology is also very developed, iron, copper and other products are widely used in production and life. In addition, the improvement and development of paper-making and printing techniques, especially the emergence of woodblock printing, have played an important role in cultural dissemination and knowledge accumulation.

According to "Fanshan Historical Data", AD 684-710, the Ban brothers found Alum in Fanshan, Lujiang County.

The early ore mining methods are mainly from walking back and forth in the mountain gullies to look for ore, observe the lines and spots of the ore, knock open with a hammer, judge and select Alum stone based on experience, and build the stove on the spot, the ore was dug, and moved to elsewhere. According to Lujiang County

Annals of Emperor Guangxu of the Qing Dynasty, after 3 years of Emperor Wenzong , people began to mine ore and refine Alum in Fanshan area of Lujiang. So far, Fanshan Alum mining industry has been preliminary development and development.

According to the Book of New Tang · Food Records Song History · Food Records, during the reign of Li Shi of Tang Dynasty, the water purification, dyeing, medicine and other uses of Alum gradually became widely known and became tribute. The imperial court nationalized all the mining and metallurgy industries and appointed officials in the Alum production area, and implemented the policy of Alum monopoly. Quarry smelting Alum has developed rapidly and expanded continuously (Zuyao & Jikai., 1990). In Fenzhou in the Tang Dynasty, today there are 7 Alum Mines in Fenyang and other places in Shanxi Province.

1.1.2 Song Dynasty

The Song Dynasty (960 to 1279) lasted for 319 years. This period consisted of two different dynasties: the Northern Song (960-1127) and the Southern Song (1127-1279). The Song Dynasty was considered as a period of high development of culture, technology and economy in Chinese history, especially when commerce and urbanization reached an unprecedented level. There were many reasons for the economic development of the Song Dynasty, including the improvement of agricultural production, the prosperity of handicraft industry and the rise of market economy. There are many records about the mining and use of Alum stone in the historical materials of the Song Dynasty. In the Song Dynasty, Alum stone was not only used in medicine and dyeing, but also used as an additive to increase the strength and luster of paper.

In the Northern Song Dynasty, the use of Alum was more widely used and the demand increased significantly, so it was included in the Prohibition System and became one of the five monopoly commodities. According to the record of Literature Examination (Volume 15 · Examination 2), the main production areas of Alum are as follows: " Alum is mainly produced in Jinzhou, Ci, Fangzhou, Wuwei Army and Lingshi County of Fen zhou; green Alum is mainly produced in Ci, Xi Prefecture and Tongling County of Chizhou. These areas are set up with official management agencies, the implementation of the Dianling System, by the official supervision of the production and sales of Alum stone. Producers use large iron pots (Wok) to make Alum stone, so they are called Wok households. They sell the Alum they produce to

the authorities."Lujiang Fanshan area is under the jurisdiction of the Wuwei Army, and has become one of the top five Alum producing areas in China. In the Song Dynasty, the government established a monopoly agency in Lujiang to manage the sale of Alum products. It is recorded in the History of the Song Dynasty (Zhi 138 · Food under 7) that the government of the Song Dynasty adopted the method of regional sales to control profits and imposed strict penalties for those who violated the regulations. As mentioned in Comprehensive Geographical of the Yuanfeng (Volume 5), there are six important towns in Lujiang area, namely Jinniu, Qingyan, Luodian, Fanshan, Wuting and Kunshan, among which Kunshan is an important Alum field. Lujiang Fanshan area is divided into big Fanshan and small Fanshan, becoming the main production base of Wuwei military Alum. The number of Alum stone smelting sites has increased to dozens, with an annual output of up to 1.5 million catty, forming a large-scale "Lujiang Alum Mine" production mode.

In the history of the Song Dynasty historical document (Zhi 138 · food under 7), the Emperor you period (1049-1053), the production of Alum stone in Jinzhou and Ci state reached 2.27 million 3800 catty, these Alum stone was used to exchange for millet and other materials, in exchange for 136600 Min copper coins; and the sales of Alum stone is 3300 copper coins. After more than three hundred years of development, during the reign of Emperor Renzong of the Song Dynasty (1049-1053), Lujiang Alum Mine has become the third largest Alum stone producing area in China, making Fanshan one of the six important towns in Lujiang area.

In the first year of the Song Huizong (1107), the Huainan area was raised to 90,000, which is twice the emperor, at the same time in the Huainan West Road set up in charge of the Alum stone business. This high tax burden makes it difficult for many Alum stone owners to bear, leading to the bankruptcy of many Alum stone producers. By the early years of the Southern Song Dynasty, the national output of Alum stone had dropped by more than half.

In 1127, the change of Jingkang occurred, which changed the fate of the Northern Song. After the Jin destroyed the Northern Song, the northern region was under the rule of the Jin. Under the rule of the Jin State, the northern region's economy was mainly dependent on nomads, so the Alum mining industry failed to recover, and once fell into a long-term downturn.

In the Southern Song Dynasty, Zhao Gou fled south and established the Southern Song regime, namely Emperor Gaozong of Song, and chose Lin 'an (today's Hangzhou, Zhejiang Province) as the capital. According to the records in the Records of the dynasty since the ", the mining and management of Alum stone has long been established by the state, in which the Alum stone in Jinzhou mainly supplies Hebei and the capital region, while the Alum stone in Huainan supplies the southeast nine road. In particular, the Kunshan Alum stone field of the Wuwei Army became the most prosperous producing area at that time. According to the records of the 14th year of Shaoxing (in 1144 AD), the annual output of Alum in Kunshan reached 600,000 catty, and the rental tax was 1.0 million catty. Kunshan area of Alum stone by folk, and the official is responsible for the acquisition, Shaoxing, the price of Alum stone per catty between 13 to 20, in Shaoxing 14 years in November, prices rose to 30, annual income forty thousand Min, to Shaoxing twenty-nine June (leap month), annual income adjustment for forty-two thousand five hundred and eighty-five. Different from Kunshan, the Alum stone is directly refined by the official, and the costs and benefits are distributed according to a certain proportion, of which 40% is used to cover the production cost, and the remaining 60% is used for goods.

At that time, the Southern Song Dynasty controlled the three Alum stone fields in Shaozhou, Lead Mountain in Xinzhou and Kunshan in Wuwei, among which the output of Alum stone in Lujiang rapidly increased to 1.2 million catty, becoming the leading Alum stone production area in China. Lujiang Alum Mine The yield of Alum is particularly prominent, marking a high-yield period in the history of development, and its products became famous at home and abroad for their pure and transparent quality characteristics. The government of the Southern Song Dynasty continued to implement the policy of official refining and marketing for the people. The price of Alum increased from 13 to 20 articles per catty, to 30 articles in 1144, and was forcibly purchased by the Quehuo Service agency. In addition, the Song Dynasty also implemented the Jiaoyin System, covering tea, salt, Alum, incense, rhinoceros horn, ivory and other commodities, so that if the general public cannot travel to the southeast region to receive Jiaoyin, they are often forced to sell in the Jiaoyin Shop at a low price, thus suffering from exploitation.

In the Song Dynasty, Alum began to be widely used in medicine, water purification, dyeing and weaving, and entered the art hall, among the ranks of handicrafts, and even affected the painting techniques.

1.1.3 Yuan Dynasty

The Yuan Dynasty (1271 to 1368), which lasted for 97 years. The Yuan Dynasty was the first dynasty in Chinese history established by ethnic minorities to rule the whole country. The agriculture and handicraft industry of the Yuan Dynasty inherited the high development of the Song Dynasty, but due to the influence of war and ethnic contradictions, the economic development did not make a great breakthrough. The policies of the Yuan Dynasty also limited the development of the economy to some extent, such as the implementation of the "hierarchical land system" and some restrictive measures on the Han people (Miao, Zhu, Sun, Moore, & Cui, 2016). The commercial development of the Yuan Dynasty was relatively prosperous, and the Mongolian people were the limitation of the nomadic livestock production, making it impossible for them to establish a self-sufficient small-scale peasant economy. There was always a tradition of heavy trade, and the implementation of the loose policy of heavy trade played an important role. Therefore, there are also records of the collection, trade and use of Alum in the historical documents of the Yuan Dynasty. The Yuan Dynasty implemented the provincial system in the local administrative divisions. Lujiang Fanshan belongs to Lujiang County, Wuwei Prefecture, Henan Province.

The History of the Yuan Dynasty · Food and Goods Records (the 43rd Annals) recorded in detail the distribution of major Alum producing areas in the Yuan Dynasty, including Guangping and Jining in today's Hebei Province, Qianshan in Jiangsu Province, Shaowu in Fujian Province, Tanzhou in Hunan Province, and Luzhou and Henan provinces in Henan Province. Among the seven major Alum producing areas, Lujiang Alum Mine became the region with the highest Alum output in the Yuan Dynasty, and the proportion of its output in the whole country even exceeded that of the Song Dynasty.

In RMB 1287, the Yuan government continued to adopt the Alum Jiaoyin system of the Southern Song Dynasty, and the Alum mining owners did not have the right to operate independently."Yuan History·Food and Goods Records" (43 annals) also mentioned that to the yuan 24 years, the Yuan Dynasty set up a special Alum class in

Wuwei Road, responsible for the sale of Alum, each Alum weighs 30 catty, with bao chao 5 two as the wholesale price. Thus, it marks the establishment and reform of the Alum class system. In that year, two Alum farms in Wuping County and Lingshi County of Guangping Road in the capital area, paid 33 ingots 2528 yuan; Qianshan County and Shaowu County in Jiangsu and Zhejiang provinces paid 4225 yuan; previously, the annual quota of Alum classes in Lujiang has reached 2400 ingots. During this period, Lujiang Alum Mine, as a major student in the Alum mining industry, occupied a crucial position.

At the end of the Yuan Dynasty, with the outbreak of peasant uprising and the situation of separatist forces, successive years of wars led to a serious social and economic recession, and most of the old Alum fields in China, including Lujiang Fanshan, ushered in a decline period.

1.1.4 Ming Dynasty

The Ming Dynasty (1368 to 1644), which lasted for 276 years. In the Ming Dynasty, although the society experienced many wars and natural disasters, the overall level of productivity still improved. Agricultural development was the foundation of the economy of the Ming Dynasty. During this period, agricultural technology was improved, such as the planting technology of rice and wheat was improved, irrigation and water conservancy facilities were strengthened, and the introduction of new crops such as corn and sweet potatoes also increased agricultural output. In the Ming Dynasty, Alum, as an important chemical substance, was widely used in making dyes, drugs and paper making. The Alum industry was more developed, especially in some areas of north China. The mining and processing of Alum stone has become an important local industry, and the Alum trade is also more active.

In the third year of Hongwu (1370), when Zhu Yuanzhang, emperor Taizu of the Ming Dynasty, unified the whole country and began to restore the economic order, the monopoly system of Alum mining was immediately included in the policy agenda. In the early Ming Dynasty, we continued to implement the strategy of official marketing since the Tang and Song Dynasties, and promoted the Alum introduction method. Under this policy, Alum mining owners will have to sell it to the government at a very low price of 5 yuan per kilogram, and private mining and smelting will be severely punished at the same level as private salt trading. In the early Ming Dynasty, the

market demand for Alum was depressed, and the government's total purchase amount of the three Alum farms was only 220,700 catty, which was only equivalent to about one seventh of the output of 1.5 million catty of Lujiang Fanshan in the sixth year of Yuanfeng in the Northern Song Dynasty, and the corresponding income from Alum class was also less. In the same year, Zhu Yuanzhang also asked Henan (Xing province) to pay 1570 Alum class notes.

After the middle of the Ming Dynasty, the government gradually relaxed the control of Alum mining, and abandoned the monopoly policy implemented for a long time since the Tang, Song and Yuan dynasties, marking that the Lujiang Alum Mine industry has entered a new stage of development. In the following four hundred years, the Alum industry operators generally adopted the large-scale cooperative labor mode, which significantly improved the production efficiency of mining and refining. One-time mining could obtain more than 90,000 catty of ore, and the output of Alum smelting each time was about 2,000 catty. After the decline of the war at the end of the Yuan Dynasty, Lujiang Alum Mine industry gradually recovered and expanded in the Hongwu period, when there were 8 Alum kilns.

1.1.5 Qing Dynasty

The Qing Dynasty (1644 to 1912) lasted for 268 years. It refers to the last feudal dynasty established by the Manchuria nationality. In the first half of the Qing Dynasty, especially in the prosperous period of Kangxi and Qianlong, the national strength was strong and the territory expanded to the largest extent in history. In the Qing Dynasty, there were some developments in agricultural technology, irrigation and water conservancy, crop planting and other aspects, such as the promotion of high-yield crops such as corn and sweet potato. The introduction of these new crops significantly increased agricultural output and helped solve the pressure of food demand brought about by population growth (R. Guo, 2011). In addition, the Qing Dynasty also witnessed a large increase in the population, which was both a driving force and a challenge to the economic development (Deng, 2015).

In the Qing Dynasty, with the slow development of capitalism and the increasingly active commodity economy, commercial taxes and tariffs increased significantly, while the collection of Alum was relatively loose. According to the Annals of Lujiang County in the reign of Emperor Guangxu, the Qing government adopted the Lingtie System, that is, after the owner of Alum Mining applied for the

government and obtained the license, he paid taxes and organized production and sales. This change marks the Alum kiln, Alum field from the official monopoly to individual management. Alum kiln and Alum field generally use bamboo and wood structure and covered with thatched factory shed, to adapt to the hot summer and cold winter, forming the unique scenery of Fanshan area, is known as "shed kiln", "shed field". Each household has a kiln and employs several workers to conduct production. Although the Qing government still maintained a certain degree of control over the mining of Alum stone in the early days, as recorded in the Lujiang County Annals of the Jiaqing period, "it was difficult to pick Alum earlier", and stipulated that graves and farmland should not be destroyed, and the frying time was limited from early October to the end of December of the lunar calendar. This leads to the output of Alum households is low, the value is not high, a winter can only fire 5 kilns, each stone Alum value of silver two money five cents, the total output value of about six or seven thousand taels of silver. It was not until the Guangxu period that Alum mining was allowed throughout the year. In the forty-sixth year of Kangxi (1707), there were 18 sheds of Alum kiln in size Fanshan. From the 40th year of Kangxi to the reign of Guangxu Emperor (1701-1875), the annual production reached 3.6 million catty, more than twice that of 1.5 million catty in the sixth year of Yuanfeng in the Northern Song Dynasty. After the Opium War in 1842, the annual output was about 75,000 Dan, and the total output value reached 16,000 taels of silver. Lujiang Alum Mine Not only in the output of Alum in the first, and high quality, by the high praise, " only Lujiang Alum pure white, compared with Zhejiang Wenzhou for the best."As a result, Lujiang Alum Mine marks the second highly productive period in its development history.

In the 19th year of Emperor Qianlong (1754), German chemist Andreas Sigismund Marggraf successfully synthesized Alumina by boiling Alum stone in sulfuric acid and then adding potassium salt, which marked the first time that Aluminum oxide (two Aluminum oxide) was prepared from Alum in the laboratory. This achievement not only demonstrated Andreas Sigismund Marggraf's deep understanding and innovation in chemistry, but also laid the foundation for the subsequent discovery and application of Aluminum metals. Due to its rarity, Aluminum was even more valuable than gold at the time, showing its importance in the scientific and industrial fields. By 1856, the French chemist Henri Etienne Sainte-Claire Deville and his companions established the first industrial production process

of Aluminum, which not only greatly reduced the cost of Aluminum production, but also made the application of Aluminum metal more widely.

During the reign of Emperor Tongzhi of the Qing Dynasty (1862-1874), the management and tax collection mode of Alum Mine experienced an important change. Instead the Buzhengshi Yamen directly managed the Bureau. This reform simplified the management process and was more in line with the needs of industry and commerce and tax administration at that time.

The introduction of "late pot" continuous production method and soil nitrate blasting mining ore method has significantly improved the production efficiency and reduced the production cost. The application of these technologies reflected the promoting role of scientific and technological progress in the development of productive forces in the Ming and Qing Dynasties. However, although some foreign industries and businessmen repeatedly put forward the requirements of "investment Fanshan, scale operation and increasing Alum production", the basic economic policy of emphasizing agriculture and suppressing business restricted the further development of Alum mining capitalism, showing the far-reaching influence of social and economic structure and policy orientation on industrial development at that time.

The contribution of the Alum industry in Lujiang County to the local economy should not be underestimated. The Alum tax became the only source of bulk industrial and commercial income in the county, which was far more important than the other commercial taxes at the time. This phenomenon not only reflects the core position of Alum industry in the local economy, but also highlights the important contribution of Alum industry to the social and economic development of Lujiang County. Despite various challenges and limitations, the development experience of Lujiang Alum Mine in the Qing Dynasty is still an important chapter worth studying and reviewing in the history of Chinese industry and commerce.

During the reign of Emperor Tongzhi of the Qing Dynasty (1862-1874), the provincial government department directly changed the post to the functional department responsible for the management of the administration of industry and commerce and taxation. Each kiln household gets a post, the annual tax silver 18 two.

The "late pot" continuous production method and the soil nitrate blasting mining method greatly improve the production efficiency and reduce the production cost.

With the development of capitalism in Ming and Qing dynasties, foreign industry and businessmen repeatedly put forward to the Qing government to invest Fanshan, scale operation and increase the output of Alum. However, the basic economic policy of emphasizing agriculture and suppressing business has inhibited the development of Fanshan Alum mining capitalism and hindered the development of individual management to the stage of capitalist manual workshop. Although the development of Lujiang Alum Mine in the Qing Dynasty was very unsatisfactory, it still made a significant contribution to the development of Lujiang County. Lujiang County in the Qing Dynasty, except for the Alum industry, is almost a pure agricultural county. Alum tax is the only large industrial and commercial income in the county. Shacks and Alum teeth pay 386 liang of taxes every year, while the annual commercial tax of urban and rural towns is only 927 money 7 cents, which is one fortieth of the Alum tax. In the fourth year of Tongzhi (1865), there were as many as 28551 fields.

1.2 Semi Colonial and Semi Feudal

The Republic of China period refers to the historical period from 1912 to 1949, which began when the Revolution of 1911 overthrew the Qing Dynasty, and Sun Yat-sen declared the founding of the Republic of China. After the Opium War (1839-1842), China was forced to sign a series of unequal treaties, open many treaty ports, lose some of its sovereignty, and gradually become a semi-colonial country. At the same time, there are still many characteristics of the feudal system in China, so this period was also known as the "semi-colonial and semi-feudal society".

During this period, China's productivity development level was relatively backward on the whole. Although there are some modern industrial buds, such as machine textile, coal mining, railway transportation, etc., China's overall economy is still dominated by agriculture, and handicraft industry and small-scale family workshops still occupy an important position. In addition, the aggression and domestic and foreign invasion have seriously hindered China's economic development. Although the handicraft industry developed during this period, it faced great pressure from western industrial products. Some traditional handicraft industries such as silk, porcelain and tea still have a certain market, but there is a big gap in technology and production efficiency compared with western industrial products. The mechanized production brought about by the industrial revolution in the West has

caused an impact on the Chinese traditional handicraft industry, and the livelihood of many handicraft people is threatened.

The development of Alum Mine in the Republic of China can be analyzed from two different periods: Beiyang government and national government.

1.2.1 Beiyang Government Period

During the period of the Beiyang government (1912-1928), from the founding of the Republic of China to the end of the unification of the national government. During this period, although China ended the absolute monarchy of more than two thousand years and established the republican government, due to internal and foreign troubles, the national unification and centralization were not realized, the warlords were divided, the political situation was unstable and the economic development was slow. However, the Revolution of 1911 removed some ideological obstacles that seriously bound the development of national industry, so the development of national industry was smoother than that of the Qing Dynasty. With the introduction of mechanical power, railway transportation, explosive blasting and other technologies into China, Lujiang Alum industry has initially had the external conditions to realize the technological transformation.

After the Revolution of 1911, the government abolished the post system, and the "shanty" was managed by the chamber of commerce, which was a guild organization of civil commerce, not a government organization. At this time, Fanshan shed wholly owned management, a kiln, kiln owner from the manager, kiln owners build permanent wooden houses on the kiln, kiln is also known as "Alum shed owners". Therefore, this is the first time in the history of Lujiang Alum Mine in the complete sense of private marketing period.

After the outbreak of the First World War , the imperialist countries were busy with the war, and China's national capitalism took advantage of the gap to develop. Late pot continuous production method and soil nitrate blasting mining ore method, greatly improve the production efficiency, reduce the production cost, Lujiang Alum Mine industry ushered in the first development period in modern times. In 1914, Chinese Alum opened the market in the international market. The domestic price of Alum rose several times, as high as 10 pieces of silver per basket, Nanjing became a famous Alum distribution center, the number of businesses engaged in Alum export

increased more than doubled. Alum prices continue to rise, selling well at home and abroad, stimulating the expansion of Alum production scale. In 1919, the Fanshan factory shed increased to 50, and the workers increased to more than 300. A large number of Alum in an endless stream from the gap wharf Fanshan 7 kilometers away, walk Xihe, Tao River, Chaohu Lake, transported to the river up and down the big commercial ports: Zhenjiang, Nanjing, Wuhu, Anqing, Jiujiang, Hankou and other places.

After the end of World War I, the international market shrank, Alum prices plunged. In 1925, it fell to about 3 yuan per basket, and the development momentum of the Lujiang Alum Mine industry was blocked. In the market oppression and competition, some small Alum shed factory closed, some were the opportunity to merge. By 1927, more than 50 sheds had been merged into 11 greenhouse factories, with more than 330 fixed workers, in addition to a considerable number of temporary workers, but the total capital increased to more than 30,000 yuan, and more concentrated in the hands of a few factory owners. There are more than 50 employees: Lu Huiming, Lu Ruiqing and Lu Huafeng, accounting for more than 60% of the total capital. The first Lu Huafeng has two largest mines in Yiji, Yongda and jewelry pit and Sun Mountain, employing more than 100 people, and opened Yiyuan grocery store on Fanshan, has dozens of hectares of fertile land, and rents 5000 tons every year.

1.2.2 National Government Period

The Nationalist Government of China (1927-1949) was the ruling government of the Kuomintang in mainland China after the victory of the civil war. During this period, the national government tried to carry out modern reforms, including the implementation of a new legal system, the establishment of a modern education system, and the promotion of industrialization. Compared with the period of the Beiyang government, productivity development has improved, especially in coastal areas and some big cities, modern industries have further developed, such as textile, steel, shipbuilding and other industries. In the handicraft industry, despite the competition from modern industry, many traditional handicrafts such as silk, jade, ceramics and other handicrafts have maintained a high level of production skills, and enjoy a high reputation in the domestic and foreign markets.

Since 1928, more investment has promoted the further expansion of the production scale, and the new technology and new process have shortened the Alum cycle, and accelerated the capital turnover.

In 1931, the War of Resistance against Japanese Aggression broke out, but Lujiang County was not captured by the Japanese army, and the Alum mining industry developed rapidly. During the Second World War, the United States, Japan, the Soviet Union and other countries applied Alum ore as the raw material for potassium and Alumina, and the ability of Aluminum and other metals to form hard and light alloys with other metals provided a variety of uses for other metals at that time. Large amounts of Aluminum are used in hard and light airframes, or other weapons. According to the 1919 Anhui Geographic Annals of Greater China, "The Fanshan of Lujiang produces Alum, mostly bought by the Japanese, and can refine Aluminum". After the Second World War, western developed countries increased their research, development and utilization, and produced more than 40 kinds of industrial products, which objectively promoted the development of science and technology, and made great progress in the political, economic, cultural and other aspects of various countries.

Lujiang Alum Mine The rapid development of the industry has attracted the attention of domestic experts and scholars. In 1933, Chen Kai and Cheng Yuqi, two experts from Nanjing Geological Survey Institute of Industrial Ministry and National Research Institute of Peiping Geology, went to Lujiang to investigate the topography, landform, transportation, stratigraphic system structure, mining, production and sales of Alum producing areas, and wrote books to introduce them.

In 1943, Lujiang Alum Mine industry employed more than 300 technicians, assisted more than 1,000 workers, the annual output of 2500 tons, the second in China, second only to Zhejiang Pingyang Alum Mine. By 1945, the number of shed farms had increased to 36, and the annual output had reached 5,000 tons, thus ranking first in the country. The good situation has attracted many people from Hankou, Qingyang, Wuwei and other places to run Fanshan factories. In just a few months, the total number of Alum factories has increased to 66.

After the victory of the War of Resistance against Japanese Aggression, China experienced a long period of turmoil and war, social contradictions were acute and

economic level was backward. The national government was corrupt and incompetent, and the corrupt officials only knew how to plunder the people crazily, and soon provoked the civil war, social unrest, war and chaos. In order to maintain the huge military expenditure, to intensify the search for the people. Lujiang Fanshan harsh taxes and miscellaneous taxes emerge in an endless stream. Each load Alum to pay 0.3 yuan mineral tax, 0.25 yuan tariff. Each factory also pays 360 yuan of mining tax, in addition to loading wheel tax, head tax, straw shoe tax and so on. Many manufacturers were overwhelmed and went bankrupt. By 1948, only 38 were left of 66 manufacturers, with workers reduced to 290, with an annual output of only 3,500 tons. After the Kuomintang fled the south of the Yangtze River, the Yangtze River was blocked, and the whole Alum industry was depressed.

2. Mechanical Industry Era

Machine big industrial history period. It usually refers to the period when, with the advance of the industrial revolution, countries around the world began to introduce mechanized production methods on a large scale, replacing the traditional manual production methods. The change began in Britain in the late 18th century and gradually spread to the rest of Europe and North America. By the late 19th to early 20th century, the machine industry began to have a profound impact on the global economy (Smil, 2006).

In the era of large machine industry, the level of productivity development has been significantly improved. Mechanized production brings the possibility of mass production, greatly improving efficiency and output, and reducing production costs. During this period, many innovative production technologies appeared, such as the wide application of steam power and electric power, as well as the introduction of assembly line production mode, which greatly changed the way of human production and life.

The big industrial age in China was later than Europe on the whole, and gradually began in the early 20th century. In the Republic of China, China began to try to introduce western industrial production mode, but the progress was slow and limited by many aspects. During this period, China's productivity development level is still low, but in some coastal cities and traffic developed areas, such as Shanghai and Tianjin, a batch of modern industrial enterprises, including textile, coal mine, steel, machinery manufacturing and other industries, the development of these

industries to promote China's productivity level has played a role. Therefore, after the founding of the People's Republic of China, Fanshan ushered in the golden age of machine industrialization. On the whole, this period is divided into two stages: socialist revolutionary construction and reform and opening up.

2.1 Socialist Revolution and Construction

The stage of socialist revolutionary construction (1949-1978) lasted from the founding of the People's Republic of China to the eve of reform and opening up. During this period, productivity experienced ups and downs and transformation. In the early stage, industrial production was restored and developed through the national planned economic system. During the first five-year plan, it focused on heavy industry construction, and then tried to rapidly improve industrial and agricultural production capacity during the Great Leap Forward period, but the economy suffered serious economic setbacks due to policy mistakes. During the Cultural Revolution, the development of productive forces suffered even greater setbacks, and economic and industrial progress slowed down. In handicrafts, it is marginalized in the national industrialization strategy, but still retains its importance in rural and remote areas, especially during the Great Leap Forward, rural handicrafts such as small family workshops were encouraged to support the local economy. Although the efficiency and product quality were uneven, it alleviated the shortage of industrial products to some extent. In addition, traditional handicrafts such as embroidery and ceramic production have been retained at the cultural level and become part of China's rich cultural heritage.

2.1.1 Early Years of the New Nation

In the early days of the founding of the People's Republic of China (1949-1955), the People's Republic of China was facing the great task of rebuilding and developing the national economy. During this period, the country's industrial development policies and guidance were mainly focused on the recovery and development of the national economy, the implementation of nationalization, the establishment of the socialist industrial system, and to a certain extent, the importance of the development of light industry and agriculture.

In the stage of economic recovery, the country has adopted a series of key policies, covering the land reform, the establishment of state-owned enterprises, as

well as the adjustment and improvement of the national economic plan. These policies have effectively stabilized the economic order and promoted the recovery of industrial and agricultural production, especially in the fields of heavy industry and agriculture. Above the post-war ruins, the economy recovered rapidly, laying a solid foundation for the socialist construction and economic development. At the same time, the implementation of the land reform has eliminated the feudal exploitation, greatly released and enhanced the rural productivity, improved the living standards of farmers, and enhanced the country's self-sufficiency in food.

In November 1949, senior worker Lu Yekun, as a representative of Fanshan area, attended the people's Congress of all sectors of the northern Anhui Administration held in Hefei. Lu Yekun reported to the conference on the interruption of Alum production and the severe situation of workers' unemployment, which attracted the high attention of the leaders attending the meeting. The Party Committee of the Communist Party of China quickly decided to send Ma Yulong, deputy chief of the Production Department of northern Anhui Administration, to carry 5,000 catty of rice to Fanshan to guide the production recovery. That same year, the Fanshan Trade Union was formed, and 499 workers joined the organization. In 1950, the Fanshan Mining Area Committee of the Communist Party of China and the Fanshan Mining Bureau of Chaohu District in northern Anhui were established successively. Wang Xunyou served as the director, the party and government departments of Fanshan mining area fully implemented the policy of "both public and private, labor and capital benefits", actively organized the production recovery, and timely expanded the production scale after the sales channel was opened, and organized the unemployed workers to help themselves. In September, the state set up a local property company specializing in Alum business in Fanshan. The implementation of Alum purchase price listing system, and the use of RMB settlement, changed the previous rice for Alum transaction way, is conducive to the stability of Alum price. Local state-owned workers and peasants Alum factory, workers Alum factory, new life Alum factory, small hill stone mine, industrial and agricultural Alum factory and its small hill branch factory have also been established. In 1951, the People's Bank established its office in Fanshan. Through the local production company to the manufacturer deposit, and the bank to provide a large amount of loans, in two years, the total number of factories and mines increased to 69, the production capacity from the original 63 night pot to 107 late pot half, most of the manufacturers of pot Alum every night from 2700

catty to more than 3000 catty. Alum production broke through the 10,000 tons mark, and employed more than 1,000 people. All kinds of shops and vendors have increased from more than 40 to more than 120. The original old street has been unable to accommodate the growing commercial activities, so a new street was opened on the grave hill below the old street to meet the development needs of Alum industry, and make the Lujiang Alum Mine area full of vitality again. In April, the labor consultative meeting was successfully held.

Then the implementation of the first five-year plan (1953-1957) to promote the industrialization of the country, with a focus on heavy industries, such as steel, machinery, chemical and energy industries. At the same time, other fields such as agriculture, transportation and commerce were also planned. During this period, the government strengthened the centralized control of the economy and implemented the planned economy system. State-owned factories were set up all over the country and promoted the construction of large-scale infrastructure projects. These policies and measures have been implemented and implemented in varying degrees.

At the end of 1953, Lujiang Industrial and Agricultural Alum factory successfully produced a kind of advanced Alum, named "Big Pearl", which is characterized by excellent transparency and large block size, and its quality is significantly better than that of Pingyang Alum Mine. In the frying process of Alum, the plant innovatively used coal as fuel, and made technological improvements to the Alum crystallization pool. These technological innovations not only ensured the stability of the production process, but also significantly increased the yield of Alum. In 1956, as the deepening of the socialist reform of private industry, Fanshan Alum to "local state-run Alum factory of workers and peasants" as the core, integrating the 48 private Alum factory, successfully realized the industry public-private partnership, built including a state-owned factory (Alum), a mine (jewelry pit) and four public-private partnerships (righteousness, yu, xing taihe new Alum factory), management system. The total fixed assets of the system exceed 100,000 yuan, and the total number of employees reaches more than 1,000. Fanshan The mine Party committee and the mining management office have implemented unified planning and production scheduling command for the factory and mine. In May 1957, the new "Fanshan Mining Management Office" was established, and the Local Committee of the Communist Party of China Wuhu appointed Zuo Mingshu as the director and Ma

Yulong as the deputy director. This marks the birth of the new socialist Alum mining enterprises, the end of the millennium of private as the main body of decentralized management and unplanned mining history, opened a new chapter in the development of Lujiang Alum Mine. Although its name has undergone several changes in the future, such as "public-private partnership Lujiang Alum Factory" and "public-private partnership Lujiang Alum Mine", "Lujiang Alum Mine" has become the common title of the organization after the public-private partnership. In 1957, the party committee of the enterprise effectively stimulated the enthusiasm of workers to participate in mine construction. In order to adapt to the standardization, rationalization of Alum ore mining and the mechanization of production, the enterprise has reformed and expanded the first flat ketone mine in Xishan. In the same year, the output of Alum reached 13,150 tons, and the economic indicators such as output value and profit exceeded the national plan, laying a solid foundation for the further development of Lujiang Alum Mine.

On the whole, the national policies during this period achieved remarkable results, and the industrial output increased substantially, laying the foundation for China's subsequent industrialization, but it was also accompanied by problems such as low efficiency of resource allocation and environmental pollution.

Figure 7: 48 Private Alum Plants Establish Lujiang Alum Mine Company
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.1.2 Great Leap Forward Period

During the Great Leap Forward (1958-1961), China implemented a series of radical industrial development policies, aiming to rapidly realize industrialization and agricultural modernization through mass movements and high indicators, among

which the most famous were the "people's commune" movement and the "great Steel smelting" movement. The government encourages local governments to build small industrial facilities, in both urban and rural areas, to try to significantly boost steel production in a short period of time. These policies have been widely implemented throughout the country, but the lack of sufficient technical support and management experience leads to wasted resources and low production efficiency, and generally low product quality. In the end, the Great Leap Forward policy failed to achieve the expected goal, but caused serious economic chaos and food shortage, causing serious social and economic consequences.

Under the positive incentive of the policy, Lujiang Alum Mine has experienced a production climax with technological innovation as the core. Party committee insight into the opportunity, carefully planned, launched the "red flag competition list" to stimulate morale. The union created an encouraging doggerel: " People to face trees to skin, young people do not insert the small white flag, teeth a bite to chase up, pull out the white flag and insert the red flag."Encourage workers to actively participate in production competition. In 1958, flat mine completed, marks the traditional ground mining to underground mining mode, underground mining equipped with ventilation, drill, air compressor, hoist, storage battery, diesel generator and other advanced mining and transportation equipment, significantly improve the working conditions of workers and reduce the labor intensity of some process. The adoption of industrial mechanization is a major change in the history of Alum Mine, which has completely changed the original and backward production situation of Alum Mine and injected new vitality and vitality into it. In the same year, the state increased its investment in Lujiang Alum Mine, with an annual infrastructure investment of close to 1.2 million yuan, which was undoubtedly an astonishing figure in the 1950s. In order to expand the production scale, the enterprise began to build the key facility of Alum production —— crystallization pool on a large scale. A year later, a total of 727 units were built with a volume of 9.19m3However, due to the roasting, weathering, leaching and other links are difficult to support, resulting in these crystallization pools in a few years after the completion of the effective use, but caused a huge waste of resources. By 1959, Alum production had surged to 20,547 tonnes, a record for potash Alum production, still unbroken until the 1980s. At the same time, the product quality has also been significantly improved. In the past three years, the production, management and construction of the enterprise have gradually got rid of the limitations of small

production, organized production, arranged construction and conducted management according to more scientific methods, done a lot of pioneering and basic work, consolidated and developed the public ownership, and showed the superiority of public ownership. But the price is also heavy, because, the blind pursuit of high indicators and lead to mining and sales imbalance, excessive consumption of broken ballast and empty inventory, for the future Alum production development left hidden dangers.

In 1960, China faced severe natural disasters, which led to a sharp decline in agricultural production and a shortage of food supply for its people. At the same time, the Soviet Union unilaterally withdrew the experts and terminated the economic construction contract, which further aggravated China's economic difficulties. Food shortages have led to malnutrition, physical decline and increased cases of edema for days. Some workers were unable to stand the difficult conditions and left the mine to return home. By 1961, the number of employees in the mine was reduced to 1679 from 1951 in the previous year, and the actual number of employees was only 1273, and the production decreased significantly. Alum production continued to decline, with a loss of 159,700 yuan, the first loss since the establishment of a public-private partnership. In the face of this grim situation, Lujiang Alum Mine's party committee and administrative leaders took a series of measures to boost the morale of the staff, encourage them to "work hard, work hard", and lead by example. Under extremely difficult conditions, the enterprise has been started to rectify, and the management system of "hierarchical accounting, output to group and responsibility to people" has been implemented. On the production side, the focus is on the supply of raw materials, increasing the storage capacity of raw materials, and extending the turnover period of raw materials from 60 days to 90 days. In addition, a series of technical transformation measures were taken, including the expansion of the narrow underground mining surface of Xishan Pingdong Mine, and the change of Xishan Pingdong ore transportation line from monorail to double track. Despite these efforts, the downward trend in Alum production is still difficult to reverse. By 1962, the loss had widened to 377,000 yuan, making the situation even more severe. During the difficult period of these three years, the state, enterprises and individuals all suffered huge losses and paid a heavy price.

In 1963, the country's economic situation improved, began to pay attention to the development of Alum mining industry. In March, Gan Jianzhong served as the factory director of Lujiang Alum Mine. With "increasing output, improving quality, reducing cost, turning loss into profit" as the center, he focused on the mine rectification and production measures, and actively promoted technological innovation. Xishan Pingdong expansion project was completed and put into use, and the mining amount of Alum stone increased greatly, to meet the production needs. Change the traditionally used rock drill to a wet rock chisel. Measures to strengthen production management and economic accounting have also paid off. This year, the output of Alum reached 11,255 tons, the quality was improved, the first and second class Alum accounted for 86.4%, the cost decreased, and the annual profit was 109,000 yuan. Lujiang Alum Mine Turned around the situation of the continuous decline in production, got out of the predicament, and stabilized the people's hearts. In the same year, the mining area established the workers 'children's school primary school, the children of workers can be nearby school. Lujiang Alum Mine The Party committee in the mine to carry out the "five good" as the goal of learning to help the labor competition activities. Encouraged by the increasingly improving economic and political situation, the production enthusiasm of the workers was mobilized by effective measures. In 1965, Lujiang Alum Mine technology, management personnel of Alum production experience is summarized, to improve the traditional production process, the "Steam Roasting Alum Spiral Extractor Immersion Process" achieved significant results, Alum yield and quality to the next level, Potassium Alum products reached 67.79%, the best quality record, annual profit of 400000 yuan, strongly promote the development of Alum mining enterprises.

Figure 8: The Great Leap Forward, Workers' Group Photos and Labor Scenes
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.1.3 Cultural Revolution

During the Cultural Revolution (1966-1976), China's industrial development policy was greatly influenced by the political movement. Under the slogan of "Grasping revolution, promoting production" implemented by the government, the focus of industrial development was placed on maintaining the purity of ideology and strengthening class struggle, rather than economic efficiency or technological progress. During this period, industrial policies encouraged local self-sufficiency, emphasizing the spirit of "Angang Constitution", that is, strengthening the political awareness of workers, promoting the system of workers, peasants and soldiers and technological innovation groups, but these policies often came at the expense of technical expertise and management efficiency. The implementation and implementation of these policies are not consistent in different places, but they are generally disturbed by political unrest, leading to the decline of industrial production efficiency and hindered technological progress. RESULTS During the Cultural Revolution, the overall industrial development suffered a setback, the economic growth slowed down, and the loss of some advanced technology and management experience caused a long-term negative impact on China's industrial modernization.

In February 1966, Lujiang Alum Mine appeared the first big-character newspaper in the " Cultural Revolution, marking the approaching of the political storm. With the release of the "May Day 6" notice, officially announcing the beginning of the Cultural Revolution era, the influence of the movement quickly spread from schools to the whole society. In the second half of the year, the frenzy of

the Cultural Revolution swept Lujiang Alum Mine, forcing the focus to change as the political situation changed. By 1967, with the enthusiasm of the Cultural Revolution, the crowd devoted their energy to revolutionary activities that were considered related to the fate of the nation, while the workers who insisted on production were ridiculed and attacked for their lack of so-called "class feelings". This led to a sharp deterioration in the production situation, after three consecutive years: Alum production in 1967 was only 11,696 tons from 1966, down 26%; production in 1968 and 1969 was below 10,000 tons, the lowest level since the public-private partnership. The cumulative loss in three years reached 1,413,400 yuan. At the same time, due to the chaos of production management, the neglect of safety production, resulting in a significant increase in industrial accidents. In 1973, two workers were killed by the "preferred method" scraper, which was not safe. Due to unplanned mining, the stope was destroyed, excessive use of cooked ore, artificially shortened the weathering period, resulting in a significant decline in the Alum yield rate. By 1974, Alum production had fallen to 1962 levels, but the cost was 50% higher than in 1962. From 1973 to 1976, Alum Mine continuous losses, a total of 2,253,800 yuan, huge losses make the enterprise into a serious predicament.

But we cannot help but see that the Lujiang Alum Mine in the "Cultural Revolution" was still developed in some aspects. Although the leading organs are paralyzed, the management function is seriously weakened. Fortunately, the vast majority of the front-line workers, can still stick to the production positions. In 1966, the output of Alum still reached 15,766 tons, making a profit of 330,000 yuan, continuing to maintain the momentum of growth. In 1967, the Lujiang Alum Mine Workers' Club with a building area of 1,303 square meters was built and put into use. In 1968, after nearly 10 years of exploration and experiment of roasting technology, the eight large vertical kilns constructed in two years were all completed and put into use, marking a major breakthrough in ore roasting technology in China. The dust control measures combined with "water spraying" and "spray spraying" have improved the ventilation and dust proof conditions in mines, and greatly reduced the dust harm that has harmed the health of mine workers for a long time. In 1970, invested by Alum Mine, the 110 kv substation and the 15 km long 35 kV high voltage transmission line was completed. At the same time, 5 kilometers of line was transformed and built in the mine, supporting the distribution stations of Alum, mining and mechanical and electrical workshops, to meet the electricity needs of

production and life, and end the history of relying on diesel engine for power generation. In the same year, on the basis of the establishment of primary schools in the mining area, the school for workers' children set up a middle school, and the scale of teachers and students was further expanded. In May 1977, Lujiang Alum Mine provided Alum stone, the raw material of expansion cement, to the Chairman MAO Memorial Hall project, and was commended by the engineering headquarters. In the same year, Alum stone ammonia immersion potassium nitrogen mixed fertilizer project was awarded the "science and technology achievement award" by Chaohu area. Lujiang Alum Mine Developed the 85 m level middle cave of Dongshan, extended the mining point of Alum stone from Xishan to Dongshan, increased the production capacity of the mine, and created conditions for the expansion of Alum production and new product development in the future. After several twists and turns, the water supply project outside the Lujiang Alum Mine plant finally broke construction. The water supply pipeline is 5 kilometers long. The test run began at the beginning of the second year and was completed at the end of the year. The whole project cost 733,000 yuan, which fundamentally improved the production and living water conditions of Alum Mine, and met the water supply needs of the continuous development and production. In the same year, on the basis of the establishment of primary school and middle school, the school for the children of workers in the mining area opened a high school, covering an area of 35,000 square meters and 1,940 square meters, with nearly 1,000 teachers, students and employees.

Figure 9: Eight Large Vertical Kilns Completed and Put into Use
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.2 Economic Reform and Opening Up

China's reform and opening up period began in 1978, which was mainly marked by China's policy of internal reform and opening up to the outside world. The industrial development policy in this period focused on the transformation of the economic system, aiming to transition from a planned economy to a market economy, including relaxing the restrictions on private and foreign-funded enterprises, promoting the reform of state-owned enterprises, the establishment and improvement of the socialist market economic system, the introduction of foreign capital and the promotion of technology introduction and innovation. These policies have been implemented in the eastern coastal areas, especially the special economic zones and the coastal open cities have attracted a large amount of foreign capital and become the forefront of industrial development; the central and western regions gradually accelerate the pace of industrialization. On the whole, these policies have greatly stimulated the vitality of China's industry, promoted the upgrading of its industrial structure and the improvement of its technological level. China's industrial output and comprehensive strength have been significantly enhanced, laying a solid foundation for China's rapid economic growth and the expansion of foreign trade.

2.2.1 The Early Stage of Reform

In December 1978, the third Plenary Session of the 11th Central Committee of China began to implement the policy of internal reform and opening up. China's internal reform started from the rural areas. Xiaogang Village, Fengyang County, Anhui Province, implemented the household contract responsibility system of "dividing land to household, responsible for profits and losses", which opened the curtain of China's domestic reform. In cities, the autonomy of state-owned enterprises has been significantly improved. At the end of the year, the Third Plenary Session of the 11th CPC Central Committee, the State took "emancipating the mind, using the mind, seeking truth from facts, and looking forward in unity" as the guidelines for the work of the whole Party, and made the strategic decision of "shifting the focus of the work of the whole Party and the attention of the whole people to the socialist modernization". The whole country to reform, the opening theme, played the construction of the four modernizations, the revitalization of China.

Figure 10: National Leaders Deliver Speeches at the Conference
Source: https://www.12371.gov.cn

In this year, after ten years of Lujiang Alum Mine "revolutionary committee" was abolished, the enterprise restored the traditional administrative management system, adopted the mine manager responsibility system under the leadership of the Party committee, and Sun Shuyi was appointed as the mine manager. By strengthening management measures and responding to the national fine-tuning of Alum prices, Lujiang Alum Mine achieved an annual profit of 88,800 yuan. Despite the small profit margin, this result is an important positive signal for Lujiang Alum Mine, a long-term loss, and is widely seen as the beginning of a turnaround for companies. At the same time, Lujiang Alum Mine officially integrated employee education into the management system and established the education department, with the purpose of transforming employee education from short-term technical training to the comprehensive improvement of cultural quality. In 1980, its super-grade Potassium Alum products were rated as the "high-quality products" of the Ministry of Chemical Industry and Anhui Province. Provincial people's government and provincial petrochemical Department respectively awarded Lujiang Alum Mine the title of "Advanced unit of safety production". In October of the same year, Sun Shuyi was appointed as the party secretary of Lujiang Alum Mine, and Li Shukui served as the mine manager. The sulfuric acid plant with a capacity of 5,000 tons was completed and put into production, adding 120 new workers. In 1982, in order to deal with the "three wastes" pollution problem, the state invested 300,000 yuan to build a sand dam and flood drainage ditch, which effectively controlled the loss of Alum sand. In addition, a staff education base covering an area of 300 square meters has been implemented, equipped with special and public classrooms of 700 square meters,

and introduced a variety of teaching equipment, including color TV set, video camera, tape recorder and teaching tape, to meet the daily teaching needs. In June, Anhui province and Chaohu administrative authorities listed Lujiang Alum Mine as the first batch of enterprises to rectify, and sent an investigation team composed of six people, including Cheng Yinjia, deputy director of the Economic Planning Commission, and Zhang Yingchun, deputy director of the Industry Bureau, to guide and assist the enterprises to rectify. In December, a new type of self-operated labor service company with self-financing for profit and loss was established, aiming to solve the employment problem of employees' children and their families.

Figure 11: Workers' Amateur Cultural School and Dormitory
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

In the aspect of urban economic system reform, we began to try to implement the management system of independent management and self-responsibility for profits and losses, which laid a foundation for the subsequent enterprise reform. Lujiang Alum Mine The enterprise leadership system reform has reached a critical stage, and gradually implemented the working mode of separation of party and government functions. According to the requirements of the principle of "four modernizations" cadres, enterprises gradually optimize the leadership team structure, selected a batch of high cultural level, management ability and strong sense of responsibility of middle-aged people as mine leadership and team leader and other key positions, and defined the party secretary, mine and the responsibilities of the functional departments. This adjustment has reduced the average age of the middle-level leadership team to 44.3 years, and increased the proportion of professional and technical personnel and those with high school education or above to 44.23% and 51.97% respectively, thus significantly improving the operation and management level of the enterprise. In January 1983, Tang Shirong was appointed as the mine head

of Lujiang Alum Mine. In March, the trial production of Ammonium Alum production line was successful for the first time, and the annual output reached 1273.5 tons, marking a breakthrough in the comprehensive utilization of Alum mud, which not only reduced the environmental burden of the mine, but also improved the economic benefits. In 1984, the Ministry of Mining specially set up a quality management department, and set up a quality management team in each workshop, focusing on strengthening analysis, testing, supervision and other basic work, a total of 150,000 yuan to purchase and equip all kinds of measuring instruments and calibration equipment. In addition, the enterprise has also formulated the Alum raw materials, semi-finished products and finished products to ensure the orderly production process, and regularly organize professional training of quality management personnel. In May, the Lujiang Alum Mine newspaper was first published. In September, 21,500 yuan was invested to build a 115-square-meter safety education room, which was used to carry out safety education activities and publicize safety education knowledge, and further enhanced the safety awareness of employees. In that year, the Mining Bureau of the Ministry of Chemical Industry awarded Lujiang Alum Mine the title of "Advanced Unit of Staff Education". The company achieved a profit of 275,000 yuan, ending the situation of long-term losses. At the same time, Lujiang Alum Mine produced special potash Alum was awarded the title of "quality product" in Anhui Province, marking the product quality has been recognized by the official and the market. In March 1985, Lujiang Alum Mine held its sixth session of the fourth worker congress, make important decisions at the meeting, formally adopted manager responsibility system, establish the mine as the core leadership status, manager was awarded the comprehensive power given by the state, responsible for the production, management and administrative management, marks the enterprise reform "five system" Inception. By May, Wang Jifu was appointed as the mine manager of Lujiang Alum Mine, while Tang Shirong became the party secretary. Subsequently, the existing management system has been comprehensively adjusted, and the ministry of Mining is divided into five management systems: production, operation, infrastructure, scientific research and logistics. Each system is responsible for the deputy manager and chief engineer (or deputy chief engineer), and the management mechanism of division, decentralization and classification is implemented. At the same time, Lujiang Alum Mine adopted a "a variety of forms, multiple channels for sales" strategy, established a nationwide self-marketing

network, reduce the dependence on the commercial sector, realize the direct communication with users, simplify the intermediate link, not only provides users with convenience, also enables enterprises to timely access to market information, according to the market supply and demand change flexible adjustment product production, avoid decision-making mistakes, make the enterprise in the fierce market competition opened up a new path.

In April 1986, Lujiang Alum Mine made a breakthrough in the technology of Alum mud conversion products, and successfully applied the Aluminum Sulfate concentrate technology of reactor. Completed the installation of all equipment and started production within 2 months after the experimental production. In December, after more than two years of efforts, the workshop with an annual output of 5,000 tons of Ammonium Alum built with a cost of 2,264,600 yuan was completed and put into production. Ammonium Alum became one of the main products of Lujiang Alum Mine, bringing significant economic benefits to the improvement of the operating conditions of the enterprise. In the same year, the establishment of Anhui Chaohu rapid coagulation plant opened up a new way for the comprehensive utilization of Lujiang Alum Mine Alum mud. After 12 years of development, nearly 7,000 square meters of staff dormitories have been built in the mining area, and the dilapidated houses and some old houses have been gradually demolished, and land has been allocated in the mining area to encourage workers to build private housing. In that year, a new canteen and two staff dormitory buildings, which not only improved the dining conditions, but also alleviated the problem of housing tension, providing convenience for the life of workers. In 1987, Lujiang Alum Mine labor service company was awarded as the "advanced unit of developing collective economic placement and employment" by the Ministry of Chemical Industry for its outstanding achievements. At the same time, Lujiang Alum Mine car team party branch was also rated as Chaohu area "advanced grass-roots party branch".

Figure 12: Lujiang Alum Mine Factory Panorama
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

In 1988, China continued to deepen reform and opening up, and further advanced economic restructuring. In particular, new progress was made in the reform of the price system and enterprises. In February, Lujiang Alum Mine implemented the enterprise contract management responsibility system, Among them, the mine manager Wang Jifu served as the contractor, and signed a three-year contract and operation contract with the Planning and Economic Affairs Committee of the Administrative Office of Chaohu District and the Finance Bureau. The contract clarified the principle of "quota subsidy, excess loss does not fill, loss all stay". To establish and perfect the mine manager responsibility system, makes the Alum ore leadership system and management mode basically in line with the needs of the enterprise development, to properly handle the interest relationship between countries, enterprises, individuals, short-term and long-term interests balance, and the relationship between the current production and enhance development potential has created favorable conditions. In April, after more than two years of preparation, the annual output of 1.7 billion yuan of 10,000 tons of cement accelerator Production line construction was completed. In May, the Lujiang Alum Mine newspaper changed its name to the Alum Mine Newspaper. At the end of the same year, after six years of planning and financing, the mine development and extension project completed the construction of shaft, shaft, derrick, south well, measure well and main transportation roadway nearly 3000 meters, and officially put into use, with a total investment of 3.34 million yuan. In May 1989, a new 560KVA transformer was added to the mine general step-down substation and put into use, which significantly improved the power consumption conditions after the capacity increase. From October to November, the "Fine Powder Acid Leaching Formulation Process" replaced the traditional "water immersion process", marking an important turning point for Lujiang

Alum Mine technological innovation to promote economic development. In December, after two years of preparation work, a new Aluminum Sulfate production line with an annual output of 5,000 tons was completed. Considering that the early production process of Aluminum Sulfate and Ammonium Alum is basically the same, the two products can be easily transferred to each other, flexible configuration scheme is adopted in the design, and Aluminum Sulfate production equipment is added in the Ammonium Alum workshop, and necessary factories and warehouses are built. This plan not only saves 500,000 yuan, but also shortens the construction cycle and improves the production efficiency, showing the creative wisdom of Alum Miners. In the same year, Anhui Chaohu fast coagulant factory opened the sales market through technological innovation, the output of fast coagulant reached 2100 tons, and the products were sold out. The mine converted the funds for buying cars to the maintenance workers' club to improve their cultural and entertainment facilities, which was widely praised by the workers.

Figure 13: Aluminum Sulfate Production Line Construction Site
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.2.2 Socialist Market Economy

At this stage, China has accelerated the reform of the economic system and implemented important measures for the socialist market economy, including the reform of state-owned enterprises, the fiscal and taxation systems, and the financial system, and vigorously developed the non-public sector of the economy. In addition, during this period, China also strengthened the legal system, promoted the development of social programs, and significantly improved the people's living standards. China's sustained industrial development, industrial structure, and the rapid growth of high-tech industries and modern service industries, have also promoted the

transformation and upgrading of traditional manufacturing industries. By 1990, Lujiang Alum Mine has developed into a medium-sized comprehensive chemical enterprise with nearly 3,000 employees and a production capacity of l20,000 tons of Alum Alum, 5,000 tons of Ammonium Alum, Aluminum Sulfate, 20,000 tons of cement fast coagulant.

In the late 1990s, with the rapid development of science and technology, and the continuous emergence of Alum substitutes, the Alum Mine market gradually shrank, and the originally busy mine began to become deserted. The rapid industrialization process also brings many problems for the environment, such as air and water pollution, land degradation, energy consumption and carbon emissions. These problems not only affect people's health and quality of life, but also cause long-term pressure on the ecological environment.

In short, since the reform and opening up, Alum ore in order to improve the economic efficiency as the center, established the "old mine old process transformation and new products and new technology development, natural resources and intellectual resources development" the development of the "five" as the center of the enterprise reform, has completed the mine transformation and Alum production system innovation, the construction of the production auxiliary facilities and welfare facilities, realize the mining and smelting Alum production capacity, and rely on scientific and technological progress, and carry out the comprehensive utilization, development of new products, broaden the business areas, establish product self-marketing network. In quite a long period of time, its production of Alum in the domestic market retention rate of one third, is the leading enterprise in Lujiang. By the beginning of the 21st century, it has developed into a medium-sized comprehensive chemical enterprise. It has made an indelible contribution to China's industrial construction and economic prosperity.

The reform broke through the stereotypes of enterprises, injected new vitality to the millennium Alum Mine. the reform mobilized various positive factors, make the Lujiang Alum Mine mine development mine shortage, lack of funds, unsalable products, fortunately survive in the unprecedented market competition pressure, make the production and operation, technical transformation, staff education and other work took a new step. Reform is a cause full of risks, which provides a broad stage for the innovative Alum Miners to realize their intelligence.

3. Information Era

The information age usually refers to the historical stage formed from the end of the 20th century with the rapid development and wide application of computer technology, the Internet and mobile communication. During this period, the development level of productivity has been significantly improved, mainly reflected in the popularization and application of information technology, which has greatly improved the production efficiency, promoted the process of globalization, changed the traditional production and management mode, and gave birth to many emerging industries. Due to the long-term dependence of human civilization on information technology, the information age will continue for a long time in the future.

Although the focus of the information age is mainly on the high-tech field, in the early stage, with the development of information technology, some traditional industries gradually decline or are replaced by emerging industries, which leads to the risk of a large number of industrial heritage being forgotten or destroyed. In the information age, how to deal with and reuse the abandoned industrial facilities, buildings and equipment or abandoned with technological progress and industrial transformation has become a new social focus. These heritages often have historical, cultural and scientific and technological values, reflecting the social and economic development status and technical level in the past industrialization period. To solve this problem requires the joint efforts of the government, society and experts to transform these industrial heritage into cultural and educational resources through legislative protection, scientific planning and innovative reuse, and to realize the protection and activation of industrial heritage.

From the characteristics of China's information age, it can be divided into two stages: the completed new urbanization period and the newly ushered in Chinese-style modernization period. Due to the differentiation of development in different regions, the progress and effect of the two stages are not consistent in time, and there is no obvious boundary between the division of time period.

3.1 New Urbanization

In 2020, the report on the government work of the State Council proposed to focus on supporting the construction of "two new and one heavy" . The construction of new urbanization began. During this period, local traditional industries stopped

production due to overcapacity, serious environmental pollution, low efficiency of resource consumption and changes that cannot meet the market demand. The policy of local governments to strengthen environmental governance aims to eliminate backward production capacity, promote the optimization of industrial structure and green development, reduce the pressure of industry on the environment, improve regional ecological quality, promote sustainable economic and social development, and improve the people's living environment, and improve the health level and the quality of life of residents. In May of the same year, the Lujiang Alum Mine was discontinued. In September, Lujiang Alum Mine and its subordinate comprehensive management company were seriously insolvent, and Hefei agreed to go bankrupt according to law.

With the decline of Alum Mine, the outflow of talents, capital, and the relocation of enterprises, the development of Fanshan has entered a low tide period. At the same time, the cultural landscape of Fanshan Industrial heritage place is gradually ignored and is in a state of spontaneous decline.

In 2013, the Central Economic Work Conference further listed "accelerating the speed of urbanization construction" as one of the six major tasks of economic work. New urbanization is a mode of urbanization development that focuses on people, focuses on quality and efficiency, and promotes the coordinated development of economic, social, cultural and ecological civilization. This strategy aims to solve the "urban diseases" arising in the process of traditional urbanization, such as excessive concentration of population, environmental pollution, and resource waste, while promoting balanced regional development and improving the quality of urbanization. In August of the next year, the Hefei Intermediate People's Court ruled to accept the bankruptcy liquidation application of Lujiang Alum Mine and Alum mining operating companies. On September 30, the Hefei Intermediate People's Court declared the Lujiang Alum Mine in bankruptcy according to the law. On November 26, under the chairmanship of Hefei then, held Lujiang Alum Mine and subordinate management company creditors meeting, unanimously passed the investigation of the debtor's property report, the bankruptcy property price plan and the bankruptcy property distribution plan (draft) report, then the bankruptcy property distribution and worker shunt placement program launched. By the end of 2015, the work of personnel placement and asset receiving was basically completed. So far, the bankruptcy

procedures of Lujiang Alum Mine and its subordinate operating companies were basically completed.

Figure 14:Alum Industrial Heritage Place Landscape Remains Unprotected
Source: Photographed by the Author

At the same time, the Chinese government and all sectors of society have gradually realized the historical, cultural and scientific and technological values of industrial heritage, and have begun to pay attention to the protection and rational utilization of these heritage. A series of industrial heritages have been systematically registered, evaluated and protected. Some regions have transformed the old industrial bases through innovative ways, transforming them into cultural parks, museums, creative industrial parks, etc., which not only retain the memory of industrial history, but also endow the heritage with new functions and commercial value. These practices not only enhance the local cultural taste and tourism attraction, but also provide a new impetus for the local sustainable development. In 2016, it was selected as the "Millennium Ancient Town of Anhui Province". In 2017, the 19th National Congress of the CPC proposed to implement the rural revitalization strategy, followed by the Central Rural Work Conference and the "No.1 Document of the Central Government", which clarified the timetable, goals and guidance of the rural revitalization strategy. In March 2018, Lujiang County organized the county land, safety supervision, mining development and other departments to carry out on-site inspection of all mining enterprises, formulated a rectification plan, closed the mines

in the Lujiang Alum Mine area, strengthened supervision, cracked down on illegal mining, and promoted the restoration of vegetation. 60% of the Alum Mine area has been restored to vegetation. At the same time, the implementation of the project management, and the county government invested 2.02 million yuan for Lujiang Alum Mine ecological restoration. In September 2018, Fanshan made a specific plan for local development based on the implementation of the national rural revitalization strategy.

3.2 Chinese-Style Modernization

The period of Chinese-style modernization is marked by a unique development model formed by China in the process of pursuing modernization. It emphasizes the combination of China's actual national conditions. The overall goal is two steps: to basically realize socialist modernization from 2020 to 2035; and to build China into a modern socialist country that is prosperous, strong, democratic, civilized, harmonious and beautiful from 2035 to the middle of this century.

With the arrival of the Chinese-style modernization period, Alum industrial heritage place faces new development opportunities. In 2020, the Fifth Plenary Session of the 19th CPC Central Committee once again emphasized the importance of "fully implementing the rural revitalization strategy", and the Party and the government attach great importance to rural revitalization and take it as the core of the work of "agriculture, rural areas and farmers" in the new era. In the autumn of the same year, in order to show the historical glory and carry forward the "spirit of Alum people", the descendants of the province, Fanshan people's government decided to build this museum, so as to inherit. In December, the Ministry of Industry and Information Technology announced the fourth batch of national industrial heritage accreditation list, and Lujiang Alum Mine was successfully selected into the "fourth batch of national industrial heritage" list. Core items including dongshan adit, xishan adit, 127 shaft, one to eight vertical kiln and the ancillary facilities, Alum Crystallization Pool, the wall, called hole, red chamber, brothel, big canteen, Alum, street, Alum, Alum Miners club, Alum worker hospital, Alum village, mining machinery, Alum ore old man oral history, the spring and autumn Alum books, etc.

At present, Alum industrial heritage place government planning, explore the use of industrial heritage sustainable development, policy, protection of cultural landscape space and activate historical industrial sites, transformation of the mode of economic

development, to promote cultural inheritance and innovation, improve the local image and quality, to cope with the social crisis and challenges in the process of modernization, build livable environment of ecological civilization. In July 2021, lujiang county natural resources and planning bureau in Lujiang Alum Mine ecological environment restoration management project area, organization held in Hefei trillion river ecological clean small watershed construction project-LuNa mine ecological restoration project blocks a project commencement ceremony, project construction marks the lujiang ring chaohu mine ecological environment restoration management project officially kicked off. Lujiang Alum Mine The project is one of the seven mine ecological restoration projects promoted by the whole county. It is a new path for Lujiang County to explore the mine restoration work, and it is a sub-project of comprehensive water environment management around Chaohu Lake. The total area of the project is 84.74 hectares, and the planned construction period is 18 months, with an investment of 264 million yuan. In 2022, Lujiang County will comprehensively promote environmental protection and ecological construction, reshape the topography and landform of Lujiang Alum Mine abandoned mines, eliminate the hidden dangers of geological disasters, and achieve the integration with the surrounding topography and landform. At present, the restoration project has achieved initial results. The abandoned mine for many years has been built into an industrial site and cultural theme park, and the hillside is covered with "green clothes".

For thousands of years, all generations of Fanshan people have made great contributions to the development of national Alum and production industry with diligence and wisdom with the "Alum Mine spirit" of "not afraid of hardships, not afraid of sacrifice and constantly moving forward". Lujiang Alum Mine Space production is not only a life history written by local people with blood and life, but also an indomitable development history of vicissitudes of life.

Conclusion

In this chapter, the evolution process of Alum cultural landscape is deeply discussed, thus revealing the trajectory and structure of Alum industrial heritage cultural landscape gradually formed in the long historical period. The study traces the mining, processing and commercial trade activities of Alum at different historical stages, and examines how these activities have shaped the unique cultural landscape and social structure.

It makes clear that the formation and development of Alum industrial heritage cultural landscape is a long and extensive process, from the ancient handicraft era to the modern industrial production, and then to the space re-production of the contemporary information age. This historical evolution not only reflects the progress of human production technology and the development of social economy, but also is an important witness of the progress of human civilization.

It further proves that in the long history, the changes of politics, economy and science and technology have a fundamental impact on the formation and development of the cultural heritage of Alum cultural landscape. The role and significance of Alum are constantly reshaped with the social changes. From the use of ancient folk to the application of modern industrialization, its commonness and differences in different cultural and economic backgrounds deserve further understanding.

However, while trying to provide a comprehensive discussion, this chapter still provides some research limitations. Limited to the existing literature and materials, some historical details may not be elaborated. Moreover, the focus of this study may be somewhat partial to specific regions or periods, and thus may not fully capture the diversity and complexity of Alum industrial heritage on a global scale.

Through the concrete achievements of Alum cultural landscape, study and summarize the aesthetics of Alum cultural landscape, which will be discussed in the next chapter.

Chapter III:

The Aesthetics of Cultural Landscape

Introduction

This chapter mainly explores the aesthetic significance of the Alum cultural landscape. Aesthetics, as a discipline studying sensory perception, using the Alum cultural landscape as a case study, provides material for aesthetic experiences to the general public, while reflecting the practical embodiment of socialist core values, playing a crucial role in promoting the aesthetic education function in contemporary aesthetics. Through aesthetic experiences, noble sentiments and feelings towards beauty can be aroused in individuals, giving them the drive to act, thus prompting people to protect nature both in their understanding and emotions, respecting and loving nature from deep within. The profound aesthetic emotions towards nature in traditional Chinese culture provide implicit and profound cultural support for building a beautiful China.

The value of the industrial heritage cultural landscape in Fanshan lies not only in its role as a witness to important events, figures, and industry changes in Chinese history but also, on a spiritual level, in its recording of the memories and evolution of a specific era. Buildings such as the "Alum Miners' Club" "Alum Miners' Hospital" and "Alum Miners' Canteen" along with industrial technological products like the "Eight Kilns" "Two Mountain Adits" and "Alum Crystallization Pool" are all material expressions of this cultural aesthetic perspective. Furthermore, historical events such as the "Big Screen Wall of Life and death stake" "Mining Accidents" and "Workers' Major Strikes" as well as cultural and artistic achievements like "Miners' Ballads" "The Annals of Alum Mines" books, and "Alum Crafts" collectively constitute the rich content of Alum culture aesthetics.

In the contemporary era of mental resource exhaustion, human aesthetic tendencies may fall into dangerous territory, especially when adopting a narrow and biased aesthetic educational perspective. The processes of perception, memory, thinking, and imagination in aesthetics hold unique value, capable of evoking deep-seated human emotions. The "learning from history" approach emphasizes the value

of historical experiences, correctly understanding the aesthetic significance of cultural landscapes, recognizing the value of heritage, and actively guiding the construction of public aesthetic perspectives, which is crucial in avoiding the extreme polarization of spiritual values. Only through in-depth research into historical development processes and the promotion of cultural landscapes, by adopting methods of distinguishing truth from falsehood and seeking commonalities while respecting differences, can we prevent the erosion of memory, facilitate the exchange and interaction of aesthetic perspectives, and thus contribute more effectively to the refinement of industrial heritage cultural landscape aesthetic concepts, adapting them to the demands of the times through social re-production.

Therefore, the first part of this chapter extensively examines the two major elements of the Alum industrial heritage cultural landscape, namely the "physical remains" and "spiritual symbols," to confirm the qualification of the Alum cultural landscape as a "national industrial heritage." The second part focuses on the influences of the Harmony between Man and Nature aesthetic perspective and the individual dimensions and representations of aesthetic wisdom in the Alum cultural landscape, elaborating deeply on the aesthetic views of the Alum industrial heritage cultural landscape. Building on the research content of this chapter, it provides a practical basis for the theoretical development of the subsequent chapters on the "meaning transformation of spatial production."

Part 1. The identity symbol of the national industrial heritage

The term "identity symbol" in the academic field refers to those signs, objects, behaviors or practices that are representative in a specific culture, society or group context, which appear or implicitly reveal the identity, status, belonging or cultural identity of an individual. These symbols may be explicit and material such as clothing, decorations and language, or they may be implicit and spiritual such as beliefs, values and customs. Human by constructing the identity of the symbol, symbol gives identity meaning, to realize mutual understanding in social network, through the specification of identity symbol system operation to coordinate the interaction between human and natural, ensure the survival and development in the natural world, convenient internal and external resources, safeguard social interests, promote the progress of the society. In the process of symbol communication, individuals construct the understanding of the relationship between things through the symbolic interpretation of others. Therefore, identity, as a mapping of human social structure and activities, is a model of a symbol of social behavior. In the past, the theoretical research and practice of heritage landscape, especially cultural landscape, we can clearly see that landscape heritage not only includes beautiful landscape, but also has landscape types with important value to regional and regional cultural groups. Recently, international Heritage organizations have begun to realize that there are great differences in the understanding, interpretation and management of eastern and Western landscape heritage values, and that cultural differences are the root cause (Silva & Chapagain, 2013).

The characteristics of Alum cultural landscape involve the mining, processing and use of Alum stone related cultural heritage, including Alum stone mine, production site, related residential areas, transportation network and related items, skills, knowledge, etc. As an industrial heritage, Alum cultural landscape not only witnesses the industrial activities and technical level in the history, but also carries the social structure, life style and cultural values of a certain period. Alum cultural landscape, as an industrial heritage, is the crystallization of local wisdom, directly reflects the key stage of the development of human society, has the value of historical, social, scientific and technological, economic and aesthetic, and is the inseparable demonstration of the perspective of the law of social development. Therefore, the protection of Alum industrial heritage is the protection of human cultural inheritance,

is the key to cultivate the social and cultural foundation, maintain cultural diversity and innovation, and ensure the continuous progress of society.

In short, Alum cultural landscape as an identity symbol has been recognized as a national industrial heritage, which has profound significance for local cultural identity, inheritance, social influence, international exchange and environmental protection.

Identity Symbol Embodiment	Specific Significance
Recognition and respect	The recognition of national industrial heritage symbolizes the national recognition and respect of Alum cultural landscape, which enhances the local residents' pride and protection awareness of their own cultural heritage.
Cultural inheritance	The protection and inheritance of the Alum cultural landscape, as an identity symbol, promotes the continuity of the local unique culture, and assists the new generation to understand and learn the traditional Alum culture and its historical significance.
Social influence	The logo of national industrial heritage improves the local social status and influence, attracts tourists and scholars to explore and visit, thus promoting the development of local economy and culture.
International communication	The identification of national industrial heritage may serve as the basis for the application of world cultural heritage, which helps to enhance international cultural exchanges and cooperation, and strengthen the global understanding and protection of the region's cultural heritage.
Environmental protection	The protection of national industrial heritage is not only related to the cultural level, but also related to environmental protection, which helps to promote sustainable development and realize the harmonious coexistence between industrial heritage protection and the natural environment.

Table 4: Significance of Identity Symbols in Alum Cultural Landscapes
Source: Compiled by the Author

1. The process of national industrial heritage identification

In general, the protection of world industrial heritage and Chinese industrial heritage are interrelated and different in their time course, action mechanism and research methods. Although China's industrial heritage protection started late, it has gradually formed its own protection mode and research method under the background of the world industrial heritage protection. The two make common progress in mutual reference and exchange, and jointly promote the development of global industrial heritage protection. Alum industrial heritage Cultural landscape records the important information of Alum from handicraft industry to industrialization, and then to different stages of the information process. It is an important carrier of China's

industrial culture, bearing the historical memory and cultural accumulation of local and industrial areas.

1.1 Establishment of the international industrial heritage protection commission

The concept of industrial heritage protection originated in the middle and late 20th century. With the progress of industrialization and the reevaluation of historical industrial sites, the international community began to pay attention to the protection of industrial heritage. The World Convention on the Protection of Cultural and Natural Heritage, adopted in 1972 provides an international legal framework for industrial heritage protection. Under the promotion of industrial archaeology, the UK first established the National Association of Industrial Archaeology (GLIAS), and then the developed countries such as the United States, France, Australia, Germany, Japan and other industrial heritage protection research institutions were also established, forming a certain scale. In 1978, the International Industrial Heritage Protection Commission (TICCH) was established in Sweden, marking the globalization of industrial heritage conservation and research, followed by the development of TICCH branches in many countries.

Industrial heritage and cultural landscape are a relatively weak part of the world heritage. In the past 20 years, UNESCO WORLD HERITAGE COMMOTTEE (UNESCO) began to pay attention to the balance of heritage, and the industrial heritage cultural landscape as a "modern heritage" has gradually received attention in the 1990s. In 1992, the 16th World Heritage Congress adopted the World Heritage Convention, adopted the concept of "cultural landscape" and formulated the corresponding standards, making the cultural landscape officially a category of world heritage. In its definition, the Convention emphasizes that the cultural landscape embodies the diversity of the interaction between human activities and the natural environment. In November 2012, TICCIH held the 15th General Assembly and Academic Symposium in Taipei, China, and adopted Taipei Declaration for Asian Industrial Heritage " (Taipei Declaration for short). The declaration held that the industrial heritage of Asia is different from other regions, and that the definition of industrial heritage needs to be expanded, and should include the industrial heritage before the Industrial Revolution. The industrial heritage of Asia strongly shows the relationship between man and land, and this cultural particularity should be

highlighted in the concept of protection. In addition, most of Asia's industrial heritage is related to colonial forces and cultural losers, which should be protected. By 2023, the total number of World heritage places has reached 1,199, including 933 cultural heritage, 227 natural heritage and 39 mixed heritage distributed in 168 countries.

The process of world industrial heritage protection reflects the reevaluation of industrial history and the promotion of industrial heritage protection awareness, and also shows the important role of international cooperation in global heritage protection. In particular, the establishment of TICCIH has had a profound impact on China, which is mainly reflected in the promotion of the international awareness and action force of China's industrial heritage protection. First of all, it has promoted China's global understanding of the importance of industrial heritage protection, enhanced international cooperation and exchanges, and enabled China to learn from international experience and take more effective measures for protection and utilization. Secondly, through the cooperation with international organizations, the protection technology and management level of China's industrial heritage have been improved, which is conducive to the sustainable development and innovative transformation of the industrial heritage. Finally, it is also conducive to enhancing China's influence and status in the field of global cultural heritage protection, and contributing its international vision and professional ability to the protection and inheritance of China's cultural heritage.

1.2 Attention to the protection of China's industrial cultural heritage

With the global development of cultural landscape heritage protection, China has also rapidly launched the research related to cultural landscape and the declaration of world heritage, which is an inevitable trend under the development of the international heritage protection movement.

In the 1960s and 1970s, under the influence of the change of productive forces, the industrial structure of the society changed, and many European and American countries were generally faced with the problem of urban renewal, and the protection and reuse of industrial heritage also emerged at the same time. At this time, China was still in the early stage of industrialization. After the reform and opening up, China's urbanization process accelerated. In the middle and late 1990s, with the gradual decline of a large number of traditional industries built in modern times, some old industrial bases and facilities gradually withdrew from the stage of history, and all

parts of China entered the stage of development focusing on renewal and transformation. In this process, the local internal industry and structure reorganization, and the contradiction between various industrial relics and the old industrial areas and urban development is prominent, resulting in a series of social problems.

At the same time, is in the context of rapid urbanization and urban renewal, the development of demand and economic interests, industrial heritage for local economic development suffered big construction case, record regional development of industrial culture carrier was severely damaged, a large number of valuable industrial heritage, or due to the lack of funds, not effective management and face demolition or disappear due to the lack of targeted research and technology and face the plight of inappropriate reuse, this kind of situation is common in many cities. For quite a long time, the industry staff and scholars have neglected the study of the architectural ontology value and location value of industrial heritage, and at the same time, there is also a lack of understanding of the value, including the historical context value and social and economic value, followed by the technical value and aesthetic value.

With the deepening of China's reform and opening up and the strengthening of international exchanges, some scholars and social personages have begun to pay attention to the historical and cultural value of these industrial heritages. In the 21st century, China began to have more exploration and attempt on the protection of industrial heritage. In 2003, China promulgated a revised version of the Law on the Protection of Cultural Relics, providing a legal basis for the protection of cultural heritage. In 2005, the China Administration of Cultural Heritage identified the first batch of Chinese architectural heritage list of the 20th century, including some industrial heritage, marking the formal inclusion of industrial heritage protection into the cultural heritage protection system. With the acceleration of modern urbanization, the combination of industrial heritage protection and urban and rural development planning, a series of protection and utilization cases of industrial heritage protection and reuse have emerged, which have improved the understanding of the value of industrial heritage from all walks of life and encouraged all localities to participate in the protection of industrial heritage.

By 2023, China has listed 57 world cultural and natural heritage places on the World Heritage List, ranking first in the world Heritage list. Among them, there are

39 world cultural heritage places, 4 world cultural and natural dual heritage places, and 14 world natural heritage places.

1.3 The fourth batch of national industrial heritage

In May 2001, Lujiang Alum Mine announced production. Subsequently caused the recession of Alum mining industry, brain drain, capital outflow and enterprise migration and other social problems, these factors together led to the serious decline of Fanshan economic development.

In the face of this challenge, the Fanshan government, after experiencing profound reflection, is determined to get rid of the extensive development model that has lasted for thousands of years. They led the local people, with a firm and dedicated spirit, on the one hand, actively plan and implement the restoration and management plan of the mine, promote the mining environment and ecological restoration of the development environment, actively seek industrial transformation, using the local ecological resources and industrial heritage, especially the cultural tourism as a key industry, thus opening a new chapter of the ecological revival and industrial transformation of Fanshan in the new century.

Up to now, the protection and utilization of industrial heritage has made remarkable achievements, a series of important industrial heritage has been effectively protected, and accumulated rich experience in the utilization and development. These achievements are forming a good social environment that attaches great importance to the protection and utilization of industrial heritage. In December 2020, Lujiang Alum Mine was included in the fourth batch of National Industrial Heritage list (MIIT, 2020).

Lujiang Alum Mine National industrial heritage list of core elements covers the dongshan adit, xishan adit, 127 shaft, one to eight vertical kiln and its ancillary facilities, Alum Crystallization Pool, large screen wall, called hole, red chamber, thel, Alum canteen, Alum old street, Alum Miners workers club, Alum worker hospital, Alum, mining machinery, the old man's oral history and the spring and autumn Alum books such as nearly 20 projects, These elements touch the many fields of architecture, production techniques, literature and art, Together, they shape the unique Alum cultural landscape of Lujiang Alum Mine.

Aesthetic Element	Sort	Cultural Achievement
Material form	Alum mining facilities and equipment	Beggar's Cave,Big Screen Wall,Two Mountain Adits,Vertical Shaft,Eight Kilns,Alum Crystallization Pool
	Alum Mine community and construction	Alum Mine Old Street,Red Building and Cyan Building,Lujiang Alum Mine Guesthouse,Alum Miners'Hospital,Alum Miners' Canteen,Alum Miners' Club
	Alum Mine enterprise	Lujiang Alum Mine,Lujiang Alum Mine Rapid-Setting Agent Factory, etc
Spirit carrier	Policy and system	National system:Alum Monopoly Law,Jiaoyin System,Ticket System,Proagricultural and Anticommerce, etc Alum Mine system:Administrative Management System,Labor Unions,Production Management System, etc
	Ancient books and documents	National document:Ancient books and cultural relics,Classic of Mountains and Seas,Shi Ya,Physical Miscellany,Comprehensive Geographical of the Yuanfeng, etc Alum Mine document:Alum Mine Spring and Autumn,The Lujiang County Annals,Alum Mine News, etc Others:Poetry, Ballads, Dialect,Legend, etc
	Technology and product innovation	Major technological and product innovations Alum crafts widely used in painting, architecture, landscape and other markets

Table 5: Main Achievements of Alum Mine Cultural Landscape
Source: Compiled by the Author

French sociologist Henry Henri Lefebvre once pointed out that in the historical evolution of the concept of space, space has two meanings: one is physical attributes, the other is spiritual attributes. Based on this theory, the research of the national industrial heritage of Alum cultural landscape should also be carried out on the material and spiritual levels, and the explicit and implicit cultural links can achieve a deeper and comprehensive understanding of the cultural connotation.

2. Alum industrial heritage Aesthetic material form of cultural landscape

The aesthetic value of industrial heritage cultural landscape comes from its aesthetic charm and the positivity of cultural aesthetic activities. Aesthetic activity is one of the unique cultural activities of human beings, which involves people's perception, experience, evaluation and creation of beauty. In the aesthetic activities, there are both concrete material forms and abstract spiritual carriers (Norman, 2005).

Fanshan, As an industrial heritage place with a millennium history of Alum production, its rich and colorful ancient mining pit old machinery, old buildings and other Alum industrial remains, just like the "living fossil" of history. It not only integrates the essence of natural works and human wisdom, but also reflects the long

and close connection between human beings and the natural environment. The rich cultural context carries the imprint of social history and culture, and becomes an important carrier to promote social life and cultural inheritance. As a realistic material and perceptual aesthetic object, the aesthetic implication of the material form of cultural landscape occupies an indispensable position in the production and spatial representation of social space, and is the passport to promote our in-depth understanding of different social life modes and correct cultural values.

2.1 Alum mining facilities and equipment

2.1.1 Beggar's Cave

The "Beggar's Cave" is a stone cave on small Fanshan. According to the local folklore of Fanshan, during the reign of Emperor Zhongzong of the Tang Dynasty, the brothers Ban Dahong and Ban Erhong fled from the south to Lujiang to seek refuge. They built a stove outside the cave with stones and cooked their meals there. Due to the effects of rainwater, the stones of the stove congealed into translucent jade-like substances. Out of curiosity, the brothers tried licking it and found it to be bitter and unsuitable for consumption. They threw it into the water, where it dissolved, making the water clear, demonstrating a purifying effect. Impressed by its uniqueness, the brothers spread the word. Subsequently, the surrounding villagers, taking advantage of the agricultural off-season, dug roads through the mountains, collected stones, and refined Alum stones. The brothers were later revered as the pioneers of Alum stone mining and refining, known as the "Mountain Opening Masters," and a temple was built in the Fanshan area to honor them.

The name "Beggar's Cave" originates from the combination of begging and cave in this story. The "Beggar's Cave" mine has remained relatively undamaged since the Tang Dynasty, with only minimal mining and collapse traces remaining. The cave is approximately 280 meters deep, 4 meters high, and 3 meters wide.

Figure 15: Scenic View Outside the Beggar's Cave Entrance
Source: Photographed by the Author

In 2001, the People's Government of Lujiang County officially designated the "Beggar's Cave" mine as the second batch of county-level cultural relics protection key sites.

2.1.2 Big Screen Wall

In the history of Lujiang Alum Mine, the working environment of the miners is extremely difficult and dangerous. Due to the lack of basic safety facilities and measures, the miners took a primitive and simple approach by climbing steep cliffs, building simple support points with wooden stakes, then lifting themselves on the stone walls with ropes, drilling rock with hammers, or drilling into deep pits. This high-risk mining method often leads to serious accidents, such as rope breaks or mine collapse, causing frequent casualties.

Figure 16: Miners Face Extremely Harsh and Dangerous Working Conditions
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

Up to now, the small Fanshan still retains this rich mineral deposits but extremely steep terrain site —— "Big Screen Wall". Photo wall, also known as shadow wall, shadow wall, screen wall, was originally an ancient temple, palace, government yamen and deep house courtyard in front of a building, that is, the wall outside the door to serve as a barrier. The function of the screen wall is to serve as a barrier in front of the building group, to distinguish the inside and outside, and to increase the atmosphere of majesty and silence. The shape of the screen wall is often a shape or wild goose wing shape. Because the small Fanshan here stone is good, Alum rate is high, quarrying workers flock to. Through the Tang and Song dynasties to the Ming and Qing dynasties, the mountain was dug into a steep stone wall of high hanging rock. Because of the shape and momentum similar to the wall, ancient people called this wall "Big Screen Walll".

By provincial archaeologists, the site was identified as a relic of mining activities during the Tang and Song dynasties. Watching, rows of ancient pine piles can be seen on the "Big Screen Walll", as well as obvious traces of ancient mining, such as chisels and fire, all of which bear witness to the hardships and sorrows the miners endured here. Local villagers recall that the stakes are called "life and death piles" meaning that the miners work on the edge of life and death. In ancient times, the miners in the family, whether father or son, had to carefully build their own piles and ropes in case a mistake led to the tragedy of falling off a cliff, leaving eternal regret.

Figure 17:Named for Its Style and Grandeur, Similar to a Courtyard Screen Wall
Source: http://www.360doc.com/content/19/0901/13/29415407_858459571.shtml

2.1.3 Two Mountain Adits and Vertical Shaft

Adit is also called "horizontal tunnels". are horizontal passages dug in mountainous areas during mining, water conservancy, and hydroelectric surveys, with direct ground exits. They serve similar purposes as vertical shafts, providing

transportation for ore, materials, personnel, as well as ventilation and drainage. Adits can also be used for prospecting by digging smaller adits. The cross-section is typically arched, commonly three-centered or circular arches. The entrance of an adit leads directly to a horizontal tunnel on the ground level. There are main adits, secondary adits, drainage adits, and ventilation adits, among others.

In 1957, to adapt to the standardized and rational exploitation of Alumstone mines and meet the needs of mechanized production, Fanshan transformed and expanded the first adit mine in Xishan. Mining operations shifted from manual drilling with iron hammers to using drilling machines, and transportation changed from manual labor to using iron rails and mine carts. The completion of Xishan Pingdong in 1958 brought significant changes to the appearance of the mine. Simultaneously, rock drilling machines, air compressors, hoists, and electric cars were purchased, fundamentally reducing the labor intensity of some workers. The transition from traditional surface mining to underground mining marked a significant change in Alumstone mining, freeing the ancient Alumstone production from its primitive and backward state, showing vitality and vigor. In 1963, the expansion project of Xishan Pingdong was completed, leading the Alumstone mine in Lujiang out of difficulties, reversing the trend of continuous production decline, and stabilizing morale. In 1977, Lujiang Alum Mine developed the 85-meter middle-level adit in Dongshan, extending the mining point of Alumstone from Xishan to Dongshan, which was completed and put into production in 1979. This ended the historical reliance of Alumstone production solely on Xishan ore since the liberation, increased the mining production capacity, and created conditions for expanding Alumstone production and future new product development. Lujiang Alum Mine constructed four mines for standardized exploitation of Alumstone, all designed, transformed, and expanded independently, with a design capacity of producing 180,000 tons of Alumstone annually. The mined ore is transported by 0.5 cubic meter "V"-shaped ore cars, pulled by self-assembled 195 diesel locomotives. The four mines are developed in a step-like distribution pattern of the ore body, with the mining method employing horizontal extensions and two techniques: "flat-bottom funnel ore retention method" and "open stope mining method," using 7655 rock drilling machines for tunneling. The total length of the tunnels has exceeded more than 30 miles, crisscrossing and distributed in Dongshan and Xishan.

Vertical shaft, a vertical pipeline with upright walls, is called a vertical shaft, which is essentially a collapsed funnel. It appears square, rectangular, or irregularly circular in plan view. The shaft walls are steep, almost vertical. Vertical shaft construction is characterized by a small footprint and minimal interference with surrounding construction. The vertical shaft development method is widely used in mining operations. However, the construction of vertical shafts is associated with significant safety risks due to the limited space, long construction period, high-altitude and edge work, and inconvenient access.

Figure 18: Two Mountain Adits Completed and Put into Production
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

Lujiang Alum Mine outsourced some of its projects, with Zhejiang Pingyang Alum Mine Shaft and Tunnel Engineering Company undertaking the main vertical shaft civil engineering project. The project was completed in October 1985. In October 1985, the main vertical shaft civil engineering project of Lujiang Alum Mine was completed by Zhejiang Pingyang Alum Mine Shaft and Tunnel Engineering Company. The Ministry of Chemical Industry allocated 1 million and 2 million RMB in 1987 and 1988 respectively, and the mine development and extension project resumed construction in August 1987. By the end of 1988, nearly 3000 meters of vertical shafts, shaft linings, shaft frames, south ventilation shafts, escape shafts, and main transport tunnels had been completed, with a total investment of 3.34 million RMB..

2.1.4 Eight Kilns

Alum stone roasting is the second process of Alum making. In the Fanshan industrial heritage, there are eight roasted vertical kilns, called "Eight Kilns".

According to research, in the past, Alum was refined by stacking ore into a pot-like structure and using wild grass as fuel for roasting. After liberation, coal replaced

grass as the roasting fuel. This simple and quick roasting method was known as "tupaozi" or "turtle shell kiln" and was used for a long time. The fuel was firewood, suitable for family-run Alum refining operations in ancient China's Alum Mountain. The "turtle shell kiln" was the first generation of Alum stone roasting furnaces in Alum Mines, information passed down through local elders' oral accounts. No remnants or traces of these kilns have been discovered to date. These roasting kilns, resembling turtle shells, were extremely simple to use, constructed by stacking Alum stones and directly heating with firewood. The temperature and duration of roasting depended primarily on the workers' experience. This highlights the rudimentary technological conditions of ancient Alum production and reflects the small-scale, family-oriented nature of the industry.

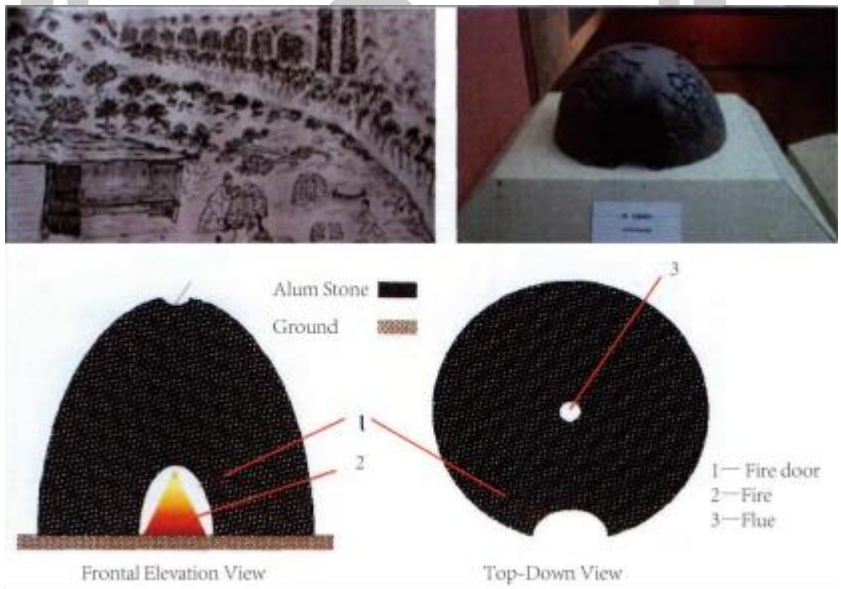


Figure 19: The First Generation Alum Slate Roasting Furnace
Source: DOI:10.26945/d.cnki.gbjku.2020.000306

Until the 1930s, the Alum mines used furnaces fueled by straw and wood, known as the second-generation roasting furnaces. The early version of these furnaces, called pot-shaped roasting furnaces, had equal internal diameters and heights.

These furnaces comprised two main parts: the upper part consisted of a brick-built trough or pot, which used the residual heat from the roasting furnace to warm and dissolve the Alum solution; the lower part was the main body of the furnace, constructed with local common rocks for the outer wall and locally made clay bricks for the interior lining. At the top of the furnace body, there was an iron pot with a

radius of approximately 0.6 meters, connected to the upper brick trough, which ensured efficient thermal conduction.

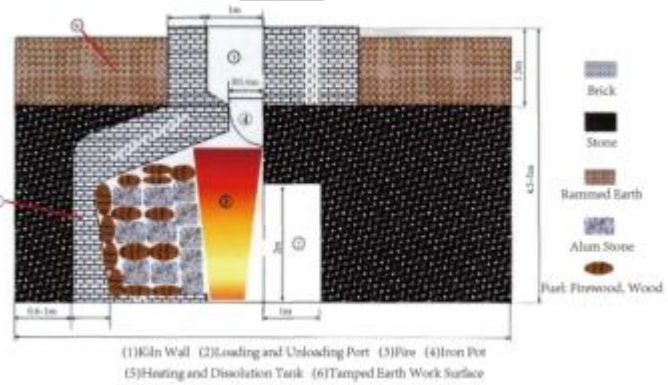


Figure 20: Second-Generation Crucible Roasting Furnace
Source: DOI:10.26945/d.cnki.gbjku.2020.000306

The diameter and depth of the kiln chamber of the bastion-shaped roaster are the same, and three sides, except for the surface of the furnace body, are wrapped in rammed earth. The bastion-shaped kiln has a capacity of approximately 5 tons of Alum. When loading Alum stone, it is layered with straw and firewood, leaving a central channel for burning. Over the course of a day and night, the Alum stone dehydrates, and the wood burns to ash, turning the stones to a lime-like color. Using a long-handled iron rake, the calcined stones are removed and crushed with a hammer while still hot. These crushed stones are then immersed in barrels filled with cold water for soaking and weathering. The resultant Alum solution is transported to an iron pan atop the kiln, where it is heated using the residual heat to dissolve and concentrate the Alum solution to the desired crystallization concentration. The concentrated Alum solution is then transferred to crystallization pools to cool and solidify.

After the merger of public and private sectors, a new type of furnace, known as the "Guts Kiln", emerged as an alternative to the second-generation roasting kiln in Alum mines. This kiln, though energy-intensive and prone to an uneven distribution of heat leading to a high rate of raw and burnt ore, was not economical from a resource and energy consumption standpoint. Nevertheless, it catered to the need for expanded ore roasting capacity following the sector merger. The furnace body is surrounded on three sides by rammed earth, reaching roughly to the height of the top. It consists of two main sections—upper and lower. Its primary structure, shape, and

size differed significantly from the first two types of furnaces. The roasting kiln, shaped like a bunker, had walls constructed solely of rock and featured a small iron pot at the top, connected to a brick-lined heating and dissolving trough, facilitating heat conduction. This type of roasting kiln was in use in the 1940s and early 1950s.

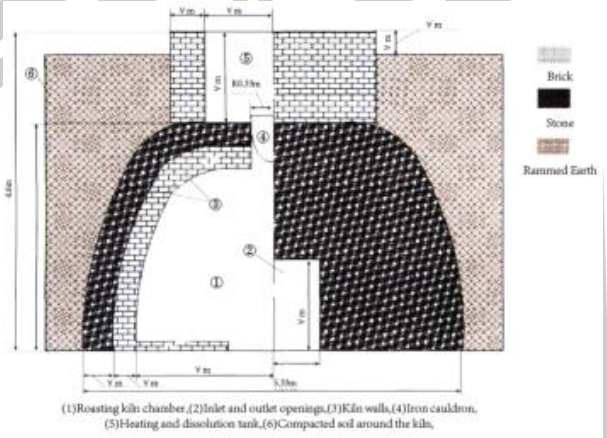


Figure 21: Second-Generation Furnace for Roasting Operations
Source: DOI:10.26945/d.cnki.gbjku.2020.000306

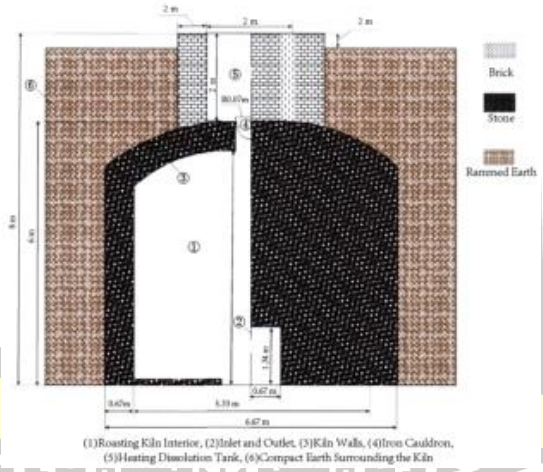


Figure 22: Second-Generation Castle-Shaped Roasting Furnace
Source: DOI:10.26945/d.cnki.gbjku.2020.000306

In the late 1950s, the second-generation roasters were gradually replaced by a new type of batch mixer known as the third-generation large vertical kiln, using coal as its fuel. These roasters had varying load capacities, such as 10 tons and 15 tons, with alunite stone blocks typically ranging from 10 to 15 centimeters. The lower part of the kiln structure was constructed with brick grates, which included a discharge

port. During the roasting process, this port was sealed with loam and stones. Above the discharge port was a loading port, which was covered with an iron plate during operation. The inner walls and flues were built with local earthen bricks from Fanshan Town, while the outer walls were made of rough stone filled with loam.

When loading the kiln, kindling materials such as straw, charcoal, and wood were first placed on the grate, followed by an appropriate amount of bituminous coal and then alunite stones. The coal and alunite stones were alternately layered to fill the kiln. The stones were arranged with smaller blocks at the bottom, larger ones in the middle, and the smallest at the top, with each layer containing approximately one ton of the mineral. The coal-to-stone ratio was adjusted based on the properties of the alunite stones and the quality of the coal. After loading, the kiln was ignited at the base and allowed to roast naturally for about 24 to 30 hours before the roasted material was removed through the discharge port.

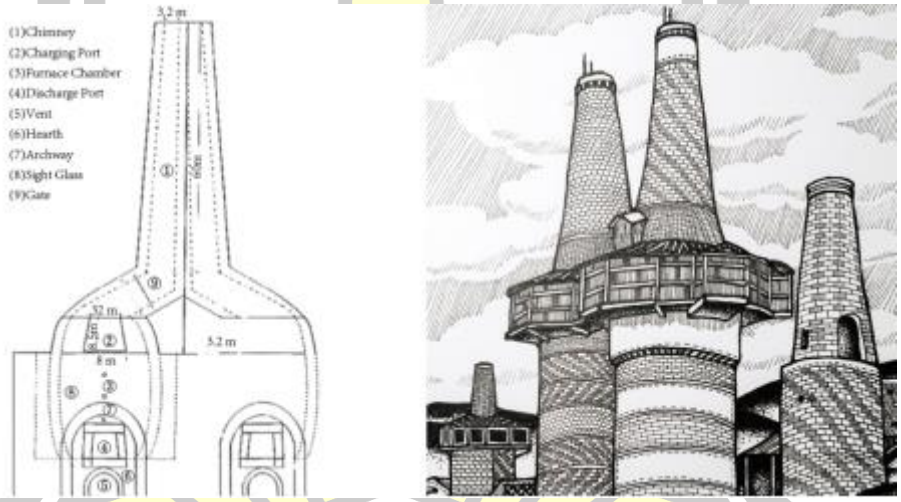


Figure 23:Third-Generation Alum Stone Roasting Furnace
Source: Compiled by the Author

In the past, the ore was built into a cooker and roasted with weeds as fuel. After liberation, coal was replaced with grass for roasting. This roasting method is simple and rapid, which is called "earth cannon", and is used for a long time. After public-private partnership, it was improved into a kiln, which has high energy consumption and high rate of ore production due to uneven firepower. From the point of view of resources, energy consumption, not economic enough. However, the kilns adapt to the needs of expanding the scale of ore roasting after public-private partnership. After 1958, experiments began to use vertical kilns instead of bile kilns, and the

construction of continuous mixing large kilns was successful, which provided direct experience for the construction of large vertical kilns.

Figure 24: Eight Roasting Vertical Kilns
Source: Photographed by the Author

After 1958, experiments began to replace the traditional kiln with vertical kilns. The successful construction of continuous mixed-material large kilns provided direct experience for the development of large vertical kilns.In 1964, in order to actively promote technological progress, Lujiang Alum Mine began to build a large vertical kiln. The kiln is a cylindrical vertical structure with an average height of 30m, a height of 12m and a volume of 90m [8]. A large vertical dense daily mature ore 42 tons. A vertical kiln thermal processing equipment, dedicated for continuous calcination of raw materials, designed to achieve top-down material input and output. It is composed of kiln body, material adding device and ventilation system, which is mainly used in the calcination of refractory raw materials and Alum stone calcination operation. Its significant advantages include lower infrastructure investment, small footprint, high ripening efficiency and low energy consumption. In the process of use, it is very important to control the calcination temperature of the calcination temperature inside

the vertical kiln. Combined with the appropriate process conditions and precise operation, the high quality clinker can be calcined. The construction of a large vertical kiln marks a major breakthrough in ore roasting technology. By 1968, all the large vertical kilns were completed and put into use.

Today, these eight large vertical kilns have become the macro image of the Lujiang Alum Mine. When people come to the Alum Mine, the first thing they see dozens of miles away is the eight large vertical kilns standing on the hillside and piercing the sky. Despite years of erosion, these large vertical kilns still stand tall in the form of giant guns. It not only shows their former glory, but also reminds people of the former prosperity of the Alum mining industry.

2.1.5 Alum Crystallization Pool

Alum Crystallization Pool, is the last process of Alum production process equipment. During the production process, after the Potassium Aluminum Sulfate solution is put into the crystallization tank, the 5-10cm thick mother liquor is added as the covering water. Under this condition, the maron in the solution of the crystallization pool began to settle to the bottom of the pool, and the white Alum chips slowly formed the crystallization on the pool wall. This crystallization process usually lasts 20 to 24 days. When the crystallization cycle is completed, the mother liquor is extracted from the pool and the Alum can be collected. The collected Alum crystals are transferred to the warehouse, which then becomes the finished Alum.

Figure 25: Crystallization Pools and Crystallization Workshops

Source: Photographed by the Author

Lujiang Alum Mine The crystallization pond was built in 1957, located in two open workshops adjacent to the ash pond. Each workshop is equipped with two columns of 16 crystal ponds with a diameter of 3 meters and a depth of 1.6 meters, made of stone strips and cement instead of traditional Alum tanks. By 1960,727 Alum crystallization ponds had been built.

2.2 Alum Mine community and construction

2.2.1 Alum Mine Old Street

Located in the southeast end of Fanshan, it used to be the residential area of mining workers, with a small river separating it from the Alum production area. The old road of the old street is 7.5 kilometers long. From Fanshan to the gap of Alum wharf, the original unicycle transport Alum ancient road, through Lufeng Bridge, Jinwan to Alum wharf, in 1950, the construction of Alum wharf road, become Lujiang Alum Mine Alum special line. The road surface is made up of hand-laid green stone slabs to facilitate the transportation of materials after quarrying. The flow of time has left traces on every inch of stone surface and blue bricks, and the footprints of countless ancestors make these green stone slabs honed extremely smooth, reflecting the long history and changes of this street. The ruts in the middle of the road deeply record the history of the hard work of successive Alum drivers, some three to five inches deep, as a silent testimony to their hard work. In 1952, due to the prosperity of the Alum industry, the original old street was extended downward, forming a new street.

Figure 26: Lujiang Alum Mine Old Street Black Brick Marks
Source: Photographed by the Author

Old street is not only the core of life of Fanshan residents, but also the center of commodity trading. During the Spring Festival, various forms of artistic expression such as circus, Dagu book, opera and qin book enriched the cultural life of Fanshan people. It was also crowded by merchants and more than 60 shops including tobacco, medicine, dyes, candles, clothing, cloth and groceries.

Figure 27: Lujiang Alum Mine Old Street Ming and Qing Architectural Ruins
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

On both sides of the old street, the brick structures of the Ming and Qing dynasties are arranged neatly, and the red lacquer wooden doors faintly reveal the bustling scene of the past. Under the eaves of these buildings, Langfang is decorated with exquisite wood carvings, while the relief patterns on the lintel, even though some have weathered away and fallen off, still show exquisite craftsmanship. The copper carving of the facade adds a solemn and simple atmosphere. Among them, the archway gatehouse of the Lu ancestral hall is located in the village named the archway courtyard.

Figure 28: Brick Bridge Village History Museum
Source: Photographed by the Author

The old street still retains the ancient well, the existing two, other places for spring Wells. Its clear and sweet well water has nourished the residents of Fanshan for hundreds of years and witnessed the rise and fall of the old streets. Today's there is a village history hall in the old street, which records the glorious history of Fanshan in detail.

Fanshan There are seven ancient Bridges, which are GongFactory Bridge, Mao Stone Bridge, XiSu Yuan Bridge, Huang Bridge and so on. Three wooden Bridges have been destroyed, and the other Bridges were rebuilt after liberation.

2.2.2 Red Building and Cyan Building

The Red Building and Cyan Building, two buildings were completed in 1956, named after their building material —— made of red brick and cyan brick respectively, so are traditionally called "Red Building" and "Cyan Building". Both buildings are typical of Soviet-period architecture. The style is often known for its large blocks of simple geometric shapes and pragmatic designs.

Figure 29: Lujiang Alum Mine Red Building and Cyan Building

Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

In the early stage of the building, the Red Building served as the mine management office. At present, it not only retains the historical value of the building, but also continues its service to the community through new functions. It has been used as a Fanshan historical and cultural exhibition hall to show the rich historical and cultural heritage of the area to the public.

2.2.3 Lujiang Alum Mine Guesthouse

The establishment of the Lujiang Alum Mine Guesthouse traces its origins back to 1969, initially serving as the office for the Lujiang Alum Mine's Party Committee and administrative bodies. By 1984, following the relocation of these offices, the building underwent a transformation into a guesthouse dedicated to providing reception services, particularly catering to the needs of superior leaders from Lujiang Alum Mine, officials from supervisory departments, and individuals engaged in

business negotiations. At that time, it was recognized as the largest reception hotel in the Fanshan area.

Entering the 1990s, the Lujiang Alum Mine Integrated Business Company took over the management of the guesthouse, shifting its operation to a personal contract management model, and concurrently rebranded it as the "Anhui Province Lujiang Alum Mine Guesthouse." The establishment was divided into two main service sectors: accommodation and catering, aimed at satisfying the diverse requirements of its clientele.

By September 2020, the Fanshan government initiated a series of restoration and renovation efforts on the Guesthouse to upgrade its facilities and enhance the quality of service. The Guesthouse reopened on May 1, 2021, continuing its tradition of serving visitors.

Figure 30: Lujiang Alum Mine Guesthouse

Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.2.4 Alum Miners' Hospital

The Alum Miners' Hospital, initially established as a rudimentary health clinic in the 1950s, has evolved significantly. By 1978, it had developed into a comprehensive facility occupying 16,000 square meters with a built area of 4,000 square meters and staffed by 56 employees. The hospital is equipped with an X-ray diagnostic machine and an ambulance, ensuring a high standard of medical care. It encompasses both outpatient and inpatient departments, offering a full range of outpatient services and accommodating 60 inpatient beds. This capacity adequately meets the medical and healthcare needs of the mine's employees and their families. In recent years, the hospital has expanded its services to the general public, which has not only

strengthened its ties with the surrounding community but also augmented its operational revenue.

Figure 31: Lujiang Alum Mine New and Old Miners' Hospital
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.2.5 Alum Miners' Canteen

In 1983, Lujiang Alum Mine decided to build a large canteen on the east side of the turtle mountain, namely Alum workshop, roasting, Alum and other workshop workers dining, completed in 1986, when normal dining nearly 1,000 people. After modernization, it has become a dining place to taste Fanshan special food.

Figure 32: Lujiang Alum Mine Miners' Canteen
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.2.6 Alum Miners' Club

In 1965, the construction of the workers' club began. It was built and put into use in 1967, with a floor area of 1,303 square meters.

Alum Miners' Club is a multi-functional recreational place with gathering, party, performance and screening.

Figure 33: Lujiang Alum Mine Miners' Club

Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

The club building has the typical characteristics of Soviet style architecture. First, the left and right are axial symmetry, the plane is regular, the middle is high and the low on both sides, the main building is towering, and the corridor is wide and extended, followed by the "three sections" structure, the "three sections" refers to the eaves, wall body and foot.

2.3 Alum Mine enterprise

2.3.1 Lujiang Alum Mine

In 1950, the "local state-owned industrial and Alum factory" was established. Workers Alum factory, new Alum factory and small hill stone mine, industrial and agricultural Alum factory hill branch factory has been established. In 1956, the national public-private partnership entered a climax, with the local state-owned industrial and agricultural Alum factory as the main body, 48 private Alum factory successfully realized the whole industry public-private partnership, the establishment of Fanshan mine management office, Zuo Mingshu as the director, Ma Yulong as the deputy director. All fixed assets of more than 100,000 yuan, more than 1,000 employees. Later, there were several changes in the name, such as "Public-private joint venture Lujiang Alum Factory", "Public-private joint venture Lujiang Alum Mine", etc. In 1966, it became a state-owned enterprise and renamed "Anhui Lujiang Alum Mine".

Figure 34: Relics From the Alum Mine, Such as Bills and Attendance Records

Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.3.2 Lujiang Alum Mine Rapid-Setting Agent Factory

The Lujiang Alum Mine Rapid-Setting Agent Factory, originally a subsidiary of the Lujiang Alum Mine, was established with significant investment from the Ministry of Chemical Industry of China. It specializes in the production of a series of concrete admixture products, making it the largest export base for concrete admixture products and a member unit of the China Concrete Admixture Association. The main factory oversees four branches: rapid-setting agents, expansive agents, chemical products, and raw material processing. Its portfolio includes dozens of products such as rapid-setting agents, expansive agents, waterproof agents, Alum stone powder, and Potassium Alum, boasting an annual production capacity of one hundred thousand tons. These products are not only best-sellers across China but also in Southeast Asia and are widely used in various construction projects including mines, railways, highways, subways, airports, hydraulic engineering, and national defense construction, positioning it as one of the backbone enterprises in the production of concrete admixture products in the country. The expansion into the building materials sector by the Rapid-Setting Agent Factory, as an extension of the Lujiang Alum Mine, has not only broadened its business scope but also stimulated the development of other building materials, significantly enhancing the developmental potential of the Lujiang Alum Mine.

Figure 35: Lujiang Alum Mine Rapid-Setting Agent Factory

Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

3. Alum industrial heritage Aesthetic spirit carrier of cultural landscape

In the aesthetic field, the distinction between material forms and spiritual carriers reveals cognitive processes from intuitive to abstract. The aesthetic material form, with its direct and sensible characteristics, constitutes the external basis of aesthetic experience, while the carrier of aesthetic spirit goes deep into a more abstract level, referring to the spiritual content, cultural value and emotional meaning conveyed through the material form. This spiritual carrier represents the inner spirit and emotional world behind the aesthetic object. Although its expression depends on the material form, its meaning and value are far beyond the boundary of the material. The discussion of the aesthetic spirit carrier not only touches on the author's feelings, cultural background and aesthetic intention of the creator, but also includes the emotional resonance, ideological enlightenment and spiritual satisfaction experienced by the viewer in the aesthetic process. The unique feature of this carrier lies in its internality and depth, which becomes the hub of the interaction between emotion and thought in aesthetic communication.

Fanshan The division and arrangement of the spiritual carrier of industrial heritage cultural landscape is based on its cultural aesthetic attributes. The spiritual carrier of this industrial heritage mainly covers policies and systems, ancient books and cultural relics, poems and ballads, Alum Mine folk customs, legends, and technology and product innovation. These elements not only reflect the rich cultural heritage and historical traditions of the Fanshan region, but also highlight the unique contribution of the region in technological development and cultural innovation.

3.1 Policy and system

3.1.1 Alum Monopoly Law

In ancient China, the prohibition system represented a policy of exclusive rights enforced by the government on specific commodities, aiming to restrict commercial transactions amongst the populace, thereby enhancing the state's fiscal revenues. The Prohibition System, therefore, signified the government's monopolistic operation on the production or sale of certain goods. This system could be categorized into two models: a comprehensive monopoly covering the entire process from production to sales, adopting a "privately produced but officially sold" approach, and a partial monopoly involving the purchase and sale of goods under direct state supervision by merchants. As a pivotal economic policy in ancient China, the prohibition system persisted from the Spring and Autumn period to the mid-Qing dynasty, significantly impacting feudal society. Particularly during the Song dynasty, the system was strengthened and developed in more detail.

During the Song dynasty, Alum was included as one of the five major commodities under state monopoly. The legislation on monopolies at the time, such as those on alcohol, tea, salt, iron, and vinegar, with the Alum monopoly law being particularly notable. The government strictly decreed that private production of salt, brewing of alcohol, making of yeast for brewing, or refining of Alum, once exceeding specified quantities, would result in capital punishment.

The Alum monopoly law primarily employed a system of stewardship for management, under which the populace raised funds to produce Alum under official supervision. The government then compulsorily purchased the Alum from producers at low prices, subsequently levied taxes, and wholesaled it to merchants for sale across various regions. Another control measure implemented by the Song government in the sales process was the demarcation of sales territories. In 1078, the government designated sales jurisdictions for major Alum-producing areas, such as the Alum from Wuwei Commandery being sold to the southeastern nine routes, covering a vast geographical area. Any sales or cross-border sales within non-designated areas were subject to severe punishment. Due to the high profits from the monopoly, merchants risked smuggling Alum, leading to official Alum stagnating in sales due to high prices.

Therefore, the Alum monopoly law during the Song dynasty was an integral part of the ancient Chinese monopoly legal system. It impacted the civilian Alum economy, especially as collusion between local officials and merchants artificially inflated Alum prices. However, the law also regulated the Alum economy to a certain extent, curbed the proliferation of private Alum production, and made it a significant source of national fiscal revenue. This system established the development direction of the ancient Chinese Alum system and influenced other monopoly laws.

3.1.2 Jiaoyin System

The Southern Song Dynasty continued the policy of "people's production and official sales" for Alum, allowing the people in the Kunshan area to produce Alum themselves. However, the official Alum sites would compulsorily purchase it at a price ranging from 13 to 20 wen per catty, which was adjusted to 30 wen by 1144. In the domain of Alum trade and circulation, the Southern Song Dynasty established the "Jiaoyin System" which, through this mechanism, brought over 40,000 guan of net profit annually to the national treasury just from the Alum tax.

During the Northern Song Dynasty, to gather materials for war preparation, the government long implemented the "Ruzhong system" relying on merchants to transport currency and food to the northwest region. The so-called Jiaoyin referred to certificates issued by the Song Dynasty government to merchants participating in the Ruzhong system, allowing them to collect cash or goods. Merchants had to prepay the goods payment at the capital or along the river's customs before they could receive their Jiaoyin. The government would offer preferential pricing based on the distance and difficulty of the journey and issue the Jiaoyin. Merchants could then use the Jiaoyin to collect currency, tea, salt, incense medicine, Alum, etc., at the capital or designated locations, leading to various forms such as currency Jiaoyin, tea Jiaoyin, salt Jiaoyin, incense medicine Jiaoyin, and Alum Jiaoyin. The printing and collection of Jiaoyin were managed by the Taifu Temple. However, powerful and influential merchants often colluded with corrupt officials to manipulate the appraisal value of goods for substantial profits, thereby damaging state taxation. Merchants living in border areas, unable to travel far to collect goods, would sell their Jiaoyin at low prices to "Jiaoyin shops" operated by wealthy merchants, suffering severe exploitation.

Essentially, Jiaoyin functioned similarly to modern "delivery orders," with the core principle being "delivery upon presenting the Jiaoyin, recognizing the Jiaoyin rather than the person." "Jiaoyin shops" functionally resembled modern stock exchanges, profiting from the price difference in buying and selling Jiaoyin. The commodities traded here included salt Jiaoyin, tea Jiaoyin, Alum Jiaoyin, incense medicine Jiaoyin, and rhino and elephant Jiaoyin, among other securities. In the Song Dynasty, some financially robust "financial tycoons" even manipulated the market with their substantial capital, depressing the market price of Jiaoyin to buy them at low prices.

Figure 36: Jiao Yin and the Jiao Yin Shops in Ancient Paintings
Source: Compiled by the author

3.1.3 Ticket System

Since 1728, the Qing Dynasty government abandoned the commodity monopoly policy that had been followed since the Tang and Song dynasties, instead adopting the "Ticket System." Under this framework, traders or producers were required to obtain a specific certificate from the authorities—the tickets, and pay the corresponding taxes to legally engage in the production, transportation, or sale of goods, without setting a capital threshold. The Ticket System, as an official regulatory measure, aimed to control the production and circulation of certain key or designated commodities. Under the influence of this policy, the Alum mining industry gained greater production and operational freedom, sparking unprecedented production enthusiasm, especially for the Lujiang Alum Mine, which entered a new stage of development.

This system played a significant role in ensuring government tax revenue and market stability. However, it also potentially fostered collusion and corrupt practices between officials and businessmen.

3.1.4 Proagricultural and Anticommerce

In ancient China, the "emphasizing agriculture over commerce" policy constituted the fundamental economic principle of feudal dynasties. This guideline underscored the central role of agriculture, positing it as the foundation of the state, while concurrently imposing restrictions on the development of industry and commerce. The policy framework of "emphasizing agriculture over commerce" and "agriculture as the foundation, commerce as the secondary" exerted a profound restraining influence on the historical trajectory of China.

During the Ming and Qing dynasties, despite the nascent signs of capitalism in China and the trend towards large-scale Alum mining in the Fanshan region, industrial and commercial entrepreneurs repeatedly proposed to the Qing government to increase investment in Fanshan, expand operational scale, and enhance Alum production. However, the steadfast adherence to the "emphasizing agriculture over commerce" economic policy curtailed the growth of capitalist sprouts within the Alum mining industry, hindering the transition from individual operations to a capitalist industrial phase.

Unlike the developmental path of Western societies, China's policy of emphasizing agriculture over commerce was rooted in its economic foundation. Ancient China was an agrarian country based on self-sufficiency and kinship relations, with its social structure reliant on agricultural civilization and organized around clan-based kinship relations. Consequently, the existence and development of commodity exchange and commercial activities were greatly constrained, with commercial trade activities necessarily subordinate to the natural economic system.

3.1.5 Labor Unions

The genesis of Labor Unions can be traced back to the Western Industrial Revolution, during which an increasing number of farmers abandoned their agricultural livelihoods to work in urban factories for employers. These workers faced low wages and extremely poor working conditions. In such circumstances, individual employees were powerless against formidable employers, leading to the emergence of

labor strikes and, subsequently, the formation of Labor Unions. In China, Labor Unions are mass organizations of the working class voluntarily formed under the leadership of the Chinese Communist Party (CCP), serving as a bridge and bond between the CCP and the working masses.

Under the leadership of the CCP, the establishment of the Fanshan labor union played a significant role in the construction efforts of the Alum Mine. From the winter of 1949 to the end of 1950, a registration of laborers was conducted, labor-capital boundaries were delineated, and the Fanshan labor union was established, with 499 workers joining the organization. The party organization, adhering to the CCP's policy of "unity and struggle, seeking unity through struggle," led the labor union in conducting reasonable, restrained, and beneficial legal struggles against capitalists, safeguarding the legitimate rights and interests of workers. Faced with the power of the nascent regime and the united force of workers, capitalists were compelled to make concessions. In 1950, a factory management committee was established. Comrades such as Ma Yulong repeatedly worked on the committee, explaining policies, leading to the agreement by capitalists to pay wages on time monthly and cover medical expenses for injured workers. In 1957, Huang Guoyuan and Shen Changjiang were recognized as active contributors to the Anhui Province labor union work.

Subsequently, the mine established a labor bureau focusing on safe production and mobilized capitalists to acquire a batch of equipment and materials for safe production. A labor-capital consultation meeting was also established, solidifying some of the workers' welfare benefits in the form of contracts and urging the improvement of their working conditions. Through these efforts, the party organization and the mine bureau enhanced the political consciousness of the workers, who demonstrated tremendous enthusiasm, propelling rapid production development.

3.1.6 Administrative Management System

The "Five Systems," comprising five management regimes, namely the Mine Manager Responsibility System, Cadre Appointment System, Economic Contracting System, Wage Floating System, and Democratic Management System, have been pivotal in the transformation of the Lujiang Alum Mine. Since the inception of reform and opening-up policies, this mine, emblematic of a new type of socialist enterprise, has embarked on profound reforms centered around enhancing corporate vitality. By

implementing the "Five Systems" reform, and cultivating a spirit of self-reliance, arduous entrepreneurship, unity, cooperation, and selfless dedication, the mine has successively completed the transformation of mining operations and the innovation of the Alum production system. It has constructed production auxiliary facilities and welfare facilities for employees, achieving a harmonization between mining extraction and Alum production capacities. Over an extended period, the Alum produced by the mine secured a one-third market share domestically, establishing it as a premier enterprise in Lujiang.

The Lujiang Alum Mine has prioritized the education of party members, cadres, and young workers as a focal point of its ideological and political work. The education of party members is chiefly achieved through the continuous strengthening of grassroots party organizations, integrating party member education into various party activities. Under the unified directives of the party committee, all party branches have established systems such as the "Political Work Routine Meeting System", "Ideological and Political Work Reporting System", "Party Member Education System", "Three Meetings and One Lesson System", "Political Theory Learning System", "Party Members' Mass Contact System", "Party Reporter System", and records like the "Party's Work Record Book", "Three Meetings and One Lesson Record Book", "Political Learning Record Book", and "Various Political Activities Registration Book". The reinforcement of foundational work and the implementation of various rules and regulations have revitalized and enriched the work of grassroots party organizations, ensuring strict organizational life training for party members and effective supervision by party organizations.

System Name	Starts	The Main Content and Implementation Effect of The System
Democratic Management System	1980	Establish the status of the working class, correctly handle the relationship between administrative leadership and the congress, attract workers to participate in democratic management and other aspects of continuous exploration and reform, the democratic management of enterprises has been gradually strengthened and improved, greatly promoting the development of enterprises.
Economic Contracting System	1982	Under the principle of responsibility, right, consistent, has implemented the "three packets a prize" and "wage production, benefit pay" responsibility system, all-in responsibility, hundreds of yuan output wage content, profits into wages and "four packages" production benefit pay form of responsibility system, factory, and mine term target as the main line, by the layers of workshop contract management index responsibility system, perfect contracting content, contracting way tend to be diverse, explore the new way

		of enterprise internal management.
Cadre Appointment System	1983	Adhering to the principle of "appointing people on merit, having both political integrity and ability", taking morality, ability, diligence and performance as the evaluation criteria, a number of young and middle-aged people with large and technical secondary school education and professional and technical titles to the ministry of Mining, employment and democratic election. The appointment system has broken the "life tenure system" of middle-level cadres, greatly improved the knowledge, age and professional structure of the cadre team, aroused the enthusiasm of cadres, and effectively promoted the implementation of the responsibility system of mine managers.
Mine Director Responsibility System	1985	In the five management systems of production, operation, infrastructure construction, scientific research and logistics, the mine manager is in the central position and is fully responsible for the production, operation and administrative management of the enterprise. The deputy mine manager and the chief engineer are responsible for each system, and the management is divided by division, power division and hierarchical management. From the mining department to the workshop and the team, the chief executive is in charge of the system, forming the framework of decision-making, command and management system centered on the mine manager.
Wage Floating System	1985	With the gradual implementation of the responsibility system of "two-level responsibility, separate accounting, self-calculated profit and loss, joint profit assessment, and cash in reward and punishment", the situation of "big pot meal" within enterprises began to change. The ministry of Mining and the independent accounting units implement the sale and settlement, and the wage floating method of the labor income and the labor results within the unit. Interests and benefits are closely linked, stimulate the initiative and creativity of the workers, and greatly enhance the vitality of the contracting unit.

Table 6: Lujiang Alum Mine Five Management Systems
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

3.1.7 Production Management System

In response to issues such as lax labor discipline and incomplete regulatory systems, the Lujiang Alum Mine undertook a comprehensive rectification approach. This initiative began with the establishment and improvement of regulatory systems, resulting in the formulation of 11 regulations including the "Mine Regulations and Laws," "Safety Operation Procedures," and "Several Provisions on Labor Discipline," cumulatively encompassing over 210,000 words. Adhering to the principle of prioritizing ideological education, in October 1982, the entire mine workforce was organized to undertake examinations on the "Mine Regulations and Laws" and the "National Staff and Workers' Code", and young workers were provided with discipline-focused education to strengthen their sense of discipline. Concurrently, meticulous ideological education efforts were carried out, and individuals who severely violated discipline and failed to reform despite repeated instruction were strictly dealt with according to the regulations, receiving either criticism and education or administrative sanctions based on the severity of their actions.

In rectifying labor discipline, the Alum Mine also emphasized a dual approach: firstly, integrating the rectification of labor discipline with the improvement of social security and the crackdown on criminal activities, collaborating with public security departments to apprehend a number of criminals. Employees involved in illegal and disciplinary violations, such as gambling, were sternly dealt with to uphold righteousness, combat malpractice, and maintain social order. Secondly, the effort to rectify labor discipline was combined with initiatives like the "Civilized Manners Month" and the "Revitalize China Reading Campaign" to positively educate employees and establish a mine spirit characterized by "civility, discipline, pragmatism, and progressiveness." The rectification of labor discipline essentially fostered a situation where regulations were followed and commands were executed across the mine, significantly improving both discipline and public security conditions, thereby creating favorable conditions for the smooth progression of enterprise production, operations, and various tasks.

Regulations such as the "Energy Management Rules", "Energy Consumption Rewards and Penalties Regulations", "Interim Regulations on Production Electricity Management", and "Detailed Rules for Management of Domestic Electricity Use" were formulated. Quota management was applied to coal, electricity, and oil, with production and domestic electricity use within the mine being measured separately and at different levels. Additionally, practices such as "Considerate electricity usage", "Bundled lighting and fees", and "Preferential electricity pricing" were abolished. Furthermore, the Lujiang Alum Mine persisted in seeking energy savings through technological upgrades, successively retrofitting a series of "large motors pulling small carts" and adopting various energy-saving technologies and equipment. These measures variably reduced energy consumption and saved costs.

3.2 Ancient books and cultural relics

Countless historical texts, documents, and materials related to the Fanshan Alum culture exist, mentioning Alum or the Lujiang Alum Mine, including "The Classic of Mountains and Seas," annotations on "The Classic of Mountains and Seas", "Shi Ya", "Physical Miscellany", "Comprehensive Geographical of the Yuanfeng", and "Lujiang County Annals". Additionally, there are books, poems, ballads, dialect folklore, and legendary stories written by the people of Fanshan themselves.

3.2.1 Classic of Mountains and Seas

The Classic of Mountains and Seas,a seminal work compiled during the period from the Paleolithic age to 221 BCE in pre-Qin China, is esteemed alongside "The Book of Changes" and "The Yellow Emperor's Classic of Internal Medicine" as one of the three great mystical texts of ancient times. Comprising eighteen volumes and approximately 31,000 characters, it is primarily divided into the "Classic of Mountains" and the "Classic of Seas", further segmented into four major sections. This mythological geographical document from ancient China amalgamates a vast array of geographical, biological, folkloric, and mythological narratives. Its significance in the annals of Chinese cultural history is profound, not only furnishing materials for the study of ancient geography but also offering invaluable insights into ancient religious beliefs, mythologies, ethnic migrations, and ancient biology.

Notably, "The Classic of Mountains and Seas" contains references to Alum stone, mentioning "Nie Stone" twice and "Stone Nie" three times, with "Nie Stone" later identified as Alum stone. Given the original text's enigmatic nature, filled with ancient mythologies and exotic geographical descriptions, it poses comprehension challenges for contemporary readers. Consequently, many scholars have annotated the text to facilitate understanding. Among them, Guo Pu, a renowned ancient Chinese literary figure and scholar born between 276 and 324 CE, provided annotations that not only elucidate difficult words and phrases but also enrich the text with historical and cultural context, greatly enhancing its readability and understanding. His contributions have significantly fostered the dissemination and scholarly examination of "The Classic of Mountains and Seas." In his annotations, Guo Pu elucidated the various regional terminologies for Alum stone across China.

3.2.2 Shi Ya

Zhang Hongzhao, a modern Chinese geologist, mineralogenist and paleontologist, whose book Shi Ya, a book on mineralogy, was first published in 1921, and was the first scientific and systematically introduced the characteristics, formation and use of various minerals.

In the book, the division of "Stone Nie" and "Nie Stone" is more detailed, that coal stone is graphite, namely Stone Nie; and Nie Stone is the current inkstone or

Alum stone. Further proved the ancient book "The Classic of Mountains and Seas" recorded in the "Nie Stone" is "Alum stone".

3.2.3 Physical Miscellany

Physical Miscellany is an academic work of The Ming Dynasty scholar Fang Yizhi , also known as "Miscellany of Names and Things," is a compendium primarily focused on natural science. First completed in 1643, Fang Yizhi revised it during his exile in Lingnan. The twelve-volume work encompasses knowledge in physics, medicine, philosophy, and geography, offering substantial historical value.

Physical Miscellany documents the production of Alum through a smelting process. "Traveling approximately ten miles along the mudflats of the Yellow River leads to the Lujiang area in Anhui, known for its Alum production. Long-term smelting operations are conducted there, yet the factory workers are not afflicted with scabies. The Nie Stone powder, dispersed during the smelting process, sparkles brilliantly, resembling butterflies in its lightness and bright color, with a purity akin to crystal."

3.2.4 Comprehensive Geographical of the Yuanfeng

The "Comprehensive Geographical of the Yuanfeng" serves as a comprehensive geographical gazetteer centered on the territorial administrative regions during the Yuanfeng era of Emperor Shenzong of the Northern Song Dynasty. This work, collaboratively compiled by Wang Cun, Zeng Zhao, and Li Dechu during the Northern Song period, encompasses ten volumes and was completed in the year 1080. In 1985, the Zhonghua Book Company published this work. Despite its concise textual records, the content is rich and unique. Besides documenting the territorial administrative regions of that time, it also includes detailed records on the population and land tribute amounts, as well as the distribution of cities, towns, fortresses, camps, mountains, and rivers, making it an invaluable resource for the study of historical economic geography and historical physical geography.

Volume 5 of the "Comprehensive Geographical of the Yuanfeng" records that Lujiang County at the time comprised six towns: Jinniu, Qingye, Luochang, Wuting, Fanshan, and Shushan. Towns, before the mid-Tang period, were originally military strongholds but evolved into commercial centers with the development of the commodity economy. The main production area of Alum during the Song Dynasty

was located in the Da and Xiao Fanshan areas of present-day Lujiang County. With the development of the Alum mining industry, a new commercial town, Fanshan, emerged under Fanshan. However, the "Alum field" established by the Song government was located in Kunsan Town. This Alum field was not a productive workshop but an institution managed by the Song government for the monopoly of Alum – a dispatching institution for Alum refining services. Its functions included cracking down on smuggling in the production areas, central purchasing, and wholesale of products.

3.2.5 Alum Mine Spring and Autumn

The book "Alum Mine Spring and Autumn" was initiated in 1988 by the Anhui Economic Research Association, which established an editorial committee to begin collecting materials. The entire manuscript was consolidated by Lu Rong and Ding Xuedong, with Shen Kun, Wang Tainian, Wang Jifu, Feng Lisheng, and Su Yueping overseeing its final review. In January 1990, the manuscript was finalized and officially published by the Anhui People's Publishing House.

"Alum Mine Spring and Autumn" is rich in content. It features a historical review that vertically sketches the millennium development history of the Lujiang Alum industry. In a horizontal perspective, it summarizes the lessons learned from ten years of reform and development of the Lujiang Alum Mines. The appendix includes a collection of directories, introductions, tables, maps, and poetry and prose celebrating the Alum Mines, all of which hold significant informational value.

3.2.6 The Lujiang County Annals

Lujiang County Annals, Local Chronicles series of Anhui Province, edited by Lujiang County Local Chronicles Compilation Committee, published by Social Sciences Academic Press, published in May 1993.

The book adopts the chapter style, which describes the history and current situation of Lujiang's economy, politics and culture, and systematically reflects the appearance of Lujiang. Fanshan As an important town in Lujiang County since ancient times, Lujiang County Annals is also an important information to understand the development process of Fanshan industrial heritage.

3.2.7 Alum Mine News

In 1984, the Lujiang Alum Mine launched its publication, which was renamed "Alum Mine News" in 1888. The Lujiang Alum Mine extensively utilized promotional tools such as the "Alum Mine News," broadcasts, news showcases, and bulletin boards to publicly commend various advanced individuals and virtuous deeds, thereby providing employees with role models and clear objectives. This approach emerged as an effective educational method. It ignited a sense of honor among the workforce, further cultivating a positive ethos within the enterprise characterized by the pursuit of excellence and the aspiration to emulate advanced examples.

3.2.8 Poetry, Ballads

Local people use the poem "Fanshan thousands of Alum field" to describe their hometown of the ancient charm of Alum culture.

Poetry and ballads play a vital role in the cultural and emotional expression of Fanshan people. They not only have a profound social and psychological impact, but also are closely linked with the specific aesthetic landscape of Alum Mine, showing a unique cultural symbolic significance. Poetry, with the help of its refined wording and profound symbol, touches people's hearts, causes deep thinking, provides a kind of aesthetic enjoyment, at the same time, it also becomes a bridge between individual emotions and collective memory, and can pass through time and space the people's cognition of the aesthetic value of Alum Mine and human wisdom. Especially when the poem depicts the specific cultural landscape such as Alum Mine, it can deepen the understanding and experience of the cultural aesthetics of the region. Ballad, as a more plain and oral form of literature, through its direct and concise way, reflects the social life and public mood, especially Alum people for Alum emotional connection, shows the strong life atmosphere and extensive folk foundation, facilitate, so in social mobilization, cultural heritage inheritance, education enlightenment, etc., play a unique role. Through ballads, Lujiang Alum Mine stories and aesthetic values have been widely spread in the production of local space, and have become an important carrier of cultural identity and communication. Whether poems or ballads, they all strengthen the emotional connection between people, promote cultural exchange and mutual learning, and bring unparalleled richness and depth to the spiritual world of Fanshan people and even human beings. Lujiang Alum Mine Poetry, songs, including

the qing daoguang 15 years for jiang "Journey to Fanshan","A Poem on the Alum Mine", "The Calcining Kiln", "Night at the Alum Mine", "The Crystallization Pond", "Alum" by Wang Jifu, "Song of the Alum Mine Workers" by Zhang Zhenjian, "Four-Character Classic on Alum Production" by Yang Xinlin, "Phoenix in the Fire" by Xu Zhisheng, "How This Jade is Pure and Ice-Clear" by Shi Xianming, along with anonymous works such as "The Life and Death Stakes of the Big Screen Wall," "Miners' Ballad," "Odes" and others.

In 1964, in view of the Alum Mine production workers culture degree is low, for the concept of standardized production is very vague, in the mine GanJianZhong, inspired by the supply and marketing department deputy section chief Yang Xinlin in popular simple words written four characters, copy posted in each position, as a production workers operation specification, and also into the worker night school books, for worker literacy culture. Because it is easy to understand and easy to remember, for the standardized operation of the staff, it has played a certain role.

Since the reform and opening up, Lujiang Alum Mine began to attach importance to the construction of corporate culture. Lujiang Alum Mine The association has improved the working system, regularly held annual meetings, published papers and commend the "five excellent", "five excellent" winners can get the opportunity to study and investigate inside and outside the province. During the past five years, the Mining Political Research Association and its members have published more than 40 papers in relevant conferences, newspapers and magazines of the ministry, provinces and prefectures, among which more than 10 of them have won the award of outstanding papers on ideological and political work of the mining Bureau of Chemical Industry, provincial petrochemical system and Chaohu region.

In 1989, the company gave up the intention to buy a car and used the funds for the maintenance workers' club to improve the cultural and recreational facilities. This has been well received by the workers and the masses. In terms of cultural and entertainment facilities, the senior cadres activity room, recreation room, library and reading room have been opened successively, and the new lighting courts have been built to facilitate the entertainment of the workers. The TV differential transfer station was built to improve the TV reception effect. Film projectors and TV cameras have been added, and the number of films and videos has been added to meet the needs of film and television lovers. The club has been overhauled to make it a multi-functional

place for gathering, gathering, performance and screening. The full play of the enthusiasm, wisdom and creativity of the cadres and workers of the whole mine will be the source of living water for enterprises to obtain infinite vitality.

3.2.9 Dialect

Dialect vocabulary, also known as regional language, is an idiom or expression form formed by the long-term life of people in a specific region, and it does not constitute an alternative language system independent of the official national language. The generation of Chinese dialect vocabulary is influenced by many factors, including social, historical and geographical aspects, which reflect the cultural traditions, customs, historical context and life style of a specific region.

Especially in the mining community, its dialect vocabulary is closely linked with the local local mining history and living habits, carries and conveys rich local culture and historical information, and is the key elements of the cultural characteristics and traditional wisdom of the region. These Alum-related terms also serve as communication links between community members and play a positive role in enhancing the cohesion and belonging of the community.

Dialectism	The Meaning of the Representative
Taipa	Mining stone mine hole, also known as mine, ore hole.
Net Film	Ore with high Alum rate and good grade.
Green Film	Cyan or brown, with poor stone quality.
Open One's Mouth	There are gaps between the top of the mine hole and the wall stone, pumice, talc, etc., for safety to peel it off, called pick opening.
Thick Stick	A wooden stick used for lifting the stone.
A Pestle	There are several miles of mountain road from the mining site to the kiln shed, the ore carried by the two people weighs about 600-800 catty, or even more than 1000 catty, during the rest, with the "ya" shaped stick to support the stick, the stick to rest called pestle. As the saying goes: "hit a pestle, change a shoulder"
The Soil Pocket	A bamboo woven basket used for picking small ores.
Ma Grasp Son	Two people in the quarry, the ore into about 1 meter high stone pile (for balance with small stone support), the stone pile weighs about 600-800 catty (old scale), with the shape of a hand, the assembled stone pocket, the rope is called hemp grip.
Small Brake Stone	Base stone for balance, between the two stone with stone brake tight, the stone is not loose.
End Grass	Selling firewood in the front row of the kiln growth team, to save time, experienced people do not need scales, two hands to hold up the firewood pole, put down the weight, the top and bottom is not a few pounds.
The Gun	Under the kiln shed, a cylindrical pit with a height and a diameter of about 2 to 3 meters is

	built with refractory stone. The pit contains about 4000 catty of ore, large stones and small stones, and layers of overhead to make it fire.
Dead Stone and Raw Stone	The guns are roasted with fire to master a certain amount of heat. The ore burned after the fire is called dry stone, and the ore burned after the fire is called raw stone.
Mature Stone and Alum Mother	The roasted ore is a successful product, called cooked stone or Alum mother.
The Ballast	After the baked ore comes out of the kiln, it is broken into small stones with hammers. Small stones in the ballast hall room (fermentation room) after many times of water fermentation, fermentation and then dug up the loose products called "ballast".
Rice Ballast	The baked ore is crushed with a hammer, picked up the stone of uniform size, the remaining small gravel, called rice ballast.
Balloff Ash	The ash under the sieve is ash.
Dry and Dry	Fermented good, can dissolve and water of the ballast is called ripe dry, not fermented ballast is raw dry.
Large Nuclear and Small Nuclear	Loose ballast by Alum pot high temperature cooking, with large wood lift repeatedly blanching, most of the ballast dissolved in the water, leaving unbroken ballast, large called large core, small called small core.
Alum (Fried Alum)	Put the ballast into the big iron pot, with boiling water, before liberation, workers wear straw sandals (after liberation wear rubber boots) step on one, 20 pounds of heavy wood lift, repeatedly blanching ballast, dissolved Alum water into the Alum tank precipitation. In 1953, it was changed to crystal tank precipitation Alum. From the ballast into the pot frying, repeatedly blanching, to the process of dissolving Alum water is called "boil Alum" (fry Alum).
Red Root and Half Face	Lujiang Alum Mine The production of the big pearl white and transparent, if there is a red block called "red root", if one side is white, the other color is not good or impurities called "half face". Before entering the warehouse, remove the "red root" and "half face".
Strike Sparks from a Flint	"Pao zi" and fried Alum iron pot under the connection, in the pot door (guomen stone also called refractory stone) firewood (Lujiang Alum Mine to burn coal). Experienced workers according to the degree of ballast boil Alum water, the temperature of the water, the time into the pot and the concentration of the temperature, called the ceasefire or fire process is called fire.
Pick	To assist the kiln households to master the daily production, in the Alum smelting process is a generalist, equivalent to the foreman.
Standing Pot	Standing by the Alum pot, the man who mastered the heat.
Home Fire	Fanshan Quarrying for the hammer, steel drill and other appliances collectively.
Balced Foot Basket	Small bamboo baskets used for washing Alum sand and small cores.
Stone Bite	A witty statement that the workers were bruised or smashed by stones during the quarrying process.
Enthalpy People	Workers in order to avoid scald, the boiling water into enthalpy water, the boiling water hot people said boiling water enthalpy people.
Diamond Angle	Dig Alum ballast with about 50 cm long pointed iron equipment.
Olecranon	Shaped like an eagle mouth iron utensils, used for digging, stone and so on.
Buy Grass Without Scales	It is said that in the early Tang Dynasty, the Chai brothers fled from the south of the Yangtze River. They built grass in the mountain nest and cut firewood. All the year round, they gathered a lot of firewood. When someone came to buy firewood, the Chai brothers never used scales to measure, or with their hands, leaving the saying "Fanshan buy grass without scales" was used until the early days of the founding of the People's Republic of China.

Table 7: Lujiang Alum Mine Dialect Vocabulary
Source: Compiled by the Author

3.2.10 Legend

The legend stories in the cultural landscape of Alum industrial heritage place are not only the precipitation of history and culture, but also an important part of the local cultural identity and social memory. These legends revolve around the mining and processing of Alum stone and the related characters and events, forming unique cultural symbols and regional symbols through oral communication and literary records. They not only provide a window for future generations to understand the ancient Alum industrial production technology and social life, but also reflect the wisdom and efforts of human beings in the process of interaction, adaptation and transformation with the natural environment. More importantly, these legends carry the common memory of local people, enhance the cohesion and identity of local communities, and are of important cultural significance for maintaining cultural diversity, inheriting intangible cultural heritage and promoting the development of local cultural tourism.

Lujiang Alum Mine The legend stories are rich and colorful, there are called the legend, the legend of the skylight rock mirror and so on.

Legend Story Name	Primary Coverage
Sky light rock mirror	Tiangrock mirror is located in Fanshan new village TiangMountain, the top of the stone about 2 meters long, about 70 centimeters wide, stone facing south, bright crystal color, according to the legend can be dozens of miles outside the village, trees, people.
Mother's nunnery	Mother nunnery is located near the former Lujiang Alum Mine fried oil depot, in 1927 by Lu Zhang financing construction, a total of 12 temples into two rooms, the Buddha has been destroyed. There is a cave near the nunnery, spring water, legend for the Huanglong out of the cave.
Dongshanling	Dongshan Mountain is also known as the loss of Cao Ling. According to the legend that Cao Cao after the Red Cliff defeat, here, the mount lost surprise, rolled down the hillside, and the ministry lost contact, shouted "heaven destroyed me Cao Mou also."When he was anxious, six gods, Zhang Liao arrived, looking at the hundreds of soldiers in distress, to stabilize the army, he looked up to the sky and laughed: "the day does not destroy my Cao Mou also."Later, this ridge was named "lost Cao Ling", the river under the ridge was "lost Cao River", and the next story: the Red Cliff was burned, the army defeated like a mountain, the morale of the army, the Dongling lost Cao.
Ophiurid	It is said that Dongshan is snake mountain, the head in the royal hill of Zhongshan Community, snake tail has been built in xinshi Street in 1952.
Buy grass without scales	It is said that in the early Tang Dynasty, the Chai brothers fled from the south of the Yangtze River. They built grass in the mountain nest and cut firewood. All the year round, they gathered a lot of firewood. When someone came to buy firewood, the Chai brothers never used scales to measure, or with their hands, leaving the saying "Fanshan buy grass without scales" was used until the early days of the founding of the People's Republic of China.

Table 8: Some Legendary Stories of the Lujiang Alum Mine

Source: Compiled by the Author

3.3 Technology innovation

The traditional Alum production process, from the simple manual small-scale smelting in the Tang Dynasty, to the Song Dynasty into the workshop production, and then to today's modern enterprise semi-mechanized production, through more than one thousand years of inheritance, is still the main process of Alum smelting. Fanshan The evolution of Alum smelting technology runs through a vast historical era, highlighting the creative wisdom and diligence of local craftsmen. With the continuous progress of technology, these methods have significantly improved the production efficiency and production capacity, reflecting the Fanshan people's unremitting pursuit of technological innovation and resource optimization.

Since the third Plenary Session of the 11th CPC Central Committee, especially in recent years, the reform has brought vigorous vitality to Lujiang Alum Mine. The enterprise establishes the guiding ideology of "taking improving economic benefits as the center" for the production and operation, Implementing the development policy of "equal emphasis on the transformation of old mines and the development of new products and technologies, and the development of natural resources and intellectual resources", On the one hand, the implementation of the "five systems" as the central content of the enterprise reform, Improve the operation and management, Strengthening ideological and political work, Stimulate the enthusiasm of the staff, creative play; On the other hand, to participate in the market competition, Relying on scientific and technological progress, Carry out comprehensive utilization, Vigorously develop new products, Initially formed the "production generation, trial production generation, preparation generation" product development pattern, Broaden the business field, The product self-marketing network has been established. These measures have injected new vitality into enterprises, improved economic benefits, and greatly enhanced their resilience and development sustainability.

Fanshan Production of Alum, crystal clear, large block, good quality, renowned in the market, marketing at home and abroad. In November 2007, it was listed as the first batch of county-level intangible cultural heritage list in Lujiang County, in December 2007, it was included in the first batch of municipal intangible cultural heritage list in Chaohu City, and in December 2008, it was included in the second batch of provincial intangible cultural heritage list in Anhui Province.

3.2.1 Mining Process

The mining and refining process determines the efficiency and production of Alum production, and generally realizes the transformation from extensive to intensive production mode. Taking the production process of Potassium Alum as an example, it has realized four steps from calcination, weathering, dissolution and crystallization of traditional local Alum production, to seven steps after technical innovation, including mining, roasting, weathering, leaching, settlement, heating and crystallization.

Figure 37: The Ancients Drew the Process Map of the Production of Alum
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

Step	Name	Job Requirement
Step 1	Mining	Mining by hammer to drill drilling, transportation by manpower to mining car.
Step 2	Calcination	The insoluble Aluminum potassium sulfate in Alum stone is turned into soluble Potassium Aluminum potassium sulfate, which is commonly known as mother and son.
Step 3	Morals And Manners	In the surface of the cooked stone constantly add water, so that its own precipitate out of fine Aluminum Sulfate potassium grain, at the same time to generate crystals, so that the cooked stone expansion and loose, weathered cooked stone is commonly known as ballast.
Step 4	Leaching	In the weathered cooked stone, Potassium Aluminum Sulfate is mixed with a large amount of silicon and impurities, and the soluble Potassium Aluminum Sulfate is separated from silicon and impurities with water to produce a turbid Potassium Aluminum Sulfate solution
Step 5	Subside	Let the turbid Aluminum potassium sulfate solution settle freely, and most of the mud and sand are removed by gravity.
Step 6	Heat	The settled Potassium Aluminum Sulfate solution is heated to about 100℃, which should not be lower than 90℃ into the crystallization tank. At the same time, the concentration of the solution can be adjusted when heating (the concentration requirement is generally 30~32 waves in summer and 28~30 in winter) to achieve the purpose of high yield and high quality.
Step 7	Crystallize	After the solution was placed into the crystallization tank, a 5-10 cm thick mother liquor was added on top as the covering water. In the first few days, the heat exchange between the upper and lower liquids in the crystallization pool, the marl in the solution began to settle to the bottom of the pool, and the Alum crystals are formed at the edge of the pool wall. The crystallization cycle is generally 20-24 days,

and the mother liquor can be shoveled Alum.

Table 9: Production Process of Alum After Technological Innovation
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

3.3.2 Alum mining method

In the production practice of thousands of years, the ore mining method developed from swimming to find stone, to burning ridge method, and then to gunpowder blasting method and current explosive blasting method, and realized the transformation of ancient and modern manual operation to mechanized production after 1949.

In the Song Dynasty, the mining methods were primitive, and the workers operated them alone, hammering the iron chisel, digging small ditches on the ore, and then using two or three wedges to open the ore, so that each person could only mine 100 to 200 catty of stone per day. The process of Alum smelting is generally complete. The procedure is: pack 30,000 or 40 catty of ores into small kilns, burn with firewood for two days and nights, and then pile the roasted ore into a straw shed, covering reed grass, and pour water every few days. After a few months, the ore is weathered and then tortured with a large iron pot. At that time, with a single pot frying, each pot of Alum more than 1000 catty, the quality is not too high, containing a small amount of slag, slightly red color.

In the Ming Dynasty, a steel chisel was still cut into the ore, and then it used three or five hundred wedges, each weighing seven or eight catty, to open up the huge ore. Each ke uses more than 600 wedges. The capacity of the kiln has also increased. Each kiln is loaded with more than 90,000 catty of ore, burning for 7 days and 7 nights, using more than 50,000 catty of grass, and requiring 8 people to operate in shifts. After burning, the ore will be broken with a hammer, still stacked in the hut, eight months of water seven, eight times, and then with three iron pot at the same time boil about 10 hours, and then the Alum juice spoon out of the amplification tank precipitation crystallization, 5 days from Alum, each Alum about 2000 catty. With the bamboo basket with the mark of the manufacturer with Alum, each basket 150 catty, the origin of silver about 5 money.

Times	Method	Step
Original	Swimming and rock-finding mining method	Look for ore in the mountain gullies, observe the grain and spots of the ore, knock open with a hammer, judge and select Alum stone based on experience, build a stove on the spot, the ore is dug, and move to elsewhere.

Early stage	"Burning the fire dragon" Mining method	Step 1: build by laying bricks or stones stove to fire: use the principle of thermal expansion and cold contraction, first observe the lines of mineral rock, select the appropriate position, build by laying bricks or stones into a small fire stove, called "fire dragon stove", in the stove firewood fire. Fire into the stone, can hear the sound of crack, more burning, crack sound is stronger, smell like the sound of firecrackers. Step 2: observe the fire view rock: with the change of stone crack sound, stone chips are falling, from less to more, miners according to these phenomena, estimate the degree of fire and ore rock cracks, control the strength of fire and the time of the fire. Sometimes, the location of the "fire dragon stove", was burned into a diameter of about a dent, called the "fire dragon scar". Step 3: splash water crack stone: "fire dragon stove" burn about 4 to 5 hours, suddenly pour cold water on the stone, the rock suddenly cold contraction, produce cracks. Step 4: chisel rock solution stone: with shovel, chisel, hammer and other tools, the stone crack into the size of Alum requirements. Step 5: Pick sale: transport the ore to the Alum smelting factory.
Modern times	Manual drilling method, gunpowder blasting mining method	Step 1: chisel hole: chisel hole is the key procedure of gunpowder blasting. Step 2: gunpowder: after the eye, in the eye depth 0.2 meters of the eye gunpowder, each eye can hold 375 grams of gunpowder. Step 3: The guns: the ignition is extremely dangerous, and the guns are mostly experts.
Modern times	Comprehensive mining method of shallow hole falling ore	Step 1: machine chisel: two miners coordinate the division of labor and coordination, using the wind air leg drill drill. Step 2: modern blasting: use explosives, detonators, fuse and other modern appliances to carry out blasting. Step 3: Modern transportation: the ore is transported to the Alum smelting factory by a mining truck or a heavy truck.

Table 10: Methods of Alum Stone Mining Through the Ages
Source: Compiled by the Author

3.3.2 Alum refining process

In the historical process of Fanshan industrial development, many Alum smelting technologies have been born successively, including the use of late pot continuous method, steamed bread inverted flame kiln, earth cannon, bile kiln, large vertical density, kiln and mixing kiln and other different facilities for Alum smelting production. The differences of these Alum smelting methods are mainly reflected in the evolution of fuel selection, process flow and equipment structure. For example, in the early days, it mainly relied on materials and grass, and turned to modern coal as fuel.

Name	Alum Refining Method
Late pot continuous	In the early days, Alum, the ore was piled into a "small cannon" and used weeds as fuel for roasting. After the ore is stacked into the stove, it is used as fuel for roasting. An Alum in five days is called a night pot. After the kiln transformation, two POTS are put in front, and the fire channel is connected. At the same time, the late pot production method with one stone reduces the consumption of firewood, shortens the Alum cycle and improves the productivity.
Steamed bread	Use wood and firewood as fuel, make the ore calcined at about 700°C, make it remove

inverted flame kiln	crystalline water, crush by natural weathering, soak with water, and make Alum after concentrated crystallization.
The earth cannon	After liberation, coal was replaced with grass for roasting. Because the calcined Alum stone stove is shaped like an earth cannon, commonly known as "earth cannon". This roasting method is simple and rapid.
Brave kiln	After public-private partnership, it was improved into a kiln, which has high energy consumption and high rate of ore production due to uneven firepower. From the point of view of resources, energy consumption, not economic enough. However, the kilns adapt to the needs of expanding the scale of ore roasting after public-private partnership.
Big vertical kiln	In 1964, in order to actively promote technological progress, Lujiang Alum Mine began to build a large vertical kiln. The kiln is a cylindrical vertical structure with an average height of 30m, a height of 12m and a volume of 90m ^{8}. A large vertical kiln produces 42 tons of mature ore per day. The construction of a large vertical kiln marks a major breakthrough in ore roasting technology.
Kiln son	Kiln is a small kind of small kiln, using the Alum core in the waste Alum slag and small ore to calcine the Alum. The kiln is about 2.5 meters wide, square, 1.8 meters high, the top is open, the bottom is equipped with iron grate.
Mixed material kiln	The mixing kiln takes bituminous coal as fuel, and the process calcination equipment is divided into two parts. The lower part is the fuel room with Alum stone and fuel, and the upper part is the dissolution pool to dissolve the Alum sand, which reduces the production cost and significantly improves the recovery rate of Alum.

Table 11: Equipment and Methods for Alum Production Through the Ages
Source: Compiled by the Author

3.3.2 Fine Powder Acid Leaching Formulation Process

The Fine Powder Acid Leaching Formulation Process represents a significant revolution in the history of Alum production, poised to serve as a pivotal turning point in the economic development of the Lujiang Alum Mine. This technique boasts a production input-output ratio several times greater than that of the traditional "water leaching" method. Firstly, it enhances resource utilization efficiency, with ore consumption falling to less than one-sixth of that required by older techniques, and allows for the utilization of both crushed and powdered ores, thereby extending the service life of the mines by several folds. Secondly, it substantially reduces the production cycle to merely a quarter of what was previously required, under 30 days. This reduction, by eliminating the need for the weathering period of calcined stones, significantly decreases capital occupation in products and accelerates capital turnover. Thirdly, it increases the degree of mechanization in production, improves working conditions, lowers labor intensity, and reduces safety hazards associated with production. Fourthly, it effectively addresses the pollution caused by the incineration of waste slag, transforming waste into resources and yielding notable environmental benefits. Lastly, it enhances economic efficiency, with product costs significantly lower than those of traditional methods.

3.3.2 Steam Roasting Alum Spiral Extractor Immersion Process

During the production of Alum in Fanshan, the leaching process occupies a crucial fourth step, and the optimization and improvement of its techniques are of significant importance. Specifically, the leaching technology has evolved from primitive manual operations to Steam Frying Alum Rotary Kiln Slag Leaching Operation Process, and further progressed to the technological advancement of steam roasting Alum spiral extractor immersion process.

Figure 38: Traditional Manual Extraction Methods
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

In the traditional manual leaching process, equipment used to produce Alum includes five cast iron pots with a capacity of approximately 1.5 cubic meters each, placed flat with a combustion chamber below for direct heating. Adjacent to these pots are six swing tanks with a capacity of 0.2 cubic meters each, used for storing Alum solution and washing sand cores. Workers add water to the pots and heat it to boiling, then continuously add weathered Alum stones into the pots. During this process, workers need to constantly stir the materials in the pots with wooden tools and remove ash and sand cores for washing in the swing tanks. When the solution in the pot reaches a concentration of about 40 degrees Baume, washing liquid is added to reduce the concentration to approximately 30 degrees. Subsequently, the temperature is raised to about 90°C, and the Alum solution filtered from sand particles is transferred to a crystallization tank. After precipitation, a clear and transparent Alum product is obtained. In this manual production process, the wooden tools used by

workers weigh approximately 15 kilograms after soaking in water, requiring continuous stirring and resulting in significant labor intensity. Additionally, workers have to work in a high-temperature and high-humidity environment, with sweat pouring down like rain in summer, only using a piece of cloth wrapped around their waist. In winter, due to the corrosive effects of Alum solution and steam, workers can only wear thin cotton vests and shorts. Careless operation may lead to skin burns from the scalding Alum solution.

Figure 39: Steam Frying Alum Rotary Kiln Slag Leaching Operation Process
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

Since 1965, the people of Fanshan have made significant efforts in technological reform, conducting in-depth analysis and multiple rounds of experimental research to address issues in the traditional leaching process. They have finally made a groundbreaking advancement with the Steam Roasting Alum Spiral Extractor Immersion Process, significantly reducing the labor intensity for workers and increasing labor productivity by 34.6%. Moreover, coal consumption has decreased by 10%, leading to a 2 to 4 percentage point reduction in production costs. Simultaneously, the quality of Alum has been consistently guaranteed. The equipment used in this process is simple and easy to operate, with significant improvements in processing, manufacturing, and maintenance convenience. The equipment's small footprint facilitates centralized management, aligning with the requirements of large-scale production. These breakthroughs in technology and management signify that Fanshan has achieved a semi-mechanized level in the overall Alum leaching process.

Figure 40: Steam Roasting Alum Spiral Extractor Immersion Process

Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

3.4 Product innovation

Alum produces many products and is also used as a handicraft.

3.4.1 Alum products

The Lujiang Alum Mine produces Potassium Alum, Ammonium Alum, Potassium Sulfate, Pulfuric Acid, PolyAluminum Sulfate, PolyAluminum Chloride, Sodium Hydroxide, Aluminum Oxide, High-Purity Aluminum Oxide, High-Purity Ammonium Alum, Potassium-Nitrogen Compound Fertilizer, Expanded cement, Alum stone concrete expansion agent, Expansion fracturing agent, Composite early-strength water reducer, Cement admixtures, and other products.

In 1984 and 1985, Lujiang Alum Mine special grade Potassium Alum won the title of "quality product" of Anhui Province and the Ministry of Chemical Industry. In 1985, super Ammonium Alum was rated as "quality product" in Anhui Province. In the food hygiene inspection organized by ten ministries and commissions, including the Ministry of Health and the Ministry of Commerce, Lujiang Alum Mine was rated as the advanced unit in implementing the "Food Hygiene Law", and Ammonium Alum won the additive certificate of "food hygiene and trustworthy". In 1988, Ammonium Alum, Aluminum Sulfate, and fast coagulant project was rated as the national excellent comprehensive utilization project of chemical environmental protection. QC team of chief engineer office was awarded advanced QC group of Chaohu area and won the second prize of provincial Petrochemical Department. In

May 1989, the mine safety QC group and the Aluminum Sulfate quality standard QC group won the third prize of the ninth national chemical quality management group. At the end of 1989, after the provincial petrochemical department, Chaohu administrative planning and economic commission review and acceptance, the overall quality management of Alum Mineral products standard, 82.2 points, acceptance qualified.

Product Name	Development Time	The Main Role
Dehydrated Alum	1956	For use in drugs, fermentation powder, etc.
Potash Alum First Class	1965	It is used for water purification, papermaking, medicine, pigment, paint, paint, paint, lake, printing and dyeing, paint, leather, fiberboard processing, rubber foam, film film, food processing, aquatic curing, goods anticorrosion, animal disease treatment and so on.
Aluminium Ammonium Sulfate	1965	ditto
Sulphuric Acid	1977	Used in fertilizer, medicine, explosives, pigments, detergent, battery and other manufacturing, also widely used in the oil purification, metal smelting and printing and dyeing industries. It is commonly used as chemical reagent and can be used as dehydrating agent and sulfonation agent in organic synthesis.
Alunite	1977	It is used in the production of Potassium Alum, Ammonium Alum, Aluminum Sulfate, potassium sulfate, Aluminum hydroxide, potassium nitrogen fertilizer and other chemical products and fast coagulant, early strong thickening agent, cement expansion agent and other building materials products.
Aluminium Sulfate	1986	For water purification, paper making, etc.
Flash-Setting Agent	1986	Can make the concrete condense and harden within a few minutes after the injection. It has the advantages of non-toxic, non-corrosive, non-irritant, strong bonding force, small rebound rate, primary spray layer thickness, and is widely used in underground engineering such as mines, tunnels, tunnels and tunnels.
Early Strong Dense Agent	1986	It can improve the early strength of concrete, increase the impermeability, and have the compaction effect.

Table 12: Lujiang Alum Mine's Research and Development of Alum Products
Source: Compiled by the Author

Extractive	Use
Glazier's Salt	It is the basic raw material of manufacturing potassium carbonate, potassium persulfate and other potassium salts, and is also used in glass, dyes, spices, medicine and other manufacturing.
Polymeric Aluminum	It is an efficient water purifier, with the functions of sterilization, decolorization, deodorization, removal of heavy metal ions and radioactive substances.

Potassium-Nitrogen Fertilizer	It can be used as base fertilizer and topdressing to improve the ability of drought, cold, disease and lodging, and promote the formation of crop starch and sugar. Especially to improve the yield of citrus, grape, tobacco, apple, flowers and trees and other cash crops have a special effect.
Alunite Expansive Cement	It has the function of compensating shrinkage, enhancing the late strength, and significantly improving the anti-crack and anti-seepage ability of concrete.
Calmogastrin	It is the high quality raw material of electrosmelting Aluminum, and can also make toothpaste friction agent, sol, etc.
Alum Sand	Can produce glass, steam ash sand brick, water glass, silica gel, light and high silicon refractory materials, cement filler, silicon Aluminum alloy and other products.
Alum Mud	It can be used in the production of Potassium Alum, Ammonium Alum, Aluminum Sulfate, polyAluminum Sulfate, anhydrous Alumina, polyAluminum chloride, cement accelerator, early strong density agent, early strong water reducer, self-stress cement, Aluminum Sulfate super early strength cement, steam brick, glazed brick, external wall tile, 811 paper packing, brown corundum and other products.

Table 13: Lujiang Alum Mine Waste Reuse Products
Source: Compiled by the Author

3.4.2 Alum crafts

Alum products not only play an important role in the field of water treatment and medicine, but also have become an important raw material for the creation of arts and crafts for hundreds of years because of their high transparency and good gloss, and continue to experience innovation and development in modern times. Alum handicrafts represent that local craftsmen use Alum stone resources to create objects with aesthetic value, which contains deep aesthetic emotion and ideal.Is the creative source of crafts production, or important raw materials, such as for painting, ceramics and other crafts production, itself can also be appreciated alone as bonsai, decorations, especially "Alum sculpture" is the most famous.

Alum Head refers to a specific painting technique in landscape painting, used to depict rocks on mountain tops. In the history of Chinese painting, according to Mi Fu's Painting History, painters in the Northern Song Dynasty used this technique to draw rocks, which were named because of their appearance like the crystallization on the top of Alum stone. It is not only the need of Dong Yuan, a painter in Song Dynasty, to solve the realistic problems facing the picture, but also an experimental innovation in landscape painting techniques. The successful application of Alum Head language in Dong Yuan's paintings also made this element one of the typical techniques to express the landscape of Jiangnan in the painting style called "Jiangnan Painting School" in later generations. With the development of the history of

landscape painting, its face was constantly changing, especially after the prosperity of literati painting (Pingge, 2023).

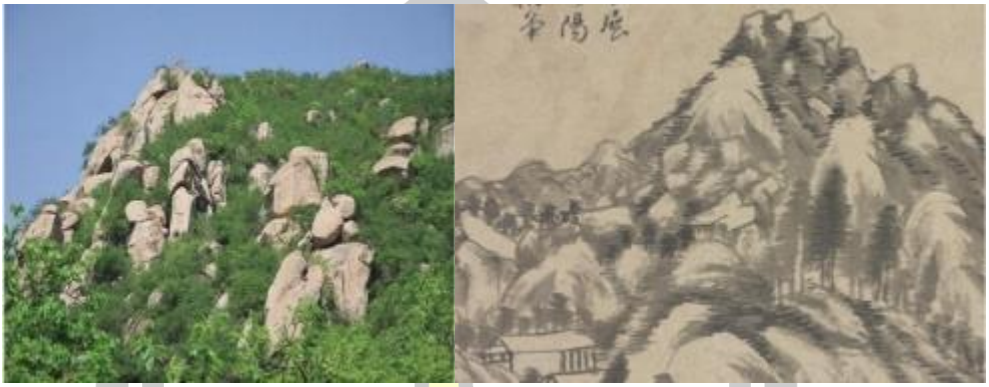


Figure 41:Reality and the expression of Alum Head in painting works
Source: (Pingge, 2023)

As a painting language, Alum Head can express the gravel on the top of the mountain, enrich the structure of the top of the mountain, and solve some drawbacks of the picture. As a kind of schema, it helps the painter to express the contents of the picture more completely. As a technique, it also provides a space for different painters to develop their own abilities in pen and ink.

Alum Red, low temperature glaze pigment, is a glaze color in the Jiajing period of the Ming Dynasty. It is named after the green Alum as raw material, its glaze is bright like bordeaux, deep purple, light such as coral Red, pure color is golden red, Alum Red main coloring agent is iron oxide, so it is also called iron red, it replaces the high temperature copper red glaze appeared in the Yuan Dynasty, it is not the use of blowing glaze, but the use of brush brush to brush the red glaze, although sometimes brush marks, But the color is warm and moist. Its painting patterns are relatively rich, coupled with the firing technology is relatively easy, it can be said that inexpensive, until today people love (Gongjian, 2019).

Figure 42: Porcelain made from Alum Red
Source: (Gongjian, 2019)

Bonsai, one of the excellent traditional Chinese arts, is a work of art with plants and rocks as the basic materials to express the natural landscape in the basin. High quality Alum produced by Fanshan, its purity is very high, the color is like jasper or crystal, no defect, clean as new, diverse forms, suitable for bonsai appreciation. In the 1930s, Alum artifacts were collected as precious items by international merchants. After the founding of New China, Alum handicraft types expanded to flowers and birds, animals, buildings, drama characters and planes, cars, etc., fine craft, realistic shape, magnificent, with a unique style.

Figure 43: Alum Crystal Home Bonsai Creative Crafts
Source: Compiled by the Author

Alum Sculpture is a kind of traditional handicraft, which originates from the rich local Alum Mine resources and superb production technology. The production process of Alum Sculpture consists of four main steps and usually takes several days to complete. First, the frame of the work is constructed with lead wire and decorated

with colored thread, then it is immersed in an Alum crystal solution, and after crystallization and solidification, it will form a colorful and crystal clear handicraft. It was included in the provincial intangible cultural heritage list in 2007. Alum Sculpture artist Liu Zuzhen was included in the provincial list of representative inheritors of intangible cultural heritage projects in 2008 (Feng, 2022).

Figure 44: Alum Sculpture Artists and Works
Source: (Feng, 2022)

Although Alum Sculpture is composed with a figurative technique, it also expresses a lofty or auspicious meaning with various symbolic images, and expresses infinite artistic conception with limited artistic images and blank space on the three-dimensional picture. The art of Alum Sculpture is the ingenious integration of artistic creativity with science and technology, handicraft and natural beauty.

Part 2. Aesthetic view of Alum cultural landscape

As a unique way for human beings to understand the world, aesthetics involves the non-utilitarian, visual and emotional connection between man and the world, including society and nature (Davies, 2012). The aesthetic process covers the cognition, understanding, perception and evaluation of the world entity between rational and perceptual, subjective and objective. Therefore, as the subject of aesthetics, human beings have aesthetic values to express their own views on all things in the world.

Aesthetics, namely aesthetic thought and aesthetic idea, as the perspective of people interpreting the world from the aesthetic perspective, constitutes a part of the world view. It is formed in human social practice, and it is closely related to other ideologies such as politics and morality. Different historical periods, different cultural backgrounds and social groups all have their own unique aesthetic concepts.

In the current and contemporary background, the human aesthetic activities have experienced the profound influence of cultural integration, and the aesthetic values show a trend of becoming more open and diversified. Therefore, it is particularly critical to continuously review the history, absorb the essence, discard the dross, and make a continuous and accurate revision and development of the contemporary aesthetics. To some extent, cultural landscape plays the role of aesthetic narrative. As a symbolic cultural heritage, it not only has aesthetic production, but also can convey the aesthetic evolution information of historical generations, including life lifestyle, cosmology, territory or historical status related to human aesthetics.

Similarly, human aesthetic appreciation has always played an important role in the sustainable production and inheritance of culture, especially in the protection and utilization of modern industrial heritage cultural landscape, in addition to the application of ecological theory and technical support, it also needs the continuous expansion of cultural, artistic expression and aesthetic language. Therefore, Alum industrial heritage cultural landscape, as the specific textbook of human aesthetic creation activities, not only helps people to learn lessons from the historical reflection, but also helps to absorb inspiration, establish and develop a correct aesthetic view in line with the spirit of The Times.

1. The aesthetic influence of the concept of Harmony between Man and Nature

The thought of Harmony between Man and Nature is the crystallization of the collective wisdom of ancient Chinese thinkers and philosophers, is a cognitive method formed in the process of exploring nature (W. Song & Cao, 2022), and is an important part of Chinese aesthetic culture.

Ancient Chinese philosophers began early to explore the laws of nature, showing reverence for the heavens and earth, conducting sacrificial activities to demonstrate respect for the heavens, earth, and ancestors (Liu & Wu, 2024). Over time, this observation of nature gradually expanded to concepts of state governance, evolving into an aesthetic philosophical pursuit dedicated to understanding the essence of things. The concept of Harmony between Man and Nature is not only considered the fundamental principle of the universe and all things, but also seen as the basic trajectory and rules guiding the development of human society. This idea embodies the wisdom and profound philosophical concepts of the ancient Chinese, involving

exploration of natural reason and moral reason, as well as the harmonious unity between the natural world and the human spiritual realm.

Exploring the relationship between heaven and man, bridging the changes of the past and present, achieving correspondence between heaven and man, and the harmony of yin and yang, has always been the lifelong pursuit of Chinese thinkers and philosophers. It is this spirit of continuous refinement and improvement in exploration that has shaped and enriched the cultural aesthetic views of generation after generation, serving as a valuable treasure for the prosperity of Chinese civilization. The concept of natural scenery in China is deeply rooted in Confucian, Buddhist, and Taoist thoughts. In the eyes of the Chinese, nature is ethical, aesthetic, and at the same time, carries strong political and social significance. (Han, 2004).

1.1 The historical origin of the concept of Harmony between Man and Nature

The philosophical concept of Harmony between Man and Nature originated in the Spring and Autumn Period and the Warring States Period, and development during the Han and Song dynasties, progressively revealing rich philosophical connotations (Liu & Wu, 2024). As an ancient Chinese thinker, the thinking of the relationship between man and nature, its core is to find the law of harmonious coexistence between man and nature. The historical development of this thought presents the aesthetic pursuit of harmonious coexistence between local and nature, and the understanding process generally changes from the awe of nature to the use of nature, and finally achieves the transformation of nature. The history of academic thought can be summarized as the three main stages before the formation of feudal society, the development period of feudal society, and the transition period of modern times.

Before the formation of feudal society, the concept of Harmony between Man and Nature was mainly reflected in the relationship between man and nature. This period was a cognitive stage when people were ignorant and blindly submitting to nature. The Book of Songs from the Western Zhou Dynasty to the Spring and Autumn Period reflects people's awe and prayer for heaven, indicating that people think their destiny is connected with the heaven of nature. In the Spring and Autumn Period, Confucius mentioned the concepts of "destiny of heaven" and "way of heaven" in the Analects of Confucius reflecting the respect and adherence of heaven, which is the

embodiment of the thought of the relationship between god and man in the relationship between heaven and man. During the Warring States Period, Mozi put forward the concepts of "Tianzhi" and "Tianli Li", believing that heaven has the will, and people should follow the will of heaven. In general, the historical period of human understanding of nature is limited, in the face of unexplained natural phenomena and low productivity level, get along with the natural environment people imagine the existence of the gods, and through the totem, symbol and other forms in daily necessities and various occasions, to declare natural power or pray for the protection of the gods. In this period, people's aesthetic concepts were mainly reflected in the praise and reverence for the nature and the void forms, which provided the ideological basis for the later aesthetic activities of the use and transformation of nature.

In the feudal society, the concept of Harmony between Man and Nature mainly reflected the orthodox relationship between man and nature, and was the development stage in which man took the initiative to approach nature and learn to use nature. However, natural resources were first dominated by the powerful imperial power, and the ruler played the role of the son of heaven. He developed the concept of Harmony between Man and Nature into the aesthetic view of "submission" and "benevolence" to educate the people, became a tool to consolidate the political power, and even established a set of strict hierarchical system. During this period, the concept of Harmony between Man and Nature on the one hand made the public feel that they enjoyed the great grace and maintained social stability, but at the same time, it also imprisoned people's thoughts of controlling nature and slowed down the progress of human civilization. In the Shang and Zhou dynasties, the accounts of "destiny of Heaven" and "divine right of monarchy" in the Book of History showed that the early rulers believed that their ruling rights were granted by heaven. In the Eastern Han Dynasty, the Book of Han written by Ban Gu recorded how Emperor Wudi and others sought the worship of heaven to consolidate the monarchy. Dong Zhongshu, a scholar of the Western Han Dynasty, discussed the relationship between divine acy and monarchy, and proposed to "dethrone all schools of thought and worship Confucianism". At the same time, he developed the concept of "heaven and man" to limit the power of the emperor. During this period, there were also scholars and thinkers constantly trying to break through the edge of the secular world, trying to

find equal opportunities between man and nature. This provides a theoretical basis for modern people to understand and transform nature.

In the modern period, the concept of Harmony between Man and Nature is mainly reflected in the equal relationship between man and nature, which is a mature stage in which people begin to pay attention to the essence of life and transform nature. During this period, with the influx of modern science and ideas of democracy and freedom in the West, the traditional Chinese concept of Harmony between Man and Nature also experienced adaptive change and expansion. In 1902, Kang Youwei tried to integrate the traditional Harmony between Man and Nature with the western social concept, and put forward the new idea of coordination with nature. Since 1915, Chen Duxiu, the pioneer of the New Culture Movement, emphasized the respect for nature and promoted the free development of man, thus indirectly promoting the modern interpretation of the concept of Harmony between Man and Nature. Jiang Zemin, the third generation leader of New China, mentioned the synergistic relationship between scientific and technological progress and environmental protection in his important thought of "Three Represents", which also reflects the aesthetic pursuit of harmonious coexistence between man and nature. Since 2012, Xi Jinping has put forward the view that "clear waters and green mountains are gold and silver mountains" in his discussion on ecological civilization construction, highlighting the new interpretation and practice of the philosophy of Harmony between Man and Nature in contemporary China. To sum up, in this historical period, scholars and thinkers are more inclined to focus on Harmony between Man and Nature, and explore the system and law of establishing the harmonious coexistence and sustainable development of man and nature.

1.2 The theoretical characteristics of the concept of Harmony between Man and Nature

From the perspective of historical origin and aesthetic connotation, the thought of Harmony between Man and Nature shows the following theoretical characteristics:

First of all, the thought of Harmony between Man and Nature is the deep thinking of ancient Chinese philosophers on the relationship between subject and object between man and nature, which reflects the exploration of the unity of this relationship." Investigate the time of heaven and man" reflects the reflection of Chinese scholars and thinkers on the relationship between heaven and man and

between the Lord and the guest, among which the Harmony between Man and Nature tends to emphasize the unity between the subject and the object. This thought pursues the harmony of the survival order and calls on people to realize the harmony and unity of the order when dealing with the relationship between man, nature and society.

Secondly, the thought of Harmony between Man and Nature has a long history, rich connotation, and has the characteristics of theology and metaphysics. It plays a role in metaphysics and ideology, and has had a profound impact on the development of Chinese society and the aesthetic view of People's Daily life.Harmony between Man and Nature requires people to follow the orders of heaven and advocate the moral qualities of benevolence and diligence. As the peak of Chinese traditional philosophy and life cultivation, it has an important guiding significance for individuals in social life.

Thirdly, the thought of Harmony between Man and Nature has distinct national characteristics, highlighting the national style of Chinese philosophy. The concern of the man and nature of it and its practical methods reflect the uniqueness of Chinese culture. The understanding and practice of the relationship between nature and man " emphasizes the unity of nature, and also reflects the comprehensive characteristics of traditional Chinese aesthetic thinking.

Finally, the development of the thought of Harmony between Man and Nature has a remarkable history. Starting from the pre-qin period, after the development of the feudal society, to the modern mature stage, Harmony between Man and Nature thought in its long historical evolution constantly show the horizontal meaning of its times and the longitudinal meaning of ideas, these changes reflect the obvious history of the idea of Harmony between Man and Nature, it according to historical problems, under the logic of the thought history in the evolution of space-time dimension.

1.3 The aesthetic role of the concept of Harmony between Man and Nature

Many ancient cultures have a cosmology that addressed the significance of place and people’s connection to it (Tuan, 1990). The ecological development of space production should guide people to rethink the relationship between people, society and nature from the perspective of natural ecological balance, and regulate people's practical activities and life style. People should not only understand their own existence from the historical dimension, but also understand their own existence from

the synchronic perspective. The idea of Harmony between Man and Nature holds that the world is an organic whole, and this world view emphasizes the systematization of man and nature, and has had a profound impact on the social life of the Chinese nation. The exploration and practice of the aesthetic function of the relationship between nature and man in the unity of nature is of great significance to the construction of contemporary social culture and the re-production of local space.

First, the concept of Harmony between Man and Nature can bring positive enlightenment to the sustainable development of contemporary society. The thought of Harmony between Man and Nature is the excellent traditional culture of China, which has the contemporary value of crossing time and space, surpassing national boundaries and coordinating with the society. For example, the love of all things and bad still helps us to adopt the tolerant and harmonious handling of relations between different groups and nations; respect the emperor of heaven, follow heaven, and so on, reminding us to explore and respect the objective laws of society and urge people to do their own things.

Second, the concept of Harmony between Man and Nature is of great significance for us to enhance national and cultural confidence. As the essence of the Chinese traditional culture, Harmony between Man and Nature, its rich thoughts of national characteristics and its practical activities, contains Chinese wisdom, let us deeply understand the excellent essence of Chinese culture, its historical value and its contemporary significance through time and space. Mr.Ji Xianlin pointed out that "the proposition of Harmony between Man and Nature is the highest and most complete expression of the Oriental integrated thinking mode"

Thirdly, the limitations of the concept of Harmony between Man and Nature are of great significance to the development of contemporary new aesthetic values. To construct the new aesthetic and cultural values under the background of globalization, we should fully draw lessons from the traditional Chinese concept of Harmony between Man and Nature and the positive value of the western "people-oriented" concept. The restriction of "man" in the concept of Harmony between Man and Nature weakens the value and initiative of man, and has the limitation of "unknown the distinction between man and man, and it is difficult to use the destiny of heaven". The western dichotomy of subject and guest holds that all things in the world are external, and takes me as the main body and other objects. The subject realizes the

unity of the subject and the object through the understanding and practice of the essence of the object.

2. The individual dimensions of aesthetic wisdom in the Alum cultural landscape

Aesthetic wisdom is the key to unlocking the mysteries of nature, society and culture. It is manifested as the free integration of multiple aesthetic values, with the characteristics of autonomy and freedom, and guiding the subject to conduct aesthetic experience and creation. Aesthetic wisdom ensures that the aesthetic subject realizes the goal of aesthetic freedom and moral consciousness, and therefore, it occupies a core position in people's aesthetic behavior.

Throughout time and across cultures, the relationship between Homo sapiens and the natural environment has played a central role in identifying and defining aspects of the realm of spirituality, wherein humans seek to make sense of the universe and find meaning in their own existence (Uhlik, 2009). As an industrial heritage, in the context of Chinese culture, the Alum cultural landscape embodies the local people's aesthetic perception of natural laws and humanistic principles. Influenced by the traditional Chinese thought of Harmony between Man and Nature, it is the concentrated embodiment of Fanshan residents' aesthetic wisdom. It directly reflects the critical period of local social development, integrating historical, social, technological, economic and aesthetic values.

The interpretation of Harmony between Man and Nature hinges on the understanding of the concept of "nature" (Liu & Wu, 2024). Through the local residents' aesthetic production of Alum cultural landscape, we can see their aesthetic emotion, aesthetic character, aesthetic creation and aesthetic ideal of the objective world, which is an indispensable demonstration of the sustainable development of modern society. The personalized dimension of the aesthetic wisdom of Alum cultural landscape also goes beyond the single perspective of traditional art, runs the aesthetic wisdom through the aesthetic practice and connotation, and constructs the value system of aesthetic wisdom in more diversified forms, thus enriching the humanistic spirit of Chinese aesthetic culture.

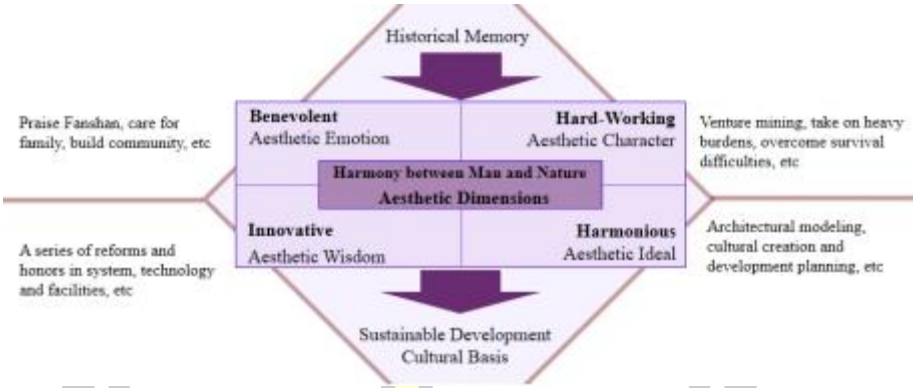


Figure 45: The Aesthetic Value, Unique Dimensions, and Representations of the Alum

Source: Illustrated by the Author

2.1 Benevolent aesthetic emotion

Aesthetic emotion is the emotion and attitude shown in human aesthetic activities. The traditional Chinese thought of "Harmony between Man and Nature" believes that there is a mysterious and close connection between man and nature, and regards the two as an inseparable organic unity, and the aesthetic emotion of human love is the basis of the maintenance and continuation of this relationship. As the founder of Confucianism, Confucius was the first to emphasize the "benevolence" to care for nature and integrate into nature."Harmony between Man and Nature" thought in the Chinese space production practice is subtle and profound, when the aesthetic emotion of love once into daily life, began to shape a subtle in the long history of this group, gradually enhance the local aesthetic accomplishment and cultural cohesion, and develop into an important part of Chinese excellent traditional aesthetic culture.

Similarly, the cultural landscape of Fanshan Industrial heritage place is the aesthetic and emotional bond to realize the thought of "Harmony between Man and Nature" between the local people and nature. Since the Tang Dynasty, more than 1,300 years ago, their ancestors found Alum stone here, and used their wisdom to process and produce it widely into their daily life. However, they also clearly knew that it was the gift of natural resources that solved the survival crisis of the local people. They guard the continuous space production and re-production of Alum mine, reproduce and create the civilization of the community, and form a symbiotic and co-prosperity partnership with Alum mine. Especially in the 21st century, because of the continuous breakthroughs in industrial production technology, when they realized that

the ecological environment damage brought by the transitional development had affected the healthy survival of the local people, they resolutely stopped Alum mining and invested a lot of money to start the governance and transformation development of the natural environment.

"The famous town is located in the south of Lujiang County, which is surrounded by mountains and rich in resources. In this land of thousands of years, generations of people stationed here, with precious life production and dedication of Alum. (Association, 1990)" these remaining poems, ballads full of affectionate praise, praise the greatness of nature, express their gratitude for nature and protection of nature.

Of course, this aesthetic emotion is not only reflected in people and nature, but also reflected in the relationship between people and between people and the community. So far, in small Alum mountain and a called Beggar's Cave, legend is a pair of brothers here first found Alum stone and promote the people around the Alum stone cure save effect, offspring respect called "The Ancestor of Alumite", and establish temple ritual worship, the tradition embodies the local contributors to the land all respect and love.

Therefore, this emotion can effectively avoid the utilitarianism of aesthetic activities, and create a cultural atmosphere for the generalization of the kindness, tolerance and mutual assistance of the Chinese nation. Even during the Second World War, despite the interference of the foreign invasion, the local people did not passively stop production, but with the simple care and love for the country, actively participate in the production boom, to ensure the stable production of Alum mine and the improvement of economic benefits.

Figure 46:The Local People Express Their Love for Lujiang Alum Mine Through Artistic

Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

The role of aesthetic emotion in practice is subtle and far-reaching. It subtly shapes people's psychology and thinking mode of understanding nature in the long river of history, and gradually enhances and condenses the internal quality and cultural behavior of local people. The history of Alum production has witnessed the changes and challenges of nature. The Alum industrial cultural landscape of Alum is the spatial expression of local people interacting with natural resources, seeking livelihood and life improvement. This lasting emotion maintains the vitality of Alum mining, and affects the identification of different people on the cultural identity of industrial heritage through aesthetic emotion.

2.2 Hard-working aesthetic character

Aesthetic character is manifested in the stable aesthetic personality and temperament of human beings themselves. The traditional Chinese thought of "Harmony between Man and Nature" holds that all things in the universe follow the natural law, and man must have the aesthetic character of diligence to conform to this law, so as to achieve the Harmony between Man and Nature. God rewards those who work hard (Jung, Wilhelm, Wilhelm, & Baynes, 2011), and maintaining the aesthetic character of diligence is an important way to realize personal value and social harmony. The Confucian classic "The Doctrine of the Mean" expounds the way to realize this aesthetic character, "what Heaven has conferred is called The Nature; an accordance with this nature is called The Path of duty; the regulation of this path is called Instruction.The path may not be left for an instant. If it could be left, it would not be the path. (Confucius, 2017)" means that people should follow the moral law and cultivate a temperament with the destiny of heaven, this process requires

unremitting efforts and diligence. Therefore, in the traditional Chinese society, diligence is regarded as a virtue and is an important standard to evaluate a person's aesthetic character.

In the more than 1300 years of production in Fanshan Industrial heritage place space, the cultural landscape here has grown from scratch and from point to surface, which reflects the industrious and persistent aesthetic character of the local people, which is the most direct aesthetic cultural representation of the idea of "Harmony between Man and Nature". "Miners are tied to long ropes, swinging on the edge of the cliff like a swing, and they move back and forth on the cliff like monkeys. The constantly prying stones fell like rain down the cliff and valley, and the jingle of the collision of stones hung over it. Occasionally, boulders would fall off and the huge crash would shock the sky. (Association, 1990)" This is the local Qing Dynasty official Jiang Kai in the poem describes the scene of Alum mining workers work, although a few words, but we can still feel in the harsh mining environment, they are not afraid of danger, hard-working aesthetic character issued by the glory of life.

The brilliance of this spirit is precious and illuminated the distant road, it encouraged people to continuously challenge and overcome various difficulties on this land, the Alum mine from a cave in the early Tang Dynasty to one of the five Alum areas in the Northern Song Dynasty, to the Southern Song Dynasty, output and mining scale in the country; to the Qing Dynasty, the product from domestic self-sufficiency to export breakthrough; in the 21st century, achieve scale, mechanized production, become the Ministry of chemical industry and Anhui Province, won the "world Alum" reputation. Under the education of the thought of "Harmony between Man and Nature", the local people have maintained the aesthetic character of diligence and made contributions, realizing the leap of historical monuments, which amazed and impressed the world.

In traditional Chinese society, diligence is regarded as a virtue and an important criterion to evaluate a person's aesthetic character. The aesthetic character of diligence is not only related to the output of the material level, but more importantly, it respects the spiritual value embodied behind it. It is not only the transformation of the external world, but also the exercise and improvement of the quality of the inner self. The ultimate goal of aesthetics is to fill one's life with infinite happiness (Kuo, Kawaguchi, & Yang, 2021). Under this aesthetic value, through the interaction

between hard work and nature, people learn to conform to the laws of nature, and at the same time, they constantly improve themselves, realize the all-round development of themselves, and obtain spiritual satisfaction and a sense of achievement.

Therefore, from the perspective of the educational value of the cultural landscape of the Alum industry, it has a positive impact on people's behavior and moral consciousness, thereby improving their attitude towards social responsibility and civic participation (Halfacre, Chessin, & Chambless, 2006), which can promote the review of the meaning of people's existence from a higher level. To build a more perfect human nature, a greater personality and a more sound quality.

Figure 47: The Aesthetic Character of Fearlessness and Tireless Diligence
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.3 Innovative aesthetic wisdom

Aesthetic wisdom reflects the human ability to understand nature, society and other beauty. The traditional Chinese thought of "Harmony between Man and Nature" believes that human beings interact with nature by means of perception, imagination, expression and creation, and that they can influence the nature and even the order of the universe, and shape the cognition and creativity of the beauty of nature in this process. For example, the Book of Shang Shu Yu Gong records the legend of Dayu controlling the flood (Chen & Wang, 2022). Dayu controlled the flood through river diversion and management, which not only successfully eliminated natural disasters, but also demonstrated the aesthetic wisdom and courage of the ancient people to transform nature through innovation. This view is most represented by Dong Zhongshu in the Western Han Dynasty, "Heaven can determine man, and man can influence heaven; heaven is the same as man, so heaven and man are one. (Ge, 2020)" He admitted that nature is the greatest creator, and also affirmed the subject initiative

of people in the aesthetic process, that is, people not only passively accept the existence of beauty, but can actively create and express the subject of beauty.

Fanshan In the historical process of space production, although people always uphold the mentality of respecting nature, they do not fall into the blind worship of nature and make progress. Under the influence of the traditional education of the thought of "Harmony between Man and Nature", we should actively explore and express the courage and strength to transform nature. Before the founding of the People's Republic of China, the mining method was very backward, workers mainly rely on the rope tied to the waist, one end fixed at the top of the mountain, one end of the body hanging on the cliff, and then looking for suitable stone cracks, forced into rows of hard piles, back and forth, until the ore peeled off. This kind of mining method, high labor intensity and small income, due to the lack of effective safety measures, ore fall off and cliff collapse often lead to heavy casualties, often be injured by stones, hit to death accidents. Now, the "big screen wall" relics located in the small Fanshan mining area are the historical witness of the so-called "life and death pile".

After the founding of new China, Lujiang Alum mine benefited from the comprehensive and bold innovation of the five systems, mobilized the enthusiasm of workers to play the creativity and innovation, promoted the industrial transformation of mining machinery facilities and equipment, accelerated the innovation of Alum production technology, and realized a major breakthrough in the technology of Alum mining and smelting. Special potassium Alum and super ammonium Alum have won the title of "high quality products" by the Ministry of Chemical Industry of China, which have made indelible contributions to industrial construction and economic prosperity.

The cultural landscape of Fanshan Industrial heritage place, as a historical product of local people to exert innovative aesthetic wisdom under the thought of "Harmony between Man and Nature", not only shows the ability of people to develop and utilize natural resources in the past, but also provides the aesthetic ideological basis for the creative development of other space production activities today. In the context of sustainable development, Fanshan people continue to play innovative aesthetic wisdom, actively improve environmental quality through ecological restoration projects, develop ecological agriculture, hold cultural activities, and are transforming into a beautiful and livable industrial and cultural tourism town. As a

recognition of the joint innovation work of the local government and residents, Fanshan Town has successively won many honors, such as "Civilized Town", "Ecological Town" and "Millennium Ancient Town".

Figure 48: Various Certificates Reflect the Industry's Affirmation of the Local People's

Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

The historical development process of the Alum industrial cultural landscape is not only the history of recording the industrious, kind and brave struggle of the local working people, but also the history of reflecting the local people's pioneering and innovative aesthetic wisdom. From the perspective of the potential of Alum industry cultural landscape education, let people understand the significance of playing innovative aesthetic wisdom, help to see the bright spot of self, to illuminate the broader human civilization and social prosperity to contribute to pride.

2.4 Harmonious aesthetic ideal

Aesthetic ideal reflects the human pursuit and desire for beauty, and is the highest realm of the thought of "Harmony between Man and Nature". The traditional Chinese thought of "Harmony between Man and Nature" regards the universe, nature and human society as an inseparable whole, and advocates that human behavior is consistent with the natural law and the cosmic order, so as to achieve a long-term and harmonious coexistence with nature. "If you drain off the water to catch fish, how could you miss them? But there will be no fish in the river at all during the next year (Lü et al., 2022)", thinker Lu Buwei with dialectical method to explain the principle of aesthetic ideal, advocating long-term planning. Since ancient times, the thought of "Harmony between Man and Nature" cherishes and upholds the Community’s

interests and values, highlighting the value and spiritual power of public interests (Liu & Wu, 2024), has prompted people to constantly improve themselves in aesthetic activities, and to pursue and realize the standard or realm of the beauty of Harmony between Man and Nature.

The pursuit of harmonious aesthetic ideal, first of all, is formed after certain aesthetic experience and aesthetic habits, the specific meaning of "harmony" will also, and change with the development of society. For example, in the feudal society with low productivity, social unrest, heavy tax, the local people by selling labor to mine Alum stone to seek survival, to pray for peace and harmless as the ideal. In the early stage of the construction of new China, social stability, economic recovery, the master of development, began to hope to get rich as soon as possible. Entering the era of intelligence, they have been planning the construction of ecological, livable and beautiful homes on the road of sustainable development. Generations of people have left this simple aesthetic ideal in the poem, reflected in the architecture, and integrated in the cultural performance in the form of cultural creation.

Architecture is an important part of the cultural landscape of the ancient Fanshan, which is the embodiment of the culture, history and aesthetic concepts. The external features of the local folk houses such as Daitile, pink wall and horsehead wall form a strong and unique visual aesthetic feature of Hui style architecture, which becomes the first impression of the viewer. In the building structure, the gables on both sides are built to rise above the roof, and fall layer by layer with the change of the slope of the roof, forming a ladder shape in the shape. The exterior wall of the building is unified in pink and white, and the top of the falling wall is decorated with gray tiles and walls to form a rolling shape resembling a horse's head, so it is called "Horse's Head Wall", also known as "Fire Seal".

Figure 49: The Local Definite Period Hui-style Architecture
Source: Photographed by the Author

In addition to the practical function of fire prevention, Horse's Head Wall not only gives the dynamic wall, but also gives the building rich cultural connotation. During the Ming and Qing Dynasties, the horse was not only an important means of transportation, but also a symbol of a promising future and a successful career. It means the master's pursuit of the ideal of "reading as an official". The Horse's Head Wall runs on the gable of the residential buildings, increasing the majesty and spirituality of the buildings, and the original plain residential buildings have more dynamic beauty because of the decoration of the Horse's Head Wall. With the development of local economy and the change of modern aesthetic requirements, the shape of Horse's Head Wall has become more diversified, including the shape of ladder, cloud and bow. These horse head walls show a unique beauty under the blue sky of Fanshan area, highlighting its historical precipitation and cultural heritage.

Architectural wood carving in Ming Dynasty is both practical and technological art, and also the accumulation of Confucian culture, its content and form contain profound Confucian aesthetic thoughts. Since the Ming Dynasty, the intention of Huizhou wood carving is based on two aspects: on the one hand, it expresses people's beautiful life ideal and inner desire in wood carving art; on the other hand, it reflects the life ideal of "self-cultivation, family harmony, governing the country, and peace in the world" in wood carving art, and promotes the Confucian ethical concept of "loyalty, filial piety, and integrity". For example, wood carving works with characters as the theme can feel the theme spirit of benevolence and strengthen the behavior of "rites". The concept of rites of Confucianism is to advocate the father's kindness, the son's filial piety, and the harmonious social order of men and women. As we all

know, the culture of filial piety is an important part of traditional Chinese ethics, and filial piety is also a commonly used theme in Huizhou wood carving, reflecting the traditional virtues of our Chinese nation. For example, the commonly used themes of Huizhou wood carving doors and Windows are "Su Wu Muyang", "Taoyuan three knot Yi", "Mother-in-law insignia" and a series of thoughts reflecting "loyalty" and "righteousness", which are important qualities advocated by Confucianism.

Figure 50: Woodcut Patterns on Windows of Local Ming and Qing Buildings
Source: Photographed by the Author

However, the realization of the aesthetic ideal is not always smooth and smooth.The relationship between “nature” and “man” is a dialectical relationship of mutual struggle and interdependence (Liu & Liu, 2013). On the way of pursuing the harmonious aesthetic ideal, they have always been unyielding to nature, more to evil forces, fought against natural disasters, fought with class oppression, and pursued the rights of freedom, equality and democracy. Countless heroes have emerged, leaving behind many touching stories.

The ideal pursuit of "matching nature with virtue" aligns closely with the objectives of constructing a contemporary ecological civilization, sharing similar foundations and goals (Liu & Wu, 2024). In 2021, the Alum mine cultural tourism project was launched, with a total investment of 2.5 billion yuan. In the planning of the project, they will rely on the rich resources of Alum industrial heritage, and use information means to organically integrate the industrial heritage with cultural memory, ecological landscape, cultural tourism activities, health care, promote the integrated development of "cultural tourism +", and realize the transformation from a single economic source to comprehensive development. Local government officials

also acknowledged the complexity, difficulty and uncertainty of the plan, but also said it is a beautiful vision that, as long as they remain hopeful and motivated for tomorrow, they will be driven by the pursuit of a harmonious aesthetic ideal.

The cultural landscape of Fanshan Industrial heritage place, as the spiritual sustenance of the local people's pursuit of harmonious aesthetic ideals under the thought of "harmony between heaven and man", encourages people to yearn for beauty forever and strive for a better future. Starting from the purpose of education of The Times, the Alum industrial cultural landscape will unify the aesthetic ideal and reality of the local people, and present the beauty and ugliness, true and false, good and evil in life, which is conducive to guiding the later people to face the contradictions in real life, encouraging them to fight for a bright future without fear of difficulties.

Conclusion

In this chapter, the aesthetic significance of the Alum cultural landscape is deeply explored, with a particular emphasis on analyzing the unique aesthetic value and cultural connotations contained in the industrial heritage cultural landscape of Ming Alum in China. These heritage cultural landscapes not only demonstrate the vitality and creativity of the Chinese nation but also embody national wisdom, representing a precious heritage of all human civilizations.

The research in this chapter adopts a rigorous methodological approach, based on the collection of detailed data and comprehensive examination of diverse cases. In-depth exploration of historical archives, industrial production records, previous research literature, and on-site inspection reports of Ming Alum industrial heritage places ensures the foundational and accurate nature of the study. Furthermore, by comparing different regions and types of Ming Alum industrial heritage cultural landscapes, the diverse manifestations and developmental changes of Alum culture under different social historical backgrounds are captured, revealing its commonalities and specificities across regions.

When analyzing the core elements of the aesthetic views of Alum cultural landscapes, a distinction is made between the two dimensions of "tangible remains" and "spiritual carriers." Tangible remains refer to the material aspects of Ming Alum industrial heritage, including buildings, machinery, etc., while spiritual carriers encompass non-material cultural heritage such as policy systems, legendary stories, and cultural entertainment. These elements collectively demonstrate the qualifications and value of Alum cultural landscapes as national industrial heritage.

Furthermore, this chapter focuses on the classical aesthetic concepts of China reflected in Alum cultural landscapes, particularly the philosophical idea of "harmony between heaven and man." Through this perspective, the aesthetic personality of the cultural landscape of Ming Alum industrial heritage places is explored, revealing the specific representations and symbolic meanings of traditional aesthetic wisdom in Alum cultural landscapes.

In summary, this chapter's research combines specific cases of the cultural landscape of Ming Alum industrial heritage with a wide range of aesthetic theories to construct a multidimensional analytical framework. It aims to provide comprehensive

insights into understanding the cultural value of industrial heritage and its modern transformation and lay a practical foundation for the development of theoretical discussions in subsequent chapters. The next chapter will explore the emergence and resolution of social crises in specific historical contexts and summarize the changes in significance under the spatial production of Ming Alum industrial heritage places.

Chapter IV:

The Meaning Change of Production of Space

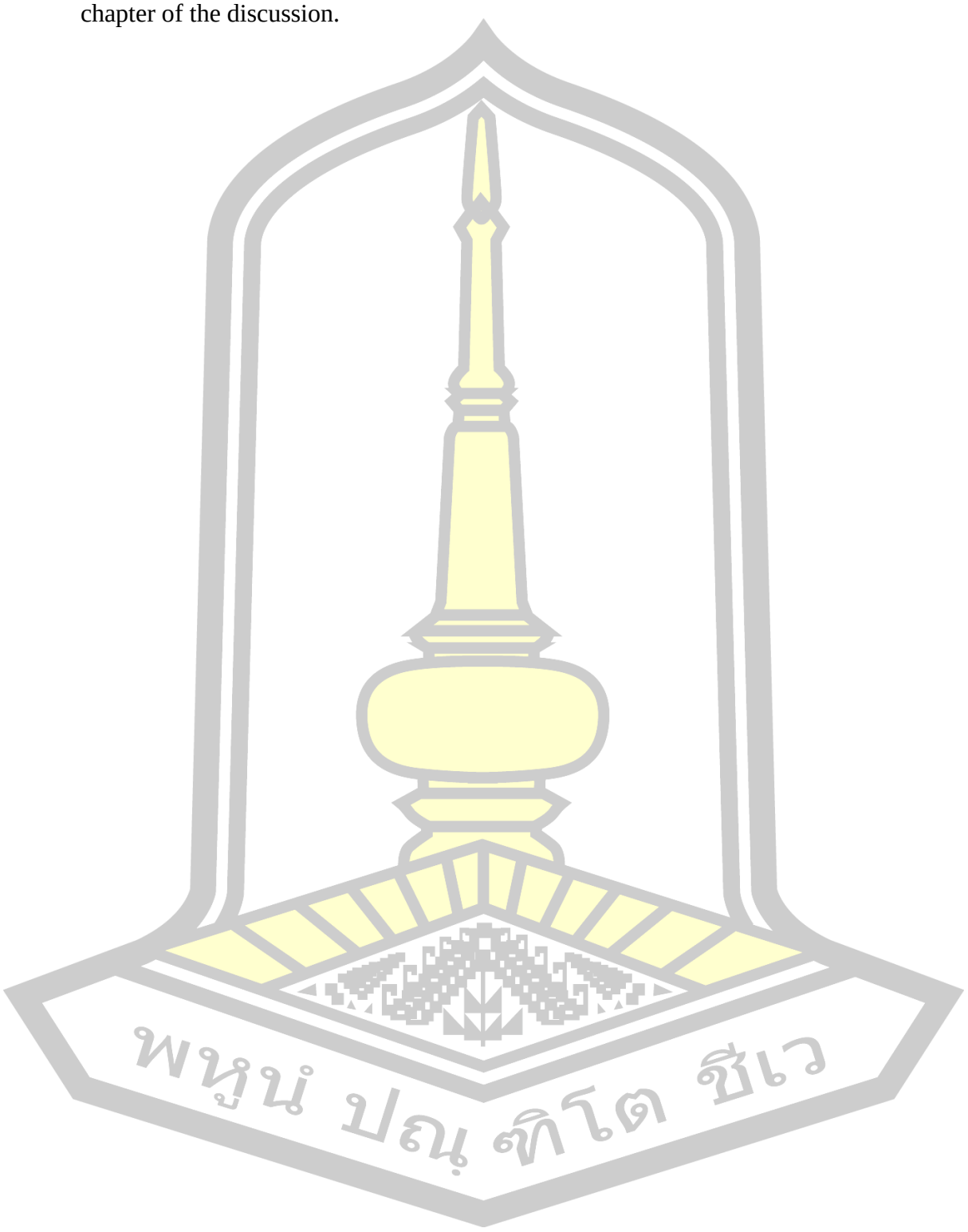
Introduction

This chapter mainly discusses the meaning change of space production. According to the western theory of space production, space is not only a static and passive background or container, but a dynamic and active component, which is produced and reproduced under the action of various social forces (such as power, economy, culture, etc.) through the interaction and interaction with social practice. The production of space influences and shapes the emergence of social relations and cultural significance. The theory of space production breaks through the traditional emphasis on time and history, and regards space as a key analytical dimension for understanding the social structure, cultural phenomena, and political and economic processes.

The initial section of this chapter employs the "deterioration of livelihood in the era of handicraft industry" and the "environmental degradation in the era of machine industry" as exemplars of two major societal crises, summarizing the significance of the "spatial turn in response to social crises" at Alum industry heritage places, and distilling mechanisms of response. The second section discusses the role of "spatial production" at Alum industry heritage places in the transformation of "cultural aesthetic perspectives," through the lens of cultural aesthetic views as a product of the continuous effect of "spatial production elements" and the transcendence of spatial production in continuously pushing the boundaries of "cultural aesthetic realms." The third section, from the perspective of cultural memory, affirms the "internal driving force of spatial production" at Alum industry heritage places, focusing on "the rich and exploitable local natural resources," "the diligent and intelligent local labor force," and "the progressively improving local social systems."

This chapter focuses on the philosophical reflection of space production problems and seeks the changing significance of space production, which has a very important guiding significance for how the re-production of subsequent space more intelligently, and provides an effective method to solve the inheritance and utilization

of local industrial heritage cultural landscape. This is also the main part of the next chapter of the discussion.



Part 1. Interpretation of the significance of the social crisis in the Alum industrial era

The development of human society is a process of continuous and gradual deepening, which is characterized by the evolution from low level to advanced level, from simple to complex, and from one state to another state. French sociologist Auguste Comte proposed that the development of human spirit has gone through three stages, he believes that social development is along the predetermined trajectory, according to the determined historical stage. British sociologist Herbert Spencer compared social development to the evolution of biological organisms, as a process of self-development of the continuous differentiation and structural complexity of internal "cells"(Lidz, 2005). In contrast, modern evolutionists propose that social change has multi-direction. The main points include: social progress is not inevitable and sometimes may decline; evolution diverges along multiple directions rather than following fixed stages, paths or patterns; societies with different levels and forms have their unique evolution or development forms. Since the 1970s, the study of macro-social changes has gradually turned to the study of social changes in specific stages, specific societies and specific communities, successively producing the theory of modernization, development sociology, community development theory and so on.

Space production change is mainly points to the multidimensional change of human social change, including the change of the macro and micro level, the longitudinal development and decline, horizontal differentiation and integration, normal and abnormal change of social structure, social quantitative change and qualitative change, and social relations, lifestyle, the evolution of the behavior, values, etc. In his work Destiny，Human Destiny: Changes and Rules, Anthropologist Danzhai discusses the internal logic of social change, pointing out that the rules formulated by human beings originate from the interpretation of natural laws, based on the cognition of laws, and are the result of evolution under the principle of survival of the fittest. These rules are a basic consensus formed in order to coordinate various internal or external relations between individuals, nature and society in order to safeguard the common interests. By understanding the law of space production change and social crisis, it emphasizes the respect and humility of human beings towards nature.

Social crisis in space production refers to the social problems and conflicts arising in the process of space production, which may lead to the deterioration of livelihood conditions and the degradation of the environment. Analysis of these social crises requires comprehensively considering the interaction of various elements and their negative effects in a specific socioeconomic context. These crises reveal that spatial production is not only related to the construction and change of physical space, but also contains more complex dimensions such as power relations, social structure and environmental influence. Representatives of the conflict theory, such as the German sociologist Ralf G. Dahrendorf And American sociologist Lewis Alfred Coser, argued that the social system should be regarded as a whole of various parts through contradictions. The main process of society is not an equilibrium state, but a conflict caused by the struggle for power and superior position. Social power resources are limited, and people's pursuit of power redistribution is unlimited, so the struggle around power is continuous, and these struggles are internal conflict phenomena in the society.

Alum industrial heritage place Space production is divided into six "historical change" stages and three "cultural landscape formation" stages. Each historical stage is accompanied by the corresponding social problems and conflicts. From the perspective of the formation stage of cultural landscape, the first two stages have ended, showing the two major social crisis characteristics of "livelihood deterioration" and "environmental destruction". The correct understanding of the social crisis in the period of handicraft industry and machine industry is of great reference significance for alleviating the social crisis in the information age.

1. Social crisis in the handicraft era — livelihood deterioration

"Poverty" is a complex socioeconomic phenomenon, referring to which individuals or groups lack the necessary economic resources and means to maintain a basic standard of living. Poverty usually involves multiple aspects, including but is not limited to insufficient economic income. Livelihood deterioration is closely related to poverty, as the living conditions of individuals or families become more difficult, and the sustainability and security of their livelihoods decline, as it often leads people into absolute poverty or exacerbates preexisting poverty. The relationship between poverty and livelihood deterioration is bidirectional(Barbier, 2010). On the one hand, poverty makes it harder for individuals and families to face

external shocks and pressures, thus making their livelihoods more vulnerable and vulnerable to deterioration. On the other hand, the continued deterioration of livelihoods can consume household assets and resources, causing them to fall into deeper poverty. Addressing poverty and preventing livelihood deterioration are important goals for achieving social development and human well-being.

Human beings's understanding of "poverty" is a process of continuous development and deepening. The understanding of poverty also goes through multiple stages. In the early days, poverty was often understood simply as a lack of material resources, where people's income or consumption level was below a set poverty line, to measure and compare poverty levels in different regions and countries. Structural functionalists believe that poverty has its function and role in society, such as the maintenance of certain parts of the economy through the presence of low-wage labor. Over time, scholars began to realize that poverty was a multi-dimensional concept, and with the rise of Marxism and other critical theories, more focus was placed on the social inequality and the impact of power structure on poverty. These theories highlight structural factors in social and economic systems, such as unequal land distribution, Labour market discrimination, and unequal relationships in the global economic system, which are recognized as the root causes of poverty(Ohlsson, 2000).

The impact of poverty on human survival is profound. According to Poverty Alleviation: China's Experience and Contribution, poverty is a persistent disease of human society and a common challenge facing the world. Poverty and its associated problems, such as hunger, disease and social conflict, seriously hinder human beings's pursuit of a better life. The eradication of poverty is the dream of mankind, and the history of human development is the history of the unremitting struggle against poverty. Solving poverty is the key to improving the overall living standard of mankind. By reducing poverty, people's quality of life can be improved, improving education and health, thus enhancing human capital and promoting economic growth. In addition, reducing poverty also help to promote social equity and harmony, reduce crime and social conflicts, and improve political stability(State Council Information Office of the People’s Republic of China, 2021).

Under the rule of the decadent feudal regime and the aggression of western powers, China has become a semi-colonial and semi-feudal society. Hundreds of millions of people represented by Alum cultural and industrial heritage have been in

poverty or even deteriorating livelihood for a long time. However, the Chinese people have always been indomitable and struggling hard, always dreaming of realizing national prosperity and national rejuvenation, and always dreaming of living a happy and beautiful life.

1.1 The social phenomenon and characteristics of livelihood deterioration

Alum industry as a traditional handicraft production mode, before the founding of new China, the Alum industrial heritage area workers living conditions. In the lack of organization of the production mode, the mining of Alum stone depends on the original manual operations, such as shoulder and human handling, the use of simple soil method refining, etc., resulting in extremely harsh working environment, and frequent mining accidents. In addition, the declining feudal regime brought continuous suffering to the lives of the workers through harsh exploitation and heavy taxation, coupled with constant local conflicts and harassment by foreign enemies. Workers have a low income, living in poverty for a long time, unable to meet the basic diet and warmth needs.

1.1.1 Disorderly production, frequent mining accidents.

Natural disasters such as floods and drought pose a direct threat to agricultural production, while Fanshan residents mainly rely on handicraft industry for mining and refining of Alum ite to make a living. In the early stage, the production mode was chaotic, and the workers under the leadership of the mine owner occupied each mine separately. Once the rich mine was found, they rushed to mine, the safety measures were seriously ignored, and the accidents such as ore slide and well top collapse led to a large number of casualties. In the 1930s, three typical mine accidents resulted in 47 deaths. In 1931, the top of the Sanyingwo mine collapsed, causing four people dead; in the same year, the bird's nest mine collapsed, three workers were killed on the spot; in 1935, the mine collapsed, more than 40 workers failed not survive.

1.1.2 Wars were frequent and taxes were heavy.

The war not only cost a lot of manpower and material resources, destroyed the production foundation and social order, but also forced the government to increase the public tax burden for military spending, Alum industry and other industries are also included. The increase in tax revenue causes the rise of production costs, affects the development of Alum industry and the lives of workers, and makes the economic and

social development of relevant areas face more severe challenges. During the War of Resistance against Japanese Aggression, the corruption of Kuomintang officials increased the burden on the people, which then led to the civil war. Fanshan The region faces a heavy tax burden, such as 0.3 yuan of mineral tax, 0.25 yuan of tariff, 360 yuan of mining tax, as well as many other taxes. Many factories have closed down due to overloading. By 1948, the original 66 factories had decreased to 38, and the number of workers had decreased to 290, with an annual output of only 3,500 tons. After the Kuomintang retreated to the south of the Yangtze River, the Yangtze River was blocked, which caused traffic jams in the Alum industry and plunged the industry into depression. Alum inventory backlog, prices plummeted, many Alum Mines shutdown, workers unemployed, economic and social development in the Fanshan area was hit hard, the scene is bleak.

Figure 51: Laboring People Facing Livelihood Crisis
Source:https://k.sina.com.cn/article_3738295043_pded1db0300100doih.html?cre=tagspc&mod=g&r=user&pos=4_6

1.1.3 Productivity is backward, and income is difficult to stabilize.

Due to the reliance on manual operation, the technical level is generally low, resulting in insufficient production efficiency, and it is difficult to meet the needs of mass production. Alum Miners need to work hard more than 10 hours a day, in the working conditions with life risks, the remuneration is meager, only a few yuan to more than 10 yuan, it is difficult to maintain the basic life. The production of handicraft industry is significantly affected by the change of market demand, and the sales of Alum products are unstable due to the market fluctuations, which leads to the uncertainty of workers' income. With the growth of population and the increasing shortage of resources, the cost of living continues to rise, especially in urban areas, where housing rents, food and commodity prices rise, further reducing the living

space of workers. When many workers were in their 40s and 50s, they lost their ability to work due to poor health, and were abandoned by capitalists and lost their source of income. They could only beg during the day and stay in the temple at night. At the time of his death, the mine owner would provide at most a simple coffin, sometimes only a bundle of firewood, buried in the barren grave of Turtle Mountain.

1.1.4 Labor intensity is big, the body overdraft is serious.

The production process of Alum industry depends on intensive physical labor, including mining, crushing, calcination, and Alum extraction, which are extremely harsh. Workers had to operate by the hot current, holding a large mallet weighing dozens of pounds, constantly stirring the Alum liquid. These workers have long worn simple straw sandals, wearing only cloth scarves around their waists, lack of basic personal protective equipment, and frequent burn accidents. The working environment in the mine is also harsh, workers walking in the hot sun, standing beside the boiling Alum liquid, continue to stir, daily work for 16 to 18 hours, in the hot environment, workers can only rely on the body to pour water to cool down, scald incidents are common. Under such poor working conditions, more than 40% of Fanshan workers suffer from serious occupational diseases, including hunchback, trachoma, stomach disease, waist injury, tuberculosis, tracheitis and more. These production links are often carried out in high temperature, dust and other harsh environments, which can easily lead to worker fatigue and illness. A song to sing the hardships of the Alum mining industry, " bar (stick) on the shoulder, sweat drip, pressure low back back camel, for the stomach; the mountain bent waist, down the steps, a careless, stone in human life.

1.1.5 Low social status, the lack of social security.

Alum workers are in a low position in the social structure, often facing the exploitation of the government and mine owners, and their opportunities to obtain social recognition and income growth are very limited.

Figure 52: Labor Scenes of Alum Workers Before the Establishment of New China
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

Before the founding of the People's Republic of China, the modern social security mechanism was missing. When workers suffered from illness, disability or entered old age, they lacked the necessary social support and protection, and their family members were often their only pillar. Given the limitation of economic conditions, the descendants of Alum workers are difficult to receive quality education, which limits the possibility of raising their social status through education, leading to the intergenerational transmission of poverty and low social status.

1.2 Methods, measures and effects of crisis resolution

To eliminate the social crisis caused by livelihood deterioration, a continuous and comprehensive strategy must be adopted. This includes strengthening the social security system, ensuring the equality of educational opportunities, improving working conditions, and increasing labor remuneration. This process depends on the cooperation between the government, society and enterprises. Through system construction and policy adjustment, it can gradually and effectively alleviate the problems and promote social fairness and harmony.

1.2.1 Before the founding of new China

Before the founding of new China, the economic structure mainly based on agriculture and the low level of economic development led to the uneven distribution of wealth and resources, and left a large number of people in poverty. The instability of the political system and the frequent wars further aggravate the social instability. The government resources and concerns mainly focus on the war and political struggle, while ignoring the issues related to the people's livelihood. In addition, the national financial tension lacks sufficient funds to build and improve the social security system, and support investment and economic recovery after livelihood

deterioration. The combined influence of these factors has caused the crisis difficult for the government to effectively deal with the deterioration of the people's livelihood.

Figure 53: Massive Strike of Miners on Anyuan Road
Source: http://www.360doc.com/content/22/1008/17/78742096_1050959056.shtml

In the face of economic oppression and the deterioration of living difficulties, Alum industrial heritage place sought a way out through workers' strikes and armed struggle, reflecting the determination and method of the working class to take collective action to improve their living conditions. As a peaceful form of protest, the workers 'strike directly expresses the workers' dissatisfaction with the unfair treatment and the deterioration of their livelihoods, forcing the employers and the government to pay attention to and address their demands. When peaceful means cannot achieve its end, fight for rights in a stronger form of armed struggle. It not only demonstrates the firm will of the working class to fight against injustice and pursue better living conditions, but also promotes the reform of the social and economic system to a certain extent, obtains a relatively more fair treatment for the working class, and shows the power and significance of collective action in changing the adverse social and economic conditions.

In May 1922, Anyuan Road Mine established a workers 'club to protect workers' rights and interests. In September, the mining authorities did not give a sincere response to the workers' request to pay the unpaid wages, and Li Li ordered the strike without hesitation. The road and mining authorities recognize the legal rights of the workers' club, improved treatment and increased wages. The successful termination of the five-day general strike showed the great power of the Chinese working class and had a great influence on various places.

Time	Strike Situation
On August 15,1922	Worker Liu Nianhong led more than 200 fried Alum workers on strike, and achieved the victory of increased wages and monthly wages.

Mid-February, 1931	Workers Liu nose and other four people organized workers to strike for five days, led more than 60 workers with firewood knives, drove out the tolerance sent by the county magistrate to catch people, forcing the management to each worker to add 10 copper coins every day, and pay the unpaid wages.
In the autumn of 1946	More than 200 workers held a three-day general strike, forcing the management to agree to pay for Alum.

Table 14: Spontaneous Organization of Three Strikes by Alum Miners
Source: Compiled by the Author

Before the founding of new China, Fanshan workers organized and held three major strikes. Lunan underground party organizations sent Lu Hanxiang, Li Wei, Xu Youkang, Zhang Jinbiao and others to Fanshan to establish the anti-enemy association, organized workers to carry out anti-japanese propaganda, fought against the local tyrants and evil gentry, carried out production self-rescue, and planted the fire of revolution among the majority of Alum workers(Association, 1990).

Time	Armed Struggle
In April, 1930	The insect shortage is serious, the Communist Party member Lv Hanxiang launched Fanshan, patio area hundreds of people to tan Lisheng and other tuhao liquidation valley accounts.
In November, 1939	Li Wei and other Communist party members established six associations of industry, peasants, commerce and young women in Fanshan, to publicize anti-Japanese aggression.
In October, 1940	Xu Youkang, head of the seventh working group of Anhui Provincial Party Committee and a member of the Communist Party, organized the "public mobilization committee" in Fanshan to publicize the resistance against Japan, and resumed the activities of the "workers' anti-enemy association" and other organizations.
In 1942,	The Fanshan branch of the Communist Party of China was established by the Lunan District Committee. During this time, Lunan guerrillas often come to Fanshan propaganda.
In early 1943	Fanshan Belongs to the leadership of the Communist Party of China, Jia Zheng as secretary, once served as deputy secretary.
In May, 1945	Shu Lutong County brigade second squadron instructor Zhang Jinbiao was ordered to Fanshan, actively contact merchants Lu Chengxia to carry out Fanshan united front work, organized merchants to deliver supplies to the guerrillas.
In October, 1946	After winning the battle with the enemy, they returned through Fanshan and stationed at the home of Lu Yeshan, where more than ten workers took the initiative to stand guard.
Winter 1947	Lunan guerrillas opened the warehouse of Shang Yitang, the richest man, and distributed silver dollars, copper banknotes, grain and clothing to thousands of workers and peasants.
In November, 1948	The guerrillas fought flexibly, burned a puppet fort in Fanshan and captured two pistols. From the brick bridge to the Fanshan, the PLA cleared the puppet army post, attacked the tortoise mountain big fort, and captured the puppet township head alive, laying the foundation for the establishment of a new regime in the Fanshan area.

Table 15: Miners Resolve Livelihood Crisis Through Armed Struggle
Source: Compiled by the Author

1.2.2 After the founding of new China

After the founding of new China, in the face of extremely severe economic and social challenges, the communist party of China leads the people self-reliance, hard struggle, implemented a series of unconventional policies and measures, promote poverty to be completed, is committed to improving the income level of the poor people, education, health services and living conditions, public satisfaction as the key to assess the effectiveness of poverty, focusing on meet the basic life needs of poor people. Fanshan With Alum Mine as the key transformation project, the investment transformation, including the modernization of mine and Alum production system, the establishment of auxiliary production and welfare facilities, and the realization of mine and Alum production capacity matching, enterprise management is gradually standardized. With the strong support of the country and the hard efforts of the enterprise employees, the Alum production has entered the track of healthy development, showing the vitality of the new socialist enterprise. Especially after the reform and opening up, China's rapid economic and social progress, the sustained growth of economic aggregate and the significant improvement of comprehensive national strength have not only reversed the social crisis of deteriorating livelihood, but also provided a solid foundation and strong support for the large-scale sustainable space redevelopment of the whole country.

1) Seek international assistance and accelerate the process of industrialization. Faced with the huge task of economic reconstruction and development, international assistance has played an important role in helping China solve the poverty problem. These assistance mainly included technical support, professional guidance, financial loans and material supplies from the Soviet Union and other socialist countries. In particular, these countries have sent a number of engineers and technical experts to China, who have provided key support in infrastructure construction (including factory, railway and power station projects) and shared advanced production technology and management experience. Through this series of support, China has not only accelerated the pace of industrialization and improved production efficiency, but also laid a solid foundation for China's economic development and poverty alleviation. In addition, international assistance has further strengthened the friendly and cooperative relations between China and socialist countries, and contributed to China's poverty alleviation and socialist construction.

2) Implement the planned economy and organize the resumption of production. The state implements a planned economy and nationalizes the industry, which guarantees the wages and welfare of the workers and improves the livelihood deterioration to a certain extent. In 1950, through the implementation of processing and ordering policies and unified purchase and sale policies, China gradually brought capitalist industry and commerce into the track of socialist transformation. Especially in Fanshan, the "local state-owned workers and peasants Alum factory" was established. By 1956,48 private Alum factories were successfully transformed into public-private joint enterprises, with Lujiang Alum Mine with local state-owned Alum factories as the core. After the joint venture, the production scale of Lujiang Alum Mine was significantly expanded, and the output of Alum increased steadily. The annual output once reached 20,000 tons, and the products were exported to the Philippines, Singapore, Japan, Malaysia and other countries and regions. This transformation process marks the end of Lujiang Alum Mine's thousand-year history of scattered, unplanned private mining, and opens a new page in the history of Fanshan development.

Figure 54: Independent Automotive Fleet and Labor Services Company
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

In 1985, Lujiang Alum Mine designated each production workshop, labor service company and automobile team as independent accounting units, decomposed the profit index, and adopted the contract method of "two levels of responsibility, separate accounting, self-responsibility for profits and losses, joint profit assessment, reward and punishment cash", and determined the responsibilities and rights of each unit in the form of contract. This kind of contracting method makes the work of each unit has a great initiative, no longer like the past and the bargaining of the mining department, but consciously to tap the internal potential, formulate specific assessment rules, layer upon layer to implement the contracting indicators. It not only

enhances the cohesion of the enterprise to the employees, and enhances the sense of responsibility of the employees, but also provides the economic benefits of the enterprise.

3) Accelerate technological innovation and increase production revenue. The state actively invests in technological improvement and industrialization, improves production efficiency, increases workers' income, and improves working conditions and quality of life. In 1956, Lujiang Alum Mine was selected as a key renovation project and received investment to complete the renovation of the mine and update the Alum production system. In addition, the auxiliary production facilities and living welfare facilities have been established to ensure the matching between the mine and Alum production capacity, and the enterprise management has also been standardized.

In the mid-1960s, Lujiang Alum Mine further increased the strength of technical innovation, established eight vertical kilns, and achieved a major breakthrough in ore roasting technology; adopted the Steam Frying Alum Rotary Kiln Slag Leaching Operation Process, marking the significant progress of frying technology, and the production process reached the semi-mechanized level. Increased the employment of workers, the number increased to more than 3000, Lujiang Alum Mine become a key backbone enterprise of the Ministry of Chemical Industry and Anhui Province. Under the strong support of the state and the unremitting efforts of the enterprise workers, the Alum production has embarked on the road of healthy development. In 1977, Lujiang Alum Mine provided expanded cement raw materials for the Chairman MAO Memorial Hall project through technological innovation, and was awarded by the Chairman MAO Memorial Hall Engineering Headquarters.

Figure 55: Product Receives Excellent Product Award from the Ministry of Chemical

Figure 56：Industry and Commendation from the Chairman Mao Memorial Hall Project

Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

4) We will respect workers' rights and interests of workers and improve social welfare. Through the establishment of a comprehensive social welfare system, including medical care, pension, unemployment and other social security measures, to ensure the basic livelihood of workers. In the National Outline for Agricultural Development released in 1956, it is clearly proposed that appropriate living care is provided to the widowed and lonely members of agricultural cooperatives who lack labor force to ensure that their basic living needs are met. Lujiang Alum Mine After its establishment, a series of living and welfare facilities, including workers 'schools, workers' hospitals, workers' clubs, Alum canteen, staff dormitories, which greatly improved the living conditions of workers. In 1965, Alum Mine launched a surprise activity in reducing the concentration of silicon dust. By taking the measures of "catching eyes with water" and "spraying water", the dust concentration was significantly reduced, the ventilation and dust prevention conditions of the mine were improved, and effectively reduced the dust harm that had long threatened the health of mine workers. In 1978, Lujiang Alum Mine completed the off-plant water supply project, an important infrastructure construction to meet the demand for Alum Mine production and domestic water, and further improved the quality of working and living environment.

5) Universal education for all and encourage knowledge to get rich. Promote compulsory education to enhance the overall education level and provide more employment opportunities as well as improve the social status for workers. Maintain a synergistic approach between poverty alleviation and intellectual as well as aspirational empowerment; enriching both material wealth and cognitive capacity, enabling impoverished individuals to harbor ambitions for prosperity alongside practical means to achieve it(Chambers, 2007). The Alum Mine places significant emphasis on educational initiatives. In 1964, to resolve the difficulties faced by workers' children in gaining access to education, a dedicated school for their children was formally established, filling the void in general education at the Lujiang Alum Mine and laying the foundation for future educational development. In 1965, construction began on a workers' club capable of accommodating 1,100 spectators with a building area of 1,303 square meters. Completed in 1967, this club provided a

cultural and recreational venue for workers and continues to serve as a location for major gatherings and film and theater viewings for Alum Mine employees to this day.

China's practice of solving the social crisis of deteriorating livelihood shows that poverty is essentially a fundamental attitude towards the people, and the people-centered approach is the fundamental driving force for poverty alleviation and reduction. Only by putting the people in mind and their interests first can we truly recognize poverty and poverty, and can we have inexhaustible impetus, clear direction and good measures to reduce poverty. These methods and measures have to varying degrees alleviated the deterioration of the population livelihood before the founding of the People's Republic of China, but at the same time have also brought a series of new social and economic problems, such as the imbalance between industrial and agricultural development, and the widening gap between urban and rural areas.

Figure 57: Improving the Educational Environment at Lujiang Alum Mine
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2. Social crisis in the era of machine industry — Environmental pollution

Although the process of space production, promoting the development of human civilization, also increases the vulnerability of the natural environment(Barrow, 2014). This phenomenon of environmental degradation can be regarded as the inevitable consequence of the development of human society to a certain stage. Through space production, the local economy has increased significantly, initially alleviated the social crisis of livelihood deterioration, and promoted the process of industrial civilization. However, this process also brings new survival challenges to the human society, followed by the fundamental change in the way of human production and life, as well as the significant expansion of the spatial scope of human activities(Rees, 2008).

The industrial revolution, as a technological revolution, is also a profound social change, which has had a profound impact on the multiple dimensions of human society(Stevenson, 1993). It has significantly increased social productivity, but also accelerated the social crisis of environmental degradation. The progress of science and technology has intensified the transformation of natural space and destroyed the balance of the original ecosystem. Human beings try to liberate themselves from the rule of nature, and they attempt to conquer nature and become the master of nature. This belief, strengthened by the rapid progress of modern science and technology, makes human beings more eager to dominate nature.

Figure 58: Panoramic View of Lujiang Alum Production Mine
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

The state of natural space is the basis of human existence and development. The destruction of the natural ecosystem has led to the severe dilemma of living space. The imbalance of the earth's ecosystem, and the increasingly intensified conflict between man and nature, which pose a serious threat to the survival and development of human beings. Ecological problems are not only related to the survival value of human beings and their production and life style, but also related to the status and civilization form of human beings in nature. The social crisis caused by environmental degradation not only reflects the negative impact of space production, but also reveals the survival dilemma of human beings in space. Humans cannot selfishly use natural resources, but must consider the adverse consequences of their actions.

Therefore, the spatial production has a profound ecological significance. Human beings must re-examine the relationship with the natural space to ensure a more

harmonious survival and achieve poetic habitation. This requires human beings to take effective measures to reduce the negative impact on the natural environment while promoting the social and economic development, so as to realize the harmonious coexistence of man and nature.

2.1 The social phenomena and characteristics of environmental damage

With the acceleration of China's economic industrialization process, the traditional Alum industry and other handicraft fields have experienced a fundamental transformation to the mechanized production mode. This shift not only greatly improves production efficiency, but also has a profound impact on the environment. Especially in the production activities of Alum industry, large-scale waste gas, waste water and solid waste are discharged into the natural environment, carrying harmful chemicals and pollutants, which brings a major threat to the ecological environment and even human health. As Huang Zhishou, deputy director of the Lujiang County Natural Resources and Planning Bureau, the environmental damage of the Alum Mine is extremely serious. In the bare mining area of 3 square kilometers, the ecosystem has been so greatly damaged that even the basic organisms cannot survive, forming an area that is extremely unfavorable to life.

The close relationship between the environmental damage and the "three wastes" discharge cannot be ignored. Among them, the air, water and soil pollution is an important environmental problem directly caused by the improper discharge or inadequate treatment of the "three wastes".

In terms of air pollution, exhaust emissions are the main source of negative impact. Especially in the roasting process of Alum stone, the emitted waste gas contains 0.2% to 0.8% sulfur dioxide. The emission of this gas can not only lead to the formation of acid rain, and then damage the forest and water ecosystem, but also cause respiratory diseases and other health problems.

For the health of the water ecosystem, the wastewater discharge also has a serious impact. In the process of mine mining and Alum production, a large amount of acidic wastewater discharged (pH value between 3.1 and 4.3) contains harmful substances, which pollute rivers, lakes and groundwater, destroy the habitat of aquatic life, reduce the water quality, and affect the safety of human drinking water and the survival of aquatic life.

Improper treatment and disposal of solid waste also leads to soil pollution problems, affecting soil quality and crop growth. The annual emissions of Alum sand and Alum mud from the extraction and crystallization process of Alum reached 70,000 to 80,000 tons and 15,000 to 16,000 tons, respectively. Solid waste sites have become the main source of pollutant diffusion to the surrounding environment, including toxic chemicals leaking into soil and groundwater.

In short, with the advancement of industrialization process, the mechanized production of Alum industry has improved the production efficiency, but its environmental impact can not be ignored. In view of the emission problem of "three wastes", effective management and governance measures should be taken to reduce their adverse impact on the environment and ensure the health of the ecosystem and the sustainable development of human society.

Figure 59: Piled-Up Mountain of Mining Waste
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

2.2 Methods, measures and effects of crisis resolution

The theory of space production emphasizes the ecological process of space production, which advocates the management and use of social space by humanitarian methods, aiming to realize the harmonious coexistence between man and social space, eliminate the contradiction between man and space, and deal with and solve the crisis faced by space. Natural space not only has practical value for human beings, but also has its own intrinsic value of independent development. Natural space is the basis of human survival and development, and constitutes a diversified organic integration including countless living bodies. If human beings fail to respect the natural space and its non-human life in the perspective of value, then the human moral concept will be regarded as incomplete and deviate from its essence.

In dealing with the pollutants left over from industrial sites, western developed countries established a complete management system earlier. In terms of financial investment, the transformation of industrial sites into public facilities and received financial support from the government. In addition, the private sector is encouraged to participate in the pollution control work of industrial sites by providing various measures such as low-interest loans, tax incentives and fund support. In terms of pollution control technology, a relatively mature technology system has also been formed.

In contrast, China started late in industrial pollution control, but it has also developed rapidly. Under the guidance of the new urbanization strategy, China's Alum industrial heritage place has achieved remarkable results in addressing environmental damage and social crisis. This shows that China is gradually establishing its own model and system in the ecology of space production. Through the comprehensive use of policies, funds and technological means, China will promote the environmental governance and spatial remodeling of industrial sites, aiming to realize the harmonious coexistence between man and natural space.

Environmental legislation and supervision, and accelerate pollution control. Strengthen environmental protection laws and their implementation, increase the cost of illegal emissions, and ensure that industry follows environmental standards. At the same time, environmental supervision will be strengthened to strictly monitor and punish enterprises that discharge pollutants. The Fourth Plenary Session of the 19th CPC Central Committee has incorporated ecological progress into a key link of socialism with Chinese characteristics and the modernization of national governance, and proposed the implementation of a strict ecological and environmental protection and responsibility system. Fanshan Alum production enterprises by strengthening management, control the pollution source of pollution, such as recovery of mine wastewater for ore weathering, to prevent the loss of Alum sand. By the requisition of land to deposit Alum sand, the newly built sand dam and flood drainage ditch in 1982 effectively contained the loss of Alum sand. In 2021, the Fanshan government launched the mine ecological restoration project with an investment of 264 million yuan for the large Fanshan, small Fanshan and Dongshan regions, with a total area of 84.74 hectares, marking a significant investment in ecological restoration in the region.

Figure 60: Lawfully Repairing Mines and Establishing Wastewater Treatment Plants
Source: Photographed by the Author

We will promote technological innovation to conserve energy and reduce emissions. Improve energy efficiency through the promotion of energy conservation and emission reduction technologies, production and products. The success of "Fine Powder Acid Leaching Formulation Process" of Alum production enterprises cured the environmental pollution of Alum mud, and realized the better unity of economic benefits and environmental benefits; the application of the coal consumption decreased by 10%; the comprehensive utilization of Alum stone and Alum waste residue and Alum mud, and realized the better unification of economic benefits and environmental benefits. Fanshan The government uses sulfur reducing bacteria microbial agent and other biological measures as the core for soil improvement, and then adjust the soil pH value, change the soil acid conditions, increase the soil organic matter content, reduce the soil heavy metal activity, play the purpose of curing and stabilization. When the soil reaches the conditions suitable for plant growth, the plant is cultivated, which better realizes the overall restoration of the mountain ecology.

Figure 61: Achievements and Promotion of Waste Utilization Technology
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

Industrial transformation and upgrading to develop a circular economy.

The government encourages and supports the industrial restructuring of traditional industrial areas, from high pollution and energy consumption to high-tech, low-carbon and environmentally friendly industries, so as to reduce environmental damage. Alum production enterprises develop circular economy, implement the recycling of resources, reduce the generation of waste and resource consumption, from "production" enterprises to "production and management" enterprises. Fanshan The government takes the initiative to explore sustainable development industries, make use of resource advantages, focus on cultivating building materials, iron and copper mining and smelting, kaolin deep processing, ecological forest development four advantageous industries, cultivate new development power and new economic growth points, open the new century Fanshan ecological revitalization, transformation and rise of the new journey. On the basis of resource protection, Fanshan focus on digging the potential of "bamboo", to build a comprehensive "upgraded version" of bamboo, new bamboo processing enterprises.

Figure 62: Fanshan Cultivates New Momentum through Environmental Governance
Source: Photographed by the Author

Part 2. Interpretation of the significance of the cultural aesthetic view

The significance change of the cultural aesthetic view in the era of Alum industry is related to the deepening of the production process of industrial space, and how people's understanding and evaluation standard of beauty undergo a major change. In the early days of the Alum industrial age, the improvement of industrial productivity and the progress of mechanical technology were often regarded as the symbol of human wisdom. This pursuit of progress and efficiency was reflected in the cultural aesthetic of that time, emphasizing functionality, simplicity and formal beauty related to industrial production. However, with the passage of time, people began to realize that the industrialization of environmental damage, social alienation, the pure pursuit of industrialization aesthetic also produced reflection, began to tend to more human, natural aesthetic tendency, emphasize the harmony and sustainability of the environment, and the position of people in nature. This change not only reflects the repositioning of human values in the process of industrialization, but also reflects the profound changes in the pursuit of social, cultural and even individual aesthetics, and reveals the vision of human beings seeking harmonious coexistence with nature in the constantly developing industrial civilization.

With the passage of time, the cultural aesthetic concept that shapes and drives space creation is also in constant evolution. This evolution usually reflects the changes in the fields of social culture, technology, economy, and politics, and how these changes affect people's understanding and expectations of spatial aesthetics and function. Understanding this evolution helps us to understand that spatial production does not exist in isolation, but is closely related to a broader socio-cultural context. Through the analysis of spatial production in different periods, we can have an insight into the trend and characteristics of social changes, and how they are reflected in our living environment.

1. Cultural aesthetics is the product of the continuous effect of spatial production factors

The formation of cultural aesthetic concept in the specific social and historical background stems from people's continuous utilization, transformation and innovation of space. With the passage of time, the behavior of space production constantly shapes and reshapes people's aesthetic preferences, cultural identity and lifestyle, and then develops a unique cultural aesthetic view. This concept further guides and

influences the future spatial production and social practice, forming a cycle of continuous change.

Henri Lefebvre The theory of space production points out that space is not neutral, but is the result of multiple factors such as social practice, political activities and historical influence. Space has multiple values: it is not only the means of production and practical consumer goods that create economic surplus value, but also a tool of political ideology control. It can be used by the state to establish a hierarchical structure, and it is also the center of class struggle and the place of change. The process of human beings transforming natural space into social space not only reflects the production activities that human beings give social significance to natural space, but also makes it a spatial form suitable for human habitation and development, leaving the imprint of society and human consciousness.

As can be seen from the space production process of Alum industrial heritage place cultural landscape, these social marks, human consciousness and cultural aesthetics are closely linked, which is reflected in how people express and shape their aesthetic preferences in artistic creation, life practice and social communication through the understanding, emotion and value judgment of the world around them. The human consciousness, as the psychological process of understanding self and environment, the formation of views and beliefs, has profoundly shaped the values, ethics and aesthetic standards of individuals and collectives. These internal cognition and emotions not only guide people's aesthetic choices and judgment through the expression of cultural aesthetics and aesthetics, but also form aesthetic standards and styles with specific times and cultural characteristics.

With the social progress, scientific and technological development and the evolution of ideology in the spatial production of Alum industrial heritage place cultural landscape, the development of human consciousness promotes the continuous renewal and change of cultural aesthetic values, showing the dynamic process of human pursuit of beauty and its inner spiritual world and external social environment. Therefore, the multiple and complex factors in space production directly or indirectly affect human cultural aesthetics, which in turn affect the natural, spiritual and social nature of space, shaping human consciousness and behavior patterns.

2. Space production constantly promotes the transcendence of cultural aesthetic domain limits

Alum industrial heritage place, the continuous influence of the spatial production factors of the cultural landscape on the cultural aesthetic view of the local residents can be deeply analyzed from multiple dimensions. First of all, as the results of social practice and historical evolution, these heritage places reflect the production mode, social relations and political and economic structure of a specific period, and these elements together create the physical appearance and spatial layout of the heritage places. The composition of such physics and space not only records the past social practice, but also reflects the political ideology and social values in the historical stage. Secondly, as a cultural landscape, the spatial material and symbolic attributes of Alum industrial heritage place have exerted a profound influence on the cultural aesthetic view of the local society. These heritage places are not only retained and displayed as material cultural heritage, but also their unique spatial form and historical meaning are integrated into the local cultural identity and collective memory, thus shaping the local people's cognition and evaluation criteria of beauty. Further, the Alum industrial heritage place cultural landscape demonstrates the ability of human beings to transform the natural space into a socially meaningful space through the social production process of its space. This process not only reflects the human transformation and utilization of the natural environment, but also reflects the human aesthetic pursuit and cultural expression of the living space.

Furthermore, Alum industrial heritage place, many elements of cultural landscape space production, such as its physical layout, architectural style, industrial relics, etc., have become the key elements for shaping and transmitting local cultural aesthetics. These factors not only affect the visual experience and aesthetic preference of the local society, but also promote the social cognition and value evaluation of the protection and application of industrial heritage in a wider cultural level, showing the close connection and interaction between cultural aesthetic appreciation and the production of social space.

In addition, the production of cultural landscape space of Alum industrial heritage place constitutes a dynamic and continuous evolution process, which not only includes directly visible activities such as the construction, transformation and utilization of physical space, but also covers the deep meaning construction and

dissemination of these activities on the social and cultural level. Space production has become an important driving force to promote the continuous expansion and deepening of local cultural aesthetic concepts, and urges social members to transcend the existing boundaries in the pursuit and understanding of beauty, and to explore broader and diversified aesthetic fields. This transcendence is not only reflected in the practice of art and design, but also penetrated into all aspects of daily life, making the boundary of cultural aesthetic view continuously expanded, reflecting the context of the dynamic development of society and culture. Especially with the application of new technologies, new materials, the innovation of design concepts and the change of social and cultural needs, the production of Alum industrial heritage place and cultural landscape space continues to promote the change of people's understanding and pursuit of beauty, which makes the cultural aesthetic concept continuously expand and deepen. This dynamic process encourages people to cross the original aesthetic boundary, explore and accept new aesthetic elements and styles, so as to transcend the existing aesthetic boundary in the continuous space creation and cultural interaction, and realize the evolution and enrichment of cultural aesthetics (Jixia, 2022).

Taking the significance change of social crisis in the industrial era of Fanshan Alum as an example, the process of the emergence and dissolution of social crisis in space production is not only the inheritance of traditional survival experience, but also the emergence of new social relations, survival wisdom, development concept and life style. Human beings must go beyond anthropocentrism, move towards natural aesthetics and laws, and create new ecological and humanistic values. For example, to create a more free and open urban-rural integration space, so that residents can enjoy a poetic life and free living. Alum industrial heritage place, The production of cultural landscape space should be oriented to the interests and needs of citizens, rather than only pursuing economic indicators. Space production should eliminate the space barriers and imbalance, promote the harmony and balance of space, eliminate the dual space structure and fracture, solve the huge gap between urban and rural areas, eliminate the gap between the rich and the poor and other problems.

Part 3. The driving force of the change of spatial production significance

Time and space constitute the basic coordinate system of human existence, and they are closely intertwined entities. In time without space, a human existence can

hardly be conceived. When discussing spatial and temporal issues, there are some changes to the importance of time and space according to specific situations, leading to the emergence of different cognitive patterns and theoretical perspectives. When the theoretical analysis tends to time, it will focus on the process, examine the event in the historical context, trace back its origin, change and development law, and deduce a historical thinking mode. On the contrary, the theory that emphasizes space focuses on the synchronization, existence and structure of things, and forms a spatial thinking mode through the dimension of space.

In the long river of history, the attention to time and space is not balanced, which often shows the deep attention to time and the relative neglect of space. Especially since the modern history period, the exploration of historical time has been given priority, while the description of space has been relatively marginalized, which has gradually formed a thinking pattern in the study of humanities and social sciences. This pattern leads to the general dependence on historical narration, such as philosophy history, cultural history, literary history, economic history, etc., and constructs a modern knowledge system with obvious historical consciousness around historicism.

However, under the framework of space-time theory, the cultural landscape study of industrial heritage should not be limited to the physical protection of the site, but should combine temporal memory with spatial production to deeply explore the cultural memory behind it. In this process, time memory acts as a bridge connecting the past and the present, the individual and the collective, the material and non-material. Spatial production is a necessary condition and component element of human production activities, covering the production of material wealth, social relations and spiritual culture, presenting rich spatial forms and diversified modes of production. With the evolution of the social space form, the mode of space production is also constantly changing, showing its inherent dynamics. At present, the focus of the theory of space production is on how to combine local characteristics to overcome the challenges encountered in the process of space production.

Space is closely linked with human production and living activities. The cultural landscape of the industrial heritage place is not only a static display of history, but also transformed into a vibrant social space. The initiation of spatial production first comes from the internal driving forces, which are the dynamic elements of the society

themselves, which jointly promote the creation, change and development of spatial structure and form. Alum industrial heritage place The drive of space production covers multiple factors such as natural resources, labor force and social system, which interact in a specific historical and geographical background and jointly shape the process of space production.

1. Rich and recoverable local natural resources

The term "natural resources" is commonly known as the matter and energy existing in nature on the earth. Cihai defines this as: natural objects that exist naturally and have utilization value, excluding raw materials processed and manufactured by human beings. Such as land, mineral deposits, water conservancy, biology, climate, ocean and other resources, are the source and space of raw materials for production. The United Nations Environment Programme is defined as the general term for the natural environmental factors that can generate economic value and improve the current and future welfare of human beings under certain time and technical conditions. According to their renewable properties, natural resources are divided into renewable resources, renewable resources and non-renewable resources. Their characteristics include availability, integrity, variability, spatial distribution uniformity and regional, etc.

In the human "space production" activities, natural resources play a vital role and constitute the material basis of space production. For example, the wood, stone and metal minerals needed for construction are all derived from natural resources and are key elements in building a physical space. The development and utilization of natural resources have a profound impact on regional economic activities and spatial layout. At the same time, the availability and quality of resources are crucial to the protection of social well-being. Clean water, air quality, adequate food supply and energy security are at the core of building a healthy social space. Thus, natural resources are not only the material basis of space production, but also a key factor in shaping socio-economic structure and environmental sustainability. In space production, the rational utilization and long-term protection of natural resources must be considered to ensure the sustainability of human activities(Neefjes, 2000).

Fanshan Known as the "underground cornucopia", the hilly terrain and surrounding castle peak provides superior natural conditions for rich mineral resources, underground proven mineral deposits including Alum, iron, copper, kaolin

more than 10 kinds, including Alum and kaolin reserves of 20 million tons, iron ore reserves of 20 million tons, copper reserves of 2 million tons. Alum stone reserves is the first in the country, reaching more than 300 million tons.

Fanshan It is famous for its name since the Tang Dynasty and has a history of more than 1500 years. The exploitation of Alum not only became the core of the town's cultural memory, but also shaped its unique regional characteristics and cultural connotation. From the perspective of cultural memory, the spatial production of Fanshan benefits from its rich local natural resources, which not only constitute the basis of regional material practice, but also have a profound impact on the construction of social structure and the formation of cultural representation. These resources not only support the local economic development at the material level, but also shape the spatial characteristics and social identity of the region at the cultural and social level.

2. Hard-working and intelligent local working people

In the torrent of historical development, the relationship between human beings and nature has experienced the gradual transformation from the primitive adaptation to the modern transformation of nature, and at the same time integrated into the protection and sustainable development of the natural environment. This topic is the core of long-term research in many disciplines, such as philosophy, ecology and environmental science. The concept extensively involves the use of human natural resources, the impact on the ecological environment, and how humans adapt to and manage the natural environment. In essence, human beings are the product of nature, and natural space has a wide range of value to human beings. Human beings can change the form of natural space, and natural space also affects the operation of human society. There is an interaction and interdependent relationship between human and natural space.

In the context of modern Chinese, "working people" usually refers to those groups who rely on physical or intellectual labor to get remuneration. They constitute the main body of social productive forces, including workers, farmers, service employees, intellectuals and so on. This term emphasizes the economic status and social role of the workers, rather than their specific occupation or job content. In the course of China's historical development, the working people have always been the driving force for social and economic development. The ancient agricultural society

relied on the hard work of the farmers to ensure the food supply and stability of the society. The craftsmen and the craftsmen promoted the progress of technology and the development of civilization through the inheritance and innovation of their skills. With the advancement of modernization, the status of the working class has been promoted and become the backbone of industrial production.

Fanshan The profound accumulation of thousands of years of history and culture has nurtured the cultural tradition of worshiping culture and morality, learning, knowledge and integrity, and cultivated the famous celebrities, people of lofty ideals and the pillars of the country. There are well-known officials, the red model of the revolution, the pillars of the construction of the country, built a unique cultural scene, leaving the glorious imprint of the spirit of the Alum people. With their diligence and wisdom, they support social development and become an important pillar of national prosperity and national rejuvenation. They are not only the link between natural resources and space production, but the direct participants of material space production, but also the important shaper of social space and cultural space. They have not only changed the material space, improved the quality of life, but also affected the construction of social space and the form of cultural space, leaving a rich cultural heritage and social experience for future generations.

In the memory of Fanshan Alum culture, the quality characteristics of "diligence and wisdom" are reflected in the local people's exploitation, processing and utilization of Alum resources, and they stand firm in the social crisis of livelihood deterioration and environmental damage. The diligence of several generations of Fanshan people is not only a simple repetition of manual labor, but also includes the continuous innovation of mining technology and a keen insight into the market demand. Their diligence represents the deep development of resources, while their wisdom is reflected in the whole process of transforming natural resources into economic benefits. Through continuous learning and innovation, they can improve production efficiency, improve product quality and expand the sales market. Especially after the founding of new China, Lujiang Alum Mine has developed into one of the key chemical mines in China and become the backbone of large and medium-sized enterprises in Anhui Province. The super Potassium Alum and super Ammonium Alum won the title of "high quality product" awarded by the Ministry of Chemical Industry and Anhui Province; the concrete expansion agent developed by the mine

won the second prize of National Science and Technology Progress, and was listed as the key promotion project of scientific and technological achievements of the Ministry of Construction. Its products are sold well in Singapore, Japan, Malaysia, New Zealand and other countries and regions, winning the reputation of "Chinese Alum industry mainstay, the mother of Anhui chemical industry".

Figure 63: The Worker Huang Guoyuan Who Makes Production Tools Himself
Source: Fanjingshan History and Culture Exhibition Hall, Lujiang County

Fanshan The case shows that the diligence and wisdom of the local working people not only mined rich Alum stone resources, promote the development of local economy, but also through the inheritance and development of Alum culture, formed a unique local culture and social identity. Lujiang Alum Mine When the development is difficult, call on the whole factory staff to carry forward the "spirit of one penny" , carry out activities to increase production and save money, and build mines. In the activity, the excellent work of the workshop group reflects the master spirit of the working class. Their life style, social organization, values, customs and traditions have left a deep mark on the local space, and constructed a social structure and cultural landscape with local characteristics. In today's era, with the increasingly prominent global environmental problems, such as climate change, loss of biodiversity, and depletion of resources, the relationship between man and nature becomes more and more important. The international community is increasingly inclined to adopt the development model of ecological civilization, that is, while ensuring economic and social development, realizing the protection and restoration of the ecological environment, and promoting the harmonious coexistence between man and nature in the new era. Fanshan The industrious and intelligent spirit of the

working people will continue to be passed down from generation to generation, become the valuable wealth of local and national space production, and contribute to the construction of a harmonious society.

3. Gradually improved local social system

At the end of the 20th century, the field of humanities and social sciences experienced a theoretical innovation called "Spatial Turn", the core of which emphasizes the importance of space and geographical environment to social science research. This theoretical change has led to a renewed focus on the spatial dimension and the recognition that space is not only the background of the physical environment, but also a decisive factor in the formation and development of social relations and social structure. The spatial shift has prompted a deep reflection on the concept of space, especially the role and significance of space in the cultural, political and economic fields.

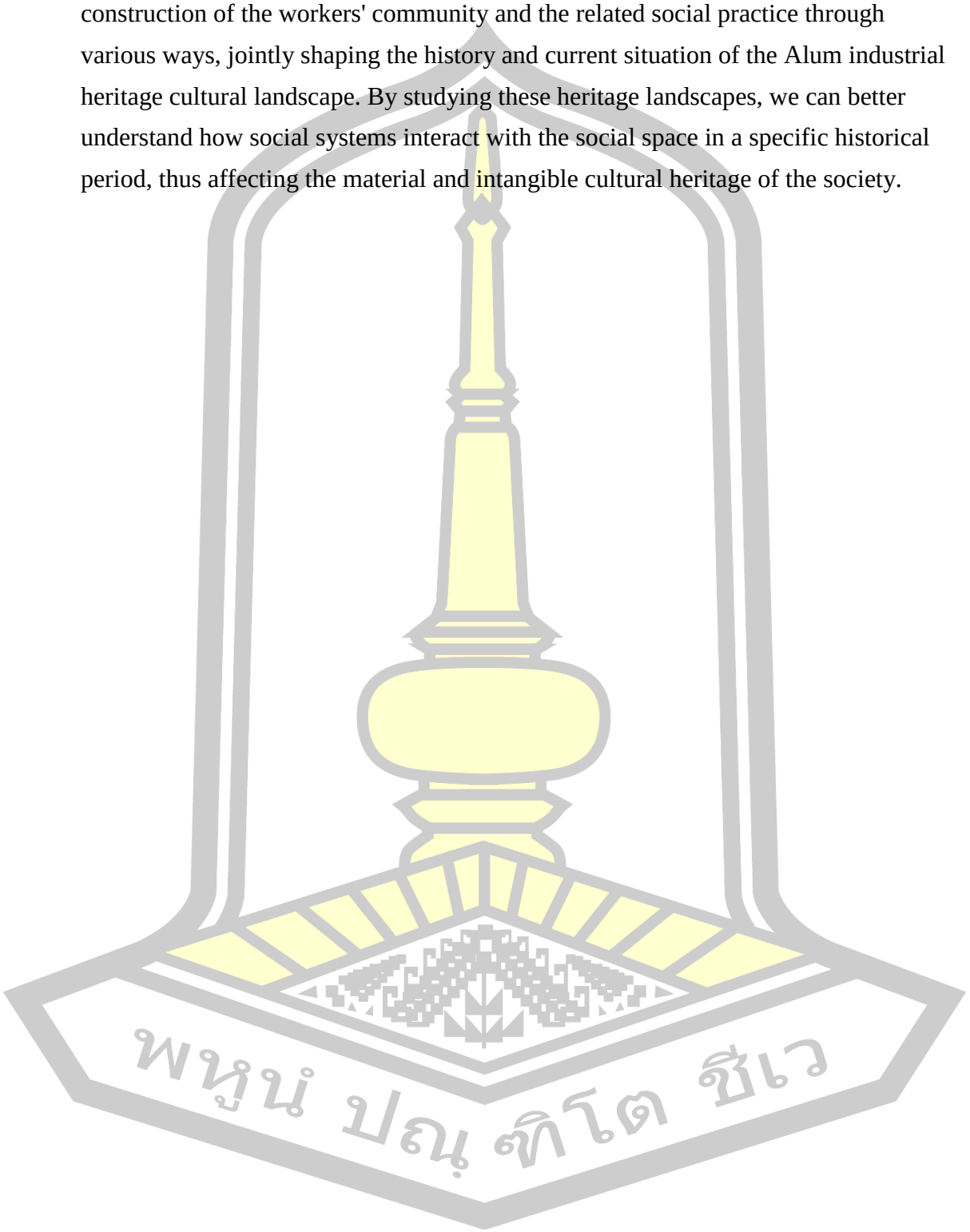
In the production process of the social space, the social system provides the key framework and rules for its operation, which determine the use mode, distribution mechanism and functional orientation of the space. These systems directly shape the actual form and connotation of social space by shaping the physical structure, social structure, and cultural symbol of space. As a result of the interaction, the concrete expression of social space both reflects and reproduces the existing social system, because space is the place where social relations and social practice occur, and people's activities and interactions in it will constantly maintain or challenge the existing social order. Therefore, social space is not only the product of the role of social system, but also the stage for the implementation and embodiment of social system. In his book The Spirit of Law, Montesquieu analyzed different political systems and legal systems, discussed the interaction between law and social structure, and emphasized the role of legal system in social development.

The production of social space needs to adjust and reform the existing social system to adapt to the needs of social development, solve the problems in the system, improve the efficiency of the system, and promote the progress of the whole society. In the Communist Manifesto, Marx and Engels emphasized the importance of the social system reform, criticized the capitalist social system, and advocated the establishment of the communist system. Therefore, the social system is not only the product of historical development, but also the driving force to promote historical

progress. The changes of social system is usually accompanied by the reorganization of social structure, the transformation of economic model and the renewal of cultural concepts, which have had a profound impact on the use of natural space and the process of human history.

Alum industrial heritage Cultural landscape, as a unique industrial heritage, not only preserves the memory of the past industrial activities, but also reflects the formation and evolution of the social system, political and economic structure and social space in a specific period. The political system, through the formulation of laws, policies and planning, determines how the regime affects the use and development of space. In the historical development of Alum industry, the government supported the development of Alum stone mining industry through policies, such as providing land use rights, investing in infrastructure construction, formulating industry standards, etc. These political decisions directly affect the formation of Alum industrial heritage cultural landscape, such as the location of mining areas, the layout of factories and the construction of workers' residential areas. The economic system determines the allocation and utilization of resources in the society, and affects the development and spatial distribution of industries. The rise and fall of Alum industry is closely related to the global economic demand, technological progress, market competition and other factors. With the change of the economic system, such as the transformation from the planned economy to the market economy, the production and trading mode of Alum industry also changes, and then affect the relevant social space structure. Social systems, including education, welfare, labor law, etc., affect the living conditions and social status of workers and their families. The formation and development of Alum industrial communities are closely related to these social systems. The residences, schools, hospitals and recreational facilities in the cultural landscape of the industrial heritage are all the concrete embodiment of the social space under the influence of the social system. Cultural traditions and values are also a part of the social system, which affect people's cognition and use of space. Alum industrial heritage The architectural style, production technology and community organization in the cultural landscape all carry the specific cultural significance, reflecting the cultural attributes of the past social space.

In short, the social system determines the layout of the Alum stone industry, the construction of the workers' community and the related social practice through various ways, jointly shaping the history and current situation of the Alum industrial heritage cultural landscape. By studying these heritage landscapes, we can better understand how social systems interact with the social space in a specific historical period, thus affecting the material and intangible cultural heritage of the society.



Conclusion

In this chapter, the research method of multidimensional spatial analysis deepens the significance of spatial production change.

This chapter analyzes the impact of social crises on spatial transformation, selecting the "deterioration of livelihood" during the handicraft era and "environmental destruction" during the mechanical industrial era as case studies. It reveals how these crises facilitated spatial reshaping and summarizes the strategies implemented by the Alum industry heritage places in addressing these challenges. These strategies not only highlight the necessity of spatial transformation but also provide a strategic framework for addressing potential future crises. The discussion further elaborates on the role of cultural aesthetics in spatial production and how spatial production promotes the expansion and development of cultural aesthetic concepts. The research emphasizes that the elements of spatial production not only have a continuous effect on cultural aesthetics but are also a key driving force in expanding the boundaries of cultural aesthetics. Moreover, from the perspective of cultural memory, this chapter identifies and affirms the three endogenous dynamics of spatial production at Alum industry heritage places: the abundance of local natural resources, the diligence and intelligence of the local labor force, and the continuous improvement of social systems. It is believed that these elements together form the dynamic foundation of the heritage place's spatial production.

Considering the contents of this chapter, the study systematically summarizes the internal power of Alum industrial heritage place space production, the key social crisis faced and the profound significance of its transformation, as well as the interactive complexity of cultural aesthetics and space production. This study provides a multi-dimensional and multi-level theoretical architecture for understanding and interpreting the spatial re-production of Alum cultural landscape.

In the following chapters, discuss the inevitability and necessity of space re-production, in-depth analysis of the sustainability theory and practical strategy of Alum industrial heritage space production of cultural landscape, and explore the application and significance of the theory of space production in the Chinese context.

Chapter V:

The Sustainability of Production of Space

Introduction

This chapter aims to explore the sustainability of spatial production. Sustainable development refers to in the process of space creation and utilization, comprehensive integration of environmental protection, social justice, and key factors such as economic development, to ensure that space planning and practice can meet the demand of modern society, and does not damage the needs of future generations to meet potential, the purpose is to promote space use to long-term stability and harmonious development(Marten, 2010). Under this concept, space production is not only the process of shaping the physical environment, it also maps the social structure, economic form and culture aesthetic evolution, its core goal is to promote a sustainable, health and diversity of space environment, to ensure that the interests of all interested parties, at the same time maintain the stability of the space production system and functionality.

At present, the concept of cultural soft power is getting more and more attention. Through the dissemination of their cultural charm and values, countries or regions can enhance their ability to influence other countries and regions. This power covers cultural products, artistic expression forms, educational system, language and ideology. With these non-mandatory means, it can shape public opinion on a global scale and enhance the international image and influence of a country. There is a close connection between the cultural landscape space production and the cultural soft power in the Alum cultural industrial heritage place. As a unique cultural and historical symbol of the region, the protection and re-production of Alum cultural industrial heritage not only helps to maintain the local historical memory and traditional craft, but also is the key way to show the cultural characteristics and historical depth of the region. Through appropriate planning and management, the cultural landscape of these heritage places can be innovated and transformed, and the cultural life can be continued. At the same time, it provides education and experience opportunities to attract tourists and scholars from home and abroad, so as to enhance the cultural attraction of the region.

Therefore, the first part of this chapter explains the historical opportunity of Alum industrial heritage place space re-production in three dimensions: the historical inevitability of Alum industrial heritage place space re-production, the crisis of labor shortage and the policy orientation of China's sustainable development. In the second part, from the perspective of cultural inheritance, the ternary dialectics of spatial production theory is put forward the conception, practice and characterization paradigm of spatial re-production of Alum cultural landscape. In the third part, according to the evolution characteristics of Alum cultural landscape, it examines the application paradigm of western space production theory in China, and summarizes the three convergence results of the concept of development of "changing life" and "changing space", Harmony between Man and Nature and "people-oriented" aesthetic, "small place" and "big topic".

Part 1. Historical opportunities for spatial re-production of Alum industrial heritage place

According to the theory of space production, human production practice makes space no longer a blank area, but with social value and cultural significance. Different social forms have different spatial forms, and the specific spatial form maintains the evolution of specific social space, thus forming the interaction mechanism between space production mode and social space form; social space mode restricts space production mode, space production mode also shapes and influences the social space mode; and space production mode is constantly changing with the change of social space form.

Since the implementation of China's reform and opening up policy, especially in the 21st century, China has actively integrated into the global economic system and achieved rapid economic growth by attracting foreign investment, promoting an export-oriented economy and participating in the international division of labor. In this process, globalization has not only provided China with capital, technology and market, but also brought cultural and information exchange, and promoted the diversification and openness of Chinese society. At the same time, the new urbanization strategy promoted by the Chinese government aims to lead the economic development and social transformation through urbanization, optimize the urban and rural structure, improve the quality of urbanization, and realize the all-round development of human beings and urban-rural integration.

After experiencing rapid industrialization and new urbanization, China is facing the challenge of transforming from quantitative growth to quality growth. This transformation not only involves the economic field, but also is related to social governance, environmental protection, cultural inheritance and innovation and other aspects. Therefore, at the present stage, the Chinese-style modernization policy is a comprehensive modernization strategy, aiming at realizing the sustainable and healthy development of economy, the comprehensive progress of society and the harmonious coexistence between man and nature. By promoting the comprehensive development of globalization, a new type of urbanization and Chinese-style modernization, China is striving to explore a new path of modernization that is both in line with the international development trend and has Chinese characteristics, so as to realize the great rejuvenation of the Chinese nation.

Alum industrial heritage place The historical opportunity of spatial re-production of cultural landscapes is that they can be re-evaluated and utilized in the context of globalization, new urbanization and Chinese modernization. These heritage places not only carry the historical and cultural values of the industrial revolution, but also have unique spatial potential in contemporary society. With the social emphasis on historical and cultural protection and the increasing demand for innovative, multifunctional and sustainable space, these industrial heritage places can be transformed into museums, cultural and art centers, business incubators or public activity spaces through creative re-production. Alum industrial heritage place The spatial re-production of the cultural landscape will enable visitors to experience and understand the lifestyle and working process of the past industrial society by retaining and reproducing the production tools, mechanical equipment and working environment of the industrial age. It not only adds new impetus to local cultural life, but also provides new growth points for economic development. At the same time, it promotes the diversity and historical continuity of urban and rural space, and provides a unique place for modern urban and rural areas connecting the past and the future. This process brings a historical opportunity for the Alum industrial heritage place cultural landscape to redefine its own value and function.

1. Historical inevitability of spatial re-production in the information age

From the perspective of the academic theory research of space production, the human understanding and practice of space production is a continuously updated and rising evolutionary process. Before Henri Lefebvre, scientists mostly regarded "space" as an abstraction, an empty shell without content and unaffected by the way of perception. For example, Aristotle believes that space is the sum of the locations occupied by objective matter; Euclidean believes that space is isotropic and infinite. Similarly, a great contempt for space exists in philosophy, such as Kant regards space as a "transcendental" category, an intuitive form of sensibility. The essence of space is ignored by various disciplines, and it is directly defined as absolute, geometric and optical. These views and attitudes lead to the depreciation of space, and lead to the traditional space-time view of "eliminating space through time". Henri Lefebvre After reflecting on the defects of the traditional space theory, it is concluded that the space should pay attention to explore its essential properties, rather than simply stay on the study of its external image. The mode of spatial production has also changed from the

natural production in the previous space to the production of the space society. In other words, space is produced, a process that involves multiple dimensions of power, culture, economy, and politics. It prompts people to jump out of the traditional material production and rethink the relationship between space, power and social practice. In this sense, space is dynamic, subjective, and full of symbolic and social meanings.

Therefore, people realize that in the process of social development, the spatial structure and function constantly adapt to the needs of social change, economic development and cultural evolution, and thus the process of change and re-production is inevitable. Space is not only passively adapting to these changes, but also an important factor driving social development and cultural change. In the evolution of history, the changes of economic foundation and social structure will inevitably lead to the adjustment and re-production of spatial form and function, so as to meet the needs of new modes of production, way of life and social relations. TICCIH In the Nizhny Tagil Charter for the IndustrialHeritage, formulated and published in 2003, it is also clearly stated that: " Industrial sites are transformed into new use value to keep them safely. This practice is quite acceptable. General heritage practice cases without historical and cultural background should establish new functions, uses and architectural forms that adapt to and coordinate with them on the premise of retaining the original organization and operation mode of the building subject."(TICCIH, 2003). Therefore, the re-production of space is not an isolated event, but an inevitable phenomenon in the process of social and historical development, which reflects the expectation of social forces for the shaping and remodeling of space under specific historical conditions.

In the new era, China's Alum industrial heritage place space re-production comes from the various needs of social and economic development and the promotion of cultural protection awareness. Alum industrial production is an important way of social progress, once actively caused the social crisis of livelihood deterioration, contributed to the rapid development of the local, but also brought a new huge social crisis of environmental pollution. With the transformation of the society, the traditional industries began to decline and became industrial sites. These sites became injuries that hindered local development. With the rapid development of China's economy and the advancement of the new urbanization process, the protection and

rational utilization of historical and cultural heritage has become an important topic of social development. Alum industrial heritage place As a witness of the history of industrialization, it carries rich historical and cultural values and the memory of industrial civilization. Their re-production can not only help to inherit and promote industrial culture, but also meet the needs of modern society for historical and cultural space. At the same time, during the transition period, China is facing the optimization and upgrading of its economic structure. The spatial re-production of Alum industrial heritage place can provide new cultural tourism resources, creative industry bases and community activity space for the city, which is conducive to promoting the diversification and sustainable development of the local economy. In addition, with the enhancement of global environmental protection awareness, the protection and reuse of Alum industrial heritage place also conform to the trend of green development, reduces the pressure on the development of new resources, and reflects the respect for and protection of the historical environment. Therefore, from the perspectives of cultural inheritance, economic transformation and environmental protection, the spatial re-production of Alum industrial heritage place is the inevitable historical choice of China's social development in the new era.

2. Social crisis in the information age — Labor shortage

It has been mentioned in the historical stages of the development of Alum cultural landscape, China's information age usually refers to the end of the 20th century. China's information age is divided into two stages: the completed new urbanization period and the new Chinese modernization stage. Due to the differentiation of development in different regions, the progress and effect of the two stages are not consistent in time, and there is no obvious boundary between the division of time period.

Labor shortage is a common problem in the two stages of the information age, and it shows the characteristics of changing from the shortage of highly skilled labor force to the shortage of knowledge labor force.

2.1 The social phenomenon and characteristics of labor shortage

Man is an advanced product of nature, with a high degree of wisdom, let people have the illusion of surpassing nature, let people unwilling to be the subordinate status of nature, and strive to become the master of all things, become the subject of nature.

The existence of human contradiction shows that man is first a component of the natural system, which must rely on nature to exist, and human initiative also depends on nature. China's information age not only marks a new stage of the country's information technology as the core driving force, but also reveals the deep causes of the social phenomenon of labor shortage. The characteristics of this era are reflected in the economic, social life, government governance and other levels, showing the high penetration of the Internet and digital technology(Rancière, 2009).

First, in the economic field, the rapid rise of the digital economy has not only become a new engine driving China's economic growth, but also gradually changed the demand structure of the labor market. With the rapid development of the Internet, big data, artificial intelligence and other technologies, the demand for high-skilled labor force has increased greatly, while the demand for traditional low-skilled labor force has been relatively reduced, exacerbating the problem of labor shortage. The popularity of emerging business models, such as e-commerce, online payment, cloud computing and the Internet of Things, has greatly improved the production efficiency and the optimization and upgrading of the economic structure, but also put forward higher skill requirements for the labor market, making the skill mismatch more obvious.

Secondly, in terms of social life, the popularization of intelligent lifestyle brought about by information technology not only deepens people's dependence on digital technology, but also indirectly affects the labor market. Although the popularity of smart phones, the convenient access to the Internet, and the rich diversification of online services provide unprecedented convenience for people, they also have a double-edged sword effect on the labor market. On the one hand, the application of information technology has created a large number of employment opportunities for some industries; on the other hand, the development of automation and intelligence has to some extent replaced the traditional human work, further aggravating the labor shortage in specific fields.

Third, in terms of government governance, the promotion of government digital transformation has significantly improved the efficiency and quality of public services, but also has an impact on the labor market. With the development of economy and the advancement of urbanization, a large number of rural labor force is attracted to the cities to find higher income jobs, leading to a large loss of labor force

in rural areas. The increasing number of young people choose continuing education or seek better development opportunities in cities, reducing the number of people willing to work in agriculture and other township labor. The promotion of e-government and the construction of smart cities have improved the transparency and convenience of government services, but they also require government departments and employees to have a higher ability to apply information technology. Although the implementation of data sharing and business collaboration strengthens the efficiency of information circulation and collaboration between governments, it also raises the urgent demand for professional and skilled labor force, reflecting the transformation and challenges of the labor market in the context of the information age.

Through technological innovation and application, China's information age not only promotes the comprehensive transformation of the economy and society, but also reveals the deep reasons behind the labor shortage phenomenon. The transformation of economic structure and industrial upgrading increase the demand for talents with professional skills and technical knowledge, especially in emerging industries such as information technology, biotechnology, new energy and environmental protection. In addition, with the improvement of the urbanization level, the demand for local professionals to develop high-quality service talents, such as education, medical care, finance, law and other industries, is also increasing. The shortage of talents in these areas limits the quality and level of urbanization development, and also reflects the core problem of the current labor shortage in local development.

2.2 The impact of labor shortage on space production

In February 2001, the Lujiang Alum Mine was discontinued. With the decline of Alum Mine, talent outside, capital outflow, enterprises move out, the development of Fanshan fell into a trough. In the context of China's information age, the demand for "skilled and knowledge-based" talents is increasing, and this trend has had a profound impact on the labor market. Especially in the field of Alum industrial heritage place space re-production, the continuous expansion of this demand makes the labor shortage phenomenon more prominent, bringing a series of adverse effects to the social and economic development.

First, the labor shortage has led to a shortage of talents, especially in the field of high skills and high knowledge, including the repair and re-production of Alum industrial heritage place. This imbalance between supply and demand not only pushes

up the cost of talent, increases the operating burden of enterprises, but also limits the rapid development of emerging industries and high-tech industries, including Alum industrial heritage place space re-production. In the critical period of informatization and digital transformation, the shortage of talents has become one of the bottlenecks restricting enterprise innovation and competitiveness improvement.

Secondly, the labor shortage also aggravates the problem of skill mismatch and affects the optimization and upgrading of the economic structure, including the effective use and transformation of Alum industrial heritage place. With the increasing demand for advanced skills and knowledge-based talents in the information age, the low-skilled labor force is facing the risk of marginalization, which not only affects their employment opportunities, but also leads to the reduction of the allocation efficiency of social resources. The aggravation of skill mismatch makes it difficult for some key industries and fields, especially the spatial re-production field of Alum industrial heritage place, to find suitable talents to support their development, thus affecting the healthy development of the overall economy.

In addition, labor shortages may also lead to increased social differentiation. As the demand for highly skilled and highly knowledgeable talents increases, the income and social status of this group of people may further improve, while the labor force lacking corresponding skills may face the double pressure of employment difficulties and declining income. This differentiation not only intensifies social inequality, but may also trigger social dissatisfaction and stability problems, especially in the communities of Alum industrial heritage place.

To sum up, although the information age has brought unprecedented opportunities for economic and social development, it also brings the challenge of labor shortage, especially in the characteristics of labor shortage in Alum industrial heritage place space re-production. This has a negative impact on enterprise innovation, the optimization and upgrading of economic structure and social harmony and stability. Therefore, solving the problems of labor shortage and skill mismatch, improving the adaptability and flexibility of the labor market, especially in the field of Alum industrial heritage place space re-production, has become an important task facing China in the information age.

2.3 Policy orientation of China's sustainable development

The Chinese government has long recognized the importance of sustainable development, and has gradually promulgated and implemented a series of policies and planning measures in the field of sustainable development. First, 1994 marked the starting point of China's policy on sustainable development. Through the release of China's Agenda 21 and the Outline of the Strategy for Sustainable Development, China has established the basic goals and framework of action for sustainable development. In the 21st century, the National Sustainable Development Plan released in 2007 further defines the medium-and long-term sustainable development goals. In 2014, the National New Urbanization Plan (2014-2020) emphasized the importance of human urbanization and ecological civilization construction. In 2015, China stepped up efforts to strengthen ecological progress through the Overall Plan for reforming the System for Ecological Civilization. The outline of the 13th Five-Year Plan in 2016 listed "green development" as one of the development concepts, and clearly defined the goals and tasks for ecological progress. In 2017, China implemented the Implementation Plan of the National Ecological Civilization Pilot Zone (Jiangxi), and China explored a replicable and extended ecological civilization construction model. In the end, the 14th Five-Year Plan for 2021 and the 2035 Outline once again emphasized green development and set specific goals and measures to accelerate the construction of ecological civilization. These series of policies and plans reflect the process of China gradually deepening the concept and practice of sustainable development from the overall plan to the concrete implementation.

Under this series of sustainable development policies, China will realize the transformation from environmental damage to ecological modification to ecological civilization in a planned and step-by-step way.

Figure 64: Residents of Fanshan Developing Ecological Industries
Source: Photographed by the Author

In the process of discussing the Chinese-style modernization, especially in the background of emphasizing the sustainable development orientation, the opportunities and challenges of Alum industrial heritage place space re-production have become an important issue. These heritage places not only carry the imprint of China's industrialization history, but also are valuable resources for achieving the sustainable development Goals. Through the re-production and innovative utilization of these regions, we can not only protect and inherit the precious industrial culture, but also promote the coordinated development of economy, society and environment, reflecting the core value of Chinese-style modernization.

The core of Chinese-style modernization is to follow the national conditions and open up a development path with Chinese characteristics, among which the guiding role of sustainable development policy occupies an important position. This orientation not only emphasizes the balance between economic growth, social progress and environmental protection, but also provides opportunities for the sustainable development of Alum industrial heritage place space re-production, jointly leading to the long-term, comprehensive and high-quality development.

Figure 65: Initial Success Seen in Ecological Management of Lujiang Alum Mine
Source: Photographed by the Author

In practice, China's sustainable development policy focuses on the transformation of its economic development mode, reducing its dependence on resources and improving environmental quality through the development of circular economy, promoting clean energy and implementing energy conservation and emission reduction policies. At the same time, scientific and technological innovation is adopted to enhance the core competitiveness of the industry, promote the

optimization and upgrading of the industrial structure, and create scientific and technological and industrial support for the spatial re-production of Alum industrial heritage place.

In addition, China's sustainable development policy also focuses on narrowing the regional development gap, supporting the development of underdeveloped areas, improving the public service system, improving the level of social programs such as education and medical care, and promoting urban-rural integration, providing the background for social progress for the re-production of Alum industrial heritage place. By actively participating in global governance and promoting international cooperation, we can ensure that the fruits of economic growth benefit all people and reduce unequal income distribution, and the Alum industrial heritage place re-production will be able to find new opportunities for cooperation and development from a global perspective.

These measures to protect and inherit Chinese culture, establish an ecological civilization system, and realize the harmonious coexistence between man and nature are not only an important part of China's sustainable development policy, but also provide a profound cultural and ecological foundation for the re-production of Alum industrial heritage place space.

To sum up, the guiding role of China's sustainable development policy and the sustainable development opportunities of Alum industrial heritage place space re-production are integrated, which constitute a comprehensive policy to promote the coordinated development of economy, society, culture and environment, with a solid foundation laid for the realization of the great rejuvenation of the Chinese nation.

Part 2. re-production of Alum cultural landscape space in the information age

The re-production of Alum cultural landscape space refers to the cultural revival and spatial renewal of the geographical areas related to the mining, processing and use of Alum stone. This process involves not only the physical restoration and replanning of industrial sites, but more importantly, the protection and activation of traditional techniques, social practices, knowledge systems and cultural values related to Alum stone. From the perspective of cultural inheritance, the significance of this re-production is to maintain and strengthen the identity of the community, promote the continuation of historical memory, and provide a window for the contemporary

society to understand and experience the past lifestyle, so as to maintain and develop the continuity and vitality of Alum culture in modern society.

Henri Lefebvre A deep understanding of spatial production, through the triple properties of naturality, spirituality and sociality, reveals the complexity and multidimensional value of Alum industrial heritage place. In the information age, the increasingly convenient communication technology and transportation have created the necessary conditions for the ecology of space production. Space production is the birthplace of social relations, creating social space, cultural space, relationship space and other spatial forms. The relationship between spatial production and society is not a linear decision mechanism, but a multiple interaction mechanism. Space production produces people's space thought, space value and space culture. The space production of the same type is related to the same space culture, while different types of space production breed different space culture.naturality lies in that these heritage places are not only places for the production of material materials, they closely rely on the natural environment, reflecting the development and utilization of natural resources, and the harmonious coexistence with the geographical environment. This is particularly true in Alum industrial heritage place, where the location, the production process and even the shape of the product are deeply rooted in its specific natural conditions. Spirit is reflected in the profound cultural and historical significance of Alum industrial heritage place. These heritage places are not only the product of physical space, but also the witness of human wisdom and spiritual pursuit. They record the past technology, production mode, social organization form, as well as people's yearning and pursuit of a better life, is the intuitive embodiment of the past social production relations and production order. Social characteristics reveal the important role of Alum industrial heritage place in shaping regional social structure, economic model and cultural identity. These spaces not only show the order of capitalist rule, but also are the witness of political ideology and social changes. Alum industrial heritage place The existence reflects how industrial activities profoundly affect the development of social relations and cultural forms, and shows the complexity and diversity of the development of human society.

Name of the Triad Space	The Corresponding Concept	Representation Content

Conceived Space	Representation of Space (Spiritual, political nature) "Space-people" planning	The representation of space corresponds to the space conceived by planners, scientists, urban planners, technocrats and social engineers, which belongs to the dimension where social space is conceived and is a conceptualized space.Embodies the ruling group of knowledge and ideology of the representation, space and production relations, and the implied order of these relationship, it as a ruling tool, biased to the rational construction of language symbol system, such as government documents, written regulations, formal marketing advertising, etc., and through various present rule of architectural symbols to play a role.
Spatial Practices	Perceived Space (Physical, natural) "Space-Place" runs	The practice of space corresponds to the special place and the overall space of each social structure, meaning the perceived space. It not only implied the space of the society, but also reflects the social relations, for the social components (such as residential, commercial blocks, railway, highway, airport) and the behavior of individuals and groups in the production and re-production, it is the process of production and re-production, but also as a result, space practice gives the main position in production. Space practice must have some kind of cohesion, but that does not mean that it is coherent.
Representational Space	Lived Space (Social, cultural) The "Space-society" experience.	Personal subjective spatial experience shaped by symbols, images, and personal emotions. Space concepts, planning and regulation in knowledge and experience are used to guide the re-production of space.Representational space is a daily, temporally coherent, non-linguistic symbol space, in which people live, but they do not fully understand its implicit and changing meanings, which have not been expressed by people in language and other symbol systems, but they are permeated in daily life.

Table 16:The Concept of Triadic Space and Its Significance
Source: Compiled by the Author

Therefore, starting from the theory of spatial production of Henri Lefebvre, the spiritual, natural and social characteristics of Alum industrial heritage place not only enrich our understanding of space production, but also provide us with a comprehensive perspective to examine and evaluate industrial heritage places, emphasizing their important value as human history and cultural heritage.

1. The idea of the re-production of Alum cultural landscape space

In the information age, we not only deeply understand that the production and re-production of space is not only a physical existence, but also a collection of spiritual and symbolic meaning. It is composed of the imagination, dreams, vision and creativity of social members, which reflects the perception, experience and meaning of space given by individuals or collectives. This concept emphasizes that space is dynamic and subjective, which goes beyond the limitations of the real world and provide us with a critical perspective of reality and conception of the future.

The conception of spatial production provides us with a framework for guiding how to jointly shape space through social practice, cultural expression, and individual imagination. Under this framework, planners, scientists, urban planners, technocrats and social engineers, through their expertise and ideology, use government documents, written regulations, formal marketing and advertising systems, as well as architectural solutions.

For the cities rich in industrial heritage, it is particularly important to formulate the feasible industrial heritage protection and reuse planning. This will not only help to protect and utilize the industrial heritage in the city, explore its historical connotation, maintain the continuity of the urban context, improve the urban function, but also stimulate the vitality of the city. However, the protection and reuse of industrial heritage face many challenges, including the lack of industrial heritage research, the lack of information records, and the limitations of time and resources of designers. This requires us to pay more attention to interdisciplinary knowledge integration and in-depth investigation and research in the research and planning process of industrial heritage.

Figure 66: Conceptualization of the Spatial Reproduction of Alum Culture Landscapes by Researchers
Source: https://www.idea-king.org.cn/worksinfo-8979.html

Through the in-depth discussion and application of the theory of "the conception of space", we can better understand and practice how to reconstruct the perception and understanding of physical space through creative thinking and imagination, and explore and realize more diversified, fair and sustainable ways of space production. This is not only a reflection and criticism of the reality, but also the conception and

innovation of the future, which provides a new perspective and method for the protection and reuse of industrial heritage.

2. The practice of re-production of Alum cultural landscape space

In the information age, the production theory of space highlights the close connection between spatial practice and social structure, and emphasizes the interaction of the special place of each social structure and the whole space, which means that the perceived space will become the field of material data production. This theory not only reveals the spatial dimension of the society, but also profoundly reflects the construction of social relations, covering the production and re-production of social components such as housing, commercial blocks and transportation networks. Space practice not only plays a leading role in this process, but also is the result of production and re-production, reflecting the core position of space in social construction. Despite its cohesive nature, spatial practice also demonstrates the diversity and diversity of social space, including multiple different social relationships and striving to integrate these scattered areas and activities.

In 2021, Hefei Production and Investment Group, Lujiang County Fanshan Rural Revitalization Investment Co., LTD., Hefei Binhu Investment Holding Group Co., LTD. Jointly established Anhui Fanshan Cultural Tourism Development Co., LTD., and jointly launched the Alum Mine cultural tourism project. The project is planned to cover an area of about 10,000 mu, of which the construction land is about 1,200 mu, with a total investment of about 2.5 billion yuan. Using information means and relying on the rich resources of Alum industrial heritage, the project aims to effectively protect and utilize these industrial relics, signs and features, with the preservation of historical context and the promotion of regional characteristics as the core, and realize the spatial re-production of industrial heritage through the organic integration of industrial memory, ecological construction and cultural and tourism activities. In the context of information age, the project is committed to the industrial heritage function and attribute to cultural tourism field, through ecological protection, Alum ore activation, ancient renewal, rural revitalization and cultural landmark construction, realize the transformation from a single scenic spot to comprehensive landscape domain, promote the development of "tourism +" multiple formats, embodies the concept of difference space production, aims to create a new space form with time characteristics and regional characteristics.

Figure 67: The Bauxite Cultural Tourism Project has officially commenced.
Source:https://fanshangroup.com

2.1 Tapping into local aesthetic resources to achieve economic transformation

Alum industrial site space production practice, because of its rich natural resources and historically developed as industrial base, as the industrial decline become industrial heritage cultural landscape, with the information age, ecological civilization become people space production aesthetic ideal, Fanshan space production practice is facing new challenges of transformation and opportunities. In this transformation process, Fanshan excavates new natural resources, uses these resources in a sustainable way, protects the ecological environment, and promotes the diversified development of the economy.

While the ecological environment is effectively protected, the space production practice of Fanshan has developed agricultural activities with local characteristics, such as using the natural environment of Alum industrial heritage place, due to its humid and pleasant environment, beautiful natural environment and rich natural resources (Mougeot, 2006). These places can become destinations for hiking, birding, nature photography and outdoor adventure, attracting visitors to experience the beauty of nature. There are Wa River, YCao River, Qiaochong River and Batan River meet here, the water is clear, and Buding Mountain, Shuangding Mountain, Zhaiji

Mountain, Huangshanzhai and other spectacular terrain, pleasant scenery. In particular, Buding Mountain, named for its shape resembles a capkettle, is the second highest peak in Hefei, 486 meters above sea level. The selenium-rich blueberry base on Niutou Mountain in Lehua Village, as the largest selenium-rich industrial planting base of selenium-rich blueberry in Anhui Province, shows the effective utilization of local characteristic resources. The Fanshan soil selenium content is as high as 1.32mg / kg, five times that of ordinary soil, and it is a selenium-rich land. The blueberry base covers an area of more than 1,500 mu and has nearly 20 varieties. In May 2015, Lehua Village was awarded the honorary title of "The No.1 Village of Selenium-rich Blueberry in Anhui Province".

Figure 68: Fanshan Cultural Tourism Festival Blueberry Picking
Source:https://chinanews.com.cn

Further, use local natural resources to develop local products, such as handicrafts and agricultural products, not only in Alum industrial heritage place tourism projects, but also to the wider market through e-commerce platform. Fanshan With 105,000 mu of mountains, forest coverage rate of more than 75%, geographical and climatic conditions are very suitable for bamboo growth, bamboo varieties, bamboo forest area of more than 40,000 mu, known as "ten thousand mu of bamboo sea". Especially in the south of the Shixia village, bamboo area of more than 20,000 mu, bamboo sea landscape spectacular. In recent years, on the basis of resource protection, Fanshan deeply excavates the potential of bamboo resources, comprehensively enhance the

bamboo industry, through the new processing enterprises and guide farmers to carry out deep processing, improve the added value of bamboo resources, and strive to achieve the increase of farmers' income and industrial development(Xie, 2015).

Figure 69: Fanshan Farm with Thousands of Acres
Source:https://fanshangroup.com

The economic transformation of China's Alum industrial heritage place, through the excavation and utilization of new local natural resources, not only brings new economic vitality to the local people, but also promotes the recovery and protection of the environment, and realizes the harmonious development of economy, society and environment. In addition, the development of renewable energy projects such as wind and solar power has also brought new growth points for the local economy. This ecological development of space production based on the utilization of local natural resources is not only a way to realize the sustainable development of human beings, but also a necessary condition to maintain the balance of the natural ecosystem. It is both possible and necessary to build a harmonious relationship between man and nature.

2.2 Constructing an Aesthetic Consumer Space for Alum Cultural Landscapes

In the context of the information age, the transformation of Alum industrial heritage cultural landscape is not a burden or obstacle to the past, but a precious resource and unique characteristics. The value of this resource is not only reflected in the material and economic levels, but also more deeply reflected in the comprehensive value of its history, science and technology, society and art. With the advancement of digitalization and information technology, Alum industrial heritage cultural landscape, with its differences in scale, use, age and historical development, shows the unrepeatable industrial characteristics, which is particularly valuable and rare in

the homogenized urban style under the background of globalization. The spatial re-production of these heritages is regarded as a kind of protective transformation. By increasing protection funds, improving the protection system, and its popularity and social and cultural influence have been enhanced by information means(De Groot, 2016).

In the wave of commercialization, the spatial re-production of Alum industrial heritage cultural landscape is facing the challenges of globalization and urbanization. Tourism, as an important economic and social regional space, has become the key to economic transformation and sustainable development through continuous production, acquisition and creation. Government policy support, private investment and community participation encouragement, together drive the process. The participation of local residents not only meets the local needs, but also strengthens the recognition and support of the project. In this process, the ecological restoration and protection of the environment affected by the Alum stone mining has laid a foundation for the subsequent ecotourism and other sustainable projects.

With the push towards the cultural industry, consumer production has turned into a process of creating cultural symbols. These aesthetically symbolized consumer activities not only beautify the products but also form an alliance with these symbols. The developed industrial society in the information age creates the consumption ideology through the media, and controls the daily life and the personal choice, so as to promote the consumption and ease the capitalist crisis. Alum industrial heritage place The consumption and production of the cultural landscape, through its unique cultural characteristics, is different from the material consumption, and provides a valuable place for the scientific research and education in the natural environment and historical background. Through the establishment of education and research bases, ecology, geology, industrial heritage protection and other fields of research.

Figure 70: Utilizing Cultural Landscape Resources for Tourism Development in Fanshan
Source: Photographed by the Author

Under the promotion of cultural industrialization, consumption production has become a process of creating cultural symbols. These symbolic consumption activities not only beautify the consumption goods, but also form an alliance with these symbols. Alum industrial heritage place Consumer production stimulates people's desire through symbolic ideology, and spreads this ideology to every corner of daily life. Using the local industrial heritage cultural landscape, develop characteristic products, such as handicrafts, agricultural products, sold in Alum industrial heritage place tourism projects, at the same time, with the help of e-commerce platform, promote to a wider market, showing the clever integration of commercialization and differentiated space production in the information age.

3. The Representation of Aesthetic Space re-production in Alum Culture Landscapes

Characterational space, also known as living space, embodies the profound concept of spatial production, and aims to capture and analyze the subjective feelings and practical functions of space in individual life. This idea highlights that space is far beyond physical or geometric entities, but is a complex area of experience created by symbols, images and personal emotions. In this field, space is regarded as an active, multi-dimensional and meaningful existence, which is shaped not only by experience and knowledge, but also by individual knowledge and experience. Representational

space is considered as the space of social construction, and its attributes and meanings are constantly generated and reshaped in the individual's daily practice. The remarkable feature of this space lies in its subjectivity and experience, which not only covers the physical space dimension, but also integrates personal emotion, memory and identity. Characterational space is formed through the interaction between individuals and space, the projection of memory and emotion, and social and cultural practice. These factors jointly influence the perception and utilization of space, and then give specific social and cultural significance to space.

Under this framework, the space is transformed into an active participant, integrated into the construction of individual and collective life, and affects the shaping of social relations, identity and cultural practice. The concept of representing space emphasizes the interaction and interdependence between space and social life, and points out that space is experienced, interpreted and re-created in the continuity of daily life and the passage of time. Therefore, the study of representation space aims to reveal how people experience space in their daily life, and how these spaces react on people's lifestyle, social relations and cultural identity. This needs to adopt an interdisciplinary perspective, combine the theories and methods of geography, sociology, cultural research and other fields, and deeply discuss the social construction process of space and its impact on individual and collective life.

In the information age, the re-production representation of Alum industrial heritage place cultural landscape space shows that the differentiation space of Alum industrial heritage place cultural landscape space gradually reflects the Alum industrial heritage cultural characteristics. The results of this conception and practice, through the transformation of local residents' life style and the improvement of living environment, symbols, images and emotional expressions, show the vitality and vitality of Alum industrial heritage place space, and stimulate the vitality of daily life.

3.1 Improvements in residents' lifestyle aesthetics

Alum industrial heritage The spatial re-production of cultural landscape is closely linked to the evolution of local people's lifestyle, showing that space is not only a physical existence, but also the complexity of social construction. Lifestyle shifts involve the evolution of daily behavior patterns, consumption habits, social interactions, and values. In the context of the information age, the cultural landscape

renewal of Alum industrial heritage place not only transforms its physical appearance, but also shapes the residents' innovative way of life.

In this renewal process, Fanshan people pay increasing attention to environmental protection and sustainable development. While enjoying the improved living environment, residents have cultivated the awareness of environmental protection and prefer a greener life mode. Alum industrial heritage place Space re-production, gradually realizing the aesthetic goal of ecological civilization through the participation and cooperation of local communities, strengthens the community connection of Fanshan people, and at the same time enhances their ability and awareness to participate in public affairs and jointly cope with challenges. The improved living environment makes the Fanshan people become active contributors to the development of the heritage places.

Fanshan People's agricultural lifestyle has also undergone a significant transformation, which has integrated the advantages of traditional agricultural practice and modern technology. With the re-production of Alum industrial heritage place cultural landscape space, Fanshan area not only reshaped its physical environment, but also brings new development opportunities for local agriculture. The introduction of modern information technology, such as intelligent agriculture systems and online marketing platforms, allows Fanshan people to more efficiently manage crop growth, improve yield quality, and broaden their sales channels. In addition, the Fanshan people during this period began to pay attention to agricultural sustainability and environmental protection, using more environmentally friendly farming methods and natural resource management strategies. By combining traditional knowledge and modern technology, Fanshan people's agricultural lifestyle not only retains the uniqueness of their cultural heritage, but also conforms to the development needs of the information age, showing a new agricultural model that keeps pace with The Times and exists harmoniously.

Figure 71: Fanshan Emphasizes the Sustainability of Agriculture
Source:https://fanshangroup.com

With the development of tourism, the cultural landscape re-production of Alum industrial heritage place provides the local residents with rich options for economic activities. In addition to traditional industries, emerging fields such as service industry, tourism, cultural and creative industries have opened up diversified employment and entrepreneurship opportunities for residents. These cultural landscape Spaces become a platform to show their history and culture, allowing local people to further explore and participate in the history and culture of their communities, and cultivate a lifestyle based on cultural pride. These Spaces become places for residents to communicate and interact, celebrate festivals and hold cultural activities, promoting the connection between community members and the enhancement of cultural identity.

One of the symbols of the information age is the wide application of digital technology. Fanshan People's lifestyle has thus become more digital, with digital technology playing a key role in preserving Alum industrial heritage place's cultural memory, and in education, work, entertainment, etc. This not only improves the convenience of life, but also broadens the way for residents to obtain information and communicate.

Through the re-production of Alum industrial heritage place cultural landscape space, Fanshan people have not only witnessed the improvement of their living environment, but also formed a new way of life that focuses on cultural experience, environmental protection, digital integration, diversification of economic activities and community participation. In this process, the concept of differentiation space can

be reflected, that is, through specific social practice, cultural expression and economic activities, a space with unique social significance and function is created, so as to promote the diversified and personalized development of life style.

Adopt prudent strategies for the combination of the festival and the daily living space, but insist on reflection and transcendence, so that the festival can activate the innovation ability of the daily life. But the festival should be the play of the human body, rather than the strengthening of technical rationality. The festival of daily life because not not of individual aesthetic activities on the class revolution makes his aesthetic redemption increasingly limited.

Figure 72:Fanshan Hosts Farmers' Harvest Festival
Source:https://www.ahljnews.com

The festival of daily life is to investigate the disadvantages of space fetishism from the perspective of aesthetic, and overcome the negative influence of space fetishism with the aesthetic dimension of festival, and its central proposition is rhythm and rhythm."Through the medium of rhythm, a lifelike space appears, it is the scope of body space. Festivals yearn for a higher realm of life aesthetic and eliminate the disadvantages of space fetishism life. Space fetishism in manipulating daily life has caused many problems of modernity, resulting in the lack of free will. Therefore, it is necessary to limit space fetishism and restore perceptual authority. Henri Lefebvre He pointed out that flexible sensibility must be used to remove the mediocrity and dogma of the space, so as to restore the overall nature of people and make life rich and

colorful."Sentiality makes the work of art alive. A work of art loses its life if it is not oriented to a pure creature. But festivals, at most are the release of personal pressure, unable to bear the responsibility of liberating all mankind. Henri Lefebvre The daily life festival of excessive advocating individuality, excessive emphasis on free will, also has a negative impact on the realization of group interests.

3.2 Improvement of social governance level

Since China proposed the concept of "beautiful countryside" in 2013, and established the grand goal of "implementing the rural revitalization strategy" in the report to the 19th National Congress of the CPC in 2017, it aims to comprehensively improve the ecological environment, economic development, social governance, cultural inheritance, innovation and quality of life in urban and rural areas. The core purpose of these policies is to improve local infrastructure, promote modern agricultural technology, promote local economic diversification, strengthen the construction of local social governance and service systems, and protect and utilize local cultural heritage. Through these comprehensive measures, the goal is to achieve the sustainable development of urban and rural areas, improve the living standards of residents, promote the integrated development of urban and rural areas, and finally achieve the vision of strong agriculture, beautiful rural areas and rich farmers(B. Li, 2023).

In Alum industrial heritage place, thanks to the support of national policies, through the application of the concept of "Alum cultural landscape space re-production" and "differentiated space", the cultural landscape can be effectively regenerated and innovatively utilized, which greatly enhanced the cultural and historical value of the region. Fanshan As a typical town at the junction of urban and rural areas, it covers a total area of 126 square kilometers, covering 11 villages and 1 community. According to the statistics of 2022, the total population is 70,600. This population base makes it particularly important to strengthen the construction of local grass-roots political power and social governance system, and to promote the improvement of the residents' self-governance system. Through the establishment and improvement of the systems of village affairs openness and residents 'council, residents' participation in local affairs and decision-making power have been significantly enhanced, the self-management, residents' self-service, self-education and self-supervision have been realized, and the transparency and fairness of social

governance have been effectively enhanced. In addition, the policy also emphasizes on strengthening the construction of local rule of law, popularizing legal knowledge, improving the legal awareness of residents, and solving the contradictions and disputes in Fanshan area through legal means, including the publicity of legal knowledge, the establishment of legal service system and dispute resolution mechanism, providing a solid legal guarantee for local social governance.

Alum industrial heritage place Encourage and guide all sectors of society to deeply participate in the sustainable development of the local government, covering diversified forms such as volunteer service, social organization support and enterprise investment. This extensive social participation not only injects rich resources into the revitalization of Fanshan, but also promotes the efficient integration of social forces and local governments, and enhances the vitality and innovation of social governance. Through the improvement of Fanshan's public services such as education, medical care, culture and culture, the cohesion of the community and the happiness of residents are enhanced. At the same time, the supply of public services is optimized, which not only significantly improves the quality of life of residents, but also lays a solid foundation of livelihood for social governance.

Using modern information technology, such as the Internet, big data, cloud computing, etc., the spatial re-production of Alum industrial heritage place has promoted the spatial re-production of "smart Alum industrial heritage place" and improved the modernization level of social governance. Through information means, the local public service management has been optimized, and the efficiency and level of governance have been improved, and the innovation and progress of social governance have been realized.

Alum industrial heritage place Space re-production not only significantly improved the local residents material living conditions, and by strengthening the construction of social management system, promoting the construction of the rule of law, improve public service, promote social participation and multiple measures such as rural construction, effectively promote the comprehensive progress of local social governance, to build a harmonious and stable and dynamic rural social environment. Since 2010, Fanshan with its "Alum culture landscape space re-production" and the successful application of the concept of "differentiation space", continuous won "the first batch of Anhui province expansion strong town pioneer", "create civilized village

town in Anhui province", "Anhui provincial ecological construction pioneer", "the first civilized township", and the honorary title, and in 2016 was "thousand town" in Anhui province, these achievements fully embodies the Fanshan in the implementation of local sustainable development and modernization of social governance.

Figure 73: Enhancing the Level of Social Governance in Fanshan
Source:https://fanshangroup.com

3.3 The re-production of aesthetic culture

How to rationally guide the scientific reuse of industrial heritage in the conception of space production, not only to avoid the loss of vitality due to excessive emphasis on static display, but also to avoid the reduction of marketing gimmicks due to excessive commercial development, is particularly critical to find a balance between the two. First of all, in the reconstruction design of industrial heritage space, attention should be paid to give the new space more emotional elements, and to establish a closer connection and expression between people, people and space, and space and space. In the process of industrial heritage reuse, it pays attention to the inheritance of aesthetic culture, connects the historical memory through innovative design elements, effectively preserves the authenticity and integrity of old industrial plants, and creates a rich and variety of new architectural Spaces. Secondly, in the selection and application of industrial heritage architectural elements, more aesthetic culture should be integrated, so that people can recall the past times through the elements in the building. Select the elements with the characteristics of The Times that can inherit the history and culture, such as the bricks, columns, wall and door

panel frame of the old building, ceiling and skylight, dome, doors and Windows, chimneys, roofs, as well as the waste machine tools, machinery, industrial process tools and landmark slogans in the factory. Through the creative reconstruction, combination and application of these old architectural elements and the new architectural elements, the breakthrough of the overall design is realized, so that people can experience the essence of the old era while enjoying the modern life.

The aesthetic culture of industrial heritage can be mainly divided into two categories: one is the collective memory of the working class who grow together with industrial and mining enterprises and experience the wind and rain together. These memories are particularly prominent in the industrial and mining enterprises after the founding of new China, including the sense of pride, identity and ownership of the working class, as well as the sense of loss brought about by the changing times. The reuse of industrial heritage has become a place for displaying old life scenes and remembering cultural memories, allowing people to travel through time and preserving production streamlines and related historical materials. The other kind of aesthetic culture is reflected in the personal nostalgia of the families of industrial workers and the residents around the industrial area in the industrial period. This kind of memory is more reflected in personal perception and complex, such as the influence of unit courtyard culture on residents' life. The reuse of industrial heritage is usually transformed into era memory characteristics and new era of creative industry space, as far as possible to keep the old industrial plant building subject, into the vicissitudes of history at the same time, the transformation into including leisure area, business district, cultural exhibition area, creative space, realize the coexistence of industrial heritage history culture and commercial development. This reuse mode emphasizes not only the grand historical narrative, but also the personal complex of the consumption era, showing the deep understanding and innovative practice of "the era expression of aesthetic culture" and "the re-production conception of industrial heritage space".

3.3.1 The continued enrichment of regional aesthetic wisdom

In the information age, the production of difference space is particularly important and complex. This concept not only covers the remodeling and utilization of physical space, but also goes deep into the integration of virtual space, social and cultural needs and technological innovation. In particular, the production of different

space under the background of information technology aims to create a space with unique identity, function and cultural depth with the help of innovation and technology, and give full play to local wisdom to meet the diversified needs and personalized lifestyle of the society. Man and nature can be unified, because man is originally the product of nature, is the constituent elements of nature, and man has the ability to reflect. People can transform the specific form of space, but they cannot do without nature, and they must constantly exchange material and energy with nature. Unlike other animals, people do not simply conform to the environment, but can change the environment. All the achievements of human civilization are based on natural space and resources. Remove the mentality of conquering and using nature, and change to regulate nature. In order to restrict the transformation of nature, we need both laws and regulations and ecological norms to help. Human beings should promote the ecological space production and bravely shoulder the responsibility for nature.

First of all, the differential spatial production in the information age attaches great importance to the integration of space and technology. Through intelligent design and management, the space is not only limited to the physical form, but has become the center of information exchange, data processing and technology interaction. To realize the sustainable development of space production, an efficient and environmentally friendly production technology is needed. The progress of production technology can promote the construction of new spatial forms (Quansheng, 2015). For example, the application of the Internet of Things, big data and artificial intelligence in the design and operation of public space can improve energy efficiency, enhance security performance, optimize user experience, and create a unique intelligent space. Secondly, the production of differential space in this era emphasizes more on user participation and community interaction. Using social media, online platforms and mobile applications, users can participate in the design, planning and management process of the space, and build a space governance model of co-creating and sharing. This not only promotes the development of spatial personalization and versatility, but also deepens the connection among community members.

Further, with the help of virtual reality (VR), augmented reality (AR) and other technologies, the production of differential space in the information age breaks the

physical boundaries and creates a mixed space with the integration of virtual and real. This space provides an immersive experience, opens up a new platform for cultural display, education and training, entertainment and leisure and other fields, and enriches the functions and significance of the space. In the process of respecting and inheriting history and culture, the production of different Spaces uses digital means to protect and reuse historical buildings and cultural heritage, and effectively preserve the historical memory and cultural identity of the city. At the same time, combining modern design concepts and technologies, the traditional space is transformed into a multi-functional space to meet the modern needs, so as to realize the harmonious coexistence between history and modernity, tradition and innovation.

In the academic idea of exploring the relationship between man and nature, a core point is that man should regard himself as a member of nature, rather than its ruler, and assume the responsibility of maintaining the balance of nature. This reflects the profound impact of human activities on the environment and advocates a more sustainable, nature-respecting attitude towards life. On this basis, the concept of "local wisdom play" into the re-production of Alum industrial heritage space means that when retaining the authenticity of industrial heritage, not only preserve the architectural and historical marks with industrial characteristics, but also pay attention to the identifiability in the process. This includes preserving the principle of repair traces as mentioned in the Venice Charter. At the same time, with the help of local wisdom, the emphasis on the distinction between the new part and the original part, to ensure that the updated industrial buildings can still identify their original pattern.

With the improvement of the market system and the progress of the social system, the role of the government should be changed from a manager to a service provider, no longer fully responsible for public affairs. In addition, the spirit of the rule of law is crucial. The market will fall into chaos in the absence of the rule of law. Therefore, all the activities of the country, including the operation of the market economy, the implementation of political rights and the protection of the ecological environment, should strictly follow the law. Finally, it is necessary to regulate the behavior of the space market subject. Marketization itself is not a problem in space production, but the staggered interests of the government, enterprises and businessmen may lead to the deviation in space production. Through further marketization and perfecting the system of paid use, according to the market rule

adjustment space use and exchange, can optimize the allocation of the space resources, realize the reasonable layout of space industry, and reasonable adjustment of the benefit distribution between the government, enterprises and urban residents, to better play to the local wisdom, in Alum industrial heritage space re-production of history and modern harmonious integration, tradition and innovation.

Under this framework, by digging deep into the local wisdom, the local unique cultural elements and wisdom are integrated into the space design, which not only enhances the cultural depth and local characteristics of the space, but also provides a new perspective for the re-production of historical space such as Alum industrial heritage. This method not only retains the original meaning of space, but also increases the readability and coherence of space through innovative methods, providing rich practical cases and theoretical support for space re-production in the information age.

3.3.2 Inheritance and reconstruction of aesthetic culture

In the information age, the re-production and production of industrial heritage and the planning and design of ancillary buildings are not only influenced by the development history styles and schools of architectural art in a specific historical period, but also integrate the new perspective of contemporary aesthetic culture and information technology(Fan & Tan, 2019). This integration of artistic expression, appeal and aesthetic value, with the influence of mechanical production and industrialization on the city and life, makes people gradually accept and appreciate the artistic characteristics in the process of industrialization. The arrival of the post-industrial era makes for a new understanding of the modern art in the early industrial era, and extracts the rich formal language and artistic ideas. The machine aesthetics and artistic value in the industrial heritage inspire the modern designers to use the creative thinking to re-create the place and artistic value, showing the unique spirit of The Times(STRONGMAN, 2007).

In the academic discussion on the authenticity of industrial heritage, the integration of aesthetic culture in the information age has brought a new perspective to the discussion of "repairing the old as the old" and "repairing the old as the new". The authenticity of the industrial heritage in its long-term development process is relative and development, therefore, in the process of re-production in the pursuit of authenticity should follow the regularity of cultural development, avoid excessive

storage, at the same time into the information age of aesthetic and technological innovation, in a more flexible and open way to retain and show the value of industrial heritage.

Figure 74: The Local Government's Plan for the Inheritance and Recreation of Alum Cultural Landscapes
Source:https://fanshangroup.com

In the restoration process of industrial heritage, the idea of Alum industrial heritage space re-production emphasizes the combination of technology and materials in the information age. For example, for the repair of masonry and concrete structures, advanced nondestructive testing technology and material science achievements can be used, such as through digital technology for brick joint removal, salt removal, moisture-proof layer repair and other procedures. The corrosion treatment of steel structures can utilize the latest chemical or physical rust-proof coatings, as well as the use of digital monitoring technology to ensure uniform and durable coatings. For the crack treatment of beams and columns, the precise injection method and filling method can be used, combined with digital modeling technology to optimize the repair scheme, to ensure the long-term effect and aesthetics of the repair effect. In this way, the re-production of Alum industrial heritage space not only retains its historical and cultural value, but also shows the integration of aesthetic culture and technological innovation in the information age, providing new ideas and methods for the protection and utilization of industrial heritage. In 2020, Fanyan Town initiated the "FANYANSHENGXI" brand identity design project, integrating industrial heritage conservation with agricultural product development. The project was executed and completed by the author's teaching team.

Figure 75: Fanyan Town "FANYANSHENGXI" Brand Logo
Source: Authored Design Works

In the information age, the generation and transformation design of industrial heritage cultural landscape not only needs the support of ecological theory and technology, but also needs the rich design language provided by art aesthetics, which is particularly prominent in the conception of Alum industrial heritage space re-production. In this era, the traditional aesthetic view is changing, and the abandoned industrial plant areas and abandoned buildings are no longer ignored only because of the "ugliness" of their history, but are regarded as precious resources carrying historical and cultural memories. In landscape design, we no longer simply remove or hide these industrial scenes, but reevaluate and create through the perspective of aesthetic culture in the information age, and transform the "ugly" elements into works of art that show the spirit of The Times and local characteristics.
"FANYANSHENGXI" brand symbol design integrates the past and present cultural phenomena of the Alum industry heritage place in Fanshan Town, embodying the evolution of societal aesthetics following cultural renewal and ecological transformation.

Figure 76: "FANYANSHENGXI" Brand Symbol
Source: Authored Design Works

The aesthetic culture in the information age emphasizes diversity and inclusiveness, and believes that the purpose of artistic creation is not only to pursue "beauty" in the traditional sense, but also to pay more attention to expression and communication, and to explore the possibility of harmonious coexistence with nature. This way of thinking encourages us to not only respect humanity, meet the basic needs of people, but also respect nature, and explore the design of industrial heritage cultural landscape. Through the use of wisdom, we establish a harmonious relationship between society and nature, so as to build a comprehensive and integrated and harmonious space.

In the concept of Alum industrial heritage space re-production, we realize that both man and nature are the subjects of the ecosystem, and the relationship between man and nature should not be antagonistic or one-way transformation, but should be interdependent, symbiotic and co-prosperity partners. This requires us to adopt a holistic perspective in the design, not only to pay attention to the real needs of people, but also to pay attention to the ideal state of harmonious coexistence between man and nature. Through this design concept, we can not only protect and make good use of the industrial heritage, but also create a better and more sustainable living space for human beings and nature under the background of the information age. The "FANYANSHENGXI" brand's Visual Identity System (VIS) encompasses ten areas, including office supplies, transportation, advertising, packaging, clothing, and signage. It includes the design and planning of over 200 products and systematically promotes and implements the "FANYANSHENGXI" visual identity.

Figure 77: "FANYANSHENGXI" Brand System Design
Source: Authored Design Works

Part 3. Review the sinicization of space theory from the evolution of Alum cultural landscape

Henri Lefebvre He is known as the pioneer and core figure of the critical trend of "space production". Smith NUneven Emphasthat Henri Lefebvre's contribution lies in his solid foundation, rich imagination and detailed discussion of space production theory. Henri Lefebvre In the Production of Space, Space and Politics, Urban Revolution and other works, it focuses on the process of space production in the developed industrial society, and believes that in the context of globalization, space production provides a key perspective for understanding the urban issue of space. Following Henri Lefebvre, David Harvey, Edward Soja and other scholars have further expanded the research field of space production and made it develop continuously. The theory of "space production" has not only profoundly affected the social life, political power and economic operation of capitalist countries, but also penetrated into philosophy, art, morality and other fields. Therefore, the discussion of "space production" in the international academic circles not only involves many scholars, but also continues to deepen.

With the increasing importance of space concept in urban sociology, "space production" has become a new vision in the field of western sociology, which has been recognized and promoted by more and more scholars. This not only expands the research scope of sociology, but also responds to the demand of The Times for theory,

and provides a new understanding and critical path for exploring spatial problems(ZHU & LI, 2019).

For contemporary China, from the theoretical perspective of "space production", it plays an important enlightenment and guiding role for the research of local space production. The contradictory characteristics of space production require us to re-examine and interpret the economic structure, operation mode and practice mode of social space production in combination with the unique geographical, social and economic conditions of China. Over the years, with the evolution of production means, logic, systems and organizations, the innovation of space technology, the acceleration of urbanization and the development of intensive production mode, China has experienced a qualitative leap in space production and formed the theory and practice mode of space production with Chinese characteristics. This process not only reflects the organic combination of theory and Chinese practice, but also contributes a unique perspective and practical experience to the development of global space production theory.

1. The cultural concept of "small place" and "big topic" converges

"Small places" represents the attention to daily life, local characteristics and individual experience in both Chinese and Western cultures. In the East, especially in Chinese culture, "small places" are a profound depiction of the countryside, family and personal emotions, such as the homesickness common in classical poetry and the praise of the natural scenery of the hometown. In western culture, "small places" is embodied in local literature and art, emphasizing the importance of cultural characteristics and individual life experience in a specific region.

The "big topic" focuses on a wider range of common human issues, such as the meaning of life, social justice, and the fate of mankind. In Eastern culture, this is usually explored through philosophical thinking, religious beliefs, and grand narratives in literary works. In western culture, from ancient Greek philosophy to modern philosophy, to literature and film, these grand themes are constantly discussed, trying to provide thoughts and answers to the questions of common concern to human beings (Harvey, 1979).

Although there are obvious differences in focus between "small place" and "big topic", the two gradually have mutual penetration and fusion in the development

process of Chinese and Western cultures. In the East, many works reflect the "big topic" through depictions of "small places", such as exploring and reflecting on social change, humanity, and morality through descriptions of family and rural life. Western works also reflect the universal human values and social problems through specific characters and events.

Whether it is focusing on "small places" or discussing "big topics", the convergence of Chinese and Western cultures is ultimately reflected in the concern about the common humanity. Through the exquisite depiction of individual life and the profound exploration of grand themes, both Chinese and Western cultures try to reveal the common emotions, values and life experiences of human beings. This attention not only narrates the distance between different cultures, but also deepens people's understanding of the commonness of human nature (Eriksen, 2015).

In the context of globalization, the communication and interaction between Chinese and Western cultures have become increasingly frequent. This communication not only includes the exchange of material needs, but also includes the mutual influence of cultural concepts and values. Through this communication, Chinese and Western cultures show more and more similarities when they focus on "small places" and "big topics", which reflects the cultural convergence under the trend of cultural globalization.

With the progress of science and technology and social development, many problems and challenges facing mankind are global and universal, such as environmental protection, social justice and human rights protection. These common problems have prompted Chinese and Western cultures to find common language and concerns when discussing the "big topic". At the same time, cultural works depicting "small places" are also more likely to resonate with global audiences, because they touch on the common emotions and experiences of mankind.

Through the discussion of the convergence of Chinese and Western cultural views of "small places" and "big topics", we can see that despite the differences between Chinese and Western cultures in history, tradition and values, they show amazing similarities in the process of paying attention to the common problems of human beings and exploring the commonality of human nature. This convergence not only reflects the profound impact of cultural globalization, but also reflects the unity

and wisdom of mankind in the face of common challenges. Understanding and recognizing this convergence is of great significance for promoting the understanding and respect among different cultures and building a harmonious symbiotic world.

2 The convergence of Harmony between Man and Nature and the aesthetic concept of "people-oriented"

The concept of Harmony between Man and Nature occupies a core position in ancient Chinese philosophy, and its roots can be traced back to Taoism and Confucianism. Taoism emphasizes the "following nature" and believes that man should conform to the law of nature, while Confucianism puts forward the "interaction between heaven and man" and emphasizes the harmonious coexistence between man and nature. This thought runs through the literature, art, gardens and other fields in the Chinese dynasties, reflecting an aesthetic ideal of pursuing harmonious coexistence with nature.

The western aesthetic concept of "people-oriented" originated in the ancient Greek period, especially when it reached its climax in the Renaissance period. During this period, the status and value of human beings have been paid unprecedented attention to, and the characters in artistic works pay more attention to the depiction of personality and the expression of emotion, emphasizing the rationality and dignity of human beings. This people-oriented aesthetic concept has exerted a profound influence on the development of western art in later generations.

Although Harmony between Man and Nature and "people-oriented" respectively emphasize the relationship between man and nature and the subject status of man, both pursue a kind of harmonious beauty. Oriental art pursues the aesthetic feeling of harmonious coexistence between man and nature, while western art pursues the harmony of inner and external. This common pursuit of harmonious beauty reflects the convergence of Chinese and western aesthetics.

Under the influence of Harmony between Man and Nature, Oriental artists often regard the natural landscape as an aesthetic object, emphasizing conforming to nature and imitating nature. In the "people-oriented" western art, nature also occupies an important position. From the landscape painting in the Renaissance period to the worship of nature in the romantic period, western art also shows the respect for and the pursuit of natural beauty.

Whether east or west, mankind's pursuit of beauty is eternal. This pursuit promotes human beings to constantly explore the relationship between themselves and the world, whether through the harmonious coexistence with nature or by emphasizing the value and dignity of the individual, the ultimate goal is to find a most ideal life state and aesthetic experience (Kassiola & Guo, 2010).

With the development of history, the communication between Chinese and western cultures is increasing, which makes the aesthetic concepts in the two cultures influence and integrate with each other. Many Western artists are inspired by Oriental art, which gradually absorbs western elements. This cross-cultural communication makes the Chinese and Western aesthetic concepts show more and more similarities.

Through the discussion of the Chinese and western aesthetics of Harmony between Man and Nature and "people-oriented", it is not difficult to find that although the two have different origins and expression forms, they show obvious convergence in the pursuit of harmonious beauty and respect for natural beauty. This convergence is not only the result of mankind's common pursuit of beauty, but also the product of cultural exchange and integration. Understanding and recognizing this convergence helps us to better understand the interaction between different cultures and the common aesthetic pursuits of mankind (Wang, Wang, Li, Shi, & Wang, 2021).

3. The social view of "changing life" and "changing space" converge

The social view of "changing life" emphasizes the improvement of people's life quality through social, economic and cultural reform and innovation. In the West, this concept is reflected in the pursuit of technological progress and social policy reform since the Industrial Revolution, aiming to improve the living conditions of the people through the development of technological development and the improvement of social welfare. In the East, especially in China, the economic development and social change since the reform and opening up also reflect the pursuit of "changing life" and promote the overall well-being of society through economic development.

The social view of "changing space" focuses more on improving the human living environment and improving the quality of life through urban planning, environmental protection and space redesign. Western countries' practices in urban planning and environmental protection, such as green buildings and sustainable urban development, reflect the focus on optimizing human settlements. Eastern countries,

especially China, which increasingly attaches great importance to environmental protection and sustainable urban development, are also trying to change and optimize their living space through policy guidance and technological innovation (Trubshaw, 2009).

Whether in the social view of "changing life" or "changing space", both China and the West show a common concern for the combination of economic development and social well-being. While pursuing economic growth, more and more attention is being paid to the transformation of the achievements of economic development into the improvement of social welfare, which reflects the pursuit of all-round human development and social justice.

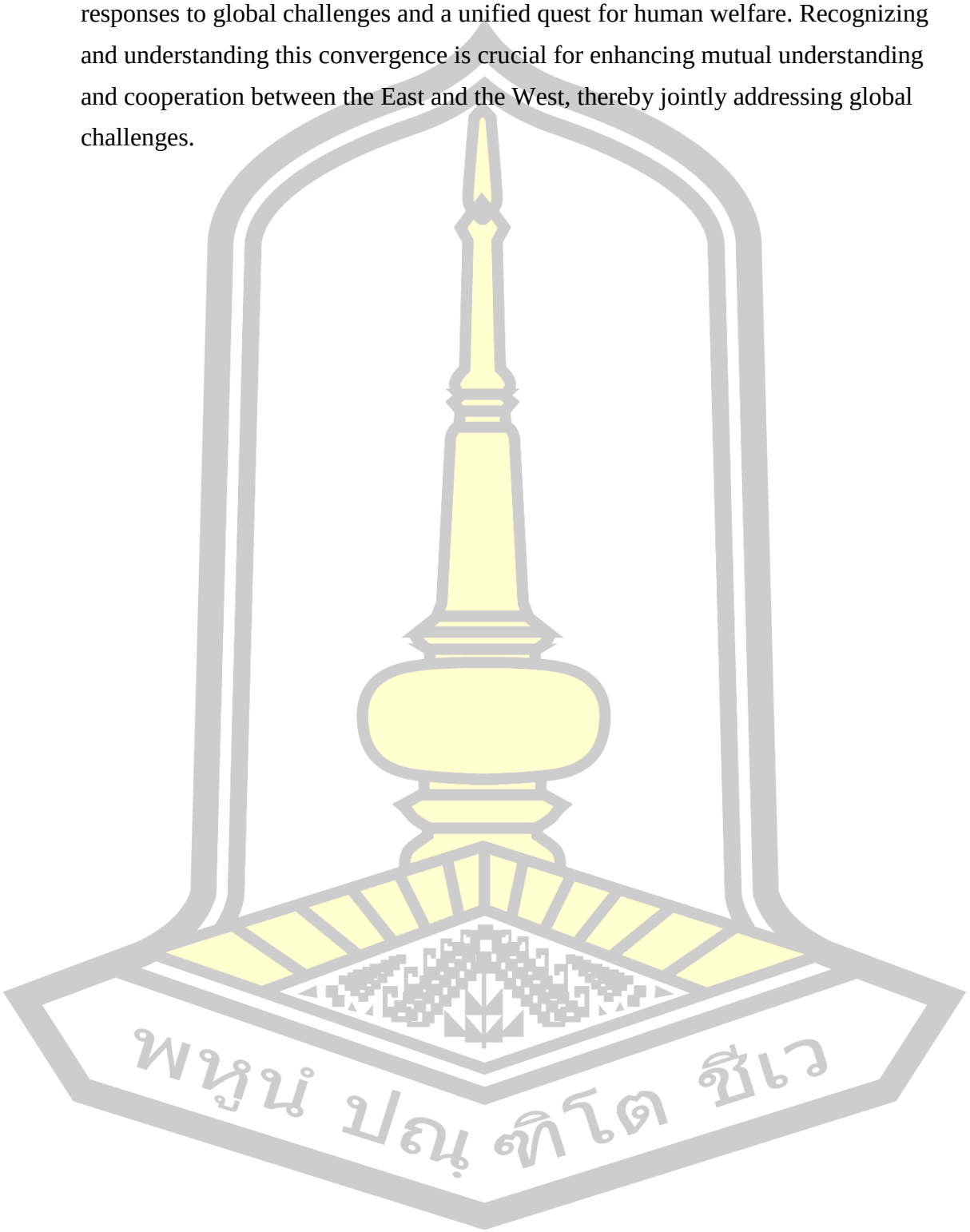
In the aspect of "changing the space", the Chinese and western social views show an obvious convergence, that is, the common pursuit of sustainable development. This is reflected in the common concern of environmental protection, resource conservation and ecological balance. Both the green building movement in the West and the construction of ecological civilization in the East emphasize the protection of the natural environment and the consideration of responsibility for future generations in the process of development.

In the context of globalization, China and the West are faced with many common challenges, such as climate change, energy crisis, environmental pollution, etc(Copeland, 2021)., which force China and the West to show convergence in their social view. The common concern and coping strategies of these global problems have promoted the mutual learning and reference of Chinese and Western ideas and practices in the aspects of "changing life" and "changing space".

The convergence between Chinese and western social views also reflects the results of the common pursuit of human well-being. Whether it is to improve the quality of life, or to optimize the living space, the ultimate goal is to improve the human well-being and happiness. This common concern for human well-being promotes the convergence and interaction between China and the West.

By examining the convergence in Eastern and Western societal views on "changing life" and "changing space," we observe significant similarities against the backdrop of globalization. This convergence is evident not only in a shared emphasis on combining economic development with social welfare but also in a mutual pursuit

of sustainable development goals(Rees, 2002). Underlying these commonalities are responses to global challenges and a unified quest for human welfare. Recognizing and understanding this convergence is crucial for enhancing mutual understanding and cooperation between the East and the West, thereby jointly addressing global challenges.



Conclusion

In this chapter, this study deeply discusses the sustainable space production of Alum cultural and industrial heritage landscape.

Based on China's new development stage and new development concept, focus on rural revitalization policies aimed at promoting local economic development, and promote Chinese-style modernization through high-quality production of new urbanization space. From the three dimensions of historical inevitability, labor shortage crisis, and the orientation of China's sustainable development policy, the research reveals the historical opportunities and challenges of Alum industrial heritage place cultural landscape in China's protection and utilization.

Research with the aid of space production theory of ternary dialectics, to retain Fanshan historical context and improve regional image for the purpose, combining industrial memory and ecological construction, cultural tourism activities, gives a new era of industrial heritage aesthetic mission, and its function and properties to cultural tourism and health industry, realize ecological protection, Alum ore activation, ancient renewal, rural revitalization and cultural landmark, the scenic area to landscape, to achieve "tourism +" mode of multiple industry integration development ideas. The research has formed the dialectical practice paradigm of combining the conception, practice and representation of spatial re-production.

Finally, this chapter depends on the evolution of Alum culture landscape, Alum culture space re-production as the research object, summarizes the three convergence characteristics of Chinese and western culture development theory, and interpret the western space production theory in China, shows the openness and wisdom in the development of China, help to promote the communication and understanding between diverse cultures.

To sum up, by applying the comparative research methods of Chinese and Western development theories, this chapter deepens the understanding of the core viewpoints, methodology and application background of their respective theories, and promotes the knowledge integration between different cultures and academic traditions. The research aims to jump out of the single thinking mode, stimulate innovative thinking, and better combine the local actual situation to solve the problem of local development under the perspective of diversity and inclusiveness.

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Chapter VI:

Summary Discussion and Conclusion

Part 1. Research summary

The research topic of this paper is “Cultural Landscape and Production of Space at the Alum Industrial Heritage Place in Fanshan Town, China”. This thesis adopts qualitative research as the research method. In the research process, the thesis adopts two information collection methods - field work and Literature Research to complete information collection. The object of this study is as follows:

1. Study the historical development trajectory of the Alum industrial heritage place cultural landscape

Through in-depth analysis of the historical evolution process of Alum cultural landscape, the development process of Alum industrial heritage place is summarized into six "historical changes" periods and three "cultural landscape formation" stages from different perspectives, which then reveals the historical development trajectory and architecture of Alum industrial heritage cultural landscape in the long time span. By tracing the mining, processing and commercial trade activities of Alum in various historical stages, this paper discusses how these activities contributed to the formation of unique cultural landscape and social structure. This historical evolution process not only shows the evolution of human production technology and the development of social economy, but also symbolizes the progress of human civilization. The study further proves that with the social changes, the role and significance of Alum have undergone continuous remodeling, from the application of ancient folk to the utilization of modern industrialization. The commonness and differences in different cultural and economic backgrounds show the necessity and value of in-depth exploration.

2. Study the aesthetic view of Alum industrial heritage place cultural landscape

Through the aesthetic perspective of Alum cultural landscape, it paper discusses the unique aesthetic value and thinking mode of Chinese Alum industrial heritage cultural landscape, and finds that Alum cultural landscape not only reflects the

innovation ability of workers, but also integrates the wisdom of the nation, and become a precious heritage of human civilization. In particular, the aesthetic presentation of "material relics" and "spiritual connotation", the core elements of Alum cultural landscape, further explains its qualification and value as a national industrial heritage. The research focuses on the Chinese classical aesthetic concept projected in the Alum cultural landscape, especially the philosophical thinking of Harmony between Man and Nature, discusses how this traditional concept affects and shapes the residents' aesthetic view of the Alum industrial heritage cultural landscape, and reveals the concrete embodiment and symbolic significance of the traditional aesthetic wisdom in the Alum cultural landscape.

3. Study the significance transformation of cultural landscape space production in industrial heritage places

Based on the perspective of cultural memory, this paper identifies the three endogenous driving forces of Alum industrial heritage place space production, and affirms the role of these elements in jointly promoting the sustainable production of heritage place space. The study selected "livelihood deterioration" in the handicraft age and "environmental destruction" in the mechanical industry era as cases to reveal the triggers of these crises contributing to spatial remodeling and generalize the strategies implemented by Alum industrial heritage place in addressing these challenges. These strategies not only highlight the necessity of spatial transformation, but also provide a strategic framework for dealing with potential future crises. In addition, it further discussed the role of cultural aesthetics in space production, and the mechanism of space production to promote the expansion and development of cultural aesthetic concepts, and found that the factors of space production not only continuously effect on cultural aesthetics, but also the key driving force to promote the expansion of cultural aesthetic boundaries.

4. Study the sustainable production of Alum industrial heritage place cultural landscape space

From the three dimensions of historical inevitability, labor shortage crisis, and the orientation of China's sustainable development policy, the research reveals the historical opportunities and challenges of Alum industrial heritage place cultural landscape in China's protection and utilization. With the help of the three-way

dialectics of space production theory, with the purpose of retaining Fanshan historical context and improving the regional image, combining industrial memory with ecological construction and cultural tourism activities, endows the industrial heritage with a new aesthetic mission of the era, and forms a dialectical practice paradigm combining the conception, practice and representation of spatial re-production. And relying on the evolution of Alum culture landscape, Alum culture space re-production as the research object, summarizes the three convergence characteristics of Chinese and western culture development theory, and interpret the western space production theory in China practice paradigm, shows the openness and wisdom in the development of China, helps to promote the multicultural communication and understanding.

Part 2. Discussion

This research topic "Cultural Landscape and Production of Space at the Alum Industrial Heritage Place in Fanshan Town, China" involves the history of 1500 years, as well as the necessary process of the sustainable development of the information age as an industrial heritage place.

This paper analyzes the protection and utilization of Chinese Alum cultural industrial heritage from the perspective of research text and research concept. At present, there are still some limitations in related research.

First of all, from the perspective of "cultural landscape", the paper has completed the historical memory of spatial production and the formation of cultural aesthetics. In the framework of the world cultural heritage, the definition of the concept of "cultural landscape" and "industrial landscape" is subdivided. Only from the perspective of the research of industrial heritage and cultural landscape, most of the relevant research literature at home and abroad focuses on geography, landscape science and history, and there are relatively few academic achievements in studying humanistic value from the perspective of space society and space aesthetics. For example, in 2018, Ellen Braae and Henriette Steine's book "Routledge Research Companion to Landscape Architecture" was published. This book provides a comprehensive overview of landscape research, including cultural landscape, natural landscape, urban landscape, etc., exploring the multi-dimensionality of landscape and how to understand landscape through different disciplinary perspectives. In 2020, Paul Lawitzke et al., in the paper "Rewilding and restoring cultural landscapes in

Mediterranean mountains: Opportunities and challenges", expanded the new concept of "mixed industrial cultural landscape" from the perspective of geography, and provided a new perspective for the interpretation of industrial cultural landscape with the perspective of "ontology" and "constructive". Through the cultural landscape research methods such as "inventory and zoning", the elements and structure of the industrial cultural landscape are scientifically analyzed, and the regional structure, architecture, site and cultural consciousness are "reconstructed" into the contemporary development. In 2023, Chinese scholar Qi YANG wrote in the paper " Research on the Changes in Cultural Landscape of Tourist-Type Traditional Chinese Villages from the Perspective of Cultural Memory: Taking Anzhen Village in Chongqing as an Example " Using the concept of a cultural landscape, It discusses the change of rural culture from the perspective of cultural memory.

The process of cultural landscape protection of world industrial heritage reflects people's reevaluation of industrial history and the promotion of awareness of industrial heritage protection, and also shows the important role of international cooperation in global heritage protection. In the 21st century, China has first made more exploration and attempt to the industrial heritage protection from the aspect of system construction. In 2003, China promulgated a revised version of the Law on the Protection of Cultural Relics, providing a legal basis for the protection of cultural heritage. In 2005, the China Administration of Cultural Heritage identified the first batch of Chinese architectural heritage list of the 20th century, including some industrial heritage, marking the formal inclusion of industrial heritage protection into the cultural heritage protection system. With the acceleration of modern urbanization, the combination of industrial heritage protection and urban and rural development planning, a series of protection and utilization cases of industrial heritage protection and reuse have emerged, which have improved the understanding of the value of industrial heritage from all walks of life and encouraged all localities to participate in the protection of industrial heritage.

In general, there are mutual correlation and differences in the time course, action mechanism and research methods. Although China started late, it has gradually formed its own protection mode and research method under the background of world industrial heritage protection. There is still room for mutual reference and exchange

between the two to continue to make common progress and jointly promote the development of global industrial heritage and cultural landscape protection.

Secondly, from the perspective of "production of space", the paper completes the research of sustainable production and aesthetic re-creation of industrial heritage cultural landscape space. Research shows that scholars of different disciplines have been concerned about space for a long time, and their space theories can complement each other and include research methods worth learning. Foreign scholars on the theory of "space production" emphasizes the significance of capital and production, but ignore the regional economic development and cultural thought production. For example, Alberto Vanolo "Shame, Guilt, and the Production of Urban Space" explores how space is incidental in mental processes and how feelings of guilt and shame arise and develop in the interaction between the internal processes of the mind and the secular "external". In 2022, Matteo Nicolini's book "Legal Geography Comparative Law and the Production of Space" outlined an interdisciplinary approach that combines law and geography, providing new perspectives on how law and geography intersect in "normative space" by providing new ways to clarify different features of legal geography.

In addition, foreign scholars mainly examine the space production process from the perspective of urban space contradiction, while domestic scholars have a short research time on "space production", which is due to the low level of globalization and urbanization before China's reform and opening up. On the other hand, the domestic research on "space production" focuses on the theoretical introduction and the use of foreign analysis methods to explain the spatial contradictions in micro cities. It neither examines the macro background of urban spatial justice production, nor reviews the spatial conception, spatial practice and spatial representation characteristics from the perspective of information age. Therefore, the current research paradigm of "spatial production" in domestic academia needs to be improved to construct a more extensive spatial theoretical system, especially to strengthen the theoretical critical dimension of sustainable "spatial re-production".

However, there is no research on "cultural landscape" and "space production" in the Fanshan industrial heritage cultural landscape and space production in China. This paper takes Chinese Fanshan industrial heritage as the text, takes "cultural landscape" and "space production" as the correlation concept to complete the research, mainly

seeing the fuzzy and blank space between the two concepts, and tries to realize the complementary research methods, research strategies and research content through the association research of the concept. Provide academic support for spatial governance and sustainable utilization of cultural landscape in Alum industrial heritage place.

Part 3. Suggestions

Industrial heritage, as an important part of the world cultural heritage, its buildings, production process, tools, and related sites, landscapes and intangible cultural heritage are of very high value. In the past 40 years, with the deepening of China's exchanges on the international stage, the western concept of industrial heritage protection has gradually exerted an impact on China, causing widespread domestic attention to the protection of industrial history and its cultural heritage. At present, a consensus has been formed on how to effectively develop and utilize the industrial heritage through space re-production. By studying Alum industrial heritage cultural landscape and spatial production, we summarize the experience, methods and shortcomings, and put forward relevant suggestions.

1. Researchers and industry experts should make good use of the "the production of space" theory to explore the interaction between Alum industrial heritage place and local social background, Alum industrial heritage place and local cultural memory, which will help to deepen our understanding of the connection between Alum industrial heritage place cultural landscape and social crisis, aesthetic wisdom and sustainable development. The analysis of these relationships can reveal the role of Alum industrial heritage place in spatial production, cultural memory preservation, and social governance. This study suggests that the formation, development and current reuse and protection of Alum industrial heritage place are not only isolated phenomena in industrial history, but also the complex cultural landscape formed in human social activities and environmental interactions. It is also suggested to pay attention to the sustainable development of space re-production from the perspective of Alum industrial heritage place and its spatial production relations, and change the traditional perspective of the study of cultural landscape.

Limited to the ability of personal research and the limitations of data collection, the systematic interpretation of relevant knowledge is not in-depth enough, hoping to put forward new research topics for the academic community, such as "Alum industrial heritage place space production and cultural aesthetic reconstruction", "the

impact of social crisis on Alum industrial heritage place cultural landscape", so as to promote the in-depth understanding and research in this field.

2. After the completion of this study, policy makers, urban planners, industrial heritage protection organizations and other individuals and collective organizations can use the findings of this study to develop more reasonable protection programs, development strategies and cultural policies. The case analysis used in this study, the field visit of Alum industrial heritage place, and the discussion of related cultural activities all provide empirical support for the sustainable utilization of Alum industrial heritage place and the lifestyle change of the cultural landscape. Other investigators can use the content of this study as a reference for the importance and reuse potential of the Alum industrial heritage place cultural landscape in contemporary society.

Part 4. Discovery of my thesis

China's Fanshan Alum industrial cultural heritage after nearly 1500 years of development, 500 years has witnessed the evolution of different spatial practices from handicraft industry to industrial mechanization and then to the practice of industrial heritage. The rise and fall of the Alum industry has shaped its unique spatial practice and cultural influence. Although Alum industrial cultural heritage has been a national industrial heritage place, people's understanding of the relationship between cultural landscape and spatial production is still not comprehensive enough. Therefore, this study, based on the basis of previous academic achievements, uses different perspectives and targeted Alum industrial heritage, so as to obtain new research findings.

1. As a national industrial heritage treasure, the Fanshan cultural landscape not only stands as a witness to local history and economic development but also exemplifies significant aesthetic value on both material and spiritual levels. This study, through meticulous preliminary research, enhances the understanding of the Alum industry heritage cultural landscape, aiming to illustrate the importance and value of its preservation and reutilization from a comprehensive perspective. This endeavor is also intended to foster younger generations' recognition of local history and culture.

2.Grounded in traditional Chinese aesthetic concepts and integrated with Western spatial production theories, this research attempts to transcend the limitations of conventional art studies. By exploring aesthetic notions from cultural and sociological angles, it seeks to infuse new meanings into the reproduction of industrial heritage spaces. The study further examines how this process can promote harmonious coexistence between local communities and their natural environments.

3.By investigating the causes, nature, mechanisms, and impacts of societal crises on the formation of the Fanshan Alum industrial heritage, this research summarizes locally distinctive principles and measures for its protection. This consideration encourages academia to reassess the modes of reproducing Chinese industrial cultural heritage spaces from a new aesthetic-cultural perspective. It also provides valuable references for the Fanshan local government in formulating reasonable policies and strategies for spatial planning and the re-creation of the Alum industry heritage cultural landscape.

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