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Scope of Industrial Heritage in China

Connotations and Scope of Industrial Heritage

Industrial heritage consists of the remains of industrial culture, which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education¹.

The main historical period for industrial heritage is from the Industrial Revolution in the latter half of the 18th century till present, including activities in the embryonic period of industrialization. Various forms of industrial heritage have been left on China's soil since seaport-opening according to treaties subscribed by the government of China in Qing Dynasty and foreign countries in China. The modern factories built with foreign industrial capital, China's national industry initiated by officials belonging to the Westernization Faction and the socialist industry in New China consti-

tute the main parts of industrial heritage in China.

The technological innovations and inventions which emerged during the development of China's agricultural society once played an important part in the Industrial Revolution (or the initial period of Industrial Revolution), which originated in Britain and spread all over the world. The workshops, methods of resources exploitation, smelting and transport facilities in modern times including canals are all parts of industrial heritage (IH).

Necessities and Urgency for the Protection of Industrial Heritage in China

Compared with China's agricultural civilization and bountiful ancient heritage, both with a history of thousands of years, industrial heritage only has less than a century of history. However, it is still indispensable material evidence for social development. The amount of information it carries about China's social development, the sizes of population, economy and society it once influenced may be much larger than the material evidence associated with cultural heritage from other historical periods. Therefore, there is great significance

in the protection of IH and we should attach the same importance we do to ancient cultural relics.

China's urban construction follows a process of "two steps backward and three steps forward", during which a lot of industries either have their production suspended or are relocated, followed by real estate development. A large quantity of industrial heritage is facing irreversible destruction and a large amount of archives are disappearing. Therefore, it is very important to carry out the identification, rescue and sorting processes of IH.

Development Stages of China's Modern Industries and Potential Industrial Heritage

Development Stages of China's Modern and Contemporary Industries

Based on the needs of research and with reference to historical materials available on industrial development in China, the course of industrial development in the modern and contemporary eras can be roughly divided into the following periods². (cf. table 1)

Potential Industrial Heritage from Different Development Stages of China's Modern Industry

Stage 1 : Emergence of China's Modern Industry (1840-1894)

The initiation of modern industry comes from forces of economic colonization from Britain, the United States, Germany and Russia and their compradors, as well as officials from Westernization of Qing Dynasty and other optimistic national capitalists. Correspondingly, the potential industrial heritage formed during this period is very rich.

Stage 2 : Initial development of China's Modern Industry (1895-1911)

After the conclusion of the Treaty of Shimonoseki, foreign capital was free from restriction of opening factories in China, which resulted in the loss of China's monopoly in industrial manufacture ; later on, Japanese capitalists, although late-comers, became main forces of investment in China. Industrial investment still focused on industries closely related to the national

economy and the people's livelihood, such as shipbuilding, mining, etc. ; light industry mainly centered on textiles and flour.

Stage 3 : Rapid development of private industrial capital (1912-1937)

Investment by Japanese invaders took the lion's share in total foreign investment in China, involving important industries such as coal mining, railway, textile, flour industries, etc. ; seizing large quantities of resources and supplanting national industries. The Northern Warlords, the important military and political officials of the later Nanjing National Government and returned overseas Chinese became principal industrial investors thereby bringing China's modern industry to the track of independent development.

Stage 4: During the War of Resistance against Japan, modern industry developed with difficulty, and there was a short-lived recovery after the war (1937-1949).

During the War of Resistance against Japan, modern industry developed with difficulty. The Japanese Imperialism formed an industrial syndicate and madly seized Chinese resources for military supplies in China. With the main cities in the east of China falling into enemy hands, a great exodus of factories to the interior of the country organized by the Nanjing National Government and echoed by national capitalists accelerated the development of China's southwestern region and the process of industrialization. However, there was a short-lived recovery after the war (1937-1949).

Potential Industrial Heritage from Different Development Stages of China's Contemporary Industry

The course of development of China's contemporary industry after the founding of the People's Republic of China in 1949 can be roughly divided into the following three stages³.

Stage 1 : Initial development of the socialist industry

The New China transformed former foreign-funded enterprises, enterprises operated by the National Government and grass roots private enterprises as well as

Historical Period	Time Span	Characteristics
Modern Industry	1840-1894	The emergence stage of China's modern industry, during which many industrial sectors emerged from scratch.
	1895-1911	Initial development period of China's modern industry; the Treaty of Shimonoseki allowed foreign capital to set-up factories throughout the country, which signified China's loss of its monopoly in industrial manufacturing.
	1912-1936	A period featuring rapid growth of private industrial capital, during which overseas Chinese and important government agencies became principal industrial investors, and modern industry gradually moved towards independent development.
	1937-1948	During War of Resistance against Japan, modern industry developed with difficulty; a lot of industrial and mining enterprises moved to the hinterlands and there was a short-lived recovery after the war.
Contemporary Industry	1949-1965	Initial development period for the socialist industry of New China, with rational development interrupted by the Great Leap Forward.
	1966-1976	Period of tortuous development of industry, with industrial production in stagnation or even falling back.
	1978-present	Period of great development of the modern socialist industry. The industrial layout was adjusted on a "two steps backward, three steps forward" basis for reorientation of some industrial areas.
(Summarized according to related chapters and sections in reference literature)		

Table 1 : Development Stages of China's Modern and Contemporary Industries

handicraft industry to a great extent ; and, with the assistance of Russian experts, a number of large-scale heavy industries were set up. A primary foundation for the modern industry with a relatively complete range of sectors had been formed. The guideline of “taking steel as the key link” during the Great Leap Forward brought about severe social and economic consequences, while at the same time leaving some industrial landscapes of that special era.

Stage 2 : Tortuous advancement of the socialist industry

During the Cultural Revolution, socialist modern industry advanced on a tortuous route of unrest. To prepare for war, the “three-line construction” of new heavy industrial bases in the southeastern hinterland of China greatly promoted the development of the southeastern region and formed a new group of emerging industrial cities.

Stage 3 : Great development of the socialist industry

Industry continued to develop steadily in China, with great changes in its ownership structure. The emergence of privately owned enterprises, village and township enterprises and foreign-funded enterprises in addition to the decline of the proportion of state-owned industries created a diversified industrial economic pattern. With the deepening of industrialization, the dynamic of traditional manufacturing industry decreased to some extent, and there was a lot of land reuse during the process of transformation of old industrial bases. The rejuvenation of old industrial bases and the relocation of Shougang Corporation (Capital Steel Corp.) have become common topics for the academia and the society as well.

Current Situation of Industrial Heritage Protection in China

Practice of Protection and Utilization

For a long time, the protection of old industrial architecture was absent in historical architecture protection in China. Before the 1990s, people used to simply

dismantle discarded old industrial buildings. Transformation and reutilization, if any, were - out of consideration for economy and practicality - improvised and of a low level. Some transformations also brought damages of various degrees to the old industrial architecture itself. After the 1990s, industrial heritage became the first to draw attention from artists. Today, with the rapid sprawling of large cities, some old industrial buildings are facing issues such as functional transformation and relocation of land. Let us consider Shanghai for example. Some artists have begun occupying warehouses and factory buildings along the Suzhou Creek, transforming them into their studios. While retaining the original appearance of these old factory buildings and warehouses, they have created special spiritual spaces by introducing various modern fashion elements.

With this as a start, industrial heritage protection and utilization have been attracting greater attention from the society, and an increasing number of people are discovering the potential value of old industrial buildings. In the 21st century, protection and utilization of industrial buildings have become popular research topics for academicians working on architecture protection. Also, the means of utilization of old industrial buildings are becoming highly diversified. Successful examples include Red Town transformed from Shanghai No. 10 Steel Factory, Bridge No. 8, formerly the site of Shanghai Automobile Brakes Corp., and Qijiang Park in Zhongshan where the Yuezhong Shipyard used to be located. The government is attaching more and more importance to the protection of industrial heritage. Recently, the State Council announced the sixth batch of major historical and cultural sites under state protection, covering blast furnace sites, copper mines, mercury mines, porcelain furnaces, liquor workshops and ancient shipyards. Some modern and contemporary industrial heritage, including early structures of Dasheng Cotton Mill in Nantong, Jiangsu Prov. and the Tsingtao Brewery and Shilongba Hydroelectric Power Station have been placed under protection.

The World Expo in Shanghai 2010 is located between Nanpu Bridge and Lupu Bridge, spanning both banks of the Huangpu River. This site used to be the origin of China's modern industry, home to more than a dozen old famous factories and enterprises including the Jiangnan Arsenal (China's first modern industrial enterprise), Xinghua Iron Works, China Coal Corporation and Rockefeller Shanghai. During the construction of the World Expo venue, the municipal Cultural Relics Administration Commission took an active part and put forward opinions on effective protection of some industrial buildings, shipyards and other structures with historical and re-utilization value. The Commission also proposed a number of motions like transformation of old industrial buildings into shipbuilding industry museums, commercial museums and energy museums for feasibility of research. Although a large number of modern industrial buildings have fallen into decline and with production suspended, in a new round of urban construction, people have come to recognize the historical messages and values of these buildings and have taken active measures to protect and utilize them.

Generally speaking, China's practice in protective transformation and utilization of industrial heritage has outpaced theoretical research. There is still a lack of systematic research in industrial heritage protection. From the perspective of the industrial buildings, people tend to focus more on the symbols, styles and spaces of buildings, architectural elements and architectural/historical values, while neglecting the historical value of the technical processes, the production techniques and the science and technology involved. If we compare the values of industrial heritage with the three widely recognized values of cultural heritage, namely, historical, artistic, technical or scientific values, we can see that technical or scientific values are fundamental characteristics distinguishing industrial heritage from other cultural heritage. In other words, protection of its technical and scientific values is the key to the protection of industrial heritage. Two main principles should be followed in the evaluation of such values. The first is

that the more unique the underlying technology, the higher the value of industrial heritage. For example, the Yangpu Water Plant in Shanghai is not only the first tap water plant in Shanghai, but also the first modern tap water plant in the real sense throughout China, with many "firsts" in technology, whose uniqueness in technology is very valuable. The second is that the more distinct the underlying technology, the higher the value of industrial heritage. Taipei Jianguo Brewery in Taiwan is one such example of prominent value of industrial heritage for its almost-lost technology.

In China, the protection of cultural heritage is more on cultural value as an extension from the protection of works of art. Therefore, in the protection and utilization of industrial heritage, it is still common to neglect its historical values in terms of science and technology. Should the historical values in terms of science and technology of industrial heritage get lost in protection, "history will not possibly provide us with channels to understand ourselves."⁴ Compared to Europe, China falls behind in the mindset and methodology of industrial heritage protection, which is related to the special characteristics of the historical development of China's industrial heritage. With a relatively longer agricultural history, China apparently used to lead the world in terms of techniques for agricultural production. As a contrast, due to late development of the industrial society and its shorter history, although there were short-lived sparks in cities like Shanghai and Nantong, modern industry does not occupy a prominent place in the whole of China's history. This has led to a tendency among people to attach more importance to ancient times than to modern times in heritage protection. With the development of urban construction, industrial heritage is gradually disappearing in many cities, which we may be unaware of.

Establishment of a Regulatory System for Protection and Utilization

China lags behind in terms of laws, rules and regulations for the protection of industrial buildings. The current rules and regulations for the protection of

architectural heritage do not go into details about industrial heritage protection and need further improvement after research and demonstration. In July 2002, *Shanghai Municipal Regulations on the Protection of Outstanding Historical and Cultural Sites and Prominent Historical Buildings* proposed the protection of industrial buildings for the first time in China, reflecting the scale and forcefulness of the government's protection plans of industrial buildings in Shanghai. On the list of 63 historical buildings for protection -in four batches -, 34 sites, including Yangshupu Water Plant, Jiangnan Arsenal and Yangshupu Power Station, are rated as outstanding sites, covering typical industrial buildings of municipal engineering, shipbuilding, postal service, light industries, textile and chemical engineering, etc. The Regulations also extended protection from outstanding modern buildings completed before 1949 to all outstanding industrial buildings with a history of more than 30 years. Some new consensus have been reached for the protection of not only historical buildings of aesthetic significance but also footprints of certain historical periods.

In April 2006, at the first China Industrial Heritage Protection Forum in Wuxi, the *Wuxi Initiative—Attaching Importance to the Protection of Industrial Heritage during High-speed Economic Development* came into being, advocating common attention from the society. The draft from the conference, after revision and promulgation by the State Administration of Cultural Heritage, became the first constitutional document on industrial heritage protection. The *Wuxi Initiative* points out that since the Opium War, modern and contemporary industrial construction in China at various stages has left industrial heritage with diverse features. This constitutes the main part of China's industrial heritage that has witnessed the changes and developments of China's modern and contemporary societies. It was believed that the protection of industrial buildings should be strengthened through various channels. This includes improving understanding, transforming ideas and appealing widespread attention to industrial heritage from the whole society ; surveys

on industrial heritage resources as well as evaluation and identification of industrial heritage will be carried out ; significant sites of industrial heritage will be, in a timely manner, announced as cultural sites under protection or registered and announced as non-movable cultural relics ; special planning on industrial heritage protection will be worked out and included into the overall urban planning. Meanwhile, the State Administration of Cultural Heritage sent the *Circular on Strengthening Protection of Industrial Heritage* to the concerned authorities, further specifying the criterion and tasks for industrial heritage protection. In the same year, on the list of the 6th group of important cultural sites under state protection, there were 9 sites of modern or contemporary industrial heritage, which indicates that industrial heritage protection has become an important part of architectural heritage protection. Comparatively speaking, the concept of industrial heritage in China is similar to that of the 1980's in Europe, as indicated by the Wuxi Forum, and the *Wuxi Initiative* is not a system or rule in the strict sense. With more and more attention from related administrative departments, the establishment of specialized institutions for industrial heritage is expected to appear on the agenda. However, there is still a considerable distance between China and Europe in terms of widespread interest from the society and the public's thorough understanding of industrial heritage.

Urgent Areas of Improvement in Protection of Industrial Heritage in China

The author personally feels that it is necessary to build the concept of systematic protection for industrial heritage in China. The current industrial heritage protection plan in Chinese cities is mainly based on the reutilization of industrial buildings with the main objective of "reutilization of idle space"⁵, which is deviated to a certain extent from the original meaning of industrial heritage protection itself, and leads to the loss of historical information. For example, the Beijing 798 Art Zone used to be "Beijing North China Joint Radio Components Factory". This factory, part of the

718 Joint Factory, was built through the sponsorship of the former German Democratic Republic, for which the plan was made in 1952, civil construction started in 1954, and it was put into operation in October, 1957. The 718 Joint Factory was designed and built by an architectural institution in Dessau, Germany, where the former Bauhaus School was also located. They shared universal points in the spiritual level of architecture, mainly characterized by laying emphasis on practical requirements, exerting the technique and aesthetic functions of new materials and structures ; simple structuring and flexible and diverse patterns. This school later came to be known as the Bauhaus School of thought. The “798” in Beijing should have conveyed this historical information covering the production, organization and management of the first factory in the planned economy. But in fact, most of this information was lost after the reutilization process. Therefore, it is required to establish the concept of systematic protection of industrial heritage because unclear concepts will inevitably lead to improper strategy and method, and have negative influence on the protection of the industrial heritage value. Europe has developed the systematic protection concept by considering the characteristics of its different industrial heritage based on a relatively complete concept of industrial heritage protection.

China lacks systematic concept of architecture protection, which should be cultivated and completed by combining the characteristics of industrial heritage, and attaching importance to propagation and education so as to build common social understanding. First, the concept of “protection” shall be taken as the concept of sustainable development of cities, with the objective to seek after historical and cultural resources which are useful for urban development. For any city, the existing “built environment” may be regarded as a historical and cultural environment, immaterial of how far the history of the city dates back to. Therefore, protection shall be extended to more than relic buildings with special significance. Though many industrial buildings are not qualified as relic buildings for their

typicality, influence of architecture or their own space characteristics in the usual sense, these industrial heritage buildings may be included into the protection plans not for their aesthetic and artistic values, but for their importance and value in the sustainable development of the city. Many industrial buildings actually testified the industrialization process of their city. In this sense, historical building protection requires covering industrial building heritage. Secondly, the concept of “reutilization”: the authenticity rule for the protection and reutilization of historical buildings is also applicable to industrial buildings. Thus, during reutilization, it is necessary to restore the original appearance as much as possible, and make the old and new structures well distinguishable. The reutilization of many industrial heritage buildings fully observes the authenticity rule and protects the original buildings, while demonstrating specific aesthetic flavors, such as combining the brick and stone texture of the original industrial buildings with contemporary glass and steel structures. The remains of some industrial equipments are also to be highlighted through the interior design so that the inherent historical quality of the original buildings are revealed to a maximum extent. The antique design style and decadence of industrial buildings have created striking contrasts with modern fashion elements, thereby producing the effect which is hard to achieve in a newly built architecture. Of course, the identification of “authenticity” requires participation of protection and regulation departments, inclusion of original historical information and archives of the buildings, detailed specification of what part(s) can or cannot be modified or dismantled in the building.

Moreover, China should attach special importance to surveying and identifying industrial heritage. As a special cultural resource, surveying is the first step for the identification, recording and research of industrial heritage value, that is, its in-depth systemic exploration and registration. In Europe, surveying and identification of historical buildings are the first and foremost tasks for the protection of these buildings, whereby detailed material and archives about the buildings are

created to provide concrete basis for their maintenance. The *Nizhny Tagil Charter for the Industrial Heritage* emphasizes the importance of the identification, rescue and sorting of industrial heritage, advocating that “Every territory should identify, record and protect the industrial remains that it wants to preserve for future generations”⁶.

Among all the factors that need to be considered in the identification of industrial heritage, the author believes that two aspects are of special importance ; firstly, understanding that the historical, scientific and artistic values of the buildings are ‘irreplaceable’. Many industrial buildings hold important historical and scientific significance. Chinese industrialization, although short in duration, has gone through a complicated course of development, including foreign-invested industry, private industry and Westernization Movement-driven industry in early industrialization stage. Following the birth of New China, many enterprises experienced privatization, private-public merging and nationalization. Many representative industrial heritage buildings bear legacies and messages of different industrial development stages and cannot be replaced by other architectural types descriptive of a specific industrialization stage. Particularly, in many industrial cities, industrial architectural heritage contains main characteristics and historical messages of these cities that should be protected in view of sustainable urban development.

Secondly, determining whether the architectures of these industrial heritage buildings is reusable today. In terms of legislation and protection planning of industrial heritage, China needs a complete set of sound protective legislations for historical buildings as a whole, rather than improving legislations for industrial heritage. China now has 109 national-level historical and cultural cities, but has no corresponding systemic protective legislations for these cities. As a result, construction in some historical and cultural cities cannot be restrained properly and destructive acts to historical buildings often occur in these cities. As regards industrial heritage, the existing protective legislations were

formulated very early and are not strong enough to regulate and standardize protection and reutilization of historical industrial buildings in new functions such as gallery, museum or the cultural centre of community. However, due to continuous rise in land prices in central areas of cities and lack of specific protection of laws and regulations for most industrial historical buildings, some departments and units - driven by economic interests - have, in the course of reutilization, damaged and even dismantled industrial heritage that was once typical of Shanghai’s old city zone. Industrial heritage protection is more significant to traditional industrial cities because the industrial heritage left in the course of urban development is a trace of these cities. For some typical industrial cities, industrial heritage protection should be included in urban and regional development planning ; industrial heritage protection tasks should be adjusted and improved ; and, measures for industrial heritage protection and reutilization put forward.

In terms of legislation and protection planning, the following tasks should be performed : firstly, study of history of urban industrialization which includes in-depth analysis of history and carding. This will help determine the characteristics of history of industrial development at the different stages in order to provide a systemic frame for classification of industrial heritage. Secondly, it is important to carry out a general survey of the existing industrial heritage buildings, which includes detailed classification and registration of materials for determining different protection levels and requirements. Thirdly, systemic urban industrial heritage protection plans should be prepared to provide control and guiding requirements for reutilization of industrial heritage buildings.

Lastly, attention should also be paid on publicity and education, so that protection and reutilization of industrial heritage buildings will become a common view of the whole society and help provide a wide spread social foundation for protection of these industrial heritage buildings. *NizhnyTagil Charter* states clearly at the end that specific teaching materials about

industrial history and heritage should be written for students of primary and middle schools. Government departments should publicize the meaning and value of industrial relics via publications, exhibitions, television, Internet and other media to promote tourism in industrial zones.

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