

## **Discussion on the Reuse of Old Industrial Buildings**

### **---- Taking the transformation of old industrial buildings in modern cities in Suzhou as an example**

**Yang Xi**

Suzhou Art and Design Technology Institute, Suzhou 215000, China

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**Abstract:** All the big cities in the country set off an upsurge in the transformation of the old city, and the transformation and reuse of the old industrial buildings in the city has become one of the key points of urban development. As one of the main birthplaces of the development of light industry in China, Suzhou. There is a wealth of experience in the reconstruction and reuse of old industrial buildings in cities. Suzhou City has a long-term vision of urban planning, and proposes that the transformation of old industrial buildings should be used to promote the adjustment of the industrial structure of "two advances and three advances". At this point, the transformation and transformation of old industrial buildings in Suzhou entered a period of rapid development. At present, it is very important to study the feasibility of the transformation and utilization of the old industrial buildings in Suzhou city.

### **1. Historical Background of Industrial Development of Modern Cities in Suzhou**

Suzhou is one of the birthplaces of the development of China's light industry. The old industrial buildings left behind in urban development show the historical development of modern light industry in Suzhou, thus providing important clues for the descendants to trace the history of Suzhou. This is an important guarantee for the sustainable development of Suzhou city culture, and it is one of the important measures for shaping Suzhou city symbol and propagating Suzhou regional culture. It also has the typical significance to study the history of light industry in modern China.

#### **1.1 During 1895-1937, it was the period of modern industry development of Suzhou.**

Under the appeal of the Westernization Movement, to save the nation by engaging in industry was carried out nationwide and Suzhou merchants were thus born. One of the most representative is the creation of Suzhou Silk Plant, which is the opening of the national industry in Suzhou, which occupies a certain historical position in the history of China's textile industry. After the signing of the "Treaty of Shimonoseki", the area from Qingyang outside the South Gate in Suzhou to Midu Bridge outside Fengmen was delimited as the concession of Japan, the United States and the Britain. The imperialist economies began to invest and set up factories in Suzhou. They established Ruifeng Silk Factory (now the first silk factory), Hashimoto Button Factory, Asian Oil Company, Mobil Oil Company, Yanheng Chang Silk Factory etc. At the same time, the national industry also gained development; Zhenya Fabric Factory (the earliest domestic enterprise that used electric loom), Hongsheng Match Factory, Huasheng Paper Mill (China's first modern paper mill), Soochow Iron Factory, Tai Wo Flour Mill and a number of factories were set up. Thus a relatively concentrated factory area was formed in Xumen, Panmen, Fengmen in the south of the city.[1]

#### **1.2 During 1949-1980, it was the period of preliminary socialism industry**

After liberation, the Suzhou People's Government encouraged the development of industry and commerce and Suzhou urban industry revived. Xuzhou Water Plant (in 2005 it was listed as the fifth batch of cultural relics protection units in Suzhou), Suzhou Guanghua Cement Plant (the country's first production of special cement), Suzhou Valve Factory, Suzhou Embroidery Institute, Xinsu Silk

Weaving Factory, Suguang Silk Factory, Suzhou Sewing Machine Factory, Suzhou Silk Scientific Research Institute, Suzhou Fan Factory, Suzhou Tan Xiangshan Factory were set up.[2]

### **1.3 After the reform and open-up, Suzhou entered the adjustment period of urban industrial region**

After the reform and open-up, Suzhou began to re-conduct the urban industrial planning. In the east and west part of the ancient city, set up two concentrated industrial zones - the industrial park, and the new area. The original industrial enterprises in the ancient city were gradually moved out. In 2000, the provincial-level industrial zone was also set up.

### **1.4 Since the new century, it has been the transformation period of modern industry in Suzhou**

During this period, the government pushed forward the strategy of "turning the city into a park" because of the internationalization of the industrial economy, the active development of new industries and high-tech industries, and the reorganization of the industry. At the same time, the left vacant factories left out of industrial restructuring in the old city face the inevitable road of the historical development of demolition and transformation.

## **2. Analysis of Heritage Characteristics of Old Industrial Architecture in Suzhou**

### **2.1 Special small-sized factories or workshop characteristic of ‘front street and back workshop’ in Suzhou**

This building space is divided into two parts: along the streets are stores to conduct sale activities; behind the architecture are the workshops to conduct production activities. Such unique architecture types with the small business mode were scattered in the ancient city of Suzhou. For example, Leiyun Shangsongfen Drugstore was set up during the reign of Yongzheng in the Qing Dynasty; now it has gradually become the national old drugstore that enjoys domestic and foreign reputation, with the typical symbolic significance of Suzhou City.

### **2.2 Abundant architecture patterns and styles**

The old industrial architectural heritage in Suzhou has large time span, including the Suzhou-style traditional architectural style, the Republican architectural style and modernist architectural style. These old industrial buildings with different styles are the witness of Suzhou urban development and the non-renewable resources of urban cultural manifestation.

### **2.3 The old industrial architectural industries have various types and are well maintained**

Suzhou old industrial buildings mostly take reeling, silk, cotton textile dyeing, food processing, handicrafts as the main body. The old industrial building types are rich, such as the factory building, the warehouse, the industrial office building, the industrial historic celebrity former residence, the industrial supporting service construction and so on; the industrial heritage style characteristics are also diverse.

### **2.4 The old industrial architectures are tightly combined with the urban characteristic cultures**

Suzhou old industrial buildings have abundant types; the operating industries are closely related with people's lives. These old industrial buildings reflect the cultural characteristics, the appearance characteristics and industrial characteristics of Suzhou.

### **2.5 The old industrial buildings are distributed in a relatively concentrated way, convenient for development and utilization in the later stage**

Small-sized old industrial buildings in Suzhou are mainly distributed in Changmen of the ancient area, such as Leiyunshang etc; large-scale enterprises are located in the northeastern area of the ancient city, such as Zhenya Silk Factory, 2nd Dyeing Plants, 3rd Plant and other veteran enterprises.

These industrial buildings have complete supporting facilities with perfect spatial layout, convenient for transformation and utilization in the later stage. The old industrial buildings in concessions are mainly concentrated from Qingyang outside the South Gate in Suzhou to Midu Bridge outside Fengmen. The buildings mainly have the architectural patterns that combine both domestic and foreign characteristics, such as Sulun Plan and No.1 Silk Plant etc.

### **3. Basic Restructuring Framework and Thought Research of Old Industrial Architecture in Suzhou**

How to rationally reuse the old industrial buildings in urban renewal and how to reconstruct the old buildings is the prerequisite for the sustainable development of the old industrial buildings. Xia Jian, Wang Yong and Yang Sheng pointed out in their paper: “Based on the characteristics of different cities and the characteristics of industrial heritage, we should establish a framework for industrial heritage protection in the form of fragmentation, classification, stratification so as to protect the industrial heritage in an entire and professional way...”<sup>1</sup> Zhou Wei pointed out in his paper: protect the old industrial buildings in Suzhou in three patterns from the urban level, street level and architectural level.<sup>2</sup> After reviewing a large amount of data and field investigation, the author puts forward the basic transformation framework of the old industrial buildings in Suzhou with classified protection and stratified reformation under the precondition of emphasizing the area-based reconstruction, according to the status and characteristics of the old industrial buildings in Suzhou.

#### **3.1 Take regional transformation as the prerequisite**

Most of the historical and cultural blocks that Suzhou has built are about the ancient buildings, ancient streets and so on. There has not been the historical block targeting at the modern urban industrial development. Seen from the old industrial areas of Suzhou, the old industrial buildings are mainly distributed in the area of Changmen Area, Pingjiang Silk Area, South Gate Qingyang Area to Fengmen Outer Density Bridge Area, Canglang Industrial Area and Xujiang Waterfront Industrial Area. Except for the scattered buildings in Canglang Industrial Area, the old industrial buildings in other areas are concentrated. Each area also has its own characteristics, suitable for the targeted unified block transformation that shows the urban industrial development vein. For example, industrial heritage of Xujiang Waterfront Industrial Area is concentrated in the west of the moat. It was part of the Beijing-Hangzhou Grand Canal, and could try to establish the Suzhou Waterfront Industrial Heritage Corridor, thus highlighting the industrial development of Suzhou and the characteristics of the water city.

Hangzhou, close to Suzhou, is quite similar to it in modern urban development. West Bridge Historical Protection Street of Gongchen Bridge in Hangzhou is located at the bank of the ancient canal and the west side of Gongchen Bridge; it is north to the first cotton mill warehouse in Hangzhou, south to Dengyun Road, west to Xiaohe Road and east to Beijing-Hangzhou Grand Canal. The district reflects the appearance of urban construction at the end of the Qing Dynasty and the beginning of the Republic of China. It is the epitome of modern industrial development in Hangzhou with strong cultural characteristics of the canal. The transformed modern historical street integrates functions such as exhibition, culture, tourism, commerce, residential and other functions into one, which shows the modern industrial culture and history formed by depending on the canal from the end of the Qing Dynasty and the beginning of the liberation period in Hangzhou.

#### **3.2 Conduct stratified transformation according to the transformation degree**

Under the premise of regional transformation, the old industrial architecture transformation is roughly divided into three types: repair&restoration type, repair&conversion type, functional replacement type.

① Repair & restoration type--the original production and commercial functions remain unchanged

Repair and consolidate the building according to the original architectural style and structure,

reinforce and restore its original use function and increase part of the display and participation of space. It is suitable for transformation of the Suzhou old famous shop and traditional handicraft. For example, the existing old industrial buildings in Changmen District mainly focus on traditional manual industry and the old famous brands; the architectural forms are mainly Suzhou-style architectural style, suitable for renovation, for example, strengthen renovation of Leiyun Shangsongfen Drug Store, Caizhi House, Wufu Building and the old house of Lu Gao. While protecting and prolonging the traditional brands, increase masses' experience and participation of brands and deepen impression of the specific urban symbols of Suzhou from the side.

② Repair & conversion type--conversion to the science and education type and landscape visit type

The production or administrative functions of the original old industrial architecture have been lost. Under the requirements of the new situation, they are required to be converted to the visit, tourism and monument space venues. Such transformation is common in industrial history, former residence of celebrities, business services, historical government departments. After reconstruction, they tend to focus on tourism education services such as the existing transformed projects in Suzhou, the Taiping Heavenly Kingdom Ordnance Institute, Suzhou Embroidery Research Institute etc. The renovation and protection of these old buildings is the witness of the development of modern light industry in Suzhou and the main medium of historical information.

③ Functional replacement type--conversion to office and commercial type

Retain the old industrial buildings and the external form of construction of the old industrial architecture and give the old industrial building new functions so as to make the new building functions participate in life use. According to the strength of the original information retained, divide it into transformation of the retained appearance, transformation of retained pattern, transformation of retained intention and originality transformation etc. This transformation is common in large factories, warehouses whose original historical and cultural information features are not strong. The original building structure facilitates the functional replacement, such as the old industrial building renovation project of Suzhou Silk Plant, which is transformed to the first International Shopping Park with the area 400,000 square meters in Suzhou and can meet multiple comprehensive demands such as shopping, dining, entertainment, leisure, tourism and other needs. At present, the transformed project is still under construction. [3]

### **3.3 Conduct stratified protection by depending on regions**

Under the premise of regional transformation, stratified protection should be set within all the old industrial building areas. Conduct grade division of the industrial buildings in project evaluation and conduct classified transformation evaluation according to the architectural features of each old industrial architecture so as to determine the reasonable reconstruction plan. The regional old industrial building transformation can be divided into the core area and controlled area according to its evaluation grades. Reversibility of the transformation of the core area is also required. At the same time, the old industrial building renovation in the regions can not emphasize a unified transformation period; it can be put into use and transformed simultaneously. Later-stage reasonable adjustment can be conducted in use. Core area transformation in regions should be careful and focus on protection.[4]

## **4. Conclusion**

At present, research and protection awareness of modern and contemporary urban development, especially the urban industrial development is insufficient. Value of the old industrial region and the old factory building has not been fully recognized. Old industrial buildings such as the well-known Suzhou Zhenya Silk Factory, Tai Wo Flour Mill, Old Oil Storage Tanks have all been demolished. Meanwhile, the transformation cases of existing industrial buildings have both good and bad phenomena. Therefore, to study and discuss the protection and reuse of the old industrial buildings in Suzhou is of great realistic significance to the city, society, environment and sustainable development of Suzhou. At the same time, it can be used for reference in similar cities in China.

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