

Preservation and Reuse of Industrial Heritage Along the Banks of the Huangpu River in Shanghai

Yi-Fan YU¹, Kong-San LI², Sheng-Lan SHU³

¹ Professor, Department of Urban Planning in Tongji University, China

² Deputy Director of Administrative Division, Shanghai Municipal Administration of Cultural Heritage

³ Deputy Chief Section Member of Administrative Division, Shanghai Municipal Administration of Cultural Heritage

A Research Project Supported by the National Science Foundation of China (51178317), and by the Program for New Century Excellent Talents in Universities Of the Chinese Ministry of Education (NCET-07-0625)

Abstract

The Huangpu River is known as Shanghai's mother river. The extensive distribution of industrial heritage sites along both banks of the river has not only great significance in the history of the city's industrial development, but also a profound impact on its urban landscape and cultural character. This paper provides an overview of the evolution and characteristics of industrial heritage along the river and measures adopted in Shanghai for their preservation and reuse.

Keywords: Industrial Heritage, Preservation, Reuse, Huangpu River, Shanghai

Shanghai rose as a river town with a wealth of cultural heritage along the banks of the Huangpu River. The historic riverfront has long been a symbol of the city. Up until the end of the last century, much of the riverfront areas had been occupied by factory buildings, warehouses, wharf structures and shipyards, which resulted not only in waste of land resources and ecological degradation, but also a landscape of desolation and rundown buildings, with local residents being prevented from being close to the water. Beginning in the 1990s, a period of rapid transformation of functional and spatial structures of the Huang River riverfront began alongside the development and opening up of the Pudong area.

1. Historical Evolution of Industrial Development along the Huangpu River

As a result of the 1842 Sino-British Treaty of Nanking, Shanghai became a treaty port opening up for foreign trade. Areas of foreign concessions in Shanghai were granted to the United Kingdom, the United States, France and other countries which brought about increased volumes of international trade. Due to lack of rail and road transportation, waterway transport became a primary mode of moving the goods and people.

Contact Author: Yi-Fan YU, Professor, Department of Urban Planning in Tongji University
Postal address: 1239 Road Si Ping, Shanghai (200092), China
Tel/Fax: 00 86 21 53 08 27 76
e-mail: yuyifan@tongji.edu.cn

Shanghai occupies a central location in the Yangtze River Delta and China's eastern seaboard, with close connections to the vast hinterland of east China through the Yangtze River. The Huangpu River, which meets the Yangtze River just before it empties into the sea and is known as the mother river of Shanghai, is one of the earlier dredged and maintained rivers recorded in Chinese history and flows for 114 kilometers through Shanghai with a width of roughly 400 meters. By the end of the 19th century, there had been a steady increase of docks and warehouses densely built along the river to cope with growing river traffic, witnessing the production and export of silk, tea, cotton and agricultural products, as well as imports of kerosene, coal, industrial equipment, and even opium which accounted for major volumes in the early years of trade.

By the 1930s, Shanghai had become a cosmopolitan city serving as the financial and shipping centers of the Far East. Most of the riverfront development clustered in areas from Fuxing Island to Longhua Wharfs on the west bank and from Pudong Donggou to Zhoujiadu on the east bank (Pudong side) of the river, creating functional divisions of the Bund Finance and Commerce district, Hongkou Wharfs, Pudong Xinhua – Minsheng Wharfs, the Lao Bai Du Wharfs, Yangshupu Industrial District, South Shanghai Industrial District and Longhua Airport area.

After 1949, Shanghai became the economic center of new China, seeing further development of its shipping and manufacturing industries. The riverfront industrial areas extended upstream to Minhang and Gaoqiao and downstream to Baoshan. The three industries - finance and commerce, shipping, and manufacturing - were the most representative of the industrial and business activities along the Huangpu River, playing a significant role in Shanghai's economic growth and urban structure and forming the foundation of Shanghai as a modern city with three core economic functions.

2. The Industrial Heritage along Banks of the Huangpu River

2.1 Overview of Riverfront Industrial Heritage

Industrial heritage sites in narrow and contiguous strips along the Huangpu River account for a majority of industrial remains in Shanghai. Such a concentration was largely the result of two factors. First, given less developed road and rail systems, waterway shipping became an inexpensive and reliable means of transportation to support industrial growth, greatly reducing costs for shipping raw materials and finished products. Second, proximity to water was also necessitated by manufacturing processes, e.g. cotton textile mills needing large amounts of water for production, power plants needing water for cooling and condensation, water works requiring good quality source water and large shipyards needing to be close to the river. Thus, over the course of more

than a century, the Huangpu River remained the central axis of Shanghai's economic and industrial development and the emergence and growth of industrial enterprises along the banks of the river fundamentally changed the old subsistence economy previously characterized by traditional cottage industry in southern China.

The government policy for Pudong development initiated in the 1990s and the 2010 World Expo in Shanghai presented two historic opportunities for transforming the functional layout and spatial structure of urban space along the Huangpu River. The industrial enterprises along the river mostly fell into two categories, i.e. heavy industry and traditional manufacturing, taking up much land space and being heavily polluting. Many SMEs lacked advanced technology. In the economic and policy context of the new era, many of the ailing manufacturing enterprises were gradually phased out, while shipbuilding, steelmaking and other pillar industries were relocated in accordance with new area planning.

Studies have shown that the large industrial areas along the Huangpu River were rare examples of a small number of remaining riverfront industrial heritage zones around the world. In the 15.5-kilometer stretch of riverfront within Yangpu District downstream on the Huangpu River alone, there were rows of densely built docks and industrial warehouses with floor areas totaling more than one million square meters, which filled almost all available riverbank spaces. A little upstream, the 2010 World Expo grounds on the riverbanks and beyond overlap many strips of former industrial land, on which large-scale old industrial buildings of Jiangnan Shipyard, Shanghai No. 3 Steel Works and Port Machinery Plant have been kept as historical and cultural remains for perpetual preservation, conserving the heritage base of modern industries in the riverfront landscape of the 21st Century Shanghai.

In order to carefully evaluate the industrial heritage sites for preservation or reuse, Shanghai has established evaluation methodologies based on a matrix of cultural, social, economic and environmental indicators and unique mechanisms for site investigation and assessment, drawing upon past experiences in the city's urban renewal and redevelopment. Up until now, a total of more than 400 buildings on 63 heritage sites along banks of the river (heritage buildings on the Bund not included) have been designated as buildings under preservation, of which more than 50% are industrial, warehouse, transportation and utility related structures. Such a ratio of industrial remains is prominently higher than that in other areas of the city. In fact, the identification and designation of historical and cultural heritage sites along the Huangpu River, in the process of urban planning and development, is work in progress. Judging by the number of preservation and reuse projects so far

completed, the actual number of industrial heritage buildings under preservation and adapted for reuse far exceeds the number in the published inventory. (Fig.1)



Illustration 1: Map of Distribution of Industrial Remains along the Huangpu River

2.2 Characteristics of Riverfront Industrial Heritage

In Shanghai in the modern era, the colonial building styles of foreign concessions and traditional architecture in the old town, new building materials and technologies and traditional wood frame technology, modern Western architecture concepts and rigid traditional rules and closed thinking, created contrasts and were nonetheless unified and mutually accommodating. Such juxtaposition and convergence of contrasting elements gave birth to the diversity in architectural styles and forms in modern industrial buildings.

Traditional Residential Style

Early industrial buildings evolved from traditional residential buildings. Although new technologies of the late 19th century were introduced with extensive use of different structural forms including brick and wood frame and bent structure, the external features continued to be dominated by traditional brick walls without plastering, wood windows and doors and pitched roofs. Buildings C and E at Huangpu Wharf in Yangpu District are examples of such style. (Fig.2)



Illustration 2: Original exteriors and internal space of buildings C and E at Huangpu Wharf in Yangpu District.

Western Classical Style

Given diverse cultural influences, some industrial warehouse buildings demonstrate obvious characteristics of the Western architectural styles. The United Warehouse at No. 725 Wai Maloo, for example, was built in 1930 in the eclectic style with concrete frame structure and exterior brick walls. The building façade shows three sections, with the bottom section featuring huge columns, middle section a vertical division sequence with characteristics of modernism, and the top section the cornice. Decorative patterns in simple forms were added to spaces between windows. Three entrances (primary and secondary) of arch structure had elaborate, decorative patterns and solid columns with vertical hollow grooves (fluting) showing neo-classical features. (Fig.3)



Illustration 3: Exterior and Façade of United Warehouse building

Modern Minimalist Style

Modern industrial buildings appeared in Shanghai in the 1920s, featuring box-shaped design, mostly using reinforced concrete structures or steel structural frames, with simple and clean building façade and dimensions conforming to standard building modules. The three-story buildings A and B at Huangpu Wharf in Yangpu District, for example, were built in 1911, which had beamless

reinforced concrete floor and roof with a height of 14 meters and two reinforced concrete stairways leading to the second level. They had exterior stucco walls with concrete frames exposed and flat roofs. (Fig.4)



Illustration 4: The original exteriors and façade of buildings A at Huangpu Wharf in Yangpu District.

3. Preservation and Reuse of Riverfront Industrial Heritage

The riverfront areas along the Huangpu River are symbolic of Shanghai's urban functions and form, and are key areas of the city's future development. In 2002, the Shanghai Municipal Government set up a "Leading Office for Development along the Banks of the Huangpu River" to provide overall guidance and coordination on urban renewal and development in areas along the River. The Master Plan for Riverfront Districts along the Huangpu River clearly defines the overall development objectives - adjustment of industrial structure and improvement of environmental quality of the waterfront areas, highlighting the need to create unique riverfront landscape and environment through preserving city's historic lineage and tapping into its cultural heritage.

Following the implementation of renewal and development plans for the South Bund, the North Bund and the 2012 World Expo area, comprehensive renewal and redevelopment have begun in riverfront areas in Yangpu, Xuhui and Pudong districts. Shanghai, through its urban development practice, has gradually established an evaluation system based on four sets of indicators for historical, scientific, artistic and reuse values, for evaluating the huge number of widely distributed industrial remains and sites with unique features along the river, attaching importance to the integrity of historic spaces and their accommodation in the environment.

3.1 The Guiding Principles for Preservation and Reuse of Industrial Heritage

The principle of sustainable development. The old industrial layout along the Huangpu River was inefficient in land use, liable for high costs in pollution cleanup and unsightly in the riverfront landscape, greatly hindering sustainable development of riverfront districts. Redevelopment planning requires, in the reuse of industrial heritage, proactive coordination with industrial restructuring, adoption of clean energy and green technology and sustainable development of areas along the Huangpu River.

The principle of holistic preservation of historical environment. Given high concentration of industrial remains in riverfront areas, redevelopment planning requires balanced considerations for the preservation of individual historic buildings and preservation of the historic district as a whole. Preservation measures integrating functional development and creation of open public spaces should be adopted to achieve distinct themes and functional enhancement of riverfront heritage.

The principle of adaptive re-use. Redevelopment planning requires maximum retention and preservation of industrial heritage buildings and their historic features as prerequisite for appropriate use of new spatial and functional elements to revitalize industrial heritage buildings and allow their integration into contemporary urban life.

The principle of holistic preservation of industrial culture. Industrial heritage in its broad sense includes factory production equipment, furniture and fixtures, other movable objects, historical archival materials as well as intangible assets such as industrial processes. Unlike immovable industrial heritage, such industrial remains are prone to loss and destruction in times of change. A survey has found that traditional production methods are still used in a number of factories in Pudong, which provides a living record of industrial evolution. As an important aspect of heritage preservation, necessary measures should be adopted to encourage these factories to preserve their traditional industrial processes, while participating in economic development.

3.2 Cases of Preservation and Reuse

This paper cites three cases most representative of renewal and reuse of historic wharfs. Common to these cases are the combination of comprehensive waterfront enhancement and transformation of industrial land functions, a typical redevelopment trend, and the unique “post-industrial landscape” created by integrating historic spaces and modern functions. Through careful study and appropriate reuse of industrial heritage sites and buildings, long abandoned and desolate old wharfs along the Huangpu River are gradually transformed into attractive public spaces.

South Bund (Redevelopment project near completion)

South Bund is an area of the earliest docks in Shanghai, which had served dock functions before Shanghai became a treaty port opening for international trade. Prior to the redevelopment project, the riverfront area had long been compartmentalized by fruit wholesale markets, a garbage dump and transport terminal and a host of factory buildings. It had been an area of rundown buildings and desolation with few public facilities and green spaces. The evaluation of South Bund's heritage resources, conducted at the outset of the project, found that the area had unique historical and cultural features because of its maze of old streets and alleyways and legacies of some of the historic buildings. First, the 20 remaining streets, all at right angle to the riverfront in the project area, corresponded to street layout recorded in historical documents dating back a century. 11 of these retained original street names which were named after the wharfs, reflecting a distinct dockside legacy. The redevelopment plan requires preservation of all old streets and their original names, as well as their original dimensions, density and layout through zoning control, making possible the holistic preservation of historical texture and layout of the South Bund. Second, in addition to six historic buildings previously designated for preservation in government registry which include

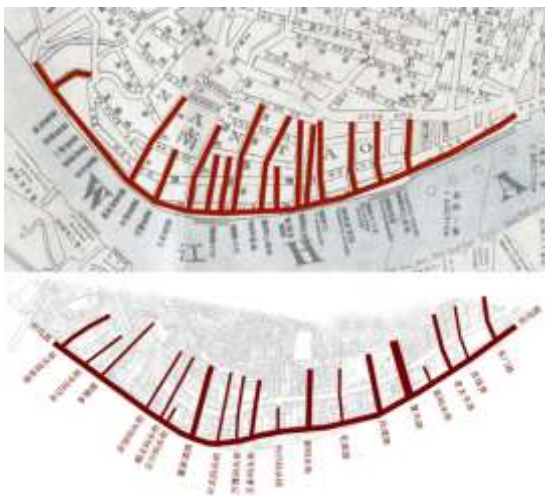


Illustration 5: Historical street layout of the South Bund



Illustration 6: Block scene of the South Bund after partial completion of redevelopment

Dongjiadu Church, Old Customs Office, and Merchant Shipping Guild Building, 14 warehouse buildings were newly identified as worthy of preservation. These warehouses were built in the early 19th century with solid structure, cavernous spaces, and unique architectural forms. They were eventually all retained and adapted, with necessary repair and renovation, to become spaces for public service, following experts' evaluation and recommendation. (Fig.5/6)

East Wharf (Project completed)

East Wharf (formerly Huangpu Wharf) is located east of Qinhuangdao Road in Yangpu District and was originally built by the Japanese owned South Manchuria Railways Co. It served as a water-gate for the 2010 World Expo in Shanghai. The four 100-year-old warehouse buildings on the project site were originally built at the turn of the 20th century. Although once in serious disrepair, these buildings with unique architectural forms, traditional façade finish and the ancillary equipment and facilities have tremendous aesthetic and historical value worthy of preservation. The repair and renovation work proceeded according to the principle of preservation, remediation and appropriate reuse, achieving comprehensive remediation and restoration of the heritage warehouses and a perfect blend of authentic historic features with practical modern functionality. Following assessment by the Shanghai Cultural Relics Management Committee in 2010, two of the heritage warehouses which were more comprehensively restored (Buildings A and B) were added to the city government list of heritage buildings under preservation. (See Illustrations 3, 4, 7 and 8) (Fig.7/8)



Illustration 7: Buildings A and B following protective restoration.



Illustration 8: Building A following protective restoration.

Minsheng Wharf (Project in design planning phase)

The wharf at the end of Minsheng Road, once the largest wharf in Asia, was originally built more than one hundred years ago with British investment and named Blue Funnel Line wharf. There were 11 industrial buildings remaining on the project site, with a total floor space of 92,000 square meters. These 11 buildings, constructed over a period many decades from the early 20th century through the 1990s, were of significant value worthy of comprehensive preservation. Two of the buildings of more than 100 meters in length contain concrete grain silos of 50 meters high, with a total floor space of over 92,000 square meters. Such building type, with strong visual impact as a landmark, was rare among all industrial remains in Shanghai. The redevelopment plan requires transformation of Minsheng Wharf functions on the basis of preserving all remaining industrial

buildings at the site, highlighting their voluminous space and building cluster, retaining and reusing original wharf facilities, so as to create spaces with unique cultural character and historical authenticity. (Fig.9/10)

Conclusion

Industrial heritage sites with historical and cultural significance are important embodiment of the city's cultural identity and spatial character. The urban landscape along the Huangpu River in Shanghai is epitome of the city's historical, cultural continuity and enrichment, in both spiritual and physical legacies, constantly evolving as time moves on and society progresses over the past century.



Illustration 9: The current state of the 80,000-ton capacity grain silos and reuse plan.



Illustration 10: Master plan for comprehensive redevelopment of Minsheng Wharf site.

Reference:

[1] Shanghai Cultural Relics Management Committee, New Approach to Shanghai's Industrial Heritage [M], Shanghai Jiaotong University Press, Shanghai, 2009.

[2] The Leading Office for Development along the Banks of the Huangpu River et al, Reshaping the Huang River Riverfront [M], China Building Industry Press, Beijing: 2010.

[3] Zhang Song et al, "Planning Strategy for Comprehensive Preservation of Areas with Industrial Heritage – A Case Study of Shanghai Yangpu District", in A Collection of Papers for the 2nd Symposium on Industrial Architectural Heritage of China (2011): 228-237

[4] Yu Yifan and Zhao Zhao, "From Historical Heritage Wharf to World Expo Watergate", Urban Architecture Journal, No. 2 (2011): 45-47

[5] Yu Yifan and Li Jijun, "Issues in Reuse of Urban Industrial Heritage", Urban Planning Forum, No. 9(2010): 57-63

[6] Yue Xiaofeng and Xi Dongfan, "An Overview of the District Layout Plan for the Northern Extension of the Huangpu River Waterfront Areas", The Shanghai Construction Science and Technology journal, No. 1 (2006): 4-8

[7] Tao Xiaoma and He Fang, "On Land Use Displacement Pattern along the Banks of the Huanpu River", Urban Planning, No. 5 (2000):34-40