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A STUDY ON INDUSTRIAL DESIGN IN SHANGHAI UNDER THE BACKGROUND OF NATIONAL ENTERPRISE IN THE PRECEDING PERIOD OF THE 20TH CENTURY

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ABSTRACT

Through the research on national enterprise in Shanghai based on international environment, social background, and development mode in the preceding period of the 20th century, this paper analysis of industrial design in Shanghai from the occurrence, development, and influencing factors of national enterprise, and it reveals the period of development history and change of industrial design in Shanghai.

Keywords: the preceding period of the 20th century, national enterprise, Shanghai, industrial design, change

1 INTRODUCTION

Reviewing the history of modern China in the past hundreds of years, since officially opening port in 1843, Shanghai as an epitome of China modern cities has witnessed the tremendous changes of the whole society. The new thoughts and culture of western world had great conflicts with its traditional thoughts and culture. The new lifestyle appeared, new social structure formed, new life customs emerged and modern life rudiment of the preceding period of the 20th century was formed in Shanghai. At the moment, the fast developing industrial and commercial enterprises had provided material foundation for modern design and make Shanghai emerge industrial design in the preceding period of the 20th century.

2 THE APPEARANCE OF SHANGHAI NATIONAL ENTERPRISES IN EARLY 20TH CENTURY

2.1 INTERNATIONAL ENTERPRISES INVADING SHANGHAI

The Chinese society in early 20th century was just under the condition of agricultural economy collapsing naturally and the stage of quick invasion of western modern industrial civilization. At that time, China's political and economic system was at a distinct disadvantage in the world. China couldn't experience modern industrial civilization just like other western countries, it also couldn't stop western countries fiercely opening China's door by force. Shanghai is located at the intersection of rivers and seas. It is the estuary of Yangtze River, and the connection point of connecting China inland and the world. It has favorable transportation advantages and it's convenient to shipping and trade. The English botanist Robert Fortune has said in his Three Years wanderings in Northern Provinces in China Notes: "Shanghae is by far the most important station for foreign trade on the coast of China, and is consequently attracting a large share of public attention. No other town with which I am acquainted possesses such advantages: it is the great gate—the principal entrance, in

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fact—to the Chinese empire.”^[1] After it being a treaty port and under the strong interference of western countries, England, America, and France set up concessions in Shanghai in succession. Shanghai Concession System was formed basically.

Depending on the technical and economic accumulation that getting by the first Industrial Revolution, Western countries quickly occupied Chinese market that just opened. From 1856 to 1857, there were 25 foreign firms opening. Since 1880, western countries successively established lots of industrial enterprises such as matches factory, Silk-filature factory, cotton mill, cigarettes factory, oil-pressing mill, machine factory, large-scale modern shipyard among which there were 41 foreign investment enterprises having initial capital above 100,000 yuan. Till 1911, the foreign investment production value of 8 industries reached 35.439 million yuan, including cotton spinning, reeling silk, flour, cigarette, match, pharmacy, machine and electricity.^[2] From 1902 to 1911 the customs report said that: “Shanghai has changed a lot these years. Time ago it was only a trading floor but now it has become a big manufacturing center.”^[3]

2.2 THE EMERGENCE OF SHANGHAI NATIONAL ENTERPRISES

Since 1890, Shang-hai Mechanical Textile Bureau went into operation. These large scale new-style machine industries replaced the old production and business pattern of feudal society’s workshop mode. Modern national enterprises began to appear in Shanghai.

In the context of politics, military, economy and technology of the whole country at that time, to a large extent, Chinese national enterprises had a passive sadness. There are three reasons that caused national enterprises emerging negatively. First is that as the invading of western powers, Qing Government was forced to improve military capabilities. Some far-sighted and thoughtful officers such as Zeng Guofan, Zhang Zhidong, Li Hongzhang and Wei Yuan, had realized that the developing industry and technology was the only way to strengthen the country and they provided the reform methods. As the proving ground of Westernization Movement, Qing Government firstly opened various military industries and enterprises in Shanghai, for example, Li Hongzhang opened the first Chinese modern industrial enterprise in 1865-Jiangnan General Manufacturing Bureau. Afterwards, national enterprises had gradually developed in Shanghai and even nationwide.

Second, the large trade margin between western countries and Qing Government made the government and citizens realized the necessity to open their own factories and met the needs of the people. Till 1920s, the electric bulb market was controlled by foreigners all the time. In 1921, national bourgeois industrialist and merchant Hu Xiyuan successfully invented the first incandescent light bulb in China. In 1923, he bought German electrical appliance factory of Oben Company and opened the first national capital electric light source industry, Ya Puer Electrical Appliance Factory. Yang Jichuan who opened Wahson Electrical Manufacturing Factory taking American “GE” brand electrical fan as sample in 1915 invented the Chinese electrical fan samples. From that we can see, China-made goods as a kind of product emerged in order to reply the invasion of foreign goods and national enterprises emerging were things that in order to reply the invasion of foreign enterprises.

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The last one is advocating Chinese national goods movement in the context of nationalism. In the late 19th century and early 20th century, Qing Government failed in serial of wars. Since the conclusion of Treaty of Shimonoseki and Boxer Protocol, many people revolted the rule of Qing Government and defended the invasion of western countries. The nationalism became stronger and stronger. Shanghai in its own way expressed the attention on country and age and developed the Anti-Russian Movement and Anti-American Boycott Movement. At that time, Shanghai established "Chinese Domestic Goods Vigilante" aiming at "providing China-made goods, developing industries, modified process and popularizing trade." In 1927, Shanghai Machinery Manufacturing national product union association established. The people who established the association hoped via combining organizations to advance the development of Chinese modern machine manufacturing industry designedly, purposefully and efficiently. During western country entering the recovery phase of the First World War, Chinese national industry ushered the first quick development period.

2.3 GOVERNMENTAL SUPPORT FOR NATIONAL ENTERPRISES

In 1911, the Xinhai Revolution broke out in China, which overturned the rule of the Qing Government and established the Nanjing Provisional Government of the Republic of China. From the very beginning of the establishment of this new government, industry promotion and business development have been regarded as the important aspects of the development of national strength. The new government issued and implemented a series of policies and laws in favor of the development of national enterprises in China, such as: Provisional Regulation on Awarding for Handicraft, Company Ordinance, Enterprise Regulation on Interest Guarantee, Medal Rules of the Ministry of Agribusiness, and Law of the Chamber of Commerce and so on. Despite of the major limitations of these policies and laws, they did play a significant role in promoting the development of the national enterprises in Shanghai. At that time, western countries were drifted into the World War I accidentally and therefore reduced their aggressions in China for the moment, which brought a good opportunity for the development of the national enterprises in Shanghai.

Since the holding of the first world exposition in England in 1851, Chinese government gradually realized exposition's importance for business, trade and commodity as well as its supporting function for the development of national enterprises. Since 1906, the Qing Government organized industrial expositions in Sichuan, Tianjin, Wuhan and Nanking respectively and the first national exposition was the Nanyang Commodity Exposition held in Nanking. In 1910, the Qing Government held a large-scale domestic exposition by itself – the Nanyang Commodity Exposition, after which the Chinese began to reflect the disadvantages of domestic commodities and study the quality advantages and disadvantages of the various exhibits as well as relevant improvement methods. A national domestic products exposition was held at Puyu Tang, Nanshi District in Shanghai in 1928 by the Ministry of Industry And Commerce – the Chinese Domestic Exposition of the Ministry of Industry And Commerce. After this exposition, specialized researchers were employed to make deep analysis on the technique, craft, pattern and style of the exhibits for the reference of domestic products in terms of quality and design. Through the holding of various industrial expositions, Chinese changed their cognitions on industrial products greatly and began to break the traditional ignorance and accept the different kinds of changes brought by modern industrial civilization, which consequently created the necessary atmosphere for the emergence of industrial design in China.

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**3 TRANSFORMATION OF NATIONAL ENTERPRISES: FROM
"PRODUCTION" TO "DESIGN"**

**3.1 PRODUCTION AND PROCESSING, IMITATING DESIGN--THE DEVELOPMENT OF WAHSON
ELECTRICAL MANUFACTURING FACTORY**

In 1916, the foreign goods were full of Chinese market. Wahson Electrical Manufacturing Factory was established in 1916, and was the earliest national electrical appliance factory. The name of "Wahson" has the meaning "for the existence the Chinese nation". Early in the reign of Emperor Guangxu, electric fan appeared in China, but their appearance was ugly and only had the basic function. Yang Jichuan liked electrical engineering and with the help of Ye Youcai and Yuan Zongyao, taking American "GE" electric fan as samples, in 1915, he successfully trial-produced two Chinese qualified electrical fans samples.

But the three founders of "Wahson" didn't possess abundant capital so the financing problem was extremely urgent. At that time, Yuan Zongyao took the electric fans and found Zhu Lanfang to invest while Zhu Lanfang required making current limiting meter first. Owing to the user stealing electricity, the imported current limiting meter was very expensive and the profit was too high. Yang Jichuan could do nothing but buy one old imported current limiting meter as sample to research. He found that the principle of this meter was simple while the structure was complex. If imitating this meter, the cost would be high. So he simplified the structure and invented Chinese local current limiting meter and the price was half of the foreign meter. In the beginning of Wahson Electrical Manufacturing Factory, they only produced various current limiting meters, voltmeter, switch and transmitting transformer and direct-current generator and other electrical machines and the most of the product imitated the imported product in design. Till 1925, ten years later, Wahson Electrical Manufacturing Factory produced electrical fans in large scale. In the early time of Wahson's design, it mostly imitated "GE" fans for example, the fans that Wahson Electrical Manufacturing Factory produced was very similar to the "GE" fans that Peter Behrens designed.

3.2 UNCONSCIOUS DESIGNS

National enterprises were in the condition of competition with foreign enterprises in the early stage. After 1860s, Shanghai concessions had another name called "Miles with Foreign". "Metropolis infested with foreign adventurers" just as its name implies, it was the place that foreigners gathered together, the foreign culture filled in and the foreign goods accumulation. We can see that no matter the daily necessities such as textile, tobacco, electric lamp and electric appliance or the match, needlework and other necessities of life, Chinese goods were competed with foreign goods. This required that national enterprises must have other unique advantages besides adopting various effective methods in trading.

In the early stage that Wahson Electrical Manufacturing Factory invested, Yang Jichuan analyzed the technology of "GE" fans and the disadvantages and improved the unreasonable parts. The early stage of Wahson Fans nearly completely imitated American product for example, the fan blade, mesh enclosure and pedestal all adopting brass-made and there was no oscillating mechanism. In order to decrease the cost, Yang Jichuan changed the former cast iron pedestal into steel plate tensile so as to reduce the weight and the

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amount of finish; meanwhile he increased the mechanical ventilation and lowered the heat of electrical machine; oscillating mechanism was aluminum alloy instead of cast iron and it became more light and flexible; fan blade made by steel added nickel plating and the surface was lighter. [4] These simple function and the changes of materials were the beginning of Chinese national enterprises' unconscious designs and the initial performance of industrial design thoughts.

In Germany, Herman Muthesius and Henry Van de Velde continued to argue "standardization". While in China, Wahson Electrical Manufacturing Factory and some other national enterprises already began to standardize design and production. The fans that Electrical Manufacturing Factory produced, to a large extent, it could change components with "GE" so the production in producing and repairing could reduce the cost. [5]

3.3 ORIGINAL DESIGN- "TWO GIRLS" COSMETIC DESIGN

In the process of Chinese national enterprises development, only through the function satisfaction and low price could they get some profits through the overruling of western enterprises and factories. So at the beginning most of the production and processing were copied and then it changed into producing by original design.

"TwoGirls" cosmetic design of Kwong Sang Hong Co., Ltd., according to Chinese modern industrial materials introduced that: "TwoGirls" vanishing cream is the first generation machine manufacturing cosmetics and was produced by Kwong Sang Hong Co., Ltd. in Hong Kong. In the early time factory that set up in Shanghai specially produced vanishing cream, floral water, hair oil, and talcum powder. In 1904, Qing Government joined the World Exposition that held in St. Louis. This is the first time that Qing Government in the name of official joining the World Exposition. Kwong Sang Hong was one of the enterprises that Qing Government inviting to join World Exposition. In this World Exposition, "TwoGirls" vanishing cream of Kwong Sang Hong and other cosmetics got the prize of World Exposition. Viewing from the package of "TwoGirls" vanishing cream that designed in early time, the style was unique, the appearance design in material, pattern, style of "TwoGirls" vanishing cream were elaborately designed. For example the "TwoGirls" makeup, although adopting cylindrical paper box, the pattern applied embossing technique. The exquisite figure created the beauty of the design. The white bottle glass and aluminum box cover of "TwoGirls" vanishing cream showed the exquisite design and stressing on the materials. The aluminum box cover of packing box embossed the brand and the design was wonderful. [6]

4 OTHER FACTORS AFFECTING THE INDUSTRIAL DESIGN OF SHANGHAI

Although "industrial design" was put forward by American Joseph Claude Sinel in 1919, in the preceding period of the 20th century, with the purpose of seeking for interest, the national enterprises of Shanghai had begun to use industrial design. In early 20th century, the industrial design of Shanghai was not only influenced by the development factors of the national enterprises themselves, but only affected by the western design ideas, the commercial art of Shanghai, the design education of Shanghai and Chinese traditional design ideas.

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4.1 THE INFLUENCE OF WESTERN DESIGN IDEAS

Shanghai is located at the intersection of the Pacific Rim and the estuary of Yangtze River, the favorable geographical position makes the foreign powers take Shanghai, a treaty port at the time, as a base and extend their influences in China, which westernized Shanghai. In the late 19th century and early 20th century, the western modern machines, modern vehicles, and the modern industrial products were introduced to China in succession, the western painting, architecture, city planning, landscape, art and design were also introduced to China at that moment. The western art and handicraft were gradually declined by that time, the Art Nouveau, Japonisme, Modernism, Art Deco began to prevail in design world, till the emergence of Bauhaus, the western design ideas were at an era of serried styles and thoughts burst.

The design of interior furnishing and daily necessities of Shanghai were also influenced by the Art Nouveau, Art Deco and the modern design. We can find the bent wood "Chair no. 14" made by Michael Thonet in some old pictures taken in China, we can also find Chinese magazine advertising with the impressive printing of many copies and creations of all kinds of different stainless steel furniture, which were so similar with the steel-pipe furniture of Marcel Lajos Breuer.^[7] Shanghai furniture manufacturers introduced new manufacturing technology and new materials, such as the application of the plywood, the chemical coating, the chemical glue and the veneer, causing fundamental change to Chinese furniture making in its structure and technology. Historical changes took place in Shanghai's furniture manufacturing.

The western design ideas and design movement exerted great influence on Shanghai's architecture and graphic design. Shanghai's architecture is known as "world exposition of buildings", the western classical architecture style, the modernism architectural style, the art deco style, and Chinese traditional architecture renaissance style were put on the stage in succession. Shanghai's graphic design was also influenced by the Art Nouveau, the Art Deco and the modernism. The book design of Shanghai in the 1920s and 1930s was very prosperous, a number of artists and designers like Tao Yuanqing, Qian Juntao, Zhang Guangyu, Chen Zhifo, Pang Xunqin, Ye Lingfeng, and even many writers like Lu Xun and Wen Yiduo all designed for the cover of books and magazines. On one hand, the design of the cover of books and magazines reveals the delicate art deco style; on the other hand, it shows the succinct modernist style.

4.2 COMMERCIAL DEVELOPMENT OF SHANGHAI HASTENED THE BIRTH OF COMMERCIAL ART

The prosperity of trade, the development of commodity production, the expansion of the market and the rise of the mass consumption all made Shanghai the city in which the commercial environment first appeared. The increasing prosperity of the commercial environment hastened the birth of commercial art. As the birthplace of Chinese commercial art and advertising industry, the commercial art form of Shanghai represented the highest level of Chinese commercial art at the time.

In early 20th century, the national enterprises in the field of textile industry in China had already had certain scale and level, particularly in Shanghai that the commercial production was increasingly perfect. The traditional dyeing and the textile industry turned to large-scale machine industry, which supplied a practical stage for the space of design which was closely related to the Graphic

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design. The commercial art in the forms of pattern design, packing design, advertisement design, window display and book design gained were unprecedented development.^[8] The space of design was also expanded, a number of new design forms which were not existed in traditional design form such as the photograph, the scenery, the theatrical design, the environmental design and the industrial design formed in succession.

In 1920s and 1930s, Raymond Loewy and Walter Darwin Teague, the earliest professional industrial designers appeared in America, at the same time, Shanghai also hastened the birth of professional designers. In 1923, "Shangmei Design Studio", set in Shanghai, was the beginning of the design practice of Chen Zhifo, who was a returned student from Japan. During this period, he drew a large number of fashionable and attractive design patterns for many major silk factories and obtained social recognition. In 1930, Pang Xunqin returned from France and was engaged in commercial art design in Shanghai. In 1931, Li Youxing returned from France and held the post of the director of the design office of Meiya Pongee Weave Factory.

4.3 "DESIGN EDUCATION" OF SHANGHAI

With the development of commercial art, Chinese traditional mentoring could not meet the increasing demand of pattern design talents, and the development of commercial art also raised new demands. Under the influence of educational trends such as pragmatism and vocational education, the specialized design education began to be separated from general skills training of fine arts, and then the art design education and industrial arts education emerged in fine art colleges.

In 1912, Liu Haisu set up private "ShangHai Training School of Fine Arts", whose establishment purpose were: "generate pure art talents, cultivate and reveal personal noble personality; generate talents who implement art education, directly cultivate and reveal compatriots' noble personalities; develop the specialized talents of industrial art, improve the industry and increase the aesthetical interest of everyone." Zhou Xiang, returned from France after study, set up China Fine Arts School in 1917, which had its name changed as China Art University. Wu Mengfei, Liu Zhiping and Feng Zikai founded Shanghai teachers college in 1919. In 1926, private Shanghai Xinhua Fine Arts School was set up. Chen Zhifo, returned after graduating from Tokyo Fine Arts School in Japan, successively held the post of professor in the art departments of Orient Fine Arts School, Shanghai Art University and Shanghai Training School of Fine Arts. Using industrial art to improve the function and quality of the domestic products, thereby resist the strike of foreign import commodities, even using the industrial art to accelerate the increase of the export sales were the fundamental starting points of Chen Zhifo by advocating industrial art. "Shangmei Design Studio" had cultivated numerous design talents, which greatly promoted the development of design education.^[9]

In 1941, Huang Zuoshen, taught by Gropius Walter who was the international modern building pioneer, returned to China after graduating from Harvard Graduate School of Design in America and set up the architectural engineering department of St . John's University. He introduced the modern architecture educational methods with the style of Bauhaus to China, and began the brand new modern architecture educational attempt, he became the important transmitter of modern architecture thought and educational methods.^[10]

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4.4 THE EXTENSION OF CHINESE TRADITIONAL DESIGN IDEAS

In the preceding period of the 20th century, Chinese traditional customs, lifestyles and hobbies were rooted in people's lives, which influenced the industrial design in this period. During this period, influenced by Chinese furniture style, the western furniture in Shanghai formed the earliest Shanghai style with a combination of Chinese and western elements. The furniture with western style were produced in Shanghai using the woods like Chinese nanmu.

In the pattern design of daily necessities and textiles, Chinese traditional design ideas exerted great influence. The appearance of "King Long" thermos produced by Yongsheng Thermos Factory was the important detail which attracted the consumers, therefore, the painters such as Huang Huanwu and Ge Xianglan were invited to draw the pattern design for the shell of the thermos. The pattern mainly used Chinese traditional pattern such as Good Luck Picture, Longevity Picture, Longevity Crane Picture, Thrill of a Romance Picture, Flowers Blossoming Together Picture, etc., all of which catered to the good luck of Chinese traditional happiness and ghillie.

5 INTROSPECTION

From "production" to "design", the development of Shanghai industry in the early 20th century is not only the historical epitome of self-atonement of the Chinese nation, but also a part of the development wave of world modern industrial design, confronted with the strike of foreign products, Chinese designers were always seeking for a self-reliance, autonomous and self-improvement renaissance road. "Taking history as a mirror, we can identify the alarming signs of the rise and fall of a society", However, in China today, under the context that the design has already turned into "industry", the design professionals cannot exactly describe the standard of "good design" to the general public, all people tend to unconsciously and chronically look for coordinates of good design in so called western advanced countries. On helping the general public to establish a kind of real and self-confident lives, the current design of China still lack the strength of action and effective measures, how to establish the coordinates of Chinese design in globalized design environment deserves the introspection of each design professional.

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