



# Study on Industrial Heritage Protection and Reuse Design of Dahua Textile Mill in Guangyuan City

Hongtao Ding

College of Urban Planning and Architecture, Southwest Minzu University, Chengdu, China  
Email: 1406062903@qq.Com

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## Abstract

The industrial heritage has a huge potential value. At present, China strongly called people to pay attention on protection and development of the industrial heritage. The project is closely to the call of national development industrial culture, in Guangyuan city Dahua mills as the foothold to study the protection and reuse of industrial heritage, improve production and living environment, promote the development of regional economy, finally realization of industrial heritage protection and sustainable development goals. This project uses SketchUp, Photoshop and other design softwares to express the graphic representation of the reuse design of Dahua Yarn factory, and to explore and study the protection and reuse design of industrial heritage. In the author's opinion, in the protection and reuse design of industrial heritage, the occurrence of "formalization" should be avoided, and the reuse design scheme should be formulated according to the characteristics of specific industrial heritage. In combination with the project itself, tourism mode or other modes may not be necessary. There are many problems, and we need new thinking in this area, as well as more practice.

## Subject Areas

Architecture, Culture

## Keywords

Industrial Heritage, Protection, Reuse, Design

## 1. Introduction

Industrial heritage is a symbol of human wisdom and civilization in a specific period of time, with unique historical, cultural, scientific, technological, eco-

conomic and other values, and plays an important role in human social development and urban construction [1]. Since the founding of the People's Republic of China, China urgently needed to change the industrial structure and faced with the severe international situation, and built a series of industrial enterprises. Under the background of that time, the rise of these industrial enterprises cemented China's national defense and promoted the development of China's economy. After entering the 21st century, the world is moving from the industrial age to the information age, from the industrial society to the post-industrial society, with the formation of new industrial mode, which accelerated the transformation of economic development. Western countries have carried out industrial upgrading earlier. With the development of China's economy, these traditional industries have been eliminated, and the industrial cities and towns have declined [2]. Then, these abandoned industrial plants have caused a series of adverse effects, such as the waste of land, waste of resources, hindering the development of towns and cities. Secondly, a series of pollution produced in the process of traditional industrial production also aggravates the deterioration of urban environment. In addition, during the period of rapid economic development in China, the urban construction was generally influenced by the "technology-based" modernist trend of thought, and a large number of cities appeared the phenomenon of "thousands of cities looking the same" [3]. With the development of human society gradually entered into an era of information and global economic integration, the developed countries and developing countries throughout the world's major cities are gradually into the post-industrial era, dominated by the concept of sustainable development, building a harmonious society to become a human view of the world, the consensus of the world foundation [4]. For the city, the traditional industrial heritage is the original form and texture of the town, which is the forgotten wealth of the city. In the process of urban planning and construction, the protection and utilization of industrial heritage have become an urgent task in China, and industrial heritage has become an urgent problem to be solved. The characteristics of industrial heritage in different regions are different. Therefore, to study the protection and reuse design of industrial heritage, different analyses should be made in combination with the actual situation of industrial heritage, and corresponding solutions should be formulated. In the field of industrial heritage in China, it increasingly presents its important theoretical and practical significance, and puts forward targeted suggestions for the protection and reuse of industrial heritage. With the wide application of advanced scientific tools, it provides important technical tools for the research on the impact of industrial heritage protection and reuse, provides theoretical support through scientific analysis, and applies new methods and new technologies to solve the problems in the field of industrial heritage protection and reuse in town planning.

Taking Guangyuan Dahua Mill industrial heritage protection and reuse design as the base, the author studies the protection and reuse design of industrial heritage. Guangyuan Dahua yarn factory in the Anti-Japanese War period, the for-

mation of Xi'an, Guangyuan two factories. After liberation in the mid-1960s, facing the severe international situation, the country responded to the call to carry out the "three-line construction". Cotton factory air-raid shelter increased to nearly 7000 square meters, constituting a considerable scale of civil air defense system. Therefore, Guangyuan Dahua Mill is an important industrial heritage [4]. At present, the main factory of Guangyuan Dahua Yarn Factory has been transformed into a second-hand goods trading market, and the details of the original industrial remains inside have been destroyed. The facade of the annex building of the factory is dilapidated, and the structure needs to be strengthened. It is in urgent need of repair and reinforcement. After the scheme design, the reuse design.

He Guanghua (2020) analyzed the Anti-Japanese War course of Dahua Yarn Factory from the perspective of history and affirmed the historical value of Dahua Yarn Factory; Fu Yubing (2019) listed the relevant status quo and reuse methods of Guangyuan City in the study of the value evaluation system of the third-line industrial heritage in Sichuan; Peng Lijun (2017) studied the urbanization on the industrial heritage of Guangyuan's third-line construction, mainly discussing the pressure of urbanization on third-line construction. In this paper, the research would be added to improve the industrial heritage protection and reuse of Guangyuan Dahua cotton in the field of deficiency, Guangyuan Dahua mills at the same time as one of representatives of the industrial heritage, industrial heritage value of itself is worthy of protection and reuse, the southwest national area of industrial heritage protection and reuse, is a typical value.

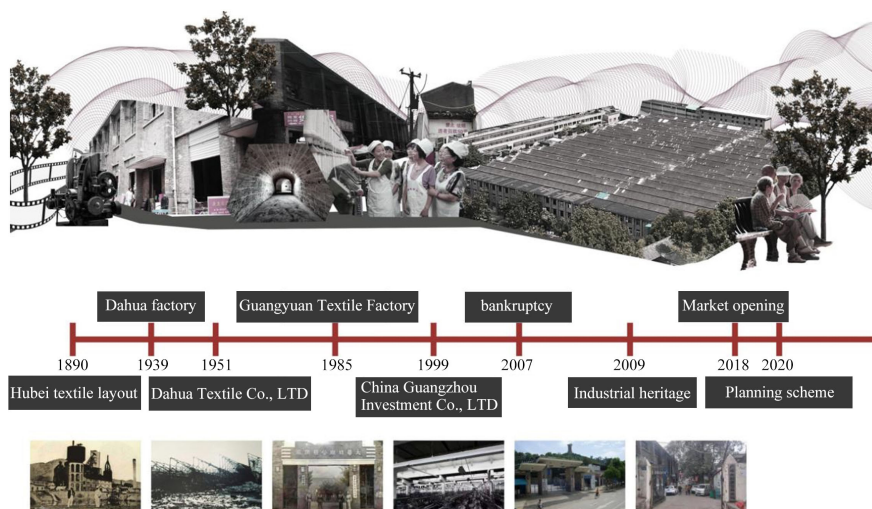
## 2. History and Development Status Quo

### 2.1. The Historical Evolution of the Development of Guangyuan Dahua Cotton Mill

Guangyuan Dahua Gauze Factory is the predecessor of Xi'an Dahua Gauze Factory, 1940 to prevent the Japanese bombing (Figure 1). The better power equipment and yarn machines of Xi'an Dahua Factory will be removed and transported to Guangyuan, and the factory will be built in caves. Dahua has two factories in Xi'an and Guangyuan. Since the mid-1960s after liberation, in the face of the grim international situation, the state has responded to the call to carry out the "three-line construction" [5]. Cotton mill air raid shelter increases overall to close to 7000 square meters or so, forming a considerable scale of civil air defense system. The relics of the Anti-Japanese War, the industrial history and the modern civil air defense project of Guangyuan have been preserved completely in this way. It is not only the cultural treasure of the people of Guangyuan, but also the historical memory and an important industrial heritage.

### 2.2. Guangyuan Dahua Cotton Mill Protection Status Quo

In October 1999, Guangyuan Textile Mill went bankrupt under the national policy. The main building was transformed into a second-hand trade market, and



**Figure 1.** Historical thread of Dahua Textile Factory (the author participated in the production).

the original details of the industrial remains inside were destroyed. Facades of auxiliary buildings of the workshop are relatively dilapidated, and the structure needs to be strengthened, which is in urgent need of repair and reinforcement. The scheme of the main body of the workshop, its auxiliary buildings and new buildings covers a total land area of 71,027.02 square meters (106.54 mu) (**Figure 2**). The building is mainly multi-story, with the coexistence of brick-concrete and frame structure. The main types of buildings are: main body and auxiliary buildings of the workshop, air-raid shelter and landscape square (**Figure 3**). Dahua cotton mill construction status: the old buildings in the factory are well preserved, and there are a lot of ancient trees in the factory.

Dahua cotton mill architectural style is not unified, mostly 2 - 4 layers, multi-purpose brick structure, part of the building quality is better, retain the elements of the Republic of China, from the overall view of the building distribution is more disorderly. The height difference on the north side of the site is slightly larger. The lack of sanitation facilities (toilets, garbage cans) has seriously affected the landscape. Ground pavement, tree pool, billboards lack of unified design management, and most of the damage, single format, low quality and chaotic management.

### 3. Protection and Reuse Design

#### 3.1. Project Positioning

The primary objective of the project is to address the continuing preservation of the industrial heritage and to enhance the cultural competitiveness and economic development of the region and even the cultural name card of the whole city after the master plan. Guangyuan Dahua Textile Factory is located at the edge of the core area of the traditional city center, with Jialing River on the west and Phoenix Mountain on the east. Relying on the beautiful landscape environment and the precious cultural and historical resources of the ancient city of



**Figure 2.** Design scope diagram (taken by the author).



**Figure 3.** The current situation of Dahua Textile Factory. (Photo by the author).

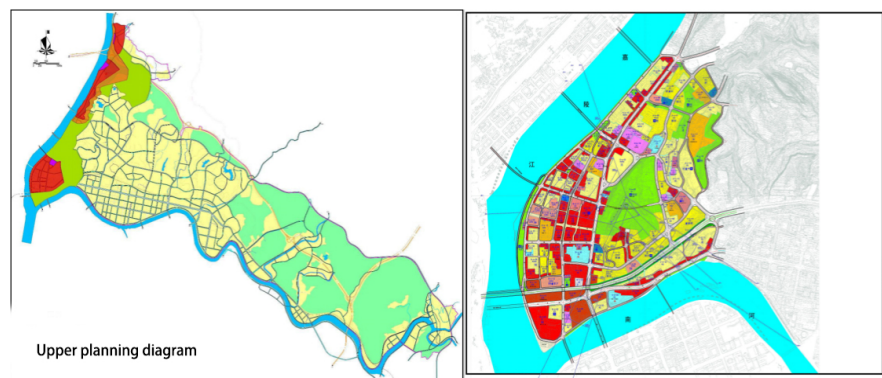
Guangyuan, combined with the core culture of Dahua Textile Factory, protect and continue the overall pattern and style of the historical and cultural city of Guangyuan, and maintain the style and characteristics of the city of Guangyuan as a whole. Build a cultural and commercial place with the most local characteristics of Guangyuan, and build an influential national 4A level tourist destination [6].

### 3.2. The Project Design

#### 3.2.1. Overall Planning and Design

First of all, the protection and reuse design of industrial heritage are not isolated or single. It needs multi-dimensional, multi-level and overall planning. Master planning and design is a good way to protect industrial heritage. As Wu Liangyong said, the protection of cultural heritage is indeed facing many difficulties at present, but once the general direction is straightened out, overcoming short-term difficulties will lead to a bright road, and the road will become wider and wider. If the old city is afraid of difficulties and difficulties and does not move forward, it will be difficult for the city to recover [7].

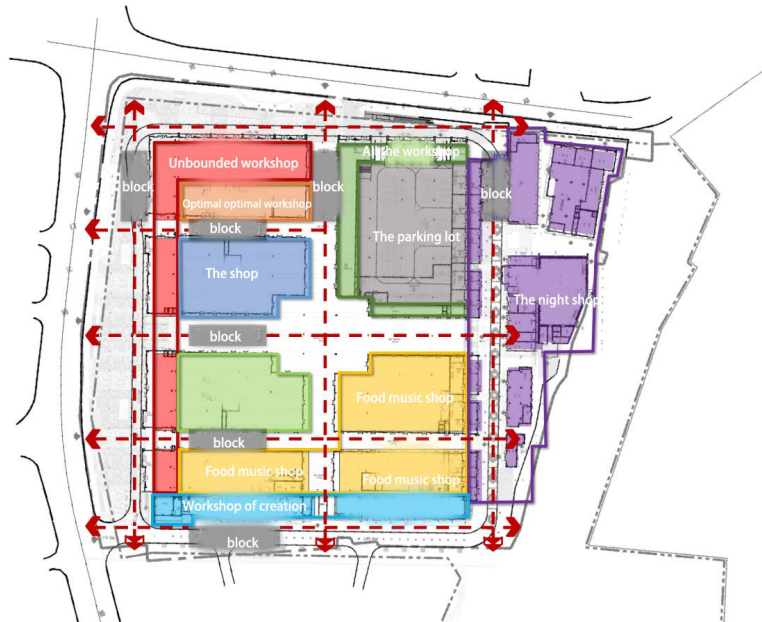
In the “Guangyuan City North Area Controlled Detailed Planning”, Dahua Textile Factory belongs to the core protection area, the land is residential and commercial and financial land, the design according to the requirements of the upper planning, in line with the property of land use. The overall planning and design mainly focus on the protection of the original historical buildings (**Figure 4**). The grade assessment of the historical buildings is carried out, and the demolition of the dilapidated buildings within the protection scope is no longer carried out. The demolition area is 9607.79 square meters. In order to meet the development of the business format, the new construction is carried out on the basis of not destroying the principle of historical buildings. The total capacity area of the new construction is 6208.69 square meters. The design of the project is a combination of multiple functional subjects and complex internal functions. The main contents are: fine business; Wenchuang Hotel; Gourmet food and beverage; Supporting garage; KTV bar; Air raid shelter theme education exhibition and other formats layout. At the same time of protection, make it full of new vitality, into the new era of economic development wave (**Figure 5**).



**Figure 4.** Upper planning diagram (source: Guangyuan Municipal Planning Bureau).



**Figure 5.** Design general plan (the author participated in the production).



**Figure 6.** Business distribution plan (the author participated in the production).

### 3.2.2. The Special Design

The overall plan involves many factors, and the special design is an important part of the overall plan. The special design is also an important node of the overall planning. The success of the special design is conducive to the smooth implementation of the overall planning and design. The special design of the facade of the building maintains the original appearance of the building, and combines modern design materials and techniques to strengthen and repair the structure and enhance the overall spatial beauty. Through the display and exhibition of the spinning skills, the landscape design reproduces the prosperous scene of Dahua Textile Mill in the industrial period and shows the heritage of the spinning craft industry. Green building design, using solar roof instead of traditional tile roof, and has the function of collecting energy and generating electricity. Solar roofs are made of glass tiles with embedded solar cells, making them more elegant and durable. Responding to the call of “low-carbon revolution”, environmental protection and energy saving. Landscape special design through the design technique, let the material collision, pick up the Dahua yarn mill spinning process industrial memory; Through the extraction, simplification, reconstruction, design and integration of cultural elements such as textile culture and industrial heritage, Dahua 1939 can regain its memory and reappear its history. Live business, food competition, food music festival and other activities can be held regularly to enhance the attention of the project (Figure 6). Make use of the large space of the cotton mill, decorate the food court, special theme catering, such as music restaurant, children’s theme restaurant, etc. [8].

## 4. Summary and Discussion

The author thinks based on the current situation of China’s industrial heritage,

the implementation of the Guangyuan Dahua Textile Factory specific practice project, to the protection and reuse of industrial heritage strategies for thinking. According to the characteristics of industrial heritage, the corresponding strategies are put forward. In the design, the emergence of “formulation” should be avoided, and the reuse design scheme should be formulated according to the characteristics of specific industrial heritage. To enhance the social attention, advocate public participation in the protection of industrial heritage, enhance their protection awareness, in the process of protection and reuse, both protection and reuse should be paid equal attention to, and the importance of protection should not be ignored in order to simply maximize the interests. Historic buildings should be protected to make them glow with new vitality, integrate into the economic development tide of the new era, and promote healthy economic development [9].

Today’s era belongs to the post-industrial era. For the products left-over from the industrial era, there are many utilization and protection modes in China today. This project also uses the tourism development mode among them to protect and reuse Dahua Textile Mill. But whether it can be successful, or needs to be tested in practice? Therefore, the author believes that the sustainable development of the protection and reuse of the industrial heritage in today’s era requires not only the protection of the industrial heritage itself, or good design, but also the economic size of the city itself and even the consumption characteristics, not necessarily the tourism mode or other modes. Because there are so many problems, we need new thinking and more practice in this area.

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## Conflicts of Interest

The author declares no conflicts of interest.

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