

Research on the Preservation and Sustainable Design of Existing Arcade Architecture in Guangdong

Li Qinyu^a and Zheng Li^{b,1}

^aGuangdong Architectural Design and Research Institute Group Co., Ltd

^bSouth China University of Technology

Abstract. The Guangdong region has numerous arcade architecture. From different perspectives, I explore the architectural features of Guangdong's arcade architecture and present the current status and causes of their preservation and sustainable use. By selecting successful examples of sustainably designed arcade streets or standalone arcade architecture in Hong Kong, Macau, and Guangzhou, I conduct a comparative analysis of their similarities and differences. This analysis identifies the strengths and weaknesses of the current preservation and sustainable use of Guangdong's arcade architecture. Based on these differences, I propose several strategies to provide a development direction for the preservation and sustainable design of arcade architecture in other regions in the future.

Keywords. Guangdong arcade architecture, sustainable design, preservation

1. Introduction

The continuous and rapid changes generated by contemporary social and economic processes have led to large-scale urbanization. However, citizen participation in the governance of urban change and development is often insufficient, necessitating more sustainable and equitable development. Throughout the urban development process nationwide, numerous issues related to the preservation of historical architecture and sustainable development have arisen, with the protection and sustainable development of arcade architecture being particularly prominent.

A review of arcade architecture protection and sustainability studies nationwide reveals that most arcade architecture is currently located in the southern regions. For instance, scholar Yang Honglie has studied the forms and evolution of early arcade houses [1]. Scholar Lin Chong's research offers a detailed account of the emergence, development process, causes, dissemination, and morphological characteristics of arcade houses in various provinces and major cities across China [2]. Scholar Xue Ying has conducted systematic research on architectural decorations in the Lingnan region [3]. Scholar Zheng Li has investigated the history of urban development in modern Shantou [4]. This Western architectural form, after being absorbed and creatively adapted by local craftsmen, now exists in a particularly diverse array. Today, the

¹Corresponding Author:Zheng Li, South China University of Technology, Wushan Street, Guangzhou, Guangdong Province, China; E-mail: 15641025@qq.com.

protection and sustainable utilization design of such historic architecture vary in approach from place to place.

2. The value of preserving and sustainably utilizing Guangdong's arcade architecture

In the Guangdong region, the value of arcade streets can be expressed in three specific dimensions: historical, cultural, and artistic.

From a historical perspective, arcade architecture contains important historical information. Although it may not have cultural relic value, the overall environment and order it creates vividly reflect a certain period of urban history, showcasing the results of the continuous layering of ancient and modern cities. Ken Yeang's research highlights the significant role of the fusion between Western colonial culture and Southeast Asian indigenous architectural traditions in the development of the arcade house typology [5].

From a cultural perspective, arcade architecture represents a combination of cultural information, social emotions, and economic value. *The Nairobi Recommendations* indicate that "preserving historic areas can make a significant contribution to maintaining and developing the cultural and social values of each country. It also helps enrich the world's cultural heritage through architecture" [6]. From an artistic perspective, arcade architecture features a unique form and includes a variety of exquisite details and decorations. Both the buildings themselves and the various artworks attached to them hold significant artistic value.

3. Cases studies of the preservation and sustainable design of arcade architecture in Guangdong

3.1. Hong Kong

In 2008, Hong Kong launched the *Revitalizing Historic Buildings through Partnership Scheme*, under which revitalized buildings are opened to the public and offer guided tours. Lui Seng Chun is the only arcade building among the 12 revitalization projects in Hong Kong. Hong Kong Baptist University holds the operating rights for this project, making it particularly noteworthy and worthy of discussion and study.

Lui Seng Chun, commissioned by the original owner Lui Leung and designed by architect Paul Rudolph, was built in 1931. The ground floor served as a pharmacy, while the floors above were residential spaces. In 2000, it was designated as a Grade 1 historic building and was later donated to the Hong Kong government by the Lui family. The building is a four-story arcade structure with a curved corner design, featuring a steel and concrete frame. The facade is finished with light yellow plaster, and the detailing is simple and adheres to the Neoclassical style. The second to fourth floors include external verandas, and due to the limited internal usable space, the design solution includes enclosing all verandas with transparent glass windows to block dust and noise. The solution carefully complies with heritage conservation requirements while meeting modern building fire safety standards. All restoration and renovation work are identifiable and reversible. The building currently serves as the School of Chinese Medicine at Hong Kong Baptist University.



Figure 1. Leung So Kee (Source: <https://www.heritage.gov.hk/doc/rhbt/Lui%20Seng%20Chun.pdf>)

3.2. Macau

The Tak Seng On Building on Macau's New Road was built in 1917 and originally owned by wealthy merchant Gao Kening. It was initially a large pawnshop, consisting of a three-story pawnshop building and a seven-story warehouse building. After closing in 1993, the government contacted the owner, and in 2002, the government funded the restoration. The first and second floors of the pawnshop building and the first floor of the warehouse were rented out, making it the first industry museum established through government-private sector cooperation. It now serves as a pawnshop museum and regularly hosts related public welfare activities. The building's façade features a water-washed stone finish, and the ground floor columns are similarly treated. The façade of the main entrance is composed of sliding doors, iron security bars, and colored frosted glass. The building's design and interior furnishings reflect the basic patterns and characteristics of early 20th-century Chinese pawnshops.

The revitalization project at 69-81 Rua de São Lázaro in Macau primarily focuses on redevelopment. The Macau Cultural Affairs Bureau funded the project and signed a five-year lease agreement with private owners. Restoration work began in 2010, and the Macau Public Library started operating there in 2016. The seven arcade buildings, influenced by Portuguese colonial style, feature a rich color palette on their façades and exhibit modernist design. The original use of the buildings dictated their simple façade decoration.

The revitalization of the São Lázaro Library was completed with the efforts of the Macau Cultural Heritage Office team. It overcame the constraints of the original site and building interiors by designing the library with a highly modern approach, preserving the overall exterior characteristics of the building while incorporating distinctive decorative details inside. This bold design approach has created many interesting interior spaces and has gained public recognition. The revitalized arcade buildings are not just decorative objects in a showcase; they fill functional gaps in the area and truly realize the value of historic buildings, which is something that both the government and designers can be proud of.



Figure 2. Ko Kening (Source: google map)



Figure 3. Rua da Palha (Source: google map)

3.3. Guangzhou

Urban redevelopment in Guangzhou began in 1979. The focus of urban development shifted from initial expansion to mid-term stock development, and has now reached a stage aimed at overall improvement of the living environment. The government has played a significant proactive role in urban construction, as noted the transformation process involves modifying old urban elements and creating new urban image elements. Specialized agencies were established, regulations and plans were issued, city walls were demolished, roads were built, and urban connections were improved. Guangzhou's urban construction has actively drawn on advanced urban planning theories from abroad and, overall, aligns with the principles of modernization" [7].

During the early stages of redevelopment, many issues arose, leading the government to tighten control. Subsequently, when facing the revitalization projects of arcade building neighborhoods such as Yongqingfang, Enning Road, Shangxiajiu, and Shiguangpu Road, the redevelopment process became more cautious and slower. The gradual slowing down of redevelopment efforts, reduction in the scale of renovations, and implementation of micro-renovations in the old city are the result of collaborative efforts between the government, developers, and the public.

The first phase of the Enning Road renovation design in 2016 was the first micro-renovation project in a historic cultural district in Guangzhou, and it was also the first to involve developers in jointly conducting sustainable design for historical cultural districts. The second phase, which began in 2019 after the development of detailed design and implementation plans, has now been completed. This phase included the restoration of 209 arcade buildings and the renovation of 454 arcade buildings, addressing gaps in the arcade streets to maintain the integrity of the arcade street façades.

In 2019, the Lingnan Architecture Research Center in Guangzhou launched the "Master Projects Near You" initiative. One of the arcade building pilot projects was at 217-225 Enning Road, a traditional-style building overseen by American designer Benjamin Wood. Examples of successful sustainable design renovations for standalone arcade buildings include the Caizhilan at 225 Beijing Road, the Xiangji Lane at 116 Shangxiajiu Road, the Ping An Theater at 125 Shiguangpu Road, and the Guangdong Provincial Committee Memorial Museum on Wenming Road. However, most of these projects were privately funded for sustainable design.



Figure 4. Nos. 217-225 Enning Road
(Source: google map)



Figure 5. The Memorial Hall of the former site of the CPC Guangdong Provincial Committee (Source: google map)

Table 1 compares information on standalone arcade buildings in the three cities mentioned earlier, focusing on the current status of sustainable design and the operational entities involved. The sustainable design approaches differ because the objectives of government-led and privately-led operations are not the same.

Table 1. Information Table on the Revitalization of Individual Arcades (Source: Drawn by the author)

Building	Owner	Operator	Operating Hours	Analysis of Revitalization Model
Ko Kaning.	Tianhe Property Development Company	Cultural Hall (Public)	2003-2014	1F: Shops + Library 2F: Tea Room + Cultural Exhibition Hall
		Association of Cultural Heritage Ambassadors (Public)	2016-Present	
Rua da Palha	Private	Macau Public Library (Public)	2016-Present	All three floors are libraries.
Leung So Kee	Hong Kong Government	Hong Kong Baptist University (Private)	2012- Present	1F: Exhibition Area + Second to Fourth 2F: Chinese Medicine Clinic + Rooftop Medicinal Herb Garden
Nos. 217-225 Enning Road	Guangzhou Government	Private	2019- Present	1F, 2F: Shops 3F: Warehouse
The Memorial Hall of the former site of the CPC Guangdong Provincial Committee	Guangzhou Government	Relevant Guangzhou Municipal Government Agencies (Public)	1915 – 1982	Initially used as a Party School base, later converted into a museum for internal government staff exhibitions
			1982- Present	Museum exhibitions open to the public

4. The advantages and shortcomings of the current protection and sustainable design of arcade architecture in Guangdong.

4.1. Advantages







Under the influence of British colonial culture from 1842 onwards for the next 150 years, the preservation of historical architecture in Hong Kong has primarily focused on the assessment and classification of historical architecture. The main work involves evaluating and grading monuments and historical architecture, with the grading of historical architecture now completed. Significant historical districts have also

undergone façade restoration and improvement. Macau has subsequently followed suit and completed similar work.

The sustainable design of standalone arcade architecture in Hong Kong and Macau has shown significant results, widely welcomed by citizens. It provides diverse and innovative uses, promotes the development of education, culture, the arts, traditional Chinese medicine, and tourism, while also boosting the regional economy, revitalizing old districts, and enhancing community cohesion. Although there are currently few examples of historical arcade architecture in Hong Kong and Macau, the completed and operational projects are exemplary. It can be said that the process of preservation and sustainable design in Hong Kong and Macau offers valuable insights for other regions, emphasizing the protection of historical value without extensive reuse practices. The design practices adopted are worthy of study. While protection and sustainable design methods cannot be generalized due to regional cultural differences, the approaches taken in Hong Kong and Macau still provide guidance for rapidly developing mainland areas. Analyzing the positive impacts of projects from perspectives such as architectural overview, property rights issues, sustainable design methods, the extent of design intervention, and post-design operational status can help future researchers gain a clearer understanding of the direction for improving sustainable design in the mainland.

The arcade policy in Guangzhou is continuously being updated and revised, indicating an increase in the government's regulatory and guiding efforts. The scholars Li Ying and Liu Yunxia have published a study titled *The Preservation and Development of Arcade Streets in Guangzhou* which establishes an evaluation system for historic arcade streets [8]. In addition to the completed restoration of historic districts and standalone arcade architecture mentioned earlier, work on the rating of historical architecture is also ongoing. As shown in Table 2, based on project experience and data, the author has developed a grading table for arcade streets. Arcade architecture is classified according to its value, with ratings ranging from A to E in descending order.

Table 2. Arcades Appearance Rating Map (Source: Drawn by the author) (Source: Drawn by the author)

Arcade	
	
	A: Historic buildings with excellent historical value and characteristics.
	B: Traditional style buildings with a certain degree of typicality.
	C: Architecturally harmonious buildings, but with some modifications that have a certain impact on their appearance.
	D: Ordinary buildings, but no more than four stories, with the building height not exceeding the original skyline.
	E: Inharmonious buildings, with large volumes and exteriors that do not match the historic district.

4.2. Disadvantages

The Guangzhou government has focused its design efforts on the interior areas enclosed by arcade streets, aiming to revitalize the entire arcade district. The funding and technical support provided primarily address the restoration of city- and district-level cultural relics and historical architecture scattered throughout the district. Additionally, arcade architecture lacking distinctive historical, artistic, or cultural value is often classified as historical building clues or remains unclassified, with the government funding facade restoration and external reinforcement. After these efforts, residents are only given advisory guidance on land use layout, without rigid regulations. There are relatively few cases where the government funds private-sector sustainable design for cultural relics and historical architecture on arcade streets. The introduction of diverse private-sector involvement in the renovation, design, and operation of arcade architecture remains an area where governmental regulations and policies need further development.

5. Three Aspects of Consideration for the Protection and Sustainable Design Strategies of Arcade Architecture in Guangdong

5.1. *Promote the distinctive features of architecture and culture, and implement targeted protection measures.*

The long-term development of the arcaded streets is intricately linked with its commercial model. A thorough study of the unique local business atmosphere and arcaded street culture is essential. Designers should integrate cultural economy and tourism development into revitalization projects, combining the historical and cultural characteristics of the arcaded streets with traditional commerce, leisure activities, and cultural experiences. This approach aims to create a *cultural experience zone* that stimulates local economic growth. When introducing new business models into the old town, it is crucial to ensure that these models do not undermine the historical and cultural features and to avoid excessive commercialization, as this is the most important and challenging aspect of proactive preservation. The area boasts a wealth of cultural characteristics, including notable traditional culture, overseas Chinese postal culture, charity hall culture, food culture, and port culture, all of which are worthy of promotion.

5.2. *Effectively conducting value assessment and adapting design modifications.*

5.2.1. *Assessing the value of historic arcaded street districts*

The valuation of historic arcaded cultural districts is conducted at three levels: district clusters, street units, and individual buildings. Since the cultural significance and revitalization strategies differ at each level, it is advantageous to perform separate evaluations. During the revitalization process, the hierarchical approach used in value assessment is maintained, addressing the macro, meso, and micro levels corresponding to districts, streets, and individual buildings. At the micro level, specific areas of historical value within the arcades are identified for subsequent restoration and adaptive reuse. As depicted in Figure 1, the author divides the arcade facades into three

sections for restoration and renovation, accompanied by a color guideline. The importance of detailing is highlighted by scholars who state: “Architectural decoration, as an art form, is emotional, whereas structure often has rational characteristics. When structure and form merge through architectural decoration, the decoration thus embodies both rational and emotional qualities” [9].

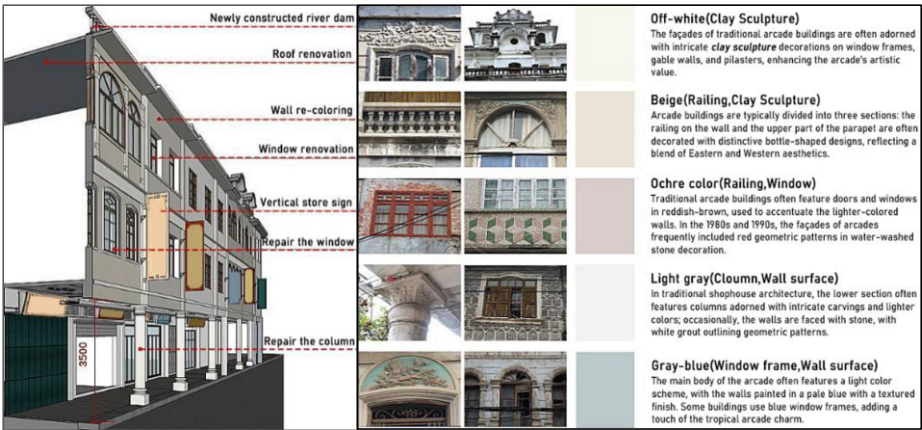


Figure 6. Three-section restoration, renovation, and color guide for shophouses (Source: Drawn by the author).

5.2.2. Evaluating the value of historic arcaded street districts

Modern modifications to historic architecture are typically based on functional repurposing. When renovating historic arcade architecture, it is essential first to assess the feasibility of such renovations. Given the inherent conflicts between modern functional spaces and historic architecture, it is crucial to determine whether the spatial layout of arcade architecture is sufficiently adaptable to meet contemporary usage requirements. Functional control should be implemented, categorizing architecture into three types: incompatible, compatible with public services, and compatible with both commercial and public services. An evaluation of the historical, cultural, and artistic value of the arcade architecture is necessary, and assessment forms can be created for this purpose. A reference for this process is the *Study on the Protection and Development Plan of Arcade Streets in Guangzhou* completed by the Guangzhou Urban Planning Exploration and Design Research Institute in 2002.

5.3. Establishing an equitable social organization platform and conducting phased design reutilization.

When the government undertakes the protection and sustainable design of historic architecture, opening buildings used for private purposes entirely for exhibitions or certain public welfare activities can alter the inherent value of these cultural relics. The arcade originally served as a space for the daily lives of its inhabitants; therefore, sustainable design should not exclude daily living spaces [10].

The best future cooperation between the government and the public involves effective communication and frequent engagement with property owners to establish a relationship of mutual trust and cooperation. Advanced technologies such as GIS and 3D scanning should be used to assist in the in-depth study of historical information and public policies. During the drafting of protection plans, design schemes, and the construction process, it is important to enhance public participation through resident surveys, raise awareness of heritage protection among the general populace, and encourage the involvement of private conservation groups and media in the protection and sustainable design efforts of the districts, granting them the right to public hearings and recommendations.

Additionally, establishing a foundation and selecting civilian liaison organizations to assist with relevant entrusted tasks can further these goals. Assigning dedicated personnel to operate social media platforms such as Weibo, WeChat, and online VR tours will help promote the local arcade architectural culture. By diversifying the use of technological means, the methods for protection and sustainable design can be upgraded effectively.

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