

UNIVERSITY OF NOVA GORICA  
GRADUATE SCHOOL

**DECORATIVE PLASTERWORK OF GUANGZHOU DURING  
THE DYNASTY QING (1644-1911) : THE STUDY OF  
TECHNIQUES AND MATERIALS**

DISSERTATION

**Hui Yang**

Mentor: Francesco Amendolagine

Venice, 2013

## ACKNOWLEDGMENTS

I would like to extend my sincere gratitude to Prof. Francesco Amendolagine, my adviser, who provided his insights and guidance throughout my dissertation writing, and for allowing me to use the facilities and resources at the Scientific Association Palazzo Cappello Venexia, the International Centre for Research and Restoration of the decorative Baroque and Neoclassical motifs (all'Associazione Scientifica Palazzo Cappello, Centro Internazionale per la Ricerca e il Restauro degli Apparati Decorativi Barocchi e Neoclassici). I would also like to thank Valeria, Stefano and Marco for use of the scanning at the above-mentioned International Centre and for their assistance and advice.

Particularly thank Prof. Saša Dobričić, Kristien Fauconnier and Drs. Marco Acri for their assistance during my Ph.D. studies.

From the National Library of China, I wish to thank the Librarian Li Yanghua for letting me use the photocopier at the office and her much appreciated support, and from the Guangdong Folk Art Museum, the Curator Huang Miao Zhang for his valuable interpretations and for his continuous help and generous advice. At the same time, I must thank Guangzhou plasterers Shao Chengcun Shao Yushan, they gave me so much help when I researched in the city of Guangzhou.

I must also thank all the participants in this study, who provided their time and assistance throughout my research. During my research a number of residents of Cantonese offered me their guidance and graciously opened their doors to their homes. The experiences that I encountered have left endearing memories. My sincere thanks go to my friend Camilla Latini, Marco De Rossi, Valentina Rascioni who have extended their enthusiastic assistance and offered words of encouragement.

Lastly, my deep appreciation goes to my wife and my daughter who have always been very supportive, helpful and encouraging.

Disertacija je bila narejena v okviru sofinanciranja študija po Javnem razpisu

»Inovativna shema za sofinanciranje doktorskega študija za spodbujanje sodelovanja z gospodarstvom in reševanja aktualnih družbenih izzivov – generacija 2011 Univerza v Novi Gorici«, ki ga delno financira Evropski socialni sklad.

## TABLE OF CONTENTS

<b>Acknowledgment</b> .....	I
<b>Table of content</b> .....	III
<b>Abstract</b> .....	IX

### Chapters:

Chapter 1. Introduction.....	01
1. 1 Background.....	01
1. 2 Purpose and scope of study.....	03
1. 3 Significance of the study.....	04
1. 4 Primary Research Questions.....	05
1. 5 Methodology of the Study.....	06
1. 6 Literature Review.....	08
1. 6. 1 Introduction.....	08
1. 6. 2 The history of the plaster.....	08
1. 6. 3 Western literatures of plaster and stucco.....	13
1. 6. 4 Chinese traditional literatures.....	18
1. 6. 5 Chinese contemporary literatures.....	21
1.7 Summary.....	22
 Chapter 2 Materials of Guangzhou plasterwork.....	 25
2. 1 Introduction.....	25
2. 2 The Cementing Materials.....	25

2. 2. 1 Th Lime.....	25
2. 2. 2 Th Oyster /Clam lime.....	30
2. 3 The Glutinous Rice.....	31
2. 4 Retarding Agents.....	32
Brown Sugar.....	32
2. 5 Fiber Material.....	33
Straw.....	33
The Yukou Paper.....	33
2. 6 Waterproof Agent.....	34
2. 7 Filler Material.....	34
2. 8 Armature Material.....	34
2. 9 Summary.....	35
 Chapter 3 Pigments and Colors.....	 37
3. 1 Introduction.....	37
3. 2 Black Pigment.....	38
3. 3 Red pigments.....	43
3. 4 Yellow pigments.....	45
3. 5 Cyan pigment.....	45
3. 6 White pigment.....	47
3. 7 Summary.....	51
 Chapter 4 Glutinous Rice Mortars.....	 53
4. 1 Introduction.....	53
4. 2 Straw plaster.....	53
4. 3 The paper plaster.....	54

4.4	The colored plaster.....	54
4.5	Summary.....	55
Chapter 5	Decorative Positions and Themes.....	57
5.1	Introduction.....	57
5.2	Plasterwork on the Roofs.....	58
5.2.1	The main ridge.....	58
5.2.1.1	On the Aoyu Ridge.....	60
5.2.1.2	On the Bogu ridge.....	65
5.2.1.3	On the Dragon Boat Ridge.....	69
5.2.1.4	Watching Ridge and Ridge on the Gateway.....	74
5.2.1.5	The Ridge of Cintamani.....	75
5.2.2	The hip on the roof.....	77
5.3	Decorative Plasterwork on the Walls.....	81
5.3.1	On the gable wall.....	81
5.3.2	Frieze of the outer wall.....	88
5.3.3	Plastering Couplet.....	90
5.3.4	Chinese Screen Wall.....	91
5.4	The relationship between decorative theme and position.....	94
5.5	Summary.....	95
Chapter 6	Plasterers in Guangzhou.....	97
6.1	Li Wenyuan and his apprentices.....	97
	Li Wenyuan.....	97
	Yang Ruishi.....	98
6.2	Guan's Clan Family.....	99

Guan Tingguang.....	99
Guan Mengyan.....	99
6.3 The plasterers of the last period of the Qing Dynasty.....	100
Chapter 7 Technical Processes of Plasterwork.....	101
7.1 Tools.....	101
7.1.1 The scaffolding.....	101
7.1.2 The plastering tools.....	101
7.2 Working process of the plasterer.....	104
7.2.1 The skills of bas-relief decoration.....	105
7.2.2 Build the decorative element in the high relief.....	106
7.2.3 Plastering the decorative works of sculpture in the round.....	107
7.3 Summary.....	109
Chapter 8 Ancient Architectures and Plasterworks in Guangzhou.....	113
8.1 The City of Guangzhou.....	113
8.1.1 An Ancient City.....	113
8.1.2 The City Layout and Architecture.....	115
8.1.3 Decorative Plasterwork.....	188
8.2 The Architectural Decorative Plasterworks.....	119
8.2.1 Religious buildings.....	119
8.2.1.1 Guangxiao Temple.....	120
8.2.1.1.1 The Mahavira Hall.....	123
8.2.1.1.2 The Sixth Ancestor Hall.....	129
8.2.1.1.3 Samgharama Hall.....	134
8.2.1.2 Sanyuan Temple.....	139

8. 2. 1. 2. 1	The Mountain Gate Hall.....	141
8. 2. 1. 2. 2	Sanyuan Hall.....	145
8. 2. 1. 2. 3	Lü Zu Hall.....	148
8. 2. 1. 3	Huai Sheng Mosque.....	150
8. 2. 1. 3. 1	The Light Tower.....	151
8. 2. 1. 3. 2	The Kanyue Attic.....	154
8. 2. 2	The Ancestral Temple.....	156
8. 2. 2. 1	Guangzhou Chen Daifu Ancestral Temple.....	157
8. 2. 2. 2	Chen Clan Temple.....	162
8. 3	Thirteen Factories and Architectural complex in Shamian Island.....	172
8. 3. 1	Trading buildings of the Thirteen Factories.....	172
8. 3. 2	Architectural complex in Shamian Island.....	177
8. 4	Conservation and Restoration Recommendations.....	182
8. 4. 1	Protection challenges of Guangzhou plasterwork.....	182
8. 4. 2	Method of current restoration and conservation.....	183
8. 4. 3	Influence of weathering factors for the plaster.....	183
8. 4. 4	Conservation and restoration recommendation.....	184
8. 5	Summary.....	186
Chapter 9 Conclusions.....		189
9. 1	Introduction.....	189
9. 2	Unique Guangzhou Decorative Plasterworks.....	189
9. 2. 1	Scientific classification of plaster materials.....	189
9. 2. 2	Five Colors Theory of Guangzhou plasterwork.....	190
9. 2. 3	The unique mortar.....	193
9. 2. 4	Water-related decorative plasterwork in Guangzhou.....	193
9. 3	Provenance of Guangzhou Plasterworks.....	194
9. 3. 1	Gandhara sculpture art.....	198



9. 3. 2	The Gandhara Sculpture Arts were introduced China.....	203
9. 3. 3	The development of Buddhism in Guangzhou.....	204
9. 3. 4	The Earliest Chinese Plasterwork Literature.....	209
9. 3. 5	Instances of decorative plasterwork.....	211
9. 4	Suggestions for Further Study.....	212
	Appendices.....	215
	Notes.....	269
	Bibliography.....	289

## ABSTRACT

The dissertation investigates plasterwork as an architectural decoration widely used in the exteriors of the city of Guangzhou during the Qing dynasty (1644-1911). Guangzhou decorative plaster derived from the Gandhara plaster emblem in 3rd - 5<sup>th</sup> century, directly related to the Roman and Alexandrian plaster through the Greek art revival movement dating back to 25 A.D. Yet, this plaster has already lost its space for survival due to development of modern architecture in China, which made teams of the plasterers become less and less; fewer and fewer Chinese people paid attention to it. However, as an Intangible Cultural Heritage, it's must be re-recognised and re-evaluated.

To identify historic value and importance of decorative art of Guangzhou plasterwork, a Multi-methodology approach was utilized. Using photos and interviews from fieldwork conducted in Guangzhou in 2010 and 2011, ancient buildings of Guangzhou as a case of study, were examined and analyzed within a historical context. Architectural drawings from my fieldwork added the thesis to enrich my study of Guangzhou plasterwork. The fundamental step of the research was here represented by the assessment of the Guangzhou decorative plasterwork, for example, the traditional materials of the mortar, decorative positions and themes, and decorative colors are clearly represented. The dissertation, through a systematic work of research and analysis, obtained the following original findings: *a) The Five Colors Theory (red, yellow, cyan, white and black) affected the Guangzhou plasterwork; b) The materials of the Guangzhou plasterwork have been scientifically classified; c) Decorative plasterwork elements were associated with water effects; d) The provenance of Guangzhou plasterworks was clarified.*

As a result, Guangzhou plasterwork mirrors prosperity of the past and reflects its current social situation within China. By studying a range of decorative plasterwork within Guangzhou region, perceptions about Guangzhou's plaster and Chinese people will be redefined.

**Key words:** Plasterwork, decoration, Guangzhou-China, lime, glutinous rice, mineral pigment, Five colors theory.

## POVZETEK

Disertacija raziskuje omet kot arhitekturno dekoracijo, katero se je pogosto uporabljalo na zunanjih površinah v mestu Guangzhou v času dinastije Qing (1644-1911). Guangzhou dekorativni omet izhaja iz Gandhara ometnega emblema iz 3. - 5. stoletja, ki je neposredno povezan z rimskimi in aleksandrijskim ometom preko grškega revival, ki sega vse do 25 A.D.

Temeljni korak raziskave predstavlja ocena tradicionalnih materialov malte v Guangzhou dekorativnem ometu. Rezultati analize ometa so pokazale popolno odsotnost mavca in prisotnost apna kot glavne inertne sestavine in poudarile uporabo lepljive riže in rjavega sladkorja kot "vezalcev in povezovalcev", kjer je sok Ljepljive riže služil za povečanje strjevanja, trdnosti in vodoodpornosti ometa. Slama in Joss papir sta bila uporabljena kot vlaknasti komponenti in sicer z uporabo slame predvsem v prvem sloju ter mivke za pridobitev prostorninske mase celotnega reliefa. Tretja plast malte, tako imenovana barvani omet, je bila narejena iz naravnih pigmentov z dodatkom aluma ter se je izvajala pod vplivom Teorije petih barv (rdeča, rumena, modra, bela in črna), glavne kitajske barvne tradicije.

Disertacija je, s sistematično raziskavo in analizo, dosegla naslednje izvirne ugotovitve:

- vpliv Teorije petih barv na dekorativnem ometu v Guangzhou;
- znanstvena klasifikacija materialov Guangzhou ometa;
- povezava elementov dekorativnega ometa z učinki vode;
- pojasnitev izvora Guangzhou ometa.

Ključne besede: dekoracija ometnih površin, Guangzhou--Kitajska, tradicionalne tehnike in materiali, apno, Ljepljiv riž, mineralna barvila, Teorija petih barv.

# Chapter 1

## Introduction

### 1.1 Background

Guangzhou remains a fascinating traditional building hundreds years after its establishment as the capital and largest city of the Guangdong province. The fact that historical records are very scanty and published source are very few concerning the plasterwork of this city, during the period of my investigation, I found that it's very difficulty to gain better insight into the history of architectural decoration and material culture of the city from its people and their way of life. In fact, many aspects of the unique traditional architecture of the city remain unknown until now. The study of the technologies and materials of Guangzhou plasterwork has not yet reached full maturity. When the stucco and decorative plaster of Rome, Pompeii (Augusti, 1967) were being studied in detail and scientific analysis was being carried out on the materials and techniques, research in Guangzhou was still in its infancy, with studies aiming at analyzing their architectural styles, while fragile plasterwork remains whether inside lime wall painting, outside decorative plaster on roofs have unjustly not received the same level of attention. Conservation of traditional building in Guangzhou has been carried out recently in a systematic and well studied manner more than ever before (Huang Miao Zhang, 2005), for example, in some famous temples such as the Chen Clan Academy, Fushan Ancestral Temple, Xujiang Ancestral Temple, The Ancestral Temple of Dragon Mother (Longmu) etc., the architectural decorative arts are conserved very carefully; The methodology for the conservation has been established, and is now being carried out according to agreed upon international norms and standards. However, there is yet no established methodology for the conservation of architectural decoration in terms of plasters and stucco. Several Ming dynasty buildings that have plastered reliefs have fallen into ruin by now. Conservation work has been conducted on some decorative plasters (Franchi and Pallechi, 1995), yet much more still needs to be done. In particularly,

many ancient buildings located various of villages, their decorative remains are left completely in the open and are under the effects of exposure to sunlight, wind and rain. Documentation and research into the technology of materials in the city of Guangzhou in terms of mortars in general and in particular the exterior plasters of ancient buildings is fairly recent (Shaer 1997, 2000).

As most of decorative plasterworks are located the outside of traditional architecture of the city, more and more of the decorative heritage is being exposed to the environmental elements that cause a threat to its integrity and permanence. Weathering and human factors have a large impact on the state of deterioration of ancient buildings of Guangzhou. It is true that, recently, conservation is slowly becoming an integral part of archaeological expeditions, where some traditional buildings in Guangzhou undergo embarrassed conservation work, therefore, necessary scientific research is conducted. Nevertheless, many of the previously architectural decorative arts are deteriorating with a lack of documentation and scientific study and without developing a proper conservation approach. This is in particular evident concerning many of the painted plasters and decorative stucco on walls and roofs coverings of the traditional building in Guangzhou.

The decorative plasterwork is applied on a large scale in the ancient architecture of Guangzhou during the Qing Dynasty. However, it has always been considered a popular art form, which we have limited historical records and references concerning the techniques and materials, in particular, lacking of relevant protective measures for it.

In Guangzhou, the decorative plasterwork and the transmission of his techniques has experienced a very different evolutionary process since the late Qing dynasty. In particularly, during the Cultural Revolution<sup>[1]</sup>, the traditional building falls under the attack of the iconoclastic fury of the Red Guards who consider it a legacy of feudal society. Afterward, the Chinese government promulgated a law on the conservation and restoration of historic buildings in 1982, by this time the decorative plasterwork of Guangdong is given more artistic dignity, and was defined

the national artistic heritage in 2008.

## **1.2 Purpose and scope of study**

This study aims primarily at filling a gap in the field of decorative plasterwork generally in China, and particularly in the city of Guangzhou. For Guangzhou decorative plasterwork, a clear understanding of material and technique is a necessary precondition. Additionally, the in-depth investigation of cross-sections helps to “reconstruct” the original appearance of decorative arts which is an invaluable tool to conservation. It also provides information regarding the state of preservation of plaster.

The study attempts at identifying Cantonese methods of applying plaster, and try to find out what could be termed as Guangzhou pigments. This helps in gaining some knowledge concerning the building technology of the Guangzhou, and hence their culture and history of decorative arts, which allows to find out more about cultural influences.

Furthermore, the study includes a compilation of a number of traditional building sites that have decorative plaster and stucco remains and the respective analysis of their plaster characteristic. It does not include other types of mortars such as those used in mural painting or in binding brick work joint; and not including the stuccowork in Xinjiang Uyghur Autonomous Region. It’s not intended to constitute a thorough study of artistic styles of plasterwork, as this would constitute a research on its own. A wide spectrum of historic architectures with Guangzhou local decorative plaster remains were chosen for the study. In-depth investigation of techniques of decorative plaster, and identification of materials was conducted.

During my investigation, I have had the opportunity to be aware of the artificial factors that have contributed to damage the ancient buildings:

- The inadequacy of the legal systems in aspects of the knowledges of conservation and restoration of buildings;
- Lack of funds due to the indifference of governmental administration;

- Some plasterers are lack of historical responsibility;

The survive of Guangzhou decorative plasterwork have been strongly challenged by the development of modern architectures and the advent of Westernized building that have caused the gradual disappearance of traditional architectural elements such as traditional roofs. My research aims mainly to:

- Thoroughly study the techniques and materials of the decorative plasterwork of Guangzhou in an attempt to organize information based on scientific methodology;
- According to the problems of current the decorative plasterwork of Guangdong, learning from the source of reference of the international experience about conservation and restoration, such as that of Venice, ensuring a more valid restoration and survive.

### **1.3 Significance of the study**

For a nationality or a country, the architectural decoration is a phenomenon that involves art and culture. Not only the structure of the buildings, but also the architectural decoration are the repositories of culture and peculiarities of a nationality or of a civilization. The theme and elements of architectural decoration often derive from daily life, decorative styles are special and unique, reflecting the traditional cultural uniqueness. There is no doubt that the reliefs, the art of plaster, the decorative colors and motifs in traditional architecture become important information for understanding the architectural style and the cultural connotation. At the same time, the decoration of the architecture can also express the social aesthetic of an area, transmitting cultural and social information. The social conscience, religious beliefs and system of value of people can also be revealed through this form of expression, and from here also derive the sociol-cultural importance to conduct an analytic study about the plasterwork.

The plaster decoration has protective and easthetic functions, and of aesthetics, and it can reveal a fundamental characteristic for interpreting the communicative

message of a building.

Unfortunately, due to the influence of Western architectural techniques, the decorative plasterwork of Guangzhou is losing its uniqueness, and the plasterers that are engaged in this activity are less and less. Guangzhou plaster as a precious cultural heritage of the mankind, it's necessary to study it, focusing on the techniques and materials, theory of color and pigments and auspicious pattern.

Meanwhile, there are also some traditional European architectures in the city of Guangzhou in the late of Qing dynasty in Shamian Island. The mansions in Shamian form the best preserved Western Europe style building, and Forty-two out of 150 buildings are counted as the most exotic ones, Gothic, Baroque, and Neoclassical. Their interior decorative plasters and stucco have an important significance of reference for the exterior plasterwork of Guangzhou.

#### **1.4 Primary Research Questions**

My study centers on the following questions: what is the material of plasterwork and whether can they be classified or not? How the technique of decorative plaster being produced by Guangzhou plasterers? What did theoretical foundation of color for Guangzhou plasterwork? What academic values has it in the field of architectural decoration? Several sub-questions can be derived from these primary questions that may provide further insight. These questions are derived from Rose's work exploring the meanings of visual images and center on three modalities at which the meanings of images are made: the technological, the compositional and the social. The technological concerns the tools and equipment used to make, structure and display an image; the compositional concerns the visual construction, qualities and reception of an image; and the social concerns economic, political and institutional practices and relations that produce, saturate and interpret an image(Rose, 2001). The followings are listed other questions to get a clearer summary:

1. How are the themes interpreted by the plasterers?
2. How do the plasterers interpret their own work within an historical



and cultural context?

3. Which influence do the outside plasterwork of Guangzhou undergo for restoration and conservation, factors artificial?
4. Why and how can be existence and development of plasterwork of Guangzhou in the future?

### **1.5 Methodology of the Study**

My study seeks to the traditional decorative materials and techniques, style of decorative color and pigments of plaster through an investigation of plasterwork practices within the city of Guangzhou. Through my studies of plasterwork within the city of Guangzhou, my knowledge of architectural decoration has been gotten in detail by the contextual information that I have gathered since 2007. Research methodologies in my study involve: Multimethodology, Comprehensive Method, Consulting Literatures and Field Research.

Prior to my field work for the study, I have consulted many literatures about decorative plasterwork in Europe in the central library of the University IUAV, the library of the Palazzo Cappello since September 2007, the Marciana National Library since 2007. Later, I went successively to study the literature about Guangzhou plasterwork in the Chinese National Library - the largest library in China, Library of the city of Guangzhou, Library of Hunan Normal University from June, 2009 to the first half of 2012. These useful literatures reading provide me the very precious information and ensure me to be able to do swimmingly the further study. Meanwhile, the gathered information from the literature review is also propitious to do a successive field research and study.

Field research was conducted in Guangzhou in order to survey and document decorative plaster applications. These buildings were regarded as the subjects of the investigation, and were chosen to cover a wide range of different decorative plaster. Effort was made to those plasters on the roof of structures that people are not accessible in normal times, following locale plasterer. Such structures include the

various temples associated with the plaster, areas of the historic village that owed large number of ancient buildings and that of that are not easy to be attended due to their disrepair. Regrettably, a number of buildings, although with visible decorative plaster remains, could not be researched due to go short of representativeness. Traditional plasters were subjected by the profound and systemic investigations, leading to the identification of plaster layers and decorative materials, and theory of decorative colors.

It's more mentionable, the field research can give the researcher a more audio-visual feel to collected useful information to fill the inadequacy of the literature review, also allowing the investigator to be contact directly with the objects of the study. According to the objectives of research and of levels of investigation, the field research of decorative plasterwork is divided into two parts:

1) *Interview for the plasterers*

During the process of the interview, I mainly use camera to take photos for the plasterers and for the traditional buildings, the MP3 to record useful information when I interview the plasterers.

2) *The research of local decorative plasterwork*

The objects of research focus mainly on those traditional buildings that have been decorated plasterworks in the range of Guangzhou, trying to choose different building in order to get more original information.

Multimethodology, Comprehensive Method are very important for the study, they can summarize and analyze correlative information, trying to get reasonable creation and scientific conclusion, in the hope to provide an useful reference for the conservation and restoration of the decorative plasterwork. Meanwhile, I will also utilizing architectural decorative theories as a conceptual framework to study the decorative plasterwork produced within the city of Guangzhou.

## **1.6 Literature Review**

### **1.6.1 Introduction**

The study about the decorative plasterwork of Guangzhou during the Qing dynasty was affected by different aspects: the history of the decorative plasterwork, the techniques and materials of the art of decorative stucco, the decorative style of traditional architecture, and the conservation and the restoration of the art of decorative stucco.

In the first part of this chapter will discuss the history of the decorative plasterwork in China, with the useful information that I have already gathered from the different methods. Historic literatures include some important ancient books both that of China and of western countries. The second part concerns the techniques and materials of decorative plasterwork. The third part is devoted to the arts of decoration of traditional architecture, such as references about the decorative patterns and colors. The last part will talk over the conservation and restoration of decorative plasters.

### **1.6.2 The history of the plaster**

The history of the decorative plasterwork, can be traced back to prehistoric times, the application of plasterwork on walls has been found since prehistoric times. The plaster is a mixture of lime, gypsum or pozzolana with the addition of water, and sometimes with the addition of materials such as sand, glue-water, milk, hair, stones and straw (Forbes, 1965b). According to the accounts and historical sources, the ancient Egyptians were already aware of the composition of plaster, which had used extensively in the interiors of their buildings. The oldest evidence is found in Mesopotamia (the region between the rivers Tigris and Euphrates in western Asia around 9.000 B.C.). During the Neolithic period (ca. 8500 - p; 4500 B.C.), about 7500 BC, the people of 'Ain Ghazal in Jordan used a mixture of lime, crushed limestone for giving lime that was used on a large scale for the covering walls, floors, and fireplaces in their homes.

The gypsum mortar has been used by the Egyptians as early as the third

millennium B.C., and the lime mortar was already known in the ancient Near East since the pre-pottery Neolithic period (ca 7200-6000 B.C.), and can be found at numerous sites such as Catal Huyuk, Jericho and Abu Hureyra in Syria (Brown, 1996). In particular, it has been found at the Neolithic site of Ayn Ghazal in Jordan (Brown, 1996; Rollefson and Kafafi, 1994), while the Neolithic site of al-Bayda, near Petra, has revealed two types of stucco: a sandy mixture of lime and a mixture of gypsum (Kirkbride 1966). In addition, use of the oldest lime, dating from the fourth millennium B.C. in Anatolia and Palestine, but at that time was only a means to whitewash the walls. The lime plaster in the mortars applied on surfaces of wall, is located in the palace of Knossos Minoan age around 1700 B.C. However, one of the structural function of lime mortars and concrete is not documented earlier than the third century B.C. in Rome and coincides with the addition of pozzolanic materials, which modify the chemistry and technology of lime (Giorgio Torracca, 2009). During the Hellenistic period, the lime mortar was used by the Greeks in the third century B.C., and has been widely used Roman Empire. These mortars were non-hydraulic and were produced from the available raw materials (Adam 1994).

In ancient India and China, making in clay and gypsum of stucco have been used to produce a smooth surface on the walls (Forbes, 1965b). The Romans used mixtures of lime and sand to build up preparatory layers, and the surfaces were mortars of finer gypsum, lime, sand and powder of marble, and the pozzolanic materials were sometimes added to mix more rapidly. After the fall of the Roman Empire, the addition of powder of marble to gypsum to make the plasterwork be more finer, only emerging in the period of the Renaissance. Around the 4th century B.C., the Romans discovered the principles of the set of hydraulic lime, which with the addition of highly reactive forms of silica and alumina could solidify rapidly even under water (JoAnn Cassar, etc., Glossary of terms: plasterwork: 46). The use of hydraulic mortar was scarce until the 18th century.

The art of decorative plasterwork has been used since ancient times, and now is still widely used in all over world, it is one of the most common art of



Figure 1. *Coffin of Ahmose*. New Kingdom, reign of Ahmose I to Hatshepsut, early Dynasty 18. ca. 1550 - 1458 B.C. Country of Origin Egypt, Upper Egypt; Thebes, el-Asasif, probably Tomb CC 64, burial 9, Carnarvon Excavations 1907–1914. Sycamore wood, stucco, paint. L. 2.29 m (90 3/16 in); h. 60 cm (23 5/8 in). Gift of the Earl of Carnarvon, 1914. P. 14.



Figure 2. *Painted Plaster Pavement Fragment*. New Kingdom, reign of Amenhotep III, Dynasty 18. ca. 1390 - 1353 B.C. Country of Origin Egypt, Upper Egypt; Thebes, Malqata, Palace of Amenhotep III, Room E. Stucco with blue, green, yellow, and brown pigments. L. 52 cm (20 1/2 in), w. 42.5 cm (16 3/4 in). Rogers Fund, 1920. P. 20.

Note: Figure 1-4 derived from:

<http://www.metmuseum.org/Collections/search-the-collections/>

decoration of traditional building. Recent excavations have revealed according to the traces of plasterwork and of decorations of stucco dating back to the last period of the cycle Maltese on the island of Malta in the Temple of Tarxien, which it was between the 3000 and 2500 B.C. (Anthony Bonanno, 1986). It is believed that the decorative plasterworks were born in the eastern provinces of Iran and that have then spread to Mesopotamia. For the aspect of smoothing of wall and the coverings of sarcophagi, the Egyptian masters of stucco used "stucco" as decorative materials (Eugene Clute, etc., 1931). Sometimes they mixed the mortar with sand, straw and mud of Nile, used as a "Binding" and decorated them (Masi Girolamo, 1788). Successively, first in proto-Iranians, the Medes and Achaemenian, then Persians and Sassanians, they completed the decorative plasterwork of walls and facades just in place of terracotta, stone and ceramics. Precisely with the Parthians (250 B.C. - 224 A.D.) returned from the West the use of the stucco relief in compositions with the painting, while in the conservation of the oriental style of geometric abstraction. With the Sassanid (224-650 A.D.) the architectural embellishment took up in the western decorative stucco in the execution of niches, pillars, pilasters, arches, lintels, friezes, etc.(Mario Fogliata, Maria Lucia Sartor, 2004).

The first famous example of use of travertine was found in a tomb of Cecilia Metella, and traced back to 103 B.C., while according to the other specialists could trace back to 50 B.C., In Mycenae the plaster was used in ancient times and still resists. The Byzantine Greeks also used the decorative stucco into the cornices and in their churches, in the window frames, and even in the mosaics (Bankart, George Percy, 1908). The Romans used stucco very generally in the cornices and enrichments of their church, also in private dwellings in Italy in ancient times. Its use was passed down to the Gallo-Roman building, in which the remains of stucco coatings, polished and painted, are not found. They were lost in the West towards the end of the Roman Empire. However, the Gauls had not lost the custom of covering



Figure 3. *Stucco mural relief fragment*. Early Imperial, 1st century A.D.. Roman stucco. The Cesnola Collection, Purchased by subscription, 1874–76. P. 74.51.5869.



Figure 4. *Stucco relief panel*. Early Imperial. 2nd half of 1st century A.D.. Roman stucco. Overall: 9 1/2 x 14 3/8 x 2 1/4 in. (24.1 x 36.5 x 5.7 cm). Gift of Henry G. Marquand, 1892. P. 92.

quarry-stone facings, and even rough courses, with a thin coating of lime and sand, to conceal the defects and joints of the stone, and to take on paint. But these plasters have no longer the beautiful polish that mark the stucco of Grecian antiquity and the best times of the Roman epoch, nor their solidity (George Percy Bankart, 1908). Far from this, these buildings were covered with coatings and paintings both in the interior and exterior, and their coatings sometimes decorated with engravings and ornaments in slight relief are real stucco work. Formerly the walls of the church were adorned with stucco work and engraved. They have consequently been rarely preserved, and their absence is too apt to make us believe that the Carlovingian builders, which show traces of stucco work on the vaults, and even on the capitals, covered with figures or ornaments in stucco or plaster (George Percy Bankart, 1908).

### **1. 6. 3 Western literatures of plaster and stucco**

Meanwhile, in some ancient Literatures such as, *The Lives of the 'Most Excellent Painters, Sculptors and Architects* (1550) by Giorgio Vasari, *four prime books of architecture* (1554) Peter Cattaneo, *the Four Books of Architecture* (1570) by Andrea Palladio involved in detail the decorative plasterwork.

In particular, *The Ten Books on Architecture*, Vitruvius Pollio Marcus (80/70 B.C. - 23 B.C.) discussed of the basic materials of stucco and plaster, in Book II, Chapter IV, described how to judge the sand of inferior quality, high-quality, he think the better pitsand should be black, gray, red, and carbuncular. And the best will be found to be that which crackles when rubbed in the hand, while that which has much dirt in it will not be sharp enough. Also use the following method to judge quality of sand: *throw some sand upon a white garment and then shake it out; if the garment is not soiled and no dirt adheres to it, the sand is suitable*. At the same time, he considered that river-sand is better than the sea-sand, the river sand, though useless in "signinum" on account of its thinness, becomes perfectly solid in stucco when thoroughly worked by means of polishing instruments. But the sea-sand has some defects when used in masonry, the wall cannot carry vaultings because it dries slowly. Furthermore, when



sea-sand has a salty efflorescences, this defect can spoil the surface then it was used in walls and these are coated with stucco. However, the pitsand used in masonry dries quickly, the stucco coating is permanent, and the walls can support vaultings. Successively, Vitruvius also preferred that sand fresh from the sandpits has no binding power on the rubble when mixed in masonry, therefore, it's not equally useful in stucco because it will cause it to crack as it dries on account of the great strength of the mixture when the lime and straw are mixed with such sand.

In Chapter V, he continues to present in detail the proportions of mortars, First, Lime made of close-grained stone of the harder sort will be good in structural parts. After slaking it, the right proportions for the composition of the mixture of mortar should be:

*1). if using pit-sand, in the proportions of three parts of sand to one of lime; 2). if using river or sea-sand, mix two parts of sand with one of lime. Further, in using river or sea-sand, the addition of a third part composed of burnt brick, pounded up and sifted, will make your mortar of a better composition to use.*

In particularly, Vitruvius presented in detail the stucco works in damp places, (and how to do the decoration of dining rooms:). According to Vitruvius's point of view, a plasterer should do primarily the following work before he create the decorative plaster or stucco under the humid environment, for the first indoor environment, the plasterers first apply a rendering coat of mortar, mixed with burnt brick instead of sand, to a height of about three feet above the floor, and then, lay on the stucco so that those portions of it may not be injured by the dampness. But for a wall is in a state of dampness all over: he should construct a second thin wall a little way from it on the inside, at a distance suited to circumstances, and in the space between these two walls run a channel, at a lower level than that of the apartment, with vents to the open air. For if the moisture has no means of getting out by vents at the bottom and at the top, it will not fail to spread all over the new wall. This done, apply a rendering coat of mortar made with burnt brick to this wall, spread on the layer of stucco, and

polish it. Then, whitewash them with lime and water so that they will not reject the rendering coat of burnt brick. After spreading the rendering coat upon this, apply layers of burnt brick mortar instead of sand mortar, and finish up all the rest in the manner described above for stucco work. Meanwhile, he also presented other creative method and technology for treating the humid interior space, and these technologies are also valid methods until now.

In the series of books of Giorgio Vasari's *Lives of the Most Eminent Painters, Sculptors and Architects Volume V*, discussed the stucco-works in paragraphs, and some main materials such as lime and gypsum. And in the Volume VIII, for the life of Giovanni da Udine, he described how to make the true stucco of the ancients through experiments:

*[...] and Giovanni, after considering that method of working with lime and pozzolana, began to try if he could succeed in making figures in low-relief; and so, pursuing his experiments, he contrived to make them as he desired in every part, save that the outer surface did not come out with the delicacy and finish that the ancient works possessed, nor yet so white. On which account he began to think that it might be necessary to mix with the white lime of travertine, in place of pozzolana, some substance white in color; whereupon, after making trial of various materials, he caused chips of travertine to be pounded, and found that it answered passing well, but that still the work was of a livid rather than a pure white, and also rough and granular. But finally, having caused chips of the whitest marble that could be found to be pounded and reduced to a fine powder, and then sifted, he mixed it with white lime of travertine, and discovered that thus he had succeeded without any doubt in making the true stucco of the ancients, with all the properties that he had desired therein. [...]*

Subsequently, Giovanni used the same methods to decorate all the vaulting there in stucco, with most beautiful ornaments bordered by grotesques similar to the

antique, and with very lovely and fantastic inventions, all full of the most varied and extravagant things that could possibly be imagined. Having executed the whole of that ornamentation in half-relief and low-relief, he then divided it up with little scenes, landscapes, foliage, and various friezes, in which he touched the highest level (Vasari, Giorgio, *Translator De Vere, Gaston du C.*).

For the book *Vasari on Technique*, in the chapter IV, Giorgio Vasari discussed in detail how to mix the stucco mortar. He make the chips of marble pounded in a stone mortar, and no other lime is used for this stucco save white lime made either of marble chips or of travertine, instead of sand the pounded marble is taken and is sifted finely and kneaded with the lime, in the proportion of two thirds lime to one third pounded marble, the stucco is made coarser or finer, according as one wishes to work coarsely or finely. When do the stucco, they begin to cover the aforesaid skeleton with the first daub of rough stucco, that is coarse and granulated, to be covered over with finer when the first stucco has set and is firm, but not thoroughly dry. The reason for this is that to work the mass of the material above a damp bed makes it unite better, therefore they keep wetting the stucco at the place where the upper coating is laid on so as to render it more easy to work. And in the chapter VI, the author thought if a plasterer want to make moldings or modeled leafage, it is necessary to have shapes of wood carved in intaglio with those same forms that one wish to render in relief. Again:

*when the artificer wishes to produce a composition in bas-relief on a flat wall, he first inserts numerous nails in the wall, here projecting less, there more, according as the figures are to be arranged, and between these he crowds in little bits of brick or tufa, in order that the ends or heads of these may hold the coarse stucco of the first rough cast, which he afterwards goes on refining delicately and patiently till it consolidates. While it is hardening he works diligently, retouching it continually with moistened paintbrushes in such a manner as may bring it to perfection, just as if it were of wax or clay.*

*By means of this same arrangement of nails and of ironwork made on purpose, larger and smaller according to need, vaults and partition walls and old buildings are decorated with stucco, as one sees all over Italy at the present day to be the habit of many masters who have given themselves to this practice. Nor is one to suspect work so done of being perishable; on the contrary it lasts for ever, and hardens so well as time goes on, that it becomes like marble.*

The above-mentioned the process of techniques of decorative stucco that Vasari present is very similar with that of Guangzhou plasterer Shao Chengcun described to me, when I interviewed him at his hometown. The only difference is that the Chinese plasterers use in generally the lime to make the mortar to adorn the exterior, and Italian plasterer is more favorite to apply gypsum stucco to decorate their interior.

At the same time, *The Four Books on Architecture*, the most successful architectural treatise of the Renaissance by the architect Andrea Palladio, and one of the two or three most important books in the literature of architecture, it contains Palladio's own designs celebrating the purity and simplicity of classical architecture. And face up to the question of the choice of materials of stucco like sand, lime and gypsum in traditional buildings. In Book I, Chapter IV, he presented that sand can come from the quarry, river, or sea. Said: In Terra di Lavoro, in the region of Baiae and Cumae, a powder is quarried which Vitruvius called pozzolana, which sets quickly in water and makes buildings very strong. Long experience has shown that among the quarried sands the white variety is the worst and, of the river sands, that from fast-flowing water is the best, particularly that found below waterfalls because it is the purest. He agreed the point of view of Vitruvius, thinks that the sea sand is the worst of all, and must be blackish and shine like glass; the best is found closest to the beach and is more coarse. He also point out that quarry sand disintegrates easily if it is used for for walls and continuous vaults. At the same time, he like to use river sand to make the decorative plaster because it dries quickly, and sea sand absorbs moisture readily and is destroyed by salt and is less able to carry loads. In particular, according his

long experience, like Vitruvius, he give also the better advice how to judge quality of sand: 'the best sand of each kind should be that which squeaks when pressed or handled and does not leave a stain or deposit when put on a white cloth. Poor sand is that which becomes cloudy and muddy when mixed with water, and which has been exposed to the air, sun, moon, and frost for a long time, because it contains too much earth and rotting moisture which is likely to allow bushes and wild fig trees to grow, which cause considerable damage to buildings.' It's Particularly valuable that, Palladio not only analyzed use of each sand, but also he discussed defects of the poor sand, and how to deal with them in order to avoid those unnecessary issues during making the plastering.

Then, Palladio analyzed in detail the stones for making lime in chapter V: All stone from hills is good if it is dry, free from moisture, and friable and does not have any other material in it which leaves the stone reduced when burnt by fire; hence lime will be better if it is made of very hard, compact white stone which, when fired, will be left a third lighter than when it was stone. Two kinds of stones are very good for plastering walls, one is spongy stone that produce lime which will be very good for plastering walls; the other is stone taken from rivers and torrents, that is pebbles, makes excellent lime having a very white and clean finish, which is why it is mostly used for plastering walls. He preferred what he called scaly stones - from the Paduan hills, "lime from them is excellent for structures in the open and under water, as it sets at once and lasts a long time. All quarried stone, particularly that from a shady and damp quarry rather than from a dry one, is better for making lime than that gathered from the earth's surface; and white stone is better to use than brown".

#### **1. 6. 4 Chinese traditional literatures**

The art of Chinese decorative lime mortar have a long history. In 1931, because of the work of the archaeologist Liang Siyong, the ruins were found with traces of lime mortar in the city of Anyang in Henan Province <sup>[2]</sup>. Afterwards, it was discovered that this " the layer of white mortar" is applied on a large scale in

architectural works of Yangshao and Longshan cultures<sup>[3]</sup> in the province of Henan, Shanxi and Gansu (Lu Liancheng, 1985). The sources have shown that the material of the "the layer of white plaster" is lime (Qiu Shihua, 1980). Meanwhile, Chinese archaeologists have also discovered some evidence of artificial lime 5,000 years ago in *Huxizhuang* of the city of Wugong in Shanxi Province, and they have found that more than a dozen ruins of the houses were plastered with "layer of white mortar" on the ground floor (Yao Yuan, 1993). In the 5<sup>th</sup> "*Qiuguan Sikou*" of book "*Zhouli*", noted uses of lime, and 6<sup>th</sup> "*Kaogongji*"<sup>[4]</sup> noted how to use lime plaster decorate the walls:

*[...] There is a type of white plaster, is the lime that derived from the combustion of oysters, and could be used to decorate the buildings.*

The use of artificial lime was found in the internal walls of the grave of the tomb No.2 in the city of *Wangdou* of the province of Hebei in the year 182 (Xing Jingwen, 1995), and the thickness of the layer of lime on the surface of walls of the ruins of the imperial palace in the city of Luoyang has only 9 to 10 millimeters thick.

In the Tang dynasty, many of the surfaces of walls were much more smoothed. Usually, they can be divided into fundamental layer (the thickness is about 3 mm), the second layer (the thickness is about 4 mm), surface layer (the thickness is about 2 mm), and the more superficial is a decorative layer (Zhang Yuhuan, 1985 ).

The recipe of the decorative plasterwork has been elaborated during the Song Dynasty. The lime mortar is often mixed with other fibers such as straw, husks of wheat, hemp and paper in order to avoid decorative works cracks (Wang Kai, 1989). Lie Jie (1100) pointed that the Chinese traditional masters first plastered three layers loess (coarse, medium and fine) on the walls, then plastered the lime mortar on the surface, and the last layer is a decorative plaster, describing the recipes in the Chapter 27:

*The red lime mortar: 15 kilo lime mixed with 11.5 kilo red earth and ruddle 5 kilo; hemp than 4.3 kilo. Later in the same chapter of the ingredient under again, for the layer below the floor surface, each 11.10*

*square meters stucco on the wall, the ingredient was: 20 kilo lime : 90 kilo white clay : 18 kilo wheat skins. How to mix red lime mortar of the imperial palace use, the ingredient of each 11.10 square meter plaster on the wall was: lime: red soil: crimson land = 30: 23: 10; ingredient of the yellow mortar was : lime: loess = 47.4: 15.2, the ingredient of the mortar of lime cyan: lime: cyan lime = 32.4: 32.4.*

Besides above-mentioned materials, Li Jie (1100) asserted that the lime mortar also mix with pig-blood, China wood oil, sucrose, staw, sticky rice juice was particularly used in the exterior decorative plasters, imperial walls, riverbank.

Stated by Song Yingxing (1637), in the *Wu Xing*<sup>[5]</sup>, Earth is the most important material of all things, including many minerals. We can give the lime (CaO) after the limestone is calcined, the cyan lime is the best, the yellow lime is the second, and the best limestone is often buried under the ground about 67- 100 cm ( Sung Ying-hsing and E-tu Zen Sun, 1997). In general, spent lime can mix with a variety of mixing materials, getting platers after mixing with China wood oil, fish oil; in particular the plasters that spent lime mix with sand, sticky rice juice or Carambola cane juice can be used the materials of decorative plaster, or construct *trinity mixture fill* walls, whilst Song (1637) also appointed that Oyster lime that was not calcined completely was not qualified material.

According to Ji Cheng<sup>[6]</sup> (1931), the plasterers often use white wax to polish the surface of works in order to make them more fine and smooth, he also asserted that the decorative works could get more smooth if used yellow lime mortars to render, little spent lime covered the surface and hemp-broom wipe lightly, and that, favour to clear them.

Ministry of Public Works, that published *Qing dynasty Architecture Methods* (Liang Sicheng, 2006), indicated in the volume IV-XLVII, the preparation of the various building mortars. The slaked lime-pond was an important work, all kinds of mortars were afforded by the lime-pond, which was often builded near building site, and the lime need be well slaked, and the best lime should be slaked and kept for two

years at least. In general, lime mortars mixed with laterite, loess, and natural pigments to get various color mortars, in particular decorative plasters need to mix with milk of sticky rice and brown sugar.

### **1. 6. 5 Chinese contemporary literatures**

After The Chinese economic reform<sup>[7]</sup> since 1978, China gets a great success in all kinds of fiends. Correspondingly, the Chinese scholars began to pay close attention to the study of arts and architecture. Firstly, the Chinese State Cultural Relics Bureau published 'Chinese places of interest Dictionary' in 1981, described very simply the decorative plaster on walls of Foshan Ancestral Temple: *adorned with decorative plasters on the walls, the peculiar idea, depicts meticulous, lively and vivid, fulling of the rich local characteristic of arts and crafts*. The description was simple, but symbolized the beginning of study of architectural decorative arts. From then on, more and more researchers began to touch upon the Chinese traditional building decoration. Among of them, for the Guangdong plasterwork, the following publications have important referential significance about the study of this decoration.

The History of Guangdong's Fine Arts, the author Li Gongming point that the plasterwork of scroll design on the ridge of the roof on the Baochong Memorial-Arch (1521) located in the Foshan Ancestral Temple is the first living example of plaster. Meanwhile, he present that there are a lots of decorative plasterworks in the Xishan Ancestral Temple (1541) located in Daliang Town of the city of Shunde. At the same time, it's necessary to do profoundly study how to distinguish era of plasterwork because the original temple was several times renovated during the Ming and Qing Dynasties. The confirmation of era of the plasterwork can help to to the further research.

Successively, Foshan Ancestral Temple (Guangdong Foshan Museum,1994), Guangzhou Chen's Clan Temple (Luo Yulin, 1996) and Sanshui Xujiang Ancestral Temple (Cheng Jianjun, 2008) three publications presented decorative position, the



titles of ornaments, form of reliefs, both pictures and texts are excellent. It's very useful to classify the plasterwork. Afterwards, the History of Chinese Ancient Architecture, Volume V (Sun Dazhang, 2002), the author presented the south decorative plasterwork and north-west decorative stuccowork, he described summarily the materials, technique, and decorative parts on the building. And the Guangzhou Plasterwork (Liu Zhaojiang, 2010), Stories & Legends in the Architectural Decorations of Chen's Lineage Hall (Huang Miao Zhang, 2005), these two publications present Guangzhou plasterwork from ornamental themes with a great variety of colorful illustrations. In particular, the former describes in detail Guangzhou plasterwork from tools, pigments and color, the production to contemporary plasterers. It's very favorable for analyzing the color of plaster, ornamental patterns and the production.

## **1.7 Summary**

Conducting a study of literatures that are mentioned above, are aware of the shortcomings and inadequacies of the study of the decorative plasterwork in the province of Guangdong. Therefore, it need an essential consideration about problems that regard the questions of availability of literature of the confronting topics subject in the study.

### **1) Neglect of the historical literature**

The decorative plasterwork is a folk art of southern China, it's an unique ornament on the roof or exterior walls in the provinces of Guangdong and Fujian. In particular, the city of Guangzhou, which have still a lot of traditional buildings of Ming and Qing dynasty. The first written records of the plasterwork dates back the Tang Dynasty (884 AD) and noted by "*The Biography of a Song Gaoseng*", in Xinjiang Uyghur Autonomous Region, there are some evidence showed that have already had plaster or stucco examples in Jin dynasty (265-420) and Southern and Northern Dynasties (420-589), even Tang dynasty (618-907). However, lacking

architectural example to prove the description of above-mentioned in the province of Guangdong. The decorative plasterwork have developed enough during Ming and Qing Dynasties, however, the related historical literatures haven't presented the Chinese decorative plasterwork during this period.

## **2) Vague description of recipes of plasters**

For recipes of decorative plasterwork, in the West, literatures such as *le ricette del restauro*, specifying in detail the classification, the proportion, the application environment, the maintenance period and methods of technique of stucco. However, From the literature *Yingzao Fashishi(1100)* of the Song Dynasty and *Engineering Practices of (1734)* of Qing Dynasty, and *Technique of restoration of Chinese traditional architecture* published in 1983 in China, have noted various recipes of stucco, however, not specify the functions and uses.

## **3) Lack of professional literature**

The Chinese traditional plasterers could not benefit from an accurate cultural education because of the influence of the feudal system, so many plasterers, even if their skill and technique are perfect, however, were illiterate, and this prevented them to devote to the academic study of art of decorative plaster.

In order to remedy the inadequacies and inaccuracies of Chinese literature on the decorative stucco of Guangdong, I choose the decorative plasterwork of Guangzhou as my research topic, while I consult the western literatures in order to carry out a perfect study. The goal of study is to establish the foundations for a systematic methodology of data and information about the decorative plaster of Guangzhou through detailed analysis and reorganization of historical data, with the intention of making a contribution to subsequent studies.



## Chapter 2

### Materials of Guangzhou plasterwork

#### 2.1 Introduction

For the decorative plasterwork of the city of Guangzhou, the traditional plasterers use lime, sand, sticky rice juice, cane sugar, straw or Yukou paper (such as papyrus) as the main material. Lime has characteristic that is resistant to alkalinity and that is resistant to high temperature, it coagulates and hardens slowly (Liao Jisheng etc, 1981), and those features are adapt to the do plaster arts in the traditional architecture; the opus signinum (cocciopesto), as well as a remarkable durability and resistance, it possess other characteristics that has the favourite use, such as low water permeability; The Yukou paper characterizes fine fibers, white, fine resistance to tensile stress; The sticky rice juice is a good gelatinous material in the lime mortar because of it's good performance in bonding strength, toughness and impermeability (Yang Fuwei etc, 2007), with the result that it has been widely used in Chinese traditional architecture (Liao Jisheng etc, 1981). but here, I will focus on discussing the classification of materials of decorative plasterwork in Guangzhou like the following:

- The binding (cementing) material;
- Organic material-- glutinous rice;
- Fiber material, waterproof material;
- Material of retarding agents;
- Filling material and other material.

#### 2.2 The Binding (Cementing) Materials

##### 2.2.1 Th Lime

In constructional engineering, the binding material can make loose granular materials (such as sand and gravel) or block materials (such as bricks and stones) bonded into the whole material (Yang Fuwei, etc., 2009), including lime, gypsum,

even asphalt and other binding materials. For the decorative plasterwork of Guangzhou, lime is one of the most important material.

As the binding material, lime was used architectural mortar thousands of years ago in China, and the most widely used. Archaeological evidence suggests that, China is one of the countries that the first calcine and use the lime in the world. In the prehistoric period (Yao Yuan, 1993), application of the lime mortar was more extensive after Western Zhou Dynasty (1029 BC-771 B.C.), especially, in the technique of plinth, Strengthen of the ground base, treatment of the roof surface and so on, and the Chinese began to use lime to build tombs, according to recordation of “*Zuo Zhuan*<sup>[1]</sup>”: For the first time he was used clamshell-lime to bury when Song Wengong<sup>[2]</sup> was dead in 635 B.C.(Zuo Qiuming, 2001). Successively, lime was more widely used after Qin Dynasty (221 B.C. – 206 B.C.), a noticeable phenomenon is



Figure 5. The Light Tower Of Huaisheng Mosque.



Figure 6. Low relief plasterwork in the main ridge of the roof on the Baochong Memorial Arch in Fushan Ancestral Temple in 1521.

that, Chinese archaeologist found a red and green decorative ridge with lime mortar in the north of corridor of government office of Site of Nanyue Kingdom<sup>[3]</sup> in 1975 (Mai Yinghao, 1990). Lime often was used in tombs after Han Dynasty (206 B.C. – 6 A.D.), either in bottom layer of mural (Huang Yafeng, 1998), or covering lime on walls of tombs (Shanxi Institute of Archaeology, 2005), or sealing of doors of tombs (Bureau of Cultural Relics in the City of Zhoucheng in Shandong, 2005), or put lime

under coffins (Shanxi Archaeological Institute, 2004 and Yang Fuwei etc., 2009). The Light Tower of Huaisheng Mosque in the city of Guangzhou was built in 627 – 649, is one of the earliest examples of Islamic architecture in China, it mimics Arabic styles while also attempting to integrate them with the local architectural styles. Its tapering brick shaft rises to a height of thirty-six meters atop a ten meter stone base, and the surface of tower is decorated with shell-lime, weatherproof antiscour and whole body is silver, elegant and beautiful (Chen Zehong, 1999). Tianwang Hall of Kaiyuan Temple in the city of Chaozhou in Guangdong province, was established in 1040, is a building of Song Dynasty (960- 1279), the innermost parts of building were rammed shell-lime and sand walls, whole performance of wall is very well until now (Da Liang, 2005). The cost of lime was more lower when coal was used fuel that calcined lime during Ming dynasty, therefore, use of lime was more universal compared with the previous dynasties (Zhang Yuhuang, 1985). Lime has widely begun to apply decorative art of all kinds of building, for example, the Baochong Memorial-arch in Foshan ancestral temple, built in Zhengde period of Ming Dynasty (1521), the plasterwork on the main ridge of halls is a shape of a ship, and decorative scroll design in middle, colour is simple and elegant (Chen Zehong, 1999). The other buildings like Lingnan First Tower (1573- 1620), the Main Hall of Wanshou Temple located in the city of Zengcheng (1385), Hall of Great Achievement (*Dachengdian*) of Conghua Academy are also decorated art of plasterwork on the main ridges of halls. In the Official Technology of Stone Bridge of Qing Dynasty, explained in detail technology of Trinity Mixture Fill in the chapter of Wall Building (Tuo Zuo), and indicated the recipe of it: lime : loess = 4:6, becoming the mixed lime-soil, and of this, the best will be found to be that which conglorations when clenched in the hand, and dispersedness when the Trinity Mixture Fill fall to the ground. It is showed from the experiments that the Trinity Mixture Fill is a hydraulic material-- Calcium silicate hydrate, use of the Trinity Mixture Fill was particularly wide in Southern China including Guangdong Province during Qing Dynasty (Zhang Yuhuang, 1985). Especially, shell-lime have already

applied in the art of plaster in Guangdong at that time. for the city of Guangzhou, the Main Hall of Dafu temple, the Hall of Mahavira of Haitong Temple, Jialan Hall of Guangxiao Temple, and Kanyue attic in Huaisheng Temple and so on, a mass of color plasterworks were applied on ridges of buildings during in the early Qing Dynasty, and this beautiful plaster were more increasingly aesthetic and elaborately ornate (Mai Yinghao, 1990). In summary, all kinds of building began to use lime mortar during dynasties Ming and Qing (the Encyclopedia of China Press, 2004), particularly in the provinces of Guangdong, Fujian and Zhejiang.

Lime is a non-hydraulic binding material (Yuan Runzhang, 1996), the rocks and minerals from which these materials are derived, typically limestone or chalk, are composed primarily of calcium carbonate ( $\text{CaCO}_3$ ), is calcinated at about  $1000^\circ\text{C}$  in different types of kiln, fired by such fuels as natural gas, coal, fuel oil, lignite etc, then converts them into the highly caustic material quicklime (calcium oxide,  $\text{CaO}$ ). Production of traditional Guangzhou plasterwork often use quicklime (derived from limestone) or oyster-shell lime as the main materials (Liu Shuting, 2008). In fact,

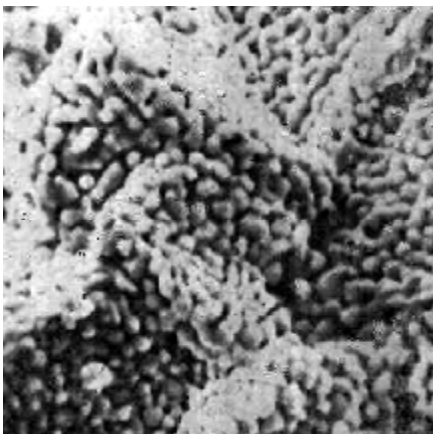


Figure 7. Calcined lime after one hour under  $950^\circ\text{C}$  in the air scanning photo of electron microscope, enlarge 4,000 times (Baoren Luofu, 1958).

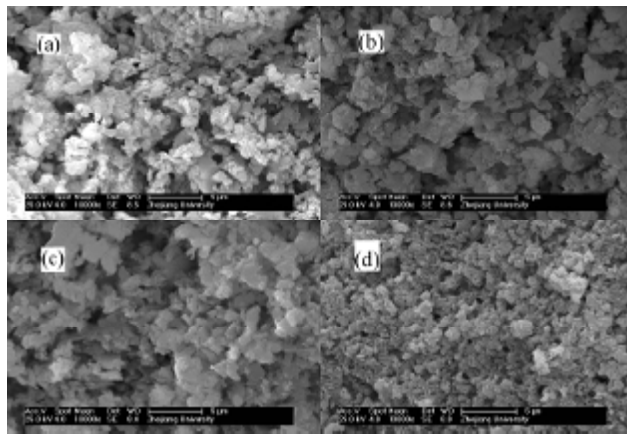
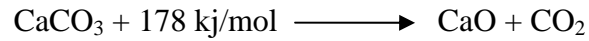


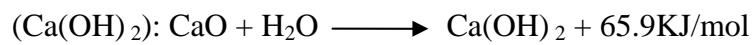
Figure 8. SEM pictures of different mortars (Wei Guofeng etc., 2011)

(A): Lime mortar prepared by commercial hydrated limes; (B): Sticky rice-lime mortar prepared by commercial hydrated lime; (C): Lime mortar prepared by aged lime putty; (D): Sticky rice-lime mortar prepared by aged lime putty.

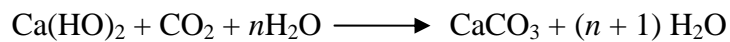
plasterers use lime to produce the plasterwork, including processes of a series of chemical reaction of lime, that is, first, decomposition reaction of calcium carbonate (CaCO<sub>3</sub>), calcined limestone to get lime:



The *figure 3* shows clearly that Calcium oxide (CaO) is white porous structure (Yuan Runzhang, 1996), therefore, it has characteristic that it's interner porosity is great, crystal particles is small, and slake quickly with water; Second, slaking of quicklime, that is quicklime mix with water, getting Calcium Hydroxide:



It has two simultaneous characteristic when quicklime slakes -- a huge amount of heat is given off, and the volume dilatation, these characteristic will affect process of structural formation of lime mortar and hardening of lime (Yuan Runzhang, 1996). Particularly, volume dilatation of lime is very harmful for the plasterwork, the plasterers must try to eliminate this deleterious dilatation before creating their works, otherwise, lime products will cause destructive cubic deformation, and consequently the experienced plasterers often use the following methods to control change of volume (*Binding Material Science Writing Group, 1980*): (1) Alter the degree of fineness of lime, (2) The most appropriate proportion of lime and water, (3) Change temperature of slaking, (4) Mix additive such as gypsum. Finally, the hardening of lime mortar in the air, and the lime products can be shaping ultimately:



This *Equality* indicates clearly that, carbonation of Calcium Hydroxide (Ca(OH)<sub>2</sub>) not only relates to water, but also concerned with concentration of Carbon Dioxide (CO<sub>2</sub>). Therefore, we can reinforce it through artificial methods in order to accelerate the process of carbonation of lime mortar, for example, the gas that is discharged from limekiln, containing about 30% CO<sub>2</sub>, rate of carbonation will be greatly increased if we use this kind of gas to process products of lime, and make plasterworks obtain superior intensity (Yuan Runzhang, 1999).

For the Guangdong plasterworks in Qing Dynasty, plasterers often use



oyster-shell lime and limestone products as plasterworks materials. In province of Guangdong there are rich oyster resources, and the method that the Cantonese use oyster-shell to calcine lime is very simple, in general, one ton coal can calcine six tons oyster-shell lime (Chen Jian, 1958). This kind of lime has a fine texture, high viscosity, but calcium oxide content is low (about 57%), making quality of plasterwork decrease if plasterers use it as the plasterwork material. Therefore, the experienced plasterers often use high-purity lime to produce plasterworks in order to increase their useful lifespan.

### 2. 2. 2 Th Oyster/Clam lime

It is possible that in some period painters and plasterers used oyster lime instead of clam lime. Oyster white is obtained by burning old oyster beds along the seacoast. The burning process involving charcoal turns it into a lime that is ready for use. Chemically clam white and oyster white are the same: calcium carbonate  $\text{CaCO}_3$  white is obtained by burning old oyster beds along the seacoast. The burning process involving charcoal turns it into a lime that is ready for use. Chemically clam white and oyster white are the same: calcium carbonate  $\text{CaCO}_3$ . the difference between

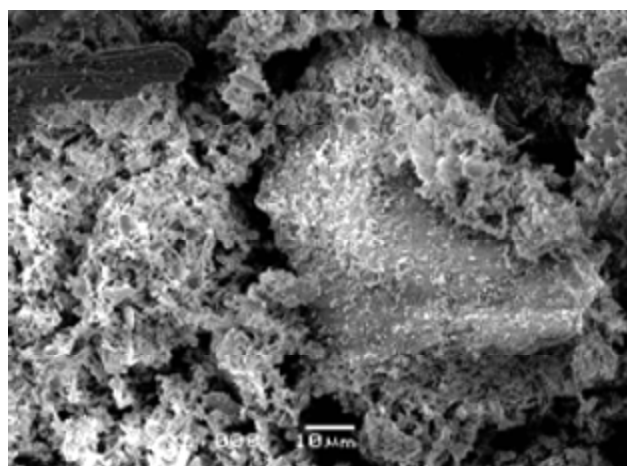


Figure 9. Image of the oyster lime was magnified 1,000 times under electron microscopy (Hong Huangkai, 2003).

them can be shown by XRD (*X-ray diffraction*), since oyster white contains only a little aragonite, while clam white is almost 100% aragonite. In the impasto lines on statues of the *Shui Lu An*<sup>[4]</sup> (Li Song, 2009) the use of clam lime is proven by the XRD. This makes me wonder about the availability of this material, since the gilded lines are obviously overlaid with gold: there is no visual reason for *Clam lime* to be used in this particular example. There might, however, be a structural reason: the lines are laid onto and are in relief on the statue. It may well be that this substance provides is easier to use for the haute relief lines of the gilding, or it may be that the gold attaches to this lime particularly well. However, often the availability of a material is the best reason for use. The local shellfish that was used for food leaves probably leaves heaps of shells ready for burning and grinding this *Clam lime*.

### **2.3 Glutinous Rice (Organic Materials)**

Glutinous rice is a type of Asian rice that is especially sticky when cooked, it has high amounts of amylopectin (amylopectin is about 95%- 100%), which is responsible for the sticky quality of glutinous rice, which glutinous rice can be used either milled or unmilled, and milled glutinous rice is white in color and fully opaque. In Chinese, it is used for food, the glutinous rice is also used building material in the traditional construction. The juice of glutinous rice is made by mixing with rice and water in a proportion of 1:10, then mixed with lime before it not still ferment, obtaining glutinous rice mortar (Zhuang Minxin, 2003).

A distinctive feature of Chinese traditional lime process is to add organic materials in lime mortar, such as glutinous rice juice, carambola juice, egg white and animal blood etc., and formed Chinese traditional technology of glutinous rice mortar (Wei Guofeng etc, 2011). No later than the Northern and Southern Dynasties (386 - 589) at least, glutinous rice mortar has become a mature technology in China, and used widely in the field of tomb, urban construction and water conservancy project (Zhang YuHuan etc., 1985). Glutinous rice mortar is clearly an organic material if it say that Rome mortar is an inorganic material (Yang Fuwei etc., 2009), it has the

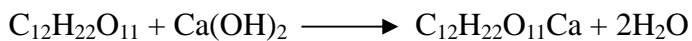
characteristic that the intensity is great, the tenacity and moistureproof capability are better, it was used widely the art of Guangdong plaster works from Ming Dynasty, and it reached the peak during the period of Qing Dynasty.

## 2.4 Retarding Agents

### Brown Sugar

Brown sugar is a sucrose sugar product with a distinctive brown color due to the presence of molasses, and the molasses is usually used that obtained from sugar cane, because the flavor is generally preferred over beet sugar molasses, based on total weight, regular brown sugar contains up to 10% molasses (Paula I. Figoni, 2010). This sugar is generally damp from the hygroscopic property of the molasses and is often labeled as *lithe*. Particle dimension is fickle but naturally less than granulated white sugar<sup>[5]</sup>.

Brown sugar mortar has characteristic of high intensity, prolonged initial setting time, premature final setting time, and that of low water absorption, high acid resistance (Horng-Ming Lee, 2005). It is a kind of lime saccharate ( $C_{12}H_{22}O_{11}Ca$ ) after the crystallization capacity of sugar mix with lime (Wang Longsheng, 2003), and it's chemical equation is:



It's surface structur has the smooth characteristic under the electron microscope, but it will make the surface of plasterwork crack, deform and deliquescence (Hong Huangkai, 2003).

Besides the brown sugar mortar, other retarding agents were kelp juice, peach juice and animal glue (Liu Shuting, 2008). In particular, the brown sugar mortar was used by the plasterwork in the temples at zones of Guangzhou, Fushan and Zhaoqing during Ming and Qing Dynasties. In the city of Guangzhou, mortar that lime mixed with glutinous rice juice and brown sugar was main plastering material.

## 2.5 Fiber Material

### Straw

The straw is the dry stalks of cereal plants, after the grain have been removed. It has the characteristic of long fiber, porous, lightweight, elasticity and flexible, therefore, it is easy to be deformed (Horng-Ming Lee, 2005). Besides used animal feed, bedding, biofuels, other uses can be also applied materials of plaster or construction material. In many parts of the world, straw is used to bind clay and concrete. A mixture of clay and straw, can be used as fiber material for Chinese traditional dwelling houses <sup>[6]</sup>.

Fiber of straw is length, and has a good toughness, it's function in lime products is that it can prevent crackle forming in the surface of plasterwork (Horng-Ming Lee, 2005). In general, it is used mainly in the first layer of the plaster figure.

### The Yukou Paper

Yukou paper is made from the young bamboo, began in the Song Dynasty (960 - 1127), it has the following characteristics: slender fiber, smooth and flexible, strong tension, white in color, non decayed and durable in use, high capacity of absorption of water (Sun Dunxiu, 1993). The first reference about the bamboo paper showed in *the complement of the history of the Tang Dynasty* (Li Zhao<sup>[7]</sup>, 1957), and later in the book *T'ien-kung k'ai-wu* (Song Yingxing, 2005) of Ming Dynasty, in which the author described the production of bamboo paper. These records showed that the production of bamboo paper has a long history in China.

Yukou paper pulp has a rich source of cellulose, delicate with high durability, and strong cementing property. For the paper mortar, the Yukou paper was the best paper material. At the same time, Joss Paper, writing paper made from bamboo (Sun Dunxiu, 1993) are also used mortar materials by the great variety of traditional building of Guangdong province, for example, in Chen's Lineage Hall, Foshan Ancestral Temple, Xujiang Ancestral Temple and Yuecheng Longmu Ancestral Temple, and elsewhere, in Chen's Lineage Hall, over the six-year period 1888 – 1894,

2562 meters long, and 2448 square meters of plasterworks (Li Zhuoqi, 2010), a mass of bamboo paper were so used.

## **2.6 Waterproof Agent**

### **Alum**

In general, Alum is the hydrated potassium aluminium sulfate (potassium alum) with the formula  $KAl(SO_4)_2 \cdot 12H_2O$ . They are soluble in water; have an astringent, acid. In the 52nd chapter of 35th book of Pliny's *Natural History*, the author gives alumen a detailed description<sup>[8]</sup>. Pliny pointed out that alumen was natural mineral, and it was characterized by a certain degree of astringency.

Alum is a waterproof agent in traditional building, it can not only make lime products such as plasterworks, lime walls hard enough (Geoffery Beard, 1983), but also prevent it from rain wash in the future if the plasterers splash water solution of alum on the surface of lime products (Horng-Ming Lee, 2005).

## **2.7 Filling Material**

Filling materials of plaster figures are various substances (Geoffrey Beard, 1983), in fact, all plaster (stucco) figures are similar, the basic construction involved varieties of hollow molding, support on metal armature, and filling with charcoal, straw, brickbat and rubble, loess and rough sand (Zhou Haixing, 2004), making the plaster figures have a basic 'body', economizing mortar material, and the figures also have enough weight without the hollow cast collapsing, and are very useful for the roofed plaster figures in the city of Guangzhou.

## **2.8 Armature Material**

The armature is an internal frame (usually made of wire or wood) which supports a modelled sculpture (Richard McDermott Miller, 1971). Vasari in his book *Vasari on Technique* indicated function of armature that:

*if he desire the work to have bolder relief in projection, in the spot where*

*this is to come he fixes iron supports or nails or other armatures of a similar kind which hold the stucco suspended in the air, and by these means the stucco sets firmly, as one sees in the ancient edifices where the stucco and the iron supports are found still preserved to the present day. Moreover, when the artificer wishes to produce a composition in bas-relief on a flat wall, he first inserts numerous nails in the wall, here projecting less, there more, according as the figures are to be arranged, and between these he crowds in little bits of brick or tufa, in order that the ends or heads of these may hold the coarse stucco of the first rough cast, which he afterwards goes on refining delicately and patiently till it consolidates.*

For Guangzhou decoration, the first layer of plaster figure are reinforced with various kinds of metal nails, wood pegs (Geoffrey Beard, 1983), bamboo pegs and wooden are used, in particular iron-wires (diameter was about 3.33 mm – 15mm) in rod and mesh form (Liu Shuting, 2008) in order to make the armature more stronger.

To support a plaster figure, a metal armature is anchored (Geoffrey Beard, 1983) on the roof of building such as on the main ridge of a building, on the gable wall, in general every part of the “body”, including legs and arms were made of iron-wires, whereas, the fingers and hairs or other small objects are set on thin wires. It is noteworthy that the plasterers must connect the armature firmly with the ridge frame.

## **Summary**

It's important to classify materials of mortar for Guangzhou decorative plasterwork. The main material of plaster is lime, never using gypsum to make the plaster; the glutinous rice and brown sugar are 'binder and aggregation', in particular, the glutinous rice, a key material, mixed with lime mortar, becoming a famous sticky rice & lime mortar, used widely the field of architecture in ancient China, it has function that increase the solidification and durability of sculpture; the fibrous material is straw or Joss paper, mixing with lime mortar and usually used the first

layer; river sand is mainly a filling material for the full relief; meanwhile, some plasterer also mix common salt with lime mortar in some zones of Guangdong.

## Chapter 3

### Pigments and Colors

#### 3.1 Introduction

The plasterer must use mineral pigments for the coloration of plasterworks, which were produced by natural ore. Pigment mineral has bright-colored, purity characteristics, and has a more stable physical and chemical properties, which it's not easy bleaching out for thousands of years. Production of mineral pigments is that make all kinks of ore mechanical crushing, selective table, rinse and purification, then get the processed pigments through mixing with glue at last.

The use of mineral pigments in China has a long history, it can be traced back to the Neolithic Age or Old Stone Age. At that time, the early human began to use coal and mineral carbon to draw the outline of graphics of animals on the walls of the cave in order to reproduce scene of life that hunt for preys. And Marcelino Sanz de Sautuola also discovered the prehistoric cave paintings with his daughter in the Cave of Altamira<sup>[1]</sup>, which the main pigments of painting were iron oxide and black manganese oxide minerals (Yin Jicai, 1990). The earliest artifact of Chinese inks can be dated back to 12th century BC, with the use of charred materials, plant dyes and animal-based inks being occasionally used with mineral inks being most common (Sun Dunxiu, 1993). The move from using graphite inksticks to soot and charred inks occurred prior to the Shang dynasty (1766 BC -1122 BC). From studies of ink traces of various dynasties, it is believed that the inkstick used in Zhou dynasty (1046BC –256 BC) is quite similar to those used in the Donghan dynasty (25—220). And use of mineral pigments was flourished during period of Sui and Tang dynasties (581 - 907), in the “*Shennong Bencao*” and “*Records of Famous Doctor(Mingyi Bielu)*” of Tao Hongjing, they recorded characteristic and application of mineral pigments such as cinnabar, red orpiment, mercury sulphide, orpiment, malachite, yellow lead and ceruse (Zhang YuHuan etc., 1985), then it began slowly to decline in Yuan Dynasty (1277 - 1367), once more decadence of use of mineral pigments was happened in the Qing dynasty (1644 - 1911). Early Qing Dynasty(1644 - 1715), most of Chinese



plasterers still used mineral pigments, but then, when Missionary Giuseppe Castiglione<sup>[2]</sup> came to the city of Beijing in 1715, he made occidental painting, oilcolous and painting technique introduced from Europe into China, and his skill as an artist was specially appreciated by the Emperor Qianlong (1736-1795). Since then, oil paints and synthetic pigments were spread slowly in China (Yin Jicai, 1990), and Chinese artisans who used mineral pigments were less and less, at the same time, import of oil impacted voilently on market of Chinese traditional mineral pigment. Therefore, use of pigments divided into two periods in zone of Guangzhou, the plaseters used mainly mineral pigments to paint plaster works at the beginning and middle of the period of Qing dynasty, and then some craftsmen began to use synthetic pigments when occidental chemical pigments imported into China (Xia Yin, 2009) at the period of Guangxu Emperor (1875-1908).

### **3.2 Black Pigment**

For the inkstick materials, from ancient times pine-black (turpentine soot) was sempre main material that made inkstick in China. Craftsmen began to use the Lampblack and painting soot in the Song Dynasty, and these two inksticks were used widely till Ming and Qing dynasties (Zhao Quanli, 2001). Materials of lampblack inkstick derived mainly from Chinese wood oil, rape seed oil, soybean oil and siritich, and that of painting soot inkstick was made from sumac soot and pine-black (Sun Dunxiu, 1993). Compared with pine-soot inkstick, colors of lampblack and painting soot inkstick are more dark and lucidus, having characteristic that become more and more dark if it is stored more long, but it must mix with animal glue if it was applied on the surface of plaster figure, such as Egg white, fish skin, or ox hide glues are used to bind the inksticks together (Jiang Xunyi, 1986). The ingredients are mixed together in precise proportions into a dough and then kneaded it until the dough is smooth and even. The dough is then cut and pressed into a mold and slowly dried. Badly made inksticks will crack and craze, due to inadequate kneading, imprecise soot to glue ratio, or uneven drying (Tian Hengming, 2004). With development of the

Self-Strengthening Movement<sup>[3]</sup> during the late Qing Dynasty, a large number of the occidental scientific and technological achievements were imported into China since the 18th century, craftsmen began to use industrial black carbon to make plasterwork in Guangdong from the year of 1899 (Zhao Quanli, 2001), and the traditional inkstick-making industry of lampblack inkstick and painting soot inkstick were exerted great influence because of its low costs.

The flourishing of inkstick industry brought up a large number of well-known craftsmen of ink-making such as Cao Sugong, Wang Jinsheng, Wang Jie'an, Hu Tianzhu were called "Four Ink-making Masters of Qing Dynasty" (Sun Dunxiu, 1993). Inksticks that they made were exquisite in workmanship, and pure color, therefore, they won a high reputation. At the same time, the works about ink-sticks were very plentiful in the history of Chinese pigments. One of the first literary records of ink-stick production in China is from *Qimin Yaoshu*<sup>[4]</sup> written by Jia Sixie (533 - 544). Elaboration of the techniques, technical requirements, and ingredients were also noted in scroll ten of *Yunlu Manchao* (Zhao Yanwei, 1206), and the "ink" chapter of *Tian Gong Kai Wu*<sup>[5]</sup> (Song Yingxing, 2005), described in detail the process of ink-making, and accompanied by illustration, thus it is of highly historical value. Subsequently, *Summary of Made Ink Techniques* (Shen Jisun, 1988) was a work that presented in detail how to make lampblack inkstick (Sun Dunxiu, 1993), including tools used, ingredients and the manufacturing method, and the author (Shen Jisun) himself was a inkstick craftsman, which he had rich practical experience, his explanation was very clear with the various illustration for the process of ink-making.

The Chinese traditional inkstick was a main pigment, but use of mineral pigments were still very universal during the early Qing dynasty, production of pigments and colouration could be also developed at that time, which some works described in detail these experience, for example, the first Volume in *The Painting Book of Mustard Seed Garden*, described methods of production of mineral pigments (Zhao Quanli, 2001). Writing in 1781, in the works *the Compilation of Jiezhou Study*

*Chinese Painting*, Shen Zongqian set out making methods of mineral pigments, such as the vermilion, blue malachite and copper green, and said that “A excellent craftsman must know the characteristic of pigments, and be carefully to think about, he can make the best pigments.”, reflecting his great attainments for making mineral pigments. Particularly, Zhang Shi classified the traditional pigments in his works *Discuss the Chinese Paintings*, and recorded how to make the ochre, light purple and rouge, very refined, it has important reference value.

Color is a complex science, it derives from the spectrum of light interacting in the eye with the spectral sensitivities of the light receptors. Color categories and physical specifications of color are also associated with objects, materials, light sources etc., based on their physical properties such as light absorption, reflection, or emission spectra (Li Pengcheng et al., 2003). Therefore, use of color of plasterworks is different due to different area and countries, also changes because of different age, climate, site of application and restoration (Geoffrey Beard, 1983). Chinese traditional philosophy of color made the colorful world summarized highly into five primary colors: cyan (blue or green), yellow, red, white, and black (Hui Shujuan, 2010), and theory of five colors occupied important position in the history of civilization of the Chinese nation. Wu Xing accompanied with Five colors formed the Chinese special theory of five elements and five colors (Deng Yan, 2011), without a doubt, this colorful theory also affected profoundly the art of Guangdong plasterworks.

I found that color-schemes of Guangzhou plasterworks follow mainly traditional theory of five colors through my on-site interviews with plasterers and field observations on the ancient architecture in Guangzhou, and study for the Chinese traditional philosophy of color, and coloration of most plasterwork and stuccos use white, black, red, yellow, blue and green. Therefore, six groups colors can be set out as the typological pattern for the Guangzhou plasterworks: *a* white plasterwork on a wall of black (floral scrolls); *b* polychrome plasterwork on a black wall; *c* polychrome plasterwork on a polychrome wall (that on gable walls); *d* white

plasterwork on a polychrome wall; *e* polychrome plasterwork on wall of white (that on windows). In addition, sculpture in the round uses mainly warm-toned red, and yellow and green are the main embellishment color.

For the Guangdong traditional palace, luxurious buildings, gardens and temples, walls were generally built by gray bricks, surface of walls were rubbed brickwork, without covering of plaster except for the Royal buildings and Temple architectures. Therefore, the plasterers usually use ‘white- on- black’ plaster to decorate wall friezes of gables for the local-style dwelling houses in order to have a transition from gables to roof. And this simple decorative style may be traced back to the early stage of Ming Dynasty (Nai Ying, 2010). The great figures of Ming dynasty Zheng Jun (About 1573 - 1620), Chen Wencheng and Yang Ming, they usually use the monochrome plaster on wall friezes.

White-on-black plasterworks were usually applied by plasterers in provinces of Guangdong from the Qing dynasty to nowadays, more than all, a large number of them were used on the roofs and gables of ancient buildings, and even some plasterers try to apply them in the interior of modern buildings for the purpose of development of art of local plasterwork. For example, the famous plasterer Shao Chengcun has ever decorated in the interior for a villa in Panyu district of the city of Guangzhou.

Other color-schemes from *b* to *f* can be used in many traditional building in all province of Guangdong, in particular, plasterwork were more rich and colorful during the early and middle (Wang Shuqin, 2009) Qing dynasty (particularly in seventeenth and eighteenth century). They could be applied abundantly on the lineage halls, temples and mansions. Among the existing ancient buildings, such as Chen Clan Academy (1888-1894), Foshan Ancestral Temple (1078-1085, rebuilt in 1372), Xujiang Ancestral Temple (was first built in 1268), become the typical example of cases for such color schemes. Architectural decorative color, which China architect Chen Feihu, asserted that the polychrome plasterwork on a monochromatic background were used more widely on the roof in south China (Chen

Feihu, 2007), in particular, the warm-toned red and yellow of plasterworks are very colorful.

As for the colors of themselves, they have special meanings in China due to influence of theory of Five colors and Wu Xing, white has the cultural symbolism of contradictions, was usually associated with purity, also with sad. And Wassily Kandinsky was of the opinion that white, although often considered as no color (Wassily Kandinsky, 2008), which is a plain and simple beauty. Therefore, it was an important architectural decorative color since Han dynasty (Wang Shuqin, 2009); Black is taken as symbol of mystery, at the same time, with the feeling of noble, solemn and calm, it was used for drawing the outline of plaster work or for the background; Red is the color of flame, symbolizing the goodness and festival, and so there were many red-toned in Guangzhou plasterworks; Yellow was thought that it was a noblest and orthodox color in ancient China, it was not used widely in the Guangdong, but it can become the dominant hue with red. And cyan is the symbol of wishes and peaces (Chen Jiazhi, 2006), it was also one color that Chinese artists frequently used.

So far, as an important architectural decorative art, the plasterworks has already begun to be regarded by Guangdong government, some documentations have discussed the question of restoration of colors originally used, emphasizing that the plasterers must identify carefully the color original, it's best to use the mineral pigments to restore the plaster in order to prevent more effective radiation of ultraviolet, decay of pests and erosion of acid rain. From 2007-2010, the restoration of all plasterworks in Foshan Ancestral Temple have used completely Chinese mineral pigments. However, according to introduction of plasterers Shao Chengcun<sup>[6]</sup>, in recent years, for the conservation of plasterworks in the Lingnan region, most plasterers have used also the chemical pigments, in particular, the use of the acrylic paints are not conducive to the protection of plasterworks.

### 3.3 Red pigments

#### -- Cinnabar, vermilion or mercuric sulfide

At the point of the book *Research of Chinese Traditional Painting Materials* (Yu Fei'an, 1955) in the fifties of the last century, the author was the first to attempt to use a scientific approach to define the matter of paint, and he described the methods to separate the grains of cinnabar and malachite into different colors based on the



Figure 10. Cinnabar Crystals (Wu Jinyong, 2011).

size of the grain. Cinnabar, including vermilion and mercuric sulphide, was one of the oldest known mineral reds. In China, it was found in its mineral form in Hunan, Guizhou, Sichuan and Yunnan (Yu Fei'an, 1955). In Guangdong plasterwork, it is one of mineral colors that plasterers the most used, the mercuric sulphide is one pigment that the plasterer prefer to use. Yu Fei'an described the ancient method of preparing cinnabar for the plasterer's use: Cinnabar must be ground in a mortar. The finer the grain is grounded the better. Then it is put into a bamboo tube. At the bottom the bamboo tube must be a bit longer than the lowest partition. The tube must

be clean and must be bound together using a lead thread to prevent it from splitting open. Use animal glue in the thicker solution and of it only the top clear solution. Mix this together with the cinnabar in the bamboo tube while adding clean water. Let it rest for an hour. Heat the au-bain-marie in an earthenware pot over a slow fire. It must not reach to boil therefore you must add cold water every now and then. When the cinnabar in the tube is almost dry, you must let the water cool down. Now wait for the cinnabar in the tube to dry up completely and remove the lead thread from the bamboo tube. Do not let it split by itself, but carefully cut it open with a knife. Now the tube contains a top layer of true red that close to the top will be yellow and this is called first-red and will be purple at the bottom of it; a clear red which is called second-red was in the middle. The three colors: first-red, second-red and third-red are kept separately in different jars (Hui Shujuan, 2010). The method described by Yu Fei'an relies on the process of separating the size of the grains of the mineral into different layers. The coarser the grain, the heavier it is. The slow heating of the tube with the suspension of glue-water and cinnabar will start the process of separation into layers of different size grains, the heavier grains settling down before the finer and therefore lighter grains. This result of layers in different hues was the same as Yu Fei'an states: the finer the grain the better. It is noteworthy that: The size of grain determines the hue of the color, and the smaller grains display less color than the coarser grains, so that if the mineral is ground too finely the color will disappear altogether, leaving you with nothing more than a whitish powder. In Chen Clan Academy, colos of warm-toned used mainly the cinnabar, vermilion or mercuric sulphide pigments, such as that of the decorative sculpture in the round on the roof and most of alto-relievo.

## -- The Ochre

Ochre is one of the most ancient natural red pigment, which Chinese artists often like to use, comes from hematite, and is composed primarily by iron oxide. It is derived from the area of Yanmen of Shanxi, Guangdong, Beijing province. In general,

the mineral is more harder the color is more darker, reddish, texture of mineral is soft after it is weathered, and the color is also more lighter, the best raw material of Ochre is smooth and delicate, the color is a little yellow (Hui Shujuan, 2010). On the roof of Foshan Ancestral Temple the ochre pigment is used widely in the alto-relievo and free-standing sculpture, sometimes Guangdong plasterers used also ochre and cinnabar to paint all gable wall.

### **3.4 Yellow pigments**

The yellow pigment can be divided mineral yellow, realgar (King's yellow), orpiment, and stone yellow, depending on the degree of color depth, in fact their chemical composition are Arsenic trisulfide, and the molecular formula is  $As_2S_3$  (Yu Fei'an, 1955). Mineral yellow, realgar, orpiment are colors that royal building and temples used. Therefore, a lot of plasterwork in Chen Clan Academy, such as openwork carving, alto-relievo and sculpture in the round are only used stone yellow by the traditional plasterers, other yellow pigments were forbidden to apply on the decoration of folk art like Guangzhou plasterwork because of affection of Chinese feudal sense of hierarchy (Zhang Yuhuang, 1985). *stone yellow* (earth yellow): color of loess, a natural mineral stone, its chemical composition is mainly  $FeOOH$ , according to the mineralogical point of view, is a variant of limonite. It has a thin structure, and contains a large amount of clay and chalk. Therefore, the variation range of color of earth yellow is from color of loess to yellowish brown, to dark brown. It is also a pigment that applied on the folk decorative art since ancient times in China.

### **3.5 Cyan pigment**

The main component of the cyan is azurite, it may be used as the name of any of a number of colors in the blue/green range of the spectrum, the wavelength is around 480-490 nanometers. The traditional Chinese artists, blue and green pigments collectively called cyan (Song Fengdi, 2001). In the records of ancient Chinese book



*Ming Yi Bie Lu*<sup>[7]</sup>, according to the degree of depth of color, cyan can be divided into Kong cyan, Bian cyan, Zeng cyan, Sha cyan, are poisonous (Cao Yunhui, 2008). It derived from are the provinces of Yunnan, Shanxi, Hunnan, Sichuan, Xizang, Guizhou (Yu Fei'an, 1955). In the work of *the compilation of jiezhou studies paints* Sen Zhongqian<sup>[8]</sup> appointed that, as a pigment, the cyan had several colors from blue to green, and all of that were asperities and agglomerate could serve for material of painting in China. So, the Chinese traditional artists also made in general patina and malachite called the cyan.

The cyan is a color of nature, could be called cyan from color of shy and vegetation to that of water (Song Fengdi, 2001). The city of Guangzhou locates in



Figure 11. Cyan pigments (Wu Jinyong, 2011)

the south of tropic of Cancer, belong to maritime subtropics monsoon climate, evergreen Four Seasons all the year round (Compilation Committee of Annals of Local History in Guangzhou,1998). Guangdong people have a long history of religion, Buddhism, Taoism, Islam, Catholicism and Christianity five major religions were believed in, in particular, Taoism as Chinese indigenous religions has gone deep into people's minds. The Cantonese also believed universally in the theory of Wu Xing, and Associated with it, as one of the Five colors cyan also become one color that people are favorite commonly (Ma Linchun, 2011). From the group of plasterworks on the roof of Chen Clan Academy, it's very clear that the application of cyan-toned has not coordinated only the relationship with nature, but also made this decorative art of roof more rich and varied.

### 3.6 White pigment

The white pigment is also an important tinctorial material in Chinese paintings and art of plasterwork, including chalk powder, white lead powder and clam white. White pigment is present on the decorative plasterwork of the main ridge of the roof in Baochong memorial arch, and that of plasterwork of scroll design on gable wall in Foshan ancient temple. X-Ray diffraction of samples gave a result of 100% clam white, and another place is made up of 90% clam white and 10% quartz. Micro chemical testing sometimes left a kaolin residue that cannot be dissolved with the applied acids.



Figure 12. Low relief plaster with scroll design on gable wall in Fushan Ancestral Temple.

Lead is significant in two different forms: lead white and yellow lead. A third form of lead is red lead, was not found in Guangdong. According to Yu Fei'an, he thought that Red lead is the similar with yellow lead, which is also called Zang red. There are two shades of lead used in murals and other decorative arts, one is deep and one is pale. Lead white is often confused with white chalk. The one which has turned black after you mix it with vermilion or red lead, is lead white (Yu Fei'an, 1955). Lead powder was seldom found in plasterworks in zone of Guangdong, not focus on discourse here. The following discuss with the emphasis on the clam white, chalk powder and hydrated lime in powder.

### Clam white



Figure 13. The interior dragon and white clouds plasterwork in Yuyin Garden in Panyu District of the city of Guangzhou.

Clam white is an favorite pigment for Guangzhou plasterers in Qing dynasty (Wu Jinyong, 2011). In the Yu Yin Garden<sup>[9]</sup> in Guangzhou, the mixture of 40% chalk and 60% aragonite was found. Aragonite is a form of calcium carbonate that occurs in corals, pearl and shells. In Guangdong plasterwork, there is a special white called *Jiefen* (one kind of powder of clam lime). The most commonly used translation for *Jiefen* is oyster white, which leads to a misunderstanding of the nature of *Jiefen*. Although the material is white and made of a shell, it is not made of oysters.

To complicate the issue even more, there is actually a material called oyster white, which is made of oyster shells and is used in building as a mortar, in the same way as the lime that is made by burning stones. It is also mixed with Tung oil (China wood oil) for use as a whitewash for ships.

In the book “*Chinese Technology in the Seventeenth Century*” written in the seventeenth century by Song Yingxing, the difference between oyster white and clam white is made clear: “Some people mistake clam shell powder for oyster lime. This is because they have never troubled themselves to learn the nature of things” [10]. In the plasterwork of Qing dynasty in Guangzhou, powder of Clam white was the main white pigment, in particular, in Chen Clan Academy, a lot of white plasterworks were colored by the powder of clam white on the gable walls.



Figure 14. The experienced plasterer Shao Chengcun points to the repaired wall with modern cement mortar to present that it's not still solid enough although it has already repaired several years, and he thinks that the traditional lime mortar is more better and more solid.

## -- Chalk and Kaolin

Chalk (creta) is a white and porous sedimentary rock, usually of Cretaceous age, a form of coccolith-rich *limestone* composed of the mineral calcite (Claudia Owen, etc., 2010). And the chemical composition of calcite is calcium carbonate (Shi Donglu, 2009), it's a mineral pigment. Another is Kaolin, with a soft, earthy, usually white mineral, which produced by the chemical weathering of aluminium silicate minerals (Wu Jinyong, 2011). This two pigments were produced from the surface of nature in ancient times, the appearance is very similar, the color is white, not obvious difference as pigment. Therefore, the ancient plasterers usually confused chalk with *Kaolin*.

Th chalk (or kaolin) has good spreadability, opaque, and the chemical property is relatively stable, in particular, almost non discoloring even hundred years. The chalk can be made surface of different texture effects, it was often used the ground color of plasterwork in ancient Guangdong, a amount of white on black plasterwork



Figure 15. Comparison that used in several acrylic paint and mineral pigment to decorated the plasterwork on the ridge of the roof in Shenzhen Houwang Temple in the same period, and the plasterer Shao Yushan explained that mineral pigment is more perfect and more durable for Guangdong plasterwork, and is also more resistant the wind erosion.

in Yu Yin Garden, the material of ground tint was the chalk mixed with ink stick. In fact, chalk mixed with other mineral pigments can be also used in other places such as on the sculpture in the round and through carving on roofs.

#### **-- Hydrated lime in powder**

Lime is a kind of material of plasterwork as well as a white pigment in Guangdong<sup>[6]</sup>. According to the plasterer Shao Yushan's practical experience, he and his father Shao Chengcun only used lime powder as the white pigment both in restoration of traditional plasterwork and in that of new construction. He thinks that lime is the best constructional decorative material, and he also explained on-site that the solid of modern white cement could not be mentioned in the same breath with the lime as time went by, lime mortar becomes increasingly hard, and white cement is short of this characteristic, that's to say, it could not become harder due to changes of time.

However, Shao also presented that some plasterers begin to use acrylic paint in recent years. Acrylic paint is a chemical pigment, which is weakly acidic, producing chemical reaction when it colorates on the surface of plasterwork because of the alkalinity of lime mortar. Therefore, acrylic paint could not become color mortar when it mixes with lime. In particular, acrylic paint dries faster than lime, and it becomes water-resistant when dry, cutting off the chemical reaction of lime mortar with carbon dioxide in the air, greatly putting off the coagulation of plasterwork, impacting directly on its lifespan.

### **3.7 Summary**

The color and pigments used in architectural decoration are closely related to the materials used, construction techniques, and also to the system of thought and values of a particular people. Chinese traditional buildings are famous for their rich and magnificent colors.



## **Chapter 4**

### **Glutinous Rice Mortars**

#### **4.1 Introduction**

Guangdong plasterwork has been decorated on the ridge of the roof as an architectural ornament in 1197 (Compilation Committee of Guangzhou Local Chronicles, 2010 ). It's materials were generally made up of lime, Joss paper, Glutinous rice, red sugar and other materials<sup>[1]</sup>. There are only three plaster mortars for the Guangzhou plasterwork, which plasterers usually produced them themselves. For the recipes of the Guangzhou decorative plasterwork, according to presentation of plasterer Shao Chengcun, imparted usually by masters from generation to generation, and the ingredients have seldom changes, plasterers apply always three types of plasters to create the plasterworks for traditional buildings.

#### **4.2 Straw plaster**

The straw plaster is a mortar that comes from the lime mortar, straw and brown sugar, in order to obtain the best plaster, it's necessary to take the following methods:

- Cut the dry straw into about 4-5 cm length, then soaked them in water, then put them into a large container, making them paved about 5 cm thickness; then must be covered a layer of lime mortar (about 5cm thick) in order to overlay completely the straw. In this manner: a layer of straw, then a layer of lime mortar, and so on alternately till has been placed in the appropriate position;
- Cover a layer of water on the surface of lime mortar;
- Seal it up, making the mixture of straw, lime and water ferment for a month;
- Scoop slowly the clear lime water out, then add the brown sugar into the straw mortar (the ratio is 200.00 kg of straw plaster mix with 1.00 kg of brown sugar);
- Mix them for a long time, then preserve them by sealing it airtight to avoid drying;
- the paste mix with sand (proper quantities sand) and some salt, become the straw mortar.

The straw plaster is a mixture of calcium hydroxide, straw, brown sugar and



sand. Carbon dioxide in the atmosphere causes the plaster to set by transforming the calcium hydroxide into calcium carbonate (limestone). And straw, brown sugar and sand were often added for additional strength. It's a rough mortar, mainly used in the first layer in order to the basic body of sculpture in the Guangdong decorative plasterwork.

### **4.3 The paper plaster**

The paper plaster is very fine and silky, and is obtained from lime, brown sugar and glutinous rice powder. Method of production is as follows:

- Immerse the *Joss paper* (or *Yukou paper*), then mix it round until it becomes paper pulp;
- Use water to immerse the quick lime, then use the fine sieve to filter, remove the impurity in the lime, becoming the oil of lime. The ingredient of paper plaster is: 100kg lime : 20kg *Joss paper* or *Yukou paper* : 2kg brown sugar: 2kg glutinous rice powder; then mix them, making paper plaster be smooth and soft;
- Then seal it for about 20 days.
- It is necessary to mix the plaster for a long time in order to make it more viscous when the plasterers use it. The mixture is longer, the viscosity of the plaster is better.

The paper plaster is a very exquisite mortar used in the second layer of plaster, need cover completely on the surface of straw plaster, making sculpture forms become more lubricious.

### **4.4 The colored plaster**

Since Song dynasty pigments can be mixed with *paper plaster* to create beautiful plasters for both interior and exterior decoration (Zhang Yuhuan, 1985). Colored plaster in the finish coat can not only do further definite form and correction of shape for the sculptural forms, but also provide an incredible variety of colors.

Any type of plaster can be tinted with pigments, and the amount of pigment used depends on the plaster type, depth of tint desired and which type of pigment is chosen, the ratio is always determined by the amount of binder in the mix. The most common color variations are blacks, reds, yellows, greens and blues, although other shades may be created by the plasterer.

For the Guangdong exterior plasterworks, colored plaster is used the outmost layer, it's easy to be affected by the external environment. Therefore, it has the same characteristics as white plaster, although staining, etching, crazing and scaling phenomena are frequently more noticeable on colored plaster<sup>[2]</sup>.

In addition to the integral pigments added into plaster, a final alum coat can enhance any plaster. Alum can increase the adhesion force of color, and prevent rain erosion.

During the field research, I found that some plasterers used cement mortar to creat sculpture on some ridge of the roofs of temple in order to reduce costs and save trouble, however, Guangdong famous plasterer Shao Chengcun think that this phenomenon show some plasterers's irresponsibility for the art of plasterwork.

#### **4.5 Summary**

For the ingredient of plaster, opinions of different plasterers are quite similar, on the whole, the main material of straw plaster, paper plaster and colored plaster are lime paper and straw, and the proportion by a certain percentage, in fact, they belong to lime mortar. For example, the plasterer Shao Chengcun that come from the Huadu District, lying in the city of Guangzhou, presented: lime : Joss paper = 100 : 20 , and the plasterer Guan Jinchuang of Nanhai district in the city of Foshan think that: lime : Joss paper = 100 : 06. Although the proportion is not completely the same, every plasterer emphasizes: the hand touch and experience are very important, the plaster should have mucosity and not too thick. In particular, proportion of water is very important, must make the plaster be moderate hardness, at the same time, the control of water content is also determined synthetically by the Humidity of weather. On the other hand, the experienced and responsible plasterers are of the same opinion that

the modern cement is unsuitable to use in the field of plasterwork.

For the straw plaster, the function of sand can make the plaster become more coarse, not only increase the adhesive force of plaster, but also enlarge the internal voids of plaster, and is favorable to the induration of plaster figures; The straw has the function of tensile breaking strength in interior of mortar, making it more solid. For the paper plaster and colored plaster, participation of glutinous rice powder has an important function in the history of Chinese traditional mortar. The glutinous rice is a matter of polysaccharide and high amounts of amylopectin, which is responsible for the sticky quality of glutinous rice. As a material of retarding agent, the glutinous rice plaster has been widely applied in the architectural field in ancient China, It has the property of strong ductility, good resistance to damp or water (Yang Fuwei, ect., 2009). It can make the Guangdong plasterwork be very effective to resist the corrosion of the environment outside.

## Chapter 5

### Decorative Positions and Themes

#### 5.1 Introduction

From ancient time, Chinese ancestors began to have the concept of worshipping the nature, believing every creature had its spirits and worshipping certain spiritual beings could bring peace and drive away evils. On the other hand, the objective things in the nature were endowed with unique meanings for their special characteristics, qualities, colors, names, forms etc.. they become symbols of certain ideas after interacting with human being's thoughts and emotions, and stabilizing through a long time's cultural inheritance. For instance, "magpie" symbolizes happy event; "peony" stands for wealth; "pomegranate" means lots of descendants; "peach" implies long life. Using the technique of symbolism and homonymity is a common way to express good wishes (Lai Ying, 2010). Besides animals and plants, myths, legends and historical stories which have certain symbolic meanings were also depicted to express people's feelings and hopes. For example, among the decorative subjects in Chen's Lineage hall, there are stories that pray for longevity and children, such as *Tian Ji Delivering a Son*; stories that advocate patriotism and loyalty to the emperor, like *Liu Qing Taming the Wild Horse*, *The Shepherd Su Wu*, and *Rescue of Ah Dou by Zhao Yun*; and stories that reward the right and punish the wrong, for example, *Li Bai Answering the Credential from a Foreign Country*, and *King Wu Conquered the Shang Regime*. People are rather interested in those legends and stories for their intriguing plots, and the morality they contain has been exerting great influence upon people from generation to generation (Liu Zhaojiang, 2010). The decorative subjects adopted in Chen's Lineage Hall are traditional subjects passed down from ancient time and well known among people. These subjects range from myths, legends, historical stories, opera figures to lucky animals, fruit and flowers, auspicious characters, landscapes and buildings, which cater to popular taste (Lin Changbin, 2011). Those patterns express people's wishes for better life through the techniques of homonymity and symbolism. Although the combinations of the

patterns are casually arranged by the craftsmen, people can easily tell their implied meanings. It is a notable feature of this traditional folk art that it can directly communicate with people's emotion.

The decorative plasterwork was a widely used architectural decoration art for the traditional buildings in the city of Guangzhou. It was often used to adorn the top of gates and on the gable walls, on the ridge of one building, around ancestral shrine, on the lintel door, on the pavilions and the archways, and gatepost couplet of some traditional gardens (Lai Ying, 2010). The folk craftsmen designed the patterns according to the space and condition of the places, and did their work right on the site.

The Guangdong plasterworks are divided into two categories according to their decorative positions, which may be on the roof or wall.

## **5.2 Plasterwork on the Roofs**

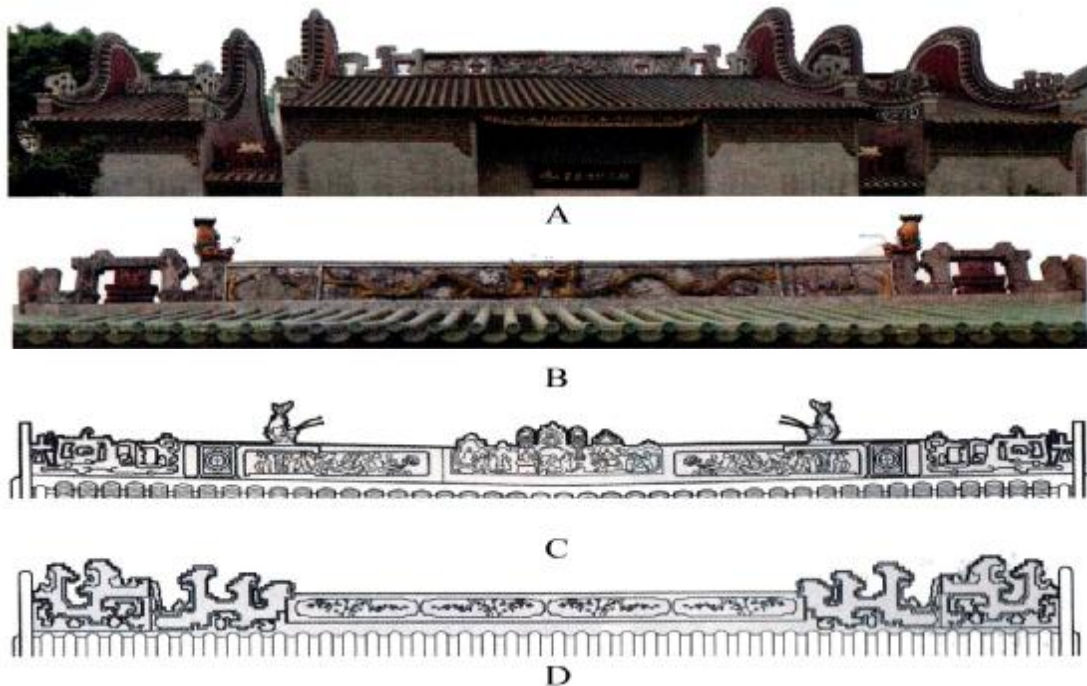
### **5.2.1 The main ridge**

Main ridge locates in the intersection of two slopes, which is highest horizontal roof ridge, two ends of the main ridge are decorated the dragon-head ridge ornament, and the middle is decorated the Propitious Vase ornament (Liu Shuting, 2008). In general, Hipped Roof, gable and hip roof (Xieshan Style), overhanging gable roof, flush gable roof have constructed the main ridge. The Hipped Roof became the highest level of roof form in the ancient Chinese architecture, in particular, period of Qing dynasty, it only was used for the royal palace and Confucius temples; and the gable and hip roof originally used only at Buddhist temples or shrines (Wu Qingzhou, 1997); overhanging gable roof was lower than the Hipped Roof and gable and hip roof in the grade of ancient building, which was the third level roof; flush gable roof is the lowest rank roof. According to the regulations of the Qing Dynasty, for below the sixth rank officials and the civilian building, the roof of hall could only be used overhanging gable roof or flush gable roof (Wang Xiaoqin, 1996), and this two forms of roof were also used universally on the traditional Guangzhou vernacular

architecture in ancient times.

Before the Han dynasty, the main ridge was straight, started from the Han dynasty the main ridge began to upward at both ends, curve, this ridge was very prevalent in the Tang, Song, dynasties, during Ming and Qing dynasties, most of main ridges restored again the straight forms (Liu Shuting, 2008).

The most part of the traditional buildings of Guangzhou such as the ancestral



Figures 16. A) Bogu plasterwork on the main ridge of the roof in Huang Feihong Memorial Hall in the city of Fushan Ancestral Temple. B) high relief plasterwork on the main ridge of the roof in Nanshe Ancestral Hall in the city of Dongguan. C) Bogu and Aoyu Decorative plasterwork on the second main ridge of the roof in Nanshe Ancestral Hall. D) Bogu plasterwork on the first main ridge of the roof in Nanshe Ancestral Hall (Liu Shuting, 2008). Image derived from the book *Chinese traditional building: decoration of roof*. p. 38.

temple, Buddhist buildings, traditional gardens, private schools are folkloric architecture, which the roof could not use the form of Hipped Roof and gable and hip roof. For the main ridges, including that of Bogu ridge and the Dragon Boat ridge<sup>[1]</sup>,

the decorative theme and forms are rich and varied. Therefore, the choice of decorative patterns could be plants, animals, historical figure, folktale and geometric patterns. For example, Foshan Ancestral Temple, Chen Clan Academy, Xujiang Ancestral Temple, the decorative plasterworks on the main ridge of the roof are rich and colorful, exceeding greatly the decoration of dragon-head ridge ornament at both ends. In general, on main ridges, the plasterworks were mainly distributed on the Aoyu<sup>[2]</sup> ridge, Baozhu<sup>[3]</sup> ridge, Dragon Boat ridge and Bogu ridge<sup>[4]</sup>.

### 5. 2. 1. 1 On the Aoyu Ridge

Aoyu ridge is one of main ridge in the city of Guangzhou, two Aoyu generally stand upside down on two sides of ridge. About the use of Aoyu ridge, it has been for so far too long in China, during Song dynasty(960 - 1279), *Images of Five Mountains and Ten Monasteries* <sup>[5]</sup> were made by the Japanese monk Chetong Yijie(Liang Sicheng, 2001). The ridge of fish-decoration has been already used on the roof of Buddhist Hall in the Jinshan temple and on the Bell Tower in the Heshan temple (Wu Qingzhou, 1997). This unique decoration was thought that it was the invention of



Figure 17. Auyo-decoration on the roof of Baochong Memorial Arch in Fushan Ancestral temple (1521).

ancient Cantonese. For this decoration, we can find the instance of plasterwork on the Baochong memorial arch in Foshan ancestral temple. Ridge of Aoyu-decoration



Figure 18. Ridge of fish-decoration on the roof hall in Jinshan temple (Song dynasty)

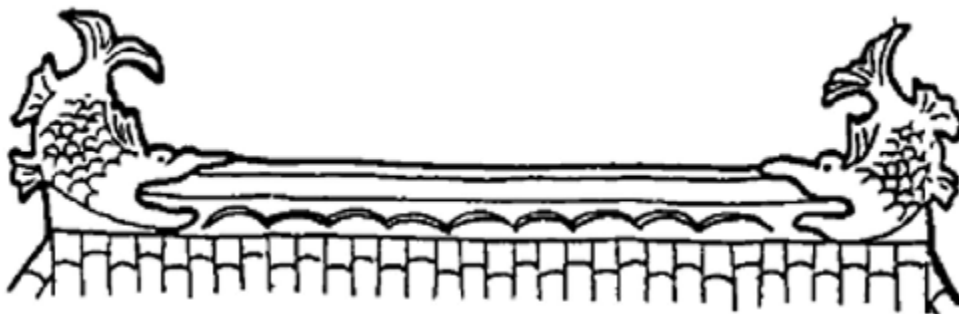


Figure 19. Ridge of fish-decoration on the roof Buddhist bell of tower in Zhongshan Temple (Song dynasty)

*Note:* Above-mentioned two images derived from the Study of Cultural Origins of the Ridge-decoration of Chinese Ancient Architecture (Wu Qingzhou, 1997).



Figure 20. The decorative plasterwork on the main ridge of the roof in Juxian Hall of Chen Clan Ancestral Temple in 1894.



Is able to be designed on the *gable and hip roof (overhanging gable roof, flush gable roof)*, such as the Foshan Ancestral Temple, *overhanging gable roof* of the front hall which was built in 1429 (Wu Qingzhou, 2011); the decoration of main ridge on the *flush gable roof* of front entrance (1894) in Chen's Clan Temple and so on, all of these main ridges are decorated large numbers of plasterwork of different period of Qing dynasty. These ridges in general are decorated very splendidly, the scales are very high and large, the most highest ridge located on the roof of Chen's Clan Temple is 4.26 meters height, and this unique style of plasterwork is also very fine (Liu Shuting, 2008). In fact, the decoration is not only very beautiful, but also has the function of windproof and waterproof. And in the Guangxiao Temple, the main ridge on roof (*gable and hip roof with double eaves of Hall of Mahavira*) that rebuilt in 1654 (Cheng Jianjun, 2010), that on the roof (*gable and hip roof with single eave*) of the Sixth Patriarch Hall (1692, ), and that on the roof (*gable and hip roof with single eave*) of Jialan Hall, which was built in 1494 (Li Gongming, 2008); the decoration of Aoyu are considerably noticeable. However, because of limit of feudal hierarchy of Qing dynasty, the decoration on the roof of Buddhist temple was generally simple (Li Gongming, 2008), and decorative patterns of main ridges were often white-black continuous scroll design, except for that of Hall of Mahavira is colored by pigments. The decorative patterns were often continuous scroll design for the Buddhist temple or Taoistic Temple. And for the Clan temples, Ancestral temples and traditional Guangdong local-style dwelling houses and gardens, such as Foshan ancestral temple and Chen clan temple, the plasterwork is decorated by very rich color due to be unacted on the feudal sense of hierarchy, in particularly after the mid-Qing Dynasty (Liu Shuting, 2008). The main ridges could be decorated all kinds of ornamental themes, including that of plants, flowers, animals and landscapes, also comprising historical personage, Chinese decorative calligraphy, the historical legends and folk tales for the Clan temple and Ancestral temple. These beautiful auspicious patterns symbolized the Cantonese were longing for for a better life. In order to make the main ridges more solid, in general, foundation bed of ridges were

decorated by the plasterwork, and the upper part was designed by the pottery sculptures. In the Chinese ancient legends, the Aoyu decoration was the numen of water, it could spray water, also could rain, it could be fireproof when it placed on the ridge of roof (Liu Shuting, 2008), it was most frequently decorated on the roof in Lingnan traditional architecture.

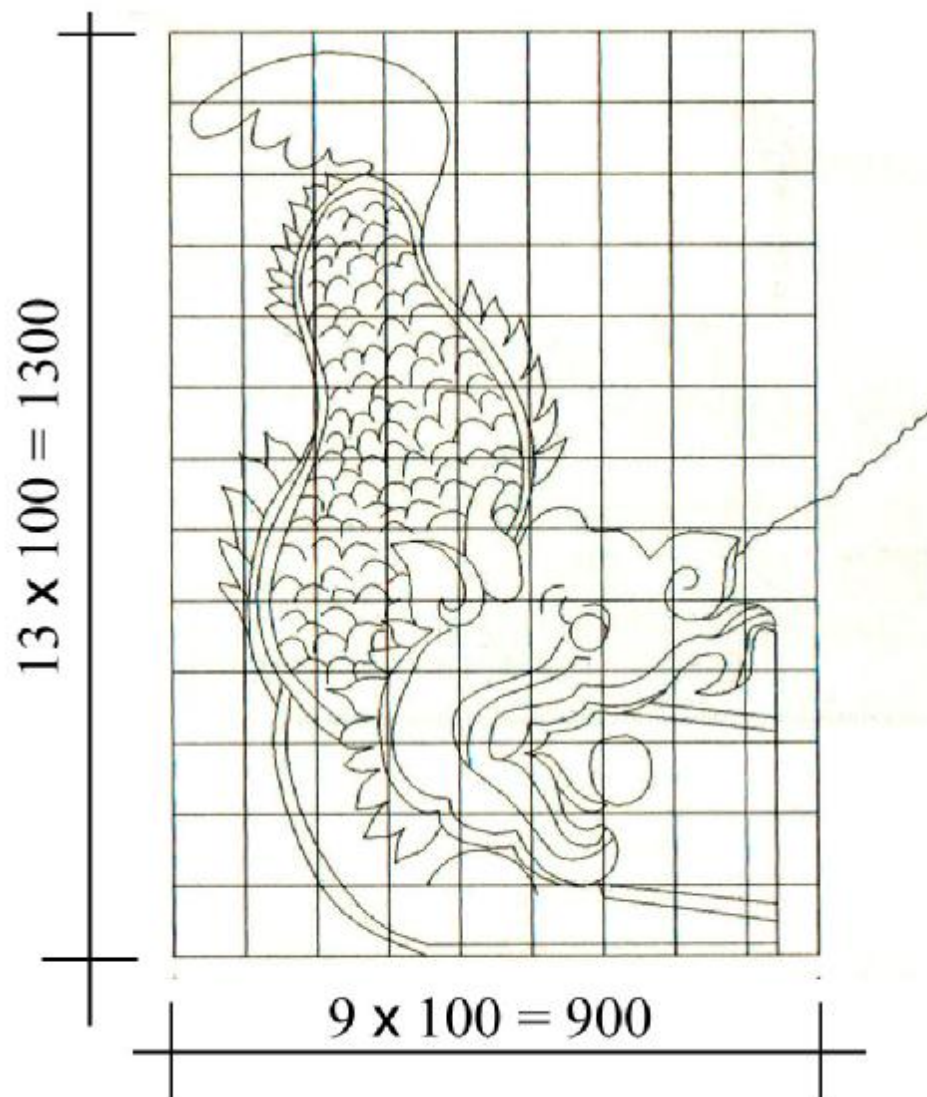


Figure 21. The detail drawing of Aoyu decoration on the main ridge of the Jialan Hall in the Guangxiao Temple, the image derives from *the Report of Architectural Research and Protective Project in the Guangxiao Temple* (Cheng Jianjun etc., 2010) .

These decorations are very brilliant, magnificent, colorful and gorgeous, which decorated on those tall ornamental ridges, such as Chen's Clan Temple, Foshan Ancestral Temple, Xujiang Ancestral Temple and The Ancestral Temple of Dragon Mother, a lot of plasterworks are decorated on their main ridges of roofs on the main halls. In particular, in Chen's Clan Temple located in the city of Guangzhou, the ceramic ornaments and the plasterworks together are decorated on the main ridge, which are very splendid and colorful. According my field research, the scale of the decorative plasterworks of Chen's Clan Temple should be the largest in South China, 2,562 meters long, and 2,448 square meters in area. The subjects range from myths, legends, historical stories, opera figures to lucky animals, fruit and flowers, auspicious characters, landscapes and buildings, which cater to popular taste. Those patterns expressed fully people's wishes for better life through the techniques of homonymity and symbolism.

In general, the main ridge of the roof that can decorated aforementioned two ornaments is the relatively tall, and those ornaments on the main ridge is divided into two parts: the ceramic decoration is upside, two decorations of Aoyu are located the topmost of ridge, the height is 1.30 meter, and plasterwork is decorated underside. Usually, the most height of ceramic sculptures is 2.90 meters, that of the decorative plasterwork below is 1.36 meter, and the total height of main ridge can be 4.26 meters (Liu Shuting, 2008).

According to the height of the gable wall, the height of the Aoyu ridge are also different. The height of short ridge of the roof can be from 0.25 meter to 0.50 meter (Zhou Haixing, 2004), the complex ornamental theme can't be decorated on these main ridges, decorated usually with bas-reliefs. The color of these ridge is red background and yellow motifs if the tiles on roof are glazed facing tiles, but if the tiles are green pantile, then the color of ridge is the black background and white patterns, and these Aoyu ridges are often more tall, about 0.55 meter- 1.30 meter (Liu Shuting, 2008), which can decorate the more multiple ornaments.

All of these plasters form a integrative ornaments with the ceramic decoration

on the roof, which have the rich folk artistic characteristic in China.

### 5. 2. 1. 2 On the Bogu ridge

Chinese Bogu is an auspicious utensil, in the province of Guangdong, the Bogu patterns as the decorative pattern of ridge on the roof were primarily applied in the late Ming Dynasty and the early(mid-seventeenth century) Qing dynasty (Song Xin, 2005) , and this distinctive decoration were applied widely the traditional buildings during the period of emperor Qianlong (1735 - 1795) of the Qing dynasty (Dou Yibing, 1990). Meanwhile, the ancient Cantonese masters made this ornamental pattern decorated on the both ends of the main ridge or the lower extreme of vertical ridge, and formed the unique Bogu decorative ridge (Sun Hai etc., 2005). The Bogu ridge does not belong to the high grade of decoration, it was the most widely used by



Figure 22. Bogu plasterwork on the main ridge in Fushan Ancestral Temple.

ridges of folkhouse, temples and school privates in ancient city of Guangzhou. The shape of Bogu ridge generally is complex, the form is huge and thickset, which is suitable for the construction of plaster, it combine perfectly with emblems of good augury such as dragons and phoenixes, Qilin<sup>[6]</sup>, reflecting the unique beauty.

#### -- The construction of Bogu ridge

In general, Bogu ridge is compounded by three parts: the ridge forehead, the ridge eyes, the ridge ears. The forehead of ridge is the part of the *Horizontal inscribed board* of the center of the main ridge, often decorated with images of plasterwork that express auspicious, such as flowers and vegetation, pine and

bamboo, the Qilin, Fenghuang and Chinese dragon, horse and lion and various figures, color is splendid and richful, so, this part become visual center in Bogu ridge; The eyes of ridge are the small holes in ears of ridge at two sides of Bogu ridge,

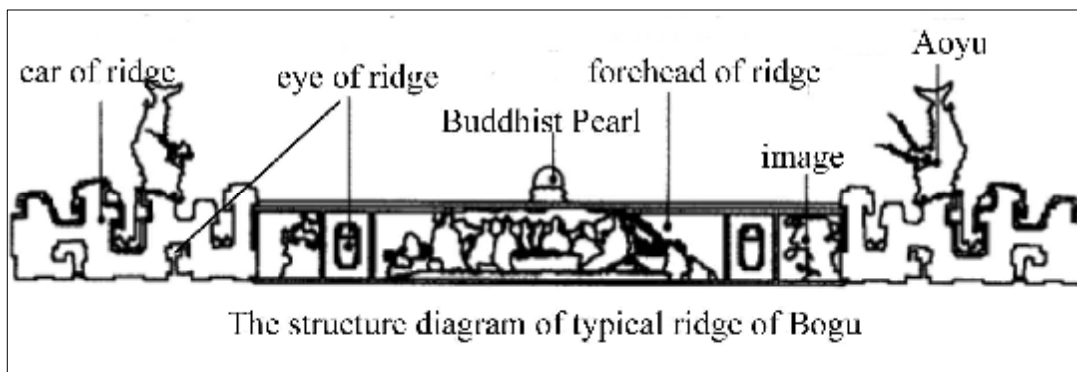


Figure 23. Bogu structure drawing, derived from the South China University of Technology (Zhou Haixing, 2004).

often decorated with small images of animal or Buddhist bottle inside the holes; The gables that connect with two sides of the ridge of Bogu are generally herringbone, or the shapes of the ear of pot (Liu Shuting, 2008), which this architecture was only built by the men who owed the scholarly honor of official rank in the ancient time, this characteristic shape of the region of Pearl River Delta a symbol of Chinese ancient official hat, having the propitious meaning of head the list of successful candidates, and becoming one of the typical characteristic in the Guangdong architecture.

### -- Ears of Bogu Ridge

The ears of ridge are constituted by brick to present perforated forms, high and low around the patchwork, imaginative. They are the special parts which reflect feature of Bogu pattern, located two sides of the main ridge: the shapes are symmetrical, and the height is equal to the forehead of the ridge. The decorative motifs have no fixed forme, and the colors are applied on backgrounds blacks and white borders, the Modeling of Bogu ridge is in their bold images and rough lines,

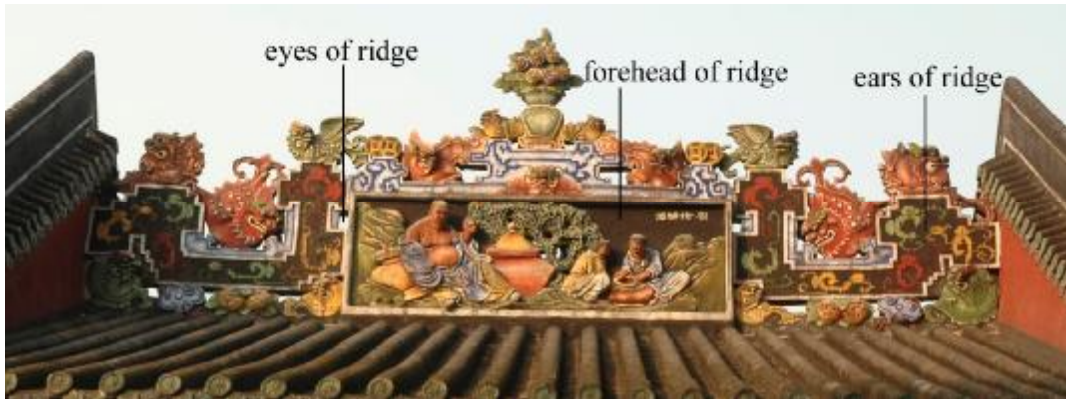


Figure 24. The color structure drawing of Bogu ridge in Chen Clan Ancestral Temple.



Figure 25. The pot-ear gable and Bogu ridge in Liugeng Ancestral Hall,  
built in 1799 and rebuilt in 1869 (Liu Shuting, 2008).

Edges are straight, and the color is succinct and generous, having the style of architectural decoration of Qin and Han dynasties. Its pattern is mainly the motifs of Kui Dragon<sup>[7]</sup>, which appear in corresponding with the form of Bogu are composed of regular geometric lines and balanced (Song Xin, 2005), meanwhile, according to likes of house-owner, the plasterers usually choose combinations of vegetal pattern of three colors (red-white-yellow or red-green-yellow) on the body of Bogu.

### -- Main image of plaster on the forehead of ridge

According to the length of the ridge of the roof, the decoration can be: 'one image', 'three images', and 'five images', for those multistory large-bay and large-depth building, can even make decoration of main ridge divided into 'seven images'. Numbers of decorative images must be odd. The central plasterwork can generally reflect the decorative theme, therefore, it is the most important one in the whole main ridge, while the others often choose the symmetrical design, call them decorative sketch of plaster due to their small breadth.

### -- Lattice window

Lattice window is the hollow-out place in the main ridges, most of them usually are rectangle or deformation of rectangle, some ridge also use the windows of

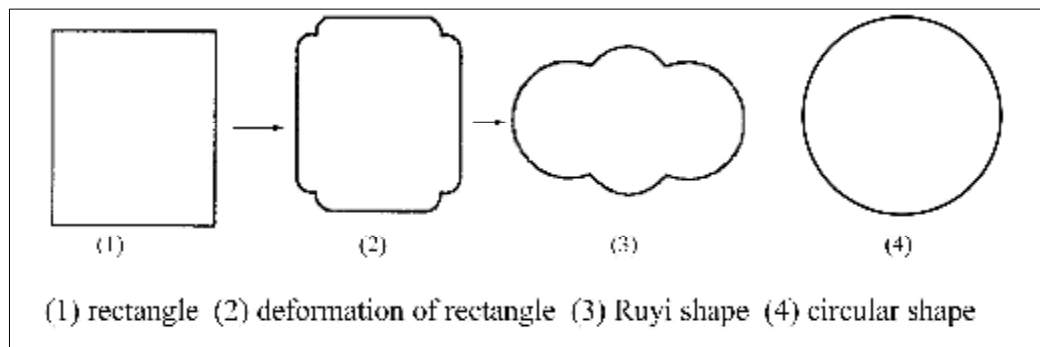


Figure 26. The classification of Lattice windows on the main ridge, derived from the South China University of Technology (Zhou Haixing, 2004).

Circular shape such as on that of roof in the Chen's Clan Temple, and some apply Ruyi<sup>[8]</sup> motif like that on the main ridge in the Foshan ancestral Temple. In fact, it is easy to find that it's just the quadrature process of deformation from rectangle to Ruyi shape. The plasterers usually design some small decorative images inside of them (such as fruits and Buddhist bottle, fruits symbolize *the more sons, the more blessings*, and Buddhist bottle means the auspicious) in order to make the ornament more rich. Except for the decorative function, these windows also have the practical

function: on the one hand, they can reduce the damage of wind, on the other hand, it's also one method of reducing weight of ridge on the roofs.

According to description of plasterer Shao Chengcun, the proportions of the composition of Bogu ridge is a regularity to be found. The proportional ratios between ears of ridge, main image and small sketch of plaster are about 1: 1.1: 0.45, in generally, the main image should be slightly longer than the ears of Bogu ridge. Proportional relationships of small sketch of plaster and ears of Bogu should be less than 0.5: 1, and the length of a sketch should not be less than the height of the main ridge, that is to say that every decorative plaster should be a horizontal composition.

### 5. 2. 1. 3 On the Dragon Boat Ridge

For the Dragon Boat Ridge, the first record of historic literature was described in the book *The Tale of King Mu, Son of Heaven*<sup>[9]</sup> during the Warring States period (318 BC to 296 BC): "Son of Heaven takes the dragon boat, which floats on Dazhao lake. Successively, the Yuan dynasty painter Wang Zhenpeng<sup>[10]</sup> drew the Dragon



Figure 27. The image derived from:

<http://ishare.iask.sina.com.cn/f/24755514.html>8. 1. 2 that on the vertical ridge

Boat in his Chinese painting "*Dragon Boat Regatta*" in 1310 or 1325. The Dragon's head lift highly, the huge body and eyes are bright and piercing, fine graving, tail rolls highly, and some boats even have multiple-eave pavilions. It's modeling in the paint is very similar with today's dragon boat. Th culture of dragon boat has a long history in Guangdong, a literature of the Ming Dynasty *The Collection of Tianshan Thatched Cottage* (Qiu Shicong<sup>[11]</sup>) recorded in detail the important information (such as dimension, color and ornament) of dragon boat (Li Ruizhi, 1991). The river



network is distributed widely in the province of Guangdong, the ancient Cantonese had always the fine custom of fishing for a living. The dragon boat became Cantonese 's object of worship, therefore, they created to make it applied on ridge of

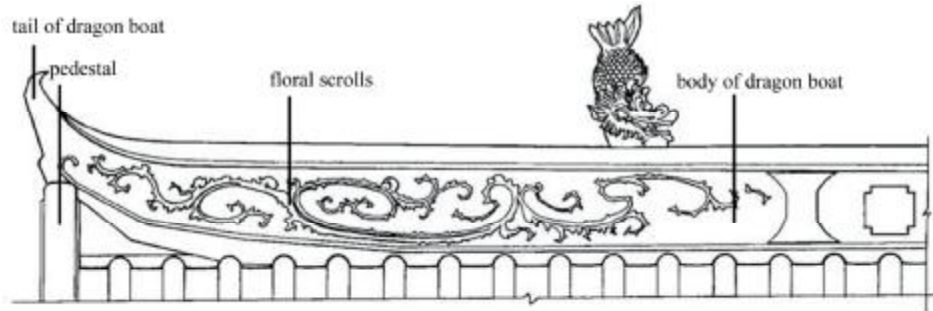


Figure 28. The elevational drawing of the ridge of dragon boat on the roof of Sanyuan Hall in Guangxiao Temple. The images derived from the compilation of the measured drawings of historic buildings in Lingnan (Tang Guohua, 2001).

roof, forming the beautiful and distinctive ridge of dragon boat. From the subsistent material object of the ridge of dragon boat, the decorative plasterwork on the roof Baochong memorial arch in Foshan Ancestral Temple should be the one of the earliest ridge of dragon boat, which was built in 1521 (Chen Zehong, 1999).

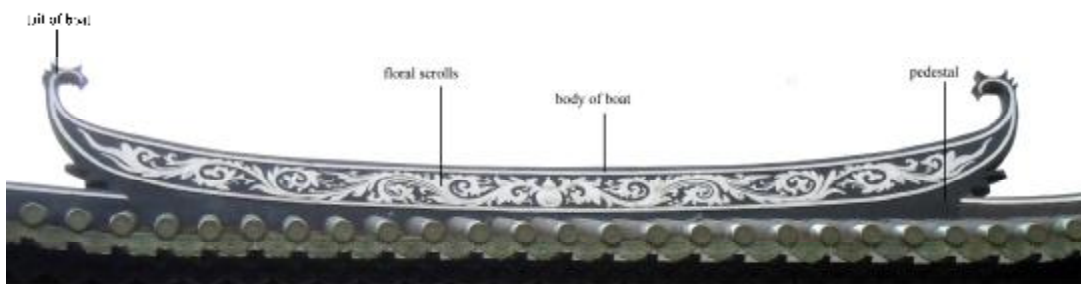


Figure 29. Schema of the ridge of dragon boat



Figure 30. The ridge of dragon boat on the roof Baochong memorial arch in Foshan Ancestral Temple, built in 1521 of Ming dynasty (Liu Shuting, 2008).

The Ridge of Dragon Boat could be in fashion in Guangdong, two reasons can be explained: one is the customs of the race of dragon boat in Lingnan, dragon boat is one of the cultural characteristics of Guangdong; the other is that the modeling of dragon was only used on the Royal buildings in the Chinese traditional ceremony, where ridge of dragon boat become the incarnation of dragon. To a certain degree, the dragon boat races is a symbol that people wish the peace and pursuit of happy life, except that it's a sports tools.

In the composition of decorative pattern of above-mentioned ridges of dragon boats, the two sides of it generally use motifs of scroll design in bass-relief, black background and white patterns, very simple and clear. It was very prevalent during the period of Tang dynasty (Liu Li, 2007). It derived generally from shape of climbing plants, such as Chinese wisteria, honeysuckle, grapes and Chinese trumpet creeper etc., these motifs have rich sense of rhythm, and incessant and inconceivably extended in space, are the symbol of prosperity (Ma Sumei, 2002). Usually, the height of the body of dragon-boat ridge (about 40 cm) is lower than that of the ridge of Bogu, not very conducive to create decoration of complex scenes, which are in general ornamental motifs of bass-relief, whose subject matters are often flowers and vegetation, and geometric patterns.

### 1) The Tail of the Dragon-boat Ridge

The tail that located in the ends of both sides of the main ridge of the dragon-boat are cocked, and they can present various iconographies: the shape of

the boat, the shape of a dragon, the form of cirrus cloud, the shape of the spoon-drift, the shape of a leaf. The shape of the boat is the most common form, the ends taper with a curve towards the inside; the form of dragon means that the termination is serrated; it's sure that the form of the spoon-drift if the termination is curved and bifurcation; if the ends like leaves, it's no doubt that the shape of the leaf the ends like leaf. The ridge of dragon boat is low level ridge, used generally on the roof of non-important building such as that on dwelling house or Taoistic Temple.



Figure 31. The shape of the boat on roof of Mountain gate in Sanyuan Taoistic Temple in 1786.

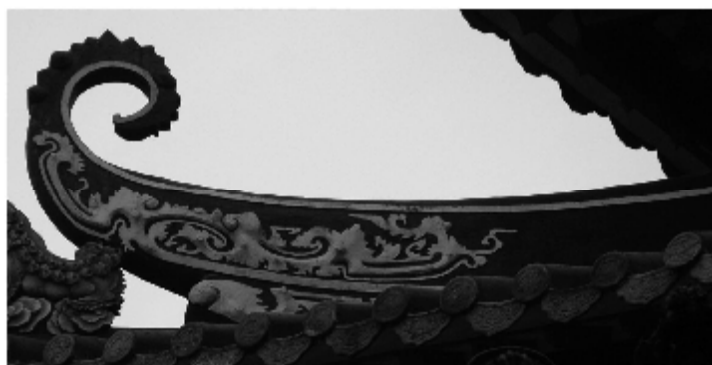


Figure 32. ridge of dragon in Foshan Ancestral Temple in 1429.



Figure 33. The shape of the spoon-drift  
in Liurong Temple (about 1911)



Figure 34. The form of cirrus cloud  
in Wuxian Taoistic Temple(1573-1620)

## 2) Comparison of the Bogu Ridge and the ridge of dragon boat

Category	Bogu ridge	Ridge of dragon boat
Time	Begin since the emperor Qianlong of Qing dynasty (1735 - 1795)	Begin during period of emperor Zhengde of Ming dynasty(1521)
Composition	Ears + main images + small sketch + lattice window	Shape of boat, two sides are cock.
Feature	interesting narrative, a strong decorative effect	Main is the floral scrolls, white and black are very simple.
Height of main ridge	0.60 - 1.50 meter	0.30 - 0.60 meter
Technique	High relief, full relief	Bass-relief
Main topic	Personalistic, animals, and vegetation	Planting pattern, geometric motif
Architectural type of Application	Ancestral temple, ancestral dwelling house, private school, garden	Buddhist temple, Taoistic temple, ancestral temple

Through the comparative table of Bogu ridge and the ridge of the dragon boat, we know these two ridges have the similar characteristic: the modelings are simple and generous, color is bright and rich, it's easy to construct, therefore, they are applied widely on the roofs of traditional buildings in the city of Guangzhou. In particular, dwelling house and garden buildings have a liking for applying these two ridges of the roof. However, for the tall and massive Aoyu ridge of the roof which are decorated the rich ceramic ornament and plasterworks, only the Chen's Clan Temple applied it due to having ample financial resources of Chen's homeowners in this city.

#### 5. 2. 1. 4 Watching Ridge and Ridge on the Gateway

The watching ridge generally refer to those ridges of the roof that can be appreciated directly by people, it usually located on the roofs of the lower buildings, such as on the Chang Lang (*Long Corridor*) or the Chinese Cloister, the ridge located in the gateway of the entrance of the Qingyun Alley<sup>[12]</sup>, which is the ridge on the gate between two halls or buildings. These buildings are usually relatively short, the decoration on the roofs are easy to watch, therefore, the production of the images are very meticulous. Wonderful watching plasterwork usually use the opera figures as the creative theme because the character is the most difficult to depict for the plasterers. Skill and technique of sculpture are often openwork carving or circular carving.

Both the watching ridge on the Corridor and that on the gateway, the overwhelming majority of ridge apply the Bogu ridge. Thereamong, the Bogu ridge on the roof of corridor between the second building and the third building in the Chen's Clan Temple, which the ornaments are very delicate, themes are rich, including the Chinese classical literature, folk tales, both historical and legendary figures, and famous Chinese buildings and landscapes along with flowers, birds, fish



Figure 35. The Seven Sages of the Bamboo Grove in the Bogu ridge on the roof of corridor in Chen's Clan Temple about in 1894.



Figure 36. the decorative plasterwork 'congratulate on Guo Ziyi's Birthday'  
on the watching ridge in Xujiang Ancestral Temple about in 1871.

and insects. A image of plasterwork called '*The Seven Sages of the Bamboo Grove*<sup>[13]</sup>', is particular vivid and beautiful, the modeling of figures are different, the landscape and seven decorative Chinese characters and signature of the plasterer formed a complete works with '*Five Bats Surround the Character of Longevity*<sup>[14]</sup>' above it; And minority of watching ridge also use the complex decoration, such as one of the watching ridge in the Xujiang ancestral temple designed the wonderful ornamental figures, called '*congratulate on Guo Ziyi's birthday*<sup>[15]</sup>', symbolizing the prosperity and happiness.

#### 5. 2. 1. 5 The Ridge of Cintamani<sup>[16]</sup> (*Ruyizhu*)

In general, the Cintamani is designed on the main ridge of Buddhist Temple or Taoistic Temple, and it mainly includes two shapes in Guangzhou' temple: Ruyizhu and Buddhist Gourd<sup>[17]</sup>, symbolizing the good luck and prosperous in Buddhism; and the peace and auspicious in Taoism. The diameter of it is generally 0.5 - 0.83

meter, the height has not the uniform requirements, is often 1.00 meters high at least.

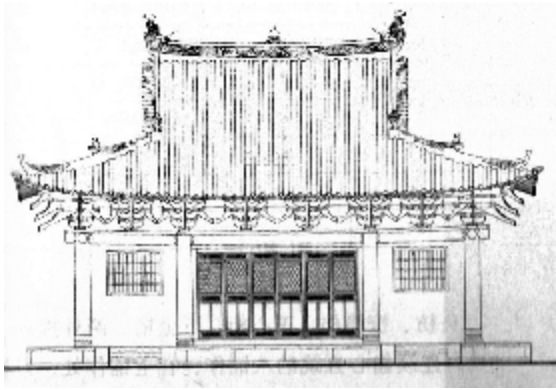


Figure 37. The front elevation of



Figure 38. The Buddhist Gourd in the

Jialan Hall in Guangxiao temple (1611)

main ridge of Jialan Hall

Note: Two images derived from Cheng Jianjun, Li Zheyang, *The Report of Architecture Research and Protection Project about Guangzhou Guangxiao Temple*, Chinese Building Industry Press, 2010, pp. 69, 143.

The Cintamani is always placed the top of center of the main ridge, the color of the roofs of other hall are decorated the white and black except that of Mahavira Hall is the warm-color, the main ridge of Guangzhou's Buddhist temple is simple, the height of it is about 0.45 - 0.50 meter, so, the ornaments is usually also the plasterwork of bass-relief, and the pattern is continuous scroll patterns, which derived from design of the honeysuckle, lotus, orchids, peonies, pomegranates, lotus, chrysanthemum, and it's different with other parts of China, the scroll patterns of plasterwork on the main ridge of the roof in Guangzhou's Buddhist temple are mainly continuous honeysuckle-pattern, which is a foreign pattern for Chinese with the rise of Buddhist art in China, and widely used in Buddhist decorative art and buildings in the Northern and Southern dynasty (420 - 589), and influenced to the secular decoration at that time, tremendously popular (Wu Chunnian, 2009). And this pattern primarily derived from the decorative art of Indian Buddhism. However, the Indian Buddhist decoration was influenced greatly by that of ancient Greece, Even can be considered that, for the Indian Buddhist ornamental arts, it has factors of art of

ancient Greece from the beginning (Fan Meng, 1991). Alois Riegl also think that the Chinese scroll patterns, should derive from the art of ancient Greece or of ancient Rome. Meanwhile, according to his view, the development of scroll patterns is a monistic in all over the world (Alois Riegl, 1893). And E. H. Gombrich comes down to Alois Riegl's theory: it's the continuation of art of the classical tradition (E. H. Gombrich, 1984). That's to say, both Alois and Gombrich have the same opinion: Egypt is the cradle of plant patterns, Ancient Greece and Rome is the center of the development of the scroll patterns, and influenced all Europe, Middle East, Chinese and other countries, eventually forming a worldwide style of scroll pattern.

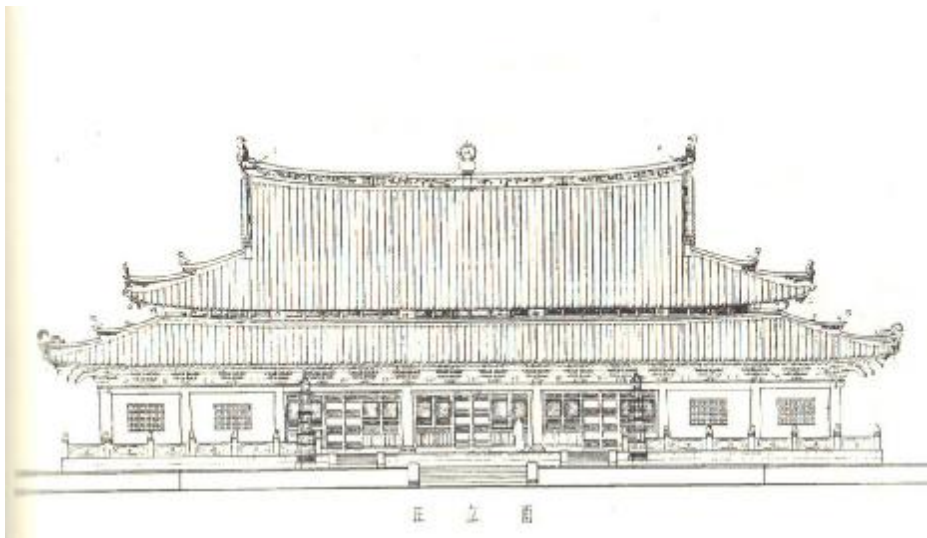


Figure 39. The Cintamani on the front elevation of Mahavira Hall in Guangxiao temple, and it image derived from1956(Cheng Jianjun etc., 2010).

### 5. 2. 2 The hip on the roof

The hip is a ridge of ancient Chinese roof, forming the Chinese unique ridge of the roof with the main ridge, with the main ridge, the hip is made up of the ridge of the roof, and applying on that of Hipped Roof, gable and hip roof, overhanging gable roof, flush gable roof. The hip is in general decorated splendid roof charms or roof figures, the decoration on the hip of Lingnan's traditional building is particularly exaggerating, Dragon, Phoenix, Qilin, Lion, Chicken and figures of decorative plasters are able to be decorated on it. The figures are decorated on the hip, which



has already been recorded clearly in the *Treatise on Architectural Methods* (Li Jie, 1956), show that it is a traditional ornament (Cheng Jianjun etc., 2010). It's different with the ornament of main ridge, the decoration of hip focus mainly on the end of it (part on the eaves).

### 1) The decoration of fishtail ridge

The decoration of fishtail ridge is mainly used on the hip of the roof, the tail cock upward is very similar the fishtail, so called fishtail ridge, Huang Chaoying<sup>[18]</sup> presented that: the fishtail ridge was used on the roof of the Buddhist and Taoistic temples since the Tang dynasty. The instance is that, two Aoyu-decoration (pottery sculpture) located on two ends of the main ridge from the main ridge of the roof of the east hall in Fuguang Temple (857), it can be proved Huang's description about the fish-decoration. Successively, the living-example of plasterwork of fishtail ridge, it's also able to find it on the hip of the roof of Jialan hall in the Guangxiao temple (1611). The tail of fish cocks upward, the white scroll pattern and a long line of plaster are decorated on the fishtail ridge, this pattern has been already exaggerated and deformed, however, it's sure that it has the characteristic of honeysuckle pattern (another scroll pattern is a kind of decoration of *float grass*, which is used on the gable wall of the folk house, next part will be discussed in detail.), which can be proved through the comparison with the honeysuckle patterns in the ornament of Dunhuang grotto in the Northern and Southern Dynasties (Xie Shengbao, 1996). The color of this kind of fishtail ridge is usually white and black, with the simple pattern, it's more able to show a solemnly and serene atmosphere. Therefor, from the instances of Fuguang temple and of Guangxiao temple, it can clearly be seen that, the fish-decoration is always the fashionable decoration in Chinese ancient Buddhist or Taoistic temples (Wu Qingzhou, 1997).

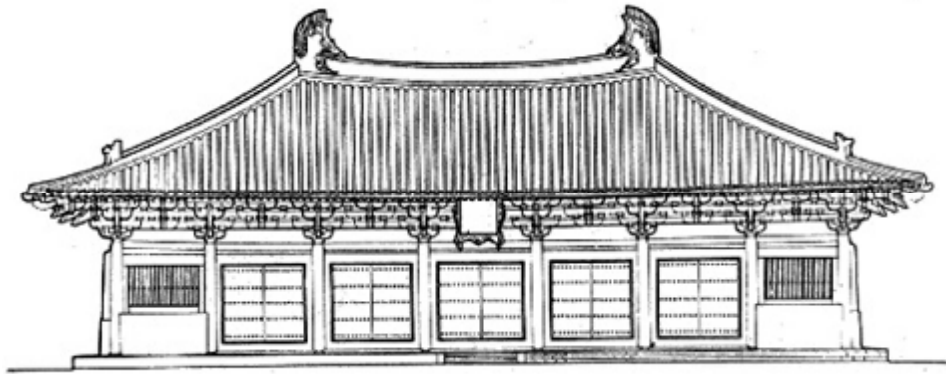


Figure 40. Fish-decoration on the main ridge of the roof of the east hall in Foguang Temple in 857 (Fu Xinian, 2009).



Figure 41. The fishtail-decoration on the hip of the roof of Jialan hall in the Guangxiao Temple (1611).

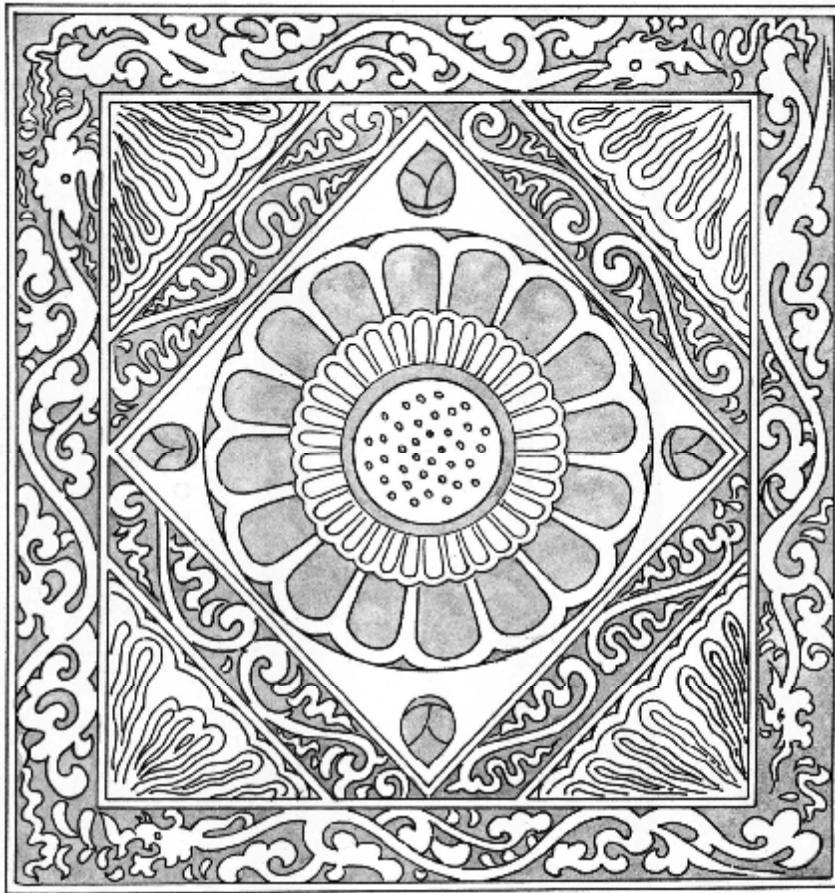


Figure 42. Images of honeysuckle pattern in Dunhuang Grotto (Xie Shengbao, 1996).

## 2) Bogu Decoration

For plasterworks on the hip of the roof, there are two forms, one is the standing Bogu image, the other is the standing animal images. The construction of Bogu must be simple and generous. First the plasterer need use gray bricks to build the basic geometric modeling, which is composition well in order to make a good distinction between the important and the secondary one; then plaster the lime mortar on bricks, at last use the black plaster paint on the surface of Bogu. Then use the white color to hook lines, in general, inner is decorated by red, yellow and green auspicious patterns. The Guangzhou's standing Bogu decoration has the bright hue, and strong artistic pattern, becoming the unique landscape of ridge of the roof. From the shape of Bogu pattern, obviously, which has a internal relation with the Chinese Kui dragon motif (Cheng Jianjun, 1988), the plasterwork of Bogu-decoration is usually painted the

dragon, phoenixes and Qilin pattern, it is thought to borrow idea from elements of Kuilong motif (Song Xin, 2005). So, the standing Bogu decoration is the dimension of Kuilong motif, is also a great innovation for the Chinese traditional motif. This decoration on the hip of the roof is used widely in the city of Guangzhou since the early of Qing dynasty. According to my field research, the existing ancestral temples and folk houses during the period of Ming and Qing Dynasties in Guangzhou, at least one thousand ancient buildings, used the Bogu decoration on their ridge of the roof. This kind of decoration is particular obvious on that of Chen's Clan temple and Foshan Ancestral temple. Meanwhile, some traditional buildings also applied single dragon or loin decoration on the hip of the roof.

### **5.3 Decorative Plasterwork on the Wall**

The wall as a part of building, except it has the function of dividing space and protection, the wall decoration is also as highly valued as that of the roof in the Chinese traditional buildings. For the city of Guangzhou, the decorative plasterwork on the wall is more and more rich and colorful since the Qing dynasty, and the decorative positions mainly focus on spirit wall<sup>[19]</sup>, frieze of outer wall, Chinese couplet<sup>[20]</sup> and gable wall. In general, plasterworks on the wall are mainly bas-relief decoration.

#### **5.3.1 On the gable wall**

In general, the gable wall is the triangular portion of a wall between the edges of a sloping roof. The shape of the gable and how it is detailed depends on the structural system being used and aesthetic concerns (Craig W Baird, 2011). In the Guangzhou Region, gables have three forms: one is the herringbone gable, simple and practical, it's usually used by the folk houses; the second is the shape of pot-ear, graceful lines and rich changes, in fact, it is built derived from the shape of Chinese ancient official-hat, symbolizing that one people have a excellent prospects, commonly call it pot-ear wall because of its shape like an ear of iron pan. Pot-ear wall is not only used

in the gable walls of the ancestral temples, also applied in folk houses; the last is wavy gable wall, which the modelings of it are up and down like wave, pay particular attention to symmetry, in general this wall is three continuous waves, it is actually deformation of wall of pot-ear, it is usually applied in the large traditional building groups. No matter what form, the main function is fireproof.



Figure 43. The west elevation drawing of gable wall of the hall in preserving Buddhist sutra in Huaisheng temple (1659).

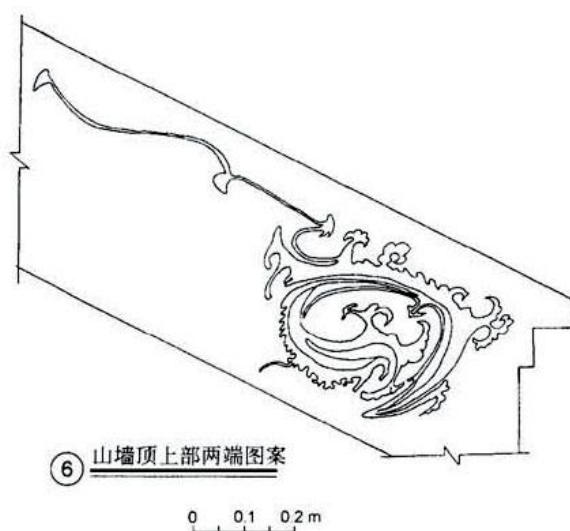


Figure 44. The plastering pattern of bas-relief on gable wall of in preserving Buddhist sutra in Huaisheng temple.

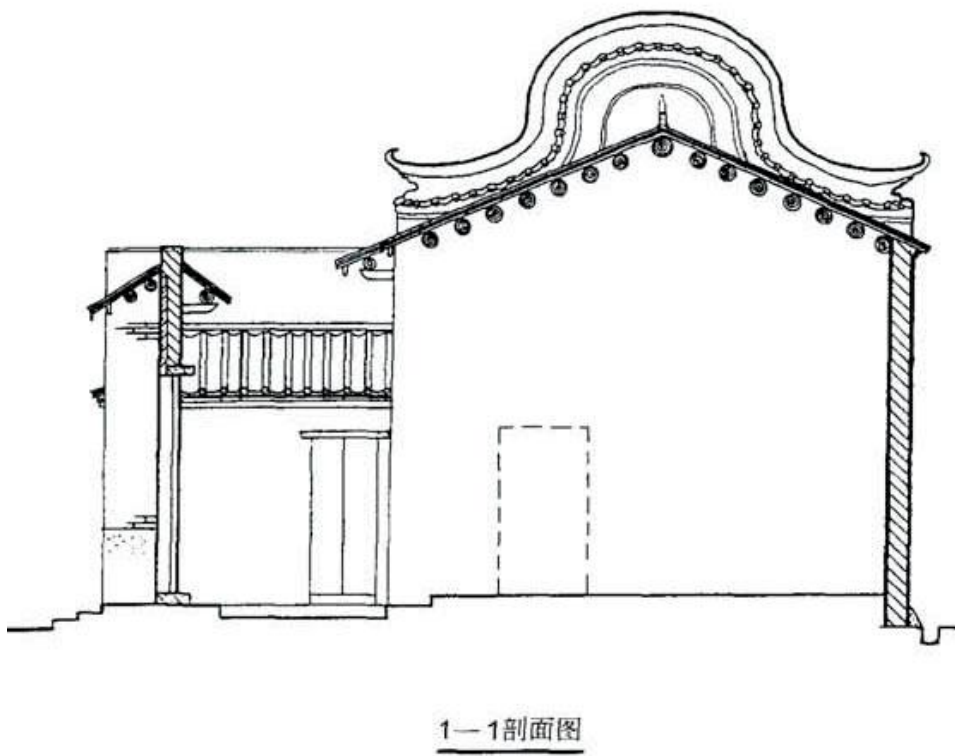


Figure 45. The gable wall of pot-ear of a folk House in Kengbei village in the city of Zengcheng.

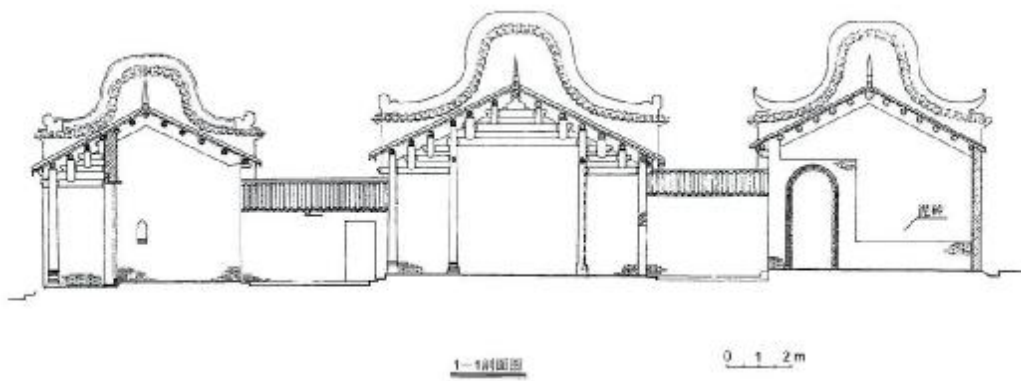


Figure 46. The wavy gable wall of Maogong in Kengbei village Maogong Ancestral temple in the city of Zengcheng.

Note: the above-mentioned images derived from Tang Guohua, the compilation of the measured drawings of historic buildings in Lingnan, South China University of Technology Press, 2001.

### **Decoration on the flush gable wall**

Usually, the decoration on the gables flush wall is plastered a shape of the Chinese character '八 (eight)'. The length of '八' is about 5,000 - 7,000 mm, and the width of it is about 450 - 500 mm, with a black background and white frame, and decorated bas-relief of 50-60 mm, with decoration of the scroll pattern, which it primordially derived from the float-grass, forming an exciting decorative patterns through artistic abstraction and deformation (Chen Jianjun, 1988). It's usually made up of multi-curve, round-leaf, plaster of bas-relief, called it 'decoration of float-grass pattern', which was often decorated on the beam column in Chinese ancient building (Yang Lianggong, 1984). This image in general is decorated with black background and white pattern, or red background and white pattern, in particularly, these three color (red, black, white ) are the main ornamental colors of Han dynasties (Cheng Jianjun, 1988). It can be also seen, the architectural decoration of color of Guangzhou derived from the same origin with that of Chinese traditional decoration.



Figure 47. The bas-relief of scroll pattern on the gable wall of Qingzhen hall  
in Foshan Ancestral temple (1899).



Figure 48. The bas-relief of scroll pattern on the on the Frieze of outer wall  
in Daling village in the city of Panyu.

The plasterers determine the length of the scroll pattern according to the dimensions of the gable wall, the general regularity is that, the length of the pattern is 20-10% of that of the whole gable wall, and the pattern usually show irregular 'S-shaped'. This decoration was very popular during Tang dynasty (Zhang Yanjie, 2007), simple and beautiful, and it tended to be complicated during Qing dynasty.

In addition, some building are also decorated auspicious images in the middle of gable wall, forming a complete plastering ornament with the patterns of two sides of gable wall.





Figure 49. The auspicious plasterwork of alto-relief in the middle of the gable wall in Houwang temple in the city of Shenzhen.

### **Decoration on the dutch gable (Chinese gable and hip roof)**

The pediment of dutch gable is often decorated the plasterwork of bas-relief. Usually, colors of the background on the pediment is black or red-ocher or vermilion, the ornamental themes are primarily images of bats, flower basket, Buddhist cloud, lotus and auspicious bottles that incarnate the positive symbols and so on, meanwhile decorative plasters on the triangular pediment is also complex and rich color.



Figure 50. The plasterwork on the dutch gable of Shenliu hall in Yuyinshan garden In Panyu district (1871).



Figure 51. The decoration on the dutch gable of front hall in Foshan ancestral temple (Xiao Haiming, 1994).

### 5.3.2 Frieze of the outer wall

The climate of Guangzhou is hot and humid with multi-typhoons, and the eaves usually extend the wall a little (about 50 mm), not forming the rich shadow on the wall, therefore, it looks very stiff between the eaves and walls due to lacking of part of transition. The traditional folk houses of Guangzhou were generally decorated the bas-relief plasterwork in the frieze of outer wall, in order to offset above-mentioned defect. The height of decoration is usually 500-700 mm, and the length of it often runs through all wall. For the front of the building, it's normally more important for the homeowners, so, it became the importance of ornament, they often required the plasterers to design the complex plastering images, a series of figures are decorated on the front frieze, and these images are often divided into 3 images, 5 images or 7 images and so on odd sections, according to the length of the walls. They often applied ornament of alto-relief to depict the historical figures, auspicious animals and plant pattern, try to make the decoration splendid and colorful in order to show the house-owner's richness and important social status. For the back frieze of outer wall, that of other secluded wall, the patterns and color of plaster were very simple, usually used red or white Bogu pattern of bas-relief, scroll pattern decoration, and only decorated two sides of the frieze wall, the middle plastered black lime mortar with white sidelines.



Figure 52. One plastering decoration on the frieze of front wall in Big House of the Tsangs<sup>[21]</sup> in the city of Hongkong (1867).



Figure 53. One decoration of alto-relief on the on the frieze of front wall in Wangwu Village in the city of Hongkong.



Figure 54. Plastering decoration of Bogu on the back Shawan frieze wall in Chen's Clan temple (1894).



Figure 55. Decoration of frieze wall of Sanren hall in village of Panyu district in the city of Guangzhou.

### 5.3.3 Chinese Couplet<sup>[22]</sup>

Chinese couplets have already a history of more than a thousand years in China, it Originated the auspicious words on the boards of *peach wood charms against evil* during the Five Dynasties (Wu Lin etc., 2011), and flourishing during the Ming



Figure 56. Two pair of Plastering couplets in Qinghui garden (1800) in Shunde district of the city of Foshan.

and Qing dynasties in particular, being applied widely in architecture of temples, garden, palace and folk house as a peculiar architectural ornament (Zhang Fuhe, 1999). The plastering couplets have been mainly used on two sides of the spirit screen or gate (door) in the provinces of Guangdong and Fujian, Hunan and Zhejiang, they were made of a pair of inscribed boards and Chinese words, having the auspicious meaning in Chinese traditional culture. The dimension of couplets have not the uniform requirements, they often are designed by the decorative objects. At First, the plasterer need to make the plastering modeling of the inscribed boards on two sides of the gate, then plaster the words on them. The Chinese words can be plastered by concave or convex carving techniques. The concave method is relatively simple, the plaster can carve directly Chinese words on the plastering modelings, the key is that plasterer have to control the humidity of the lime mortar, in general, the experienced plasterer is able to finish successfully this concave engraving words; and for the convex carving words, the technique is more complex, and the ornamental level is also higher, the plasterer usually carve the words on the surface of the inscribed boards. The words often applied the *semi-cursive script* or *cursive script* to decorate in order to make the ornamental words more artistic. Meanwhile, the color of the words were used contrasting colors of background of decorative boards so as to have the ornamental words more clear.

#### **5. 3. 4 Chinese Screen Wall**

The screen walls usually point to the small wall facing the gate in traditional Chinese building (Wang Xiaoqing etc., 1996), it was found primarily in a building site of Western Zhou (1046–771 B.C.) dynasty, especially popular during the Ming and Qing Dynasties (Fan Zhanjun, 2006). Screen walls can be positioned either on the outside or the inside of the gate they are protecting (Shan Deqi, 2003). The screen walls of the emperor is located in outside the gate -- ornate screen walls featuring a dragon motive are the Nine-Dragon Walls that can be found in imperial palaces and gardens. That of the folk house is positioned in inside the gate (Zhao Ye, 1996). They

generally point to the inside screen wall in Guangzhou, which can be constructed from brick or glazed tile. The screen wall where often status symbols and could be richly decorated by plasterwork. Common decorations include symbols of good luck (Xie Zongrong, 2004), such as the character for good fortune.

Screen wall is made up of the base, body and roof three parts, the central area of the body is usually constructed by square bricks of 45-degree angle. It's height is 2,500 mm at least, and the highest screen wall can arrive at 8,000 mm such as the *Nine-Dragon Screen* located in the imperial Chinese palaces in Beijing. In general, simple screen wall maybe has not decoration in Lingnan region, but it must be rubbed brickwork and very neat, and luxurious screen wall is usually decorated plasterwork with many auspicious pattern. The decoration of screen wall can be divided into two forms, one is that, the center is the approximate square plasterwork,



Figure 57. The decorative plasterwork of Screen Wall in Yuyinshan garden in Panyu district (1871).

and the ornament on the screen wall is mainly designed in the central region and four corners, the majority of decorative subjects are landscapes or Chinese *seal script*<sup>[22]</sup> '歲' (longevity); another decoration is that, the center is the decorative ceramic,



Figure 58. Plasterwork of Lintel of a portal in Zizheng Daifu ancestral temple in Huadu district of the city of Guangzhou (1863).



Figure 59. Decorative plaster of lintel of a window in back hall of Chen's Clan temple (1894).



decorated the small plastering pattern on the boards in all around. the decorative style of screen wall is simple and beautiful, usually use the bas-relief, On the one hand, the decoration and wall can form an organic whole; on the other hand, the appropriate decoration also make the rigid walls more vivid. The decoration of Screen wall is suitable for a closer appreciation, usually within four or five meters, therefore, the decoration is especially done fine by the plasterer.

In addition, plasterworks of bas-relief are also designed on the lintel of a portal or of the window. The pattern of these plasters are very simple, bas-relief, scroll design or auspicious small animal such as bat, loin and so on.

#### 5.4 The relationship between decorative theme and position

For Guangzhou's plasterwork, are mostly decorated in the outside of the building, and most of the decorative motifs are auspicious plant, animal or religious figures. The combination decorative plasters and patterns formed a series of propitious themes<sup>[23]</sup>. The following table are for the relationship between decorative theme and position in the city of Guangzhou.

*The table of the applicable rules of the decorative motifs and themes in Guangzhou*

classification	position	techniques of expression
geometric patterns	Gable wall, ridge of the roof, Frieze of outer wall	Bas-relief
Flowers, plants and vegetation	Screen wall, main ridge on the roof, hip of roof, gable wall	Bas-relief, Alto-relief with partial openwork carving
Animal motifs	Main ridge of the roof, watching ridge, hip of the roof, screen wall and frieze of outer wall, lintel of portal	Alto-relief with partial openwork carving, sculpture in the round

Patterns of Landscapes	Watching ridge; main ridge, frieze of outer wall,	Alto-relief
Historic personage	Watching ridge, main ridge	Bas-relief alto-relief and sculpture in the round
Bogu pattern	Watching ridge, hip of roof and frieze of outer wall	sculpture in the round, openwork carving, Bas-relief
Decorative plastering words	Main ridge of the roof; couplets on gate or door.	Bas-relief

## 5.5 Summary

The architectural decorative art is accompanied by the development of traditional architecture. The ornament of building became more and more splendid and colorful since the early of Qing dynasty due to the development of large building groups and religious buildings, the plasterwork became the main exterior decoration with the stone carving and ceramic sculptures in the province of Guangdong. In general, decorative patterns can combine with various of sculptures to form a complete image, then painted the mineral pigments on the surface of it (Li Gongming, 2008), getting a strong and variegated decoration. Thereby, the Guangzhou's plasterwork has formed a decorative style of distinctive local characteristics in history of Chinese architecture.

### 1) The unique decorative positions

The Chinese traditional building includes the roof, walls and foundation. For the interiors, decorated by woodcarving and the Caihui<sup>[24]</sup> because its structure mainly made up of wood. However, as the art of lime mortar, the plasterwork is mainly decorated on the roofs and the outside of walls in Guangzhou. The main reason is that, wood is the main architectural material in Guangzhou's traditional buildings, being made up of the main frame structures of building. At the same time, it's easy to

build of complex structure of roof because the wood is suitable for working by hand, leading to a relative light roof for large building groups due to the properties of the wood itself. To a certain extent, it's not suitable for the multi-typhoon and rainy environment of Guangzhou. In this way, the plasterworks can be embellished and adorned on the complex ridges with ceramic sculptures and stone carving in order to add the weight of the roof, and also make the roof more splendid and colorful. Therefore, the Guangzhou's plasterwork has not only the decorative beauty, but can be also windproof and waterproof, thereby protecting the interior wood framework.

## **2) The innovation and application**

The Chinese traditional buildings have continuity of relative fixity from materials, constructure and decoration since ancient times. However, in Guangzhou region, it's easy to find some innovative application. For example, the dragon-boat ridge and Bogu ridge on the roof, specially, the application of Bogu ridge, is the unique innovation in all China. It was originally a kind of indoor furniture that was used to display antiques, and the plasterers skillfully made it applied on the roof of building, forming the local Bogu decoration. In my field research, I found that at least one thousand traditional folk house have used the decoration of Bogu ridge on the roof. It can be said that, this simple and beautiful decorative style became the symbol of Guangzhou's traditional building during the period of Qing dynasty. Successively, use of local resources of decorative pattern is also successful. The water-grass is originally not any relationship with architecture, but the Guangzhou's plasterers have made them changed scroll pattern, used on the plastering decoration of gable wall or of frieze of outer wall. In addition, Litchi and Longan these local fruits are also used in the plastering ornament. These patterns are closely related to the local production and living, they can satisfy people's spiritual needs and aesthetic taste at that time.

## Chapter 6

### Plasterers in Guangzhou

#### 6.1 Li Wenyuan and his apprentices

##### Li Wenyuan (? , ?)

For plasterers of Guangzhou, the first recorded plasterer was Li Wenyuan, was about born in the later years in Jiaqing emperor (1796-1820) of Qing dynasty, and he became famous during the period of the emperors Xianfeng and Tongzhi (1821 ~ 1874), Dong Village in the Shawang town (Miao Li, 2008). Li Wenyuan specialized in the fresco, decorative plasterwork, brick-carving and stone carving (Committee for Compilation of Local Records in Panyu, 1995 ). He was especially good at fresco, for plastering figures, landscapes, flowers and birds, he created them very vivid and beautiful. When Empress Dowager Cixi<sup>[1]</sup> has ordered to rebuild the Summer Palace in 1886, Li went to Beijing and participate in the competition for the decoration of the Summer Palace<sup>[2]</sup> , and got the work because of his decoration 'a girl who is picking mulberry leaves ' was so beautiful, which it have been judged the best one by Cixi.

His extant works such as the decoration '*the Boat returns in Storm*' on the watching ridge in Yanxi hall in *The He's Ancient Temple*, *The Wei Chou*<sup>[3]</sup> *tames the Bear* on the watching ridge in Qinglong Temple, and *Gathering in Lan Gloriette* on the frieze of outer wall in a folk house in Shawan town (Miao Li, 2008). In particular, a alto-relief plasterwork of landscape was designed very delicate on the frieze of wall under the eaves in the Baogong<sup>[4]</sup> temple, the wheel of the carriage can rotate with the water pouring in case of rain, making the whole decoration being full of dynamic. Most of his manuscripts are kept in the Museum of Shawan town now. Meanwhile, his other works such as *The image of Eight Immortals*, *The Seven Sages of the Bamboo Grove* and *The image of Tom, Dick, and Hairy*<sup>[5]</sup> are able to be detected in the four famous gardens<sup>[6]</sup> of the province of Guangdong.

Li Wenyuan had no children, all of his skills and technique about decorative

sculpture has been passed his nephew Li Pusheng (? , ?) and the apprentice Yang Ruishi. Li Pusheng was specially expert in plastering *Crested Myna* and *Bombax ceiba*, his decoration of *five sons all passed the imperial examinations* is saved in He's ancestral temple in his hometown Shawan. Subsequently, Li Pusheng also passed his technique to his son Li Qiyu, these plasterers were the famous master at that time, being very good at fresco, plasterwork and brick-carving.

### **Yang Ruishi**

Yang Ruishi (1836-1908), was born in Zini village, Panyu district in the city of Guangzhou. The predecessors of several generations have always engaged in the construction in his family, he did the plasters with his father since childhood, later he became one of Li Wenyuan's apprentice, doing the technique of plasterwork and fresco (Committee for Compilation of Local Records in Panyu, 1995). He was good at painting the varied swallow and willow, and he was also famous for plastering *The image of swallow and willow*. He has ever plastered his decoration *The image of passing on the Confucian doctrine* (1897) on frieze of wall in the Mai's ancient temple in Nansha district of Guangzhou(Chen Qiyun, 2012), for the image, the center is a fresco of lime mortar and was plastered the decoration of bas-relief with Bogu pattern. It's one of the original decoration of the period of the late Qing Dynasty, without any change until now.



Figure 60. The images derived from the original work of Yang Ruishi, were found in Nansha district (Chen Qiyun, 2012).

Yang was already 72 years old in 1908, he was still employed to plaster the decoration for the ancestral temple, which was rebuilt in the Shiqiao village of Panyu district (Miao Li, 2008). He fell down from the scaffold of more than two meters high because of being old and infirm. Although Yang has completed his decoration, he was died in that year.

## **6.2 Guan's Clan Family**

### **Guan Tingguang (?-?)**

The first Guan's plasterer was Guan Tingguang, was born in Nanhai district of the city of Foshan. He has ever been one of apprentice of Liang Qiu and Li Shizuo<sup>[7]</sup> (1687- 1770) when Guan was Juvenile, studied the Chinese paint following Liang and Li. Later. According to the information of Liang and Li, we can deduce that Guan Tingguang could have once worked during the periods of Emperor Qianlong (1735 - 1795) and even the early of Emperor Jiaqing (1795 - 1820). Guan specialized the decorative plasterwork and fresco for folk houses and temples after he was in adulthood. He was especially good at plastering varied figures. During the process of my field research, the plasterer Guan Jingzhuang presented that, most works of Guan Tingguang were the decoration of bas-relief and fresco, which are conserved in the Guan's ancestral temple (1749) and in locale folk houses in Lianbiaoxi village in Nanhai district.

### **Guan Mengyan (?, ?)**

Guan Tingguang's nephew, a famous plasterer in the last period (1840 - 1911) of the Qing Dynasty, he was expert in painting flowers and birds, his works of plasterwork was conserved in Yiyu private school , called 'Yipin Xialing': It's a color decoration of flowers and birds on the frieze of the back wall of the hall, is also his 'representative work. Guan's Clan Family is a family that appreciates the work of decorative plasterwork, Guan's sixth generation plasterers Guan Jinzhuang and Guan

Jinsi, They are still engaged in the creation of plasterwork, his family decorative works are throughout the folk houses and ancestral temple in the areas of Foshan, Zhongshan, Heshan and Guangzhou. However, the special skill and technique that have been already lasted more than 120 years will be also facing a lost if there is successor.

### **6.3 The plasterers of the last period of the Qing Dynasty**

For the decorative plasterwork in the Chen's Clan temple (1894), the plasterers are: Jin Yaosheng (1884-1953), Bu Jingquan (? , ?), Bu Jinting (? , ?), Bu Genquan (? , ?), Guan Yong (? , ?), Guan Heng (? , ?) e Guan Junhe (? , ?)(Huang Miao Zhang, 2006).

## Chapter 7

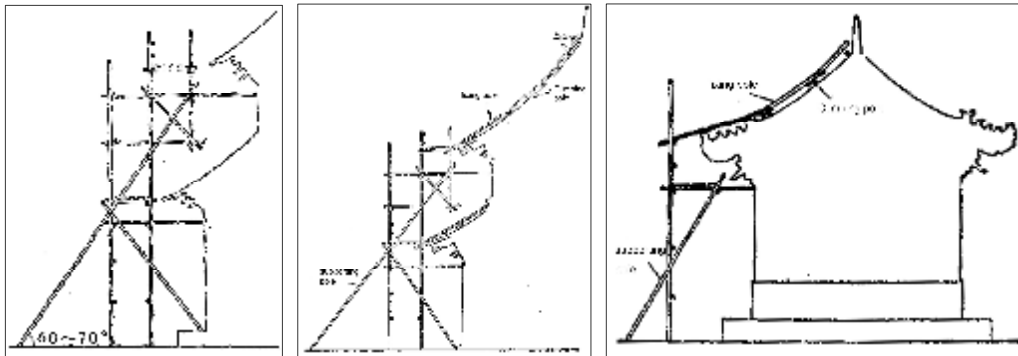
### Technical Processes of Plasterwork

#### 7.1 Tools

##### 7.1.1 The Scaffolding

How to construct the scaffolding for the buildings, it has been already described in detail by the Li Jie's *Treatise on Architectural Methods* (1103) and the *Qing dynasty Architecture Method* (1734) (Qing Gongcheng Zuofa Zeli). The plastering work-load of the roof is the maximum in all decorative engineering, 3 -4 plasterers need working-time of 55 days at least if they have to finished all works on the roof (Du Xianzhou , 1983). Therefore, the plasterers must construct the scaffolding in order to facilitate their work, moreover, the engineering of scaffolding was usually set up by the plasterers themselves, because the traditional folk houses and temples are generally not very high in Guangdong ( general 6,80 - 19,0 meters high).

Three scaffoldings were usually used in the plastering engineering: Qiyan scaffolding, Chigan scaffolding, and Qianggan scaffolding.



Figures 61. Qiyan scaffolding. Chigan scaffolding. Qianggan scaffolding.

Note: three images derived from the 'Repairing Technology of Chinese Ancient Building' (Du Xianzhou, 1983).

##### 7.1.2 The plastering tools

For the plastering tools, we may start in North Song dynasty (960-1127) with the description of the tools given by Li Jie's *Treatise on Architectural Methods* (1103).



Li presented vaguely some tools in use by plasterers. However in his 541 illustrations, only 2 images of horizontal rulers related to the construction of plaster. Similarly illustration from Wu Rong's *The Treatise of Lu Ban*<sup>[1]</sup> published in the period of Wanli (1573 - 1602) of Ming dynasty showed a few plaster tools among

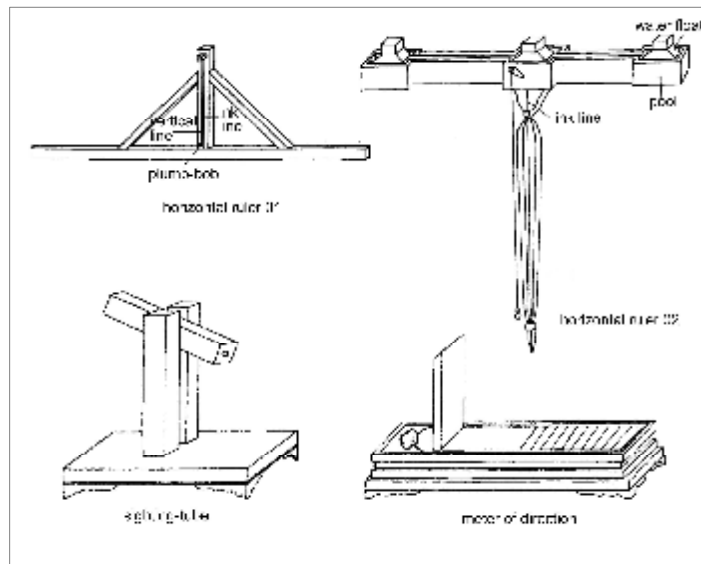


Figure 62. The horizontal rulers in Li Jie's *Treatise on Architectural Methods* (1103).

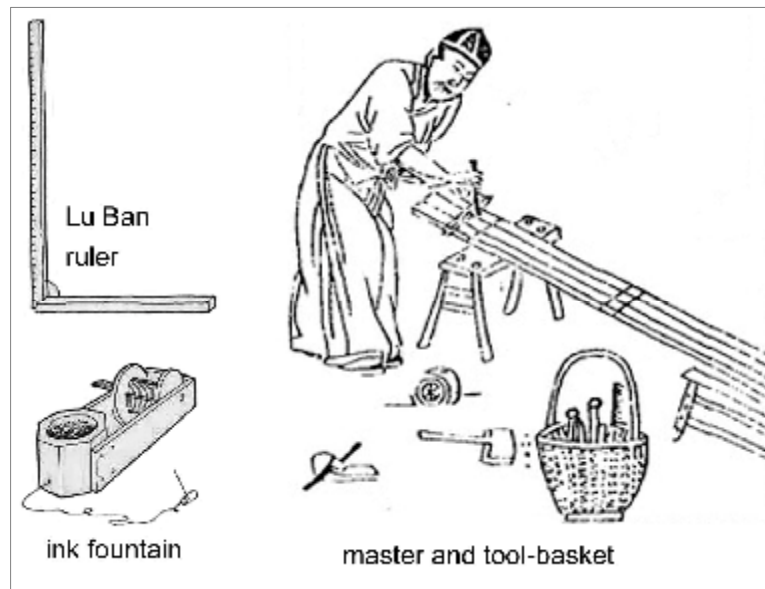


Figure 63. Tools from Wu Rong's *Treatise of Lu Ban* (1573-1602).

those of the carpenter-tool. Successively, also a illustration from the era of the emperor Yongzheng *Qing dynasty Architecture Method* published in 1734, a architectural literature which is mainly the text description and a little illustration, showed several stucco-tools such as shovel-knife, scratching-tool and iron rods. Then this book described trowels, smooth-ruler plate, square ruler, arc ruler and angle ruler, ink fountain, Wooden-handle Ax, mortar bucket and sieves for sift the lime and sand withal, and basket for tools, wood plane-tool, which commonly belong to carpenter, but without related illustration.

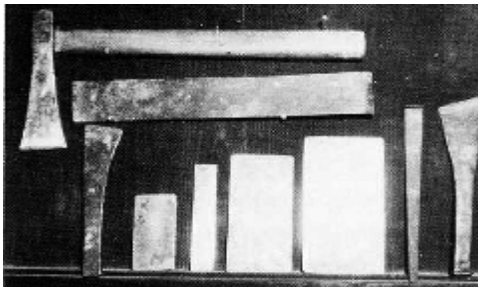


Figure 64. Plasterer's tools from Yongzheng Era's Qing dynasty Architecture Method in 1734.



Figure 65. Yuan Xiting's plaster-tools (about 1821-1850), derived from the Wuxi New Weekly (He Xuebai, 2010).



Figure 66. Tools from Shao Chengcun's ancestor, Chen's Clan temple in Guangzhou in 1894.

In the era of the emperor Daoguang (1821 - 1850) of Qing dynasty, the plasterer Yuan Xiting's plaster-tools were affluent in the previous items in the visual. He ever used various trowels, wood plane tool, brush, wood strip (35 - 40 cm), small spatulas, hammer, small Ax. Among of them, and the special trowels (such as trowel-line and trowel -angle) were produced by himself, which were used to shape the pattern. Lastly, plastering tools from Shao Chengcun's ancestor<sup>[2]</sup> in 1894, show a series of them such as horizontal ruler, copper wires, and plastering pens, according the description of Shao Chengcun, his ancestor had ever used these tools to plaster the decoration when he worked in the Chen's Clan temple at that time.

According to the function of tools, we can classify them as the following tools:

- Tools for lofting and for correction: chalk line, plumb-bob, try square, zigzag rule, tape measure.
- Tools for mixing-mortar and for measuring: shovel, scoop, wooden tub, pail, wash bowl (mortar-bowl), plastering pallet, fine sieve, water dipper.
- Tools for plastering and for color: trowels, brushes, oil painting brush.

Among the tools listed above and described, trowels definitely are the most important tools for the plasterer, and can directly affect the quality of the plasterworks.

## **7.2 Working process of the plasterer**

The plasterers belong to manual workers, their social status were very low in ancient China. The market of handicraft industry was strong region in the ancient society, the masters would have enough survival guarantee if they had the their own skills (Cao Huangxu, 1996). Therefore, the master did not completely teach their skills and their unique recipe to his apprentices until they could not work any more, and the training of the young apprentice was mainly passed through the teaching form from the master to the apprentice or from father to son. This way of oral teaching, on the one hand, it's easy to result in the lack of literature about recording the plastering skills; on the other hand, it's more easy to make the family skills

achieve a high degree of perfection, thereby, this family plastering skills have a certain continuity.

It's difficult to establish the precise processes of work used in the past because of little evidence of literature, but from observation of surviving plasterwork, and conversations with plasterers and restorers (Geoffrey W. Beard, 1983), combining the oral skills of the local plasterers, according to the plasterer Shao Yushan's<sup>[3]</sup> oral dictation, every plasterer has to do the following work if he want to design a creative plaster:

1. Plasterer has to negotiate business with the house-owner at first;
2. Set up the scaffolding or trestles;
3. Mix the mortar;
4. Measure the decorative objects;
5. Draw the drafting;
6. Plaster the modeling;
7. Coloring;
8. Final Check in detail.

### **7. 2. 1 The skills of bas-relief decoration -- the scroll pattern as the example**

The bas-relief plasters of scroll pattern were generally adorned on two sides of gable wall or frieze of the outside wall or of upside of windows, it's usually black background and white pattern, strong contrast, and the pattern is simple and generous.

- Use cut-watt knife cut the surface of bricks, making the wall more coarse in order to reinforcing lime mortar's adhesive attraction with the wall;
- Use lime mortar to plaster the decorative fascia (about 40 cm high and 2 cm thick) on the gable wall;
- Draw the drawings on the white fascia, making the motif of scroll pattern of two sides of the gable wall maintained the same;

- Used the Chinese writing brush to dip in the pine-black ink to drawing up the draft, confirm the proportion of the pattern and the curling-form of the scroll pattern according to the dimensions of the gable wall;
- Use meddle-sized trowel to plaster the basic shape of pattern along the sketch, paying attention to maintaining the smooth line, and the variations of thickness of shaped body;
- Use the trowel to smooth the surface of the patten, and plaster the details of pattern;
- Coloring: use the large-size brush to dip in the pine-black ink to paint the background of fascia and keep the pattern white, getting the decoration of black and white contrast. Repeat the previous operation after that the first color has dried.
- Finally check the details of the decoration.

The bas-relief of the decoration focuses more on the beauty and elegance of forms characterized by balance, symmetry and recurrent decorative patterns rather than on the description of the plot through the narrative art. For this decoration itself, does not perform any didactic function, meanwhile it does not convey detail messages, but has the decorative beauty.

### **7. 2. 2 Build the decorative element in the high relief**

For the high belief, the production process of plasterwork as following:

- Use the straw mortar to plaster the decorative border;
- First the pine-black ink mixed with lime mortar, getting the black mortar, then use it to plaster wall about 5 mm thick;
- Use brush to dip in the lime water to draw the sketch;
- First Use the cut-watt knife to cut the wall for positions of complex pattern, and brush glue, then fix nails at the forms projected from the background to hold the weight, and the fingers and the small objects

carried by figures or other animals were set on wires (Geoffrey W. Beard, 1983), suitably stiffened with lime mortar;

- According to the principle from the large to small and from rough to fine forms, for the first layer and the second layer, used the straw mortar and paper mortar to model the decorative works with the trowel and hands, trying to make the plasterwork vivid and lifelike;
- For the third layer, plaster the colored mortar;
- Finally use the plastering pens to paint the mineral pigments on the surface of the sculpture ;
- Make a final check in detail.

The high relief generally contains skills of the intaglio carving and openwork carving, which project from the background about 5 - 22 cm. The high relief can be designed the complex themes, usually decorated on the ridges of the roofs, using the decoration of the elements of animals or figures or landscape.

### **7. 2. 3 Plaster the sculpture in the round**

For the skill of traditional decoration of sculpture in the round, could be directly built by plasterers on the roof. A decorative loin (a Chinese auspicious animal that can guard the house) as an example will be presented on the hip roof in Chen's Clan temple. In general, the decoration in the round is not suitable to represent natural scenes.

- Used the iron bar (the diameter was about 1.67 cm) to build the main armatures on the hip roof according to the size of the auspicious loin, and the iron bars had to set into the wall of the ridge in order to make the armature more stable (Dai Zhijian, 2003). This skill was finished with the Blacksmith's help in the Qing dynasty.
- Used the fragments of the brick, tile as the filler, then use coarse sand and yellow mud to stucco the basic shape of the sculpture;
- Used the straw mortar to stucco the first layer, then use the vermilion

mortar to plaster the second layer, meanwhile, pay attention to the model of the details of the sculpture, such as mane, teeth, eyebrows of loin, should be set on wires, connected with the body, then use the small trowel and hands to paster them;

- Used the lime mortar of red ocher to cover it completely; first use trowels and hands to model the larger parts, while only at the end are modeled parts that occupy smaller surfaces, such as the prominent mane, teeth, brows and so on;
- Colored the figure before the mortar was not fully dry, so that the mineral pigments could combine with the color mortar, making the color more durable;
- Brushed alum water when the sculpture was dry completely.

*The table of the executive skill:*

structure of the decoration	decorative bands	low relief	high relief	sculpture in the round
staking-out	the master drew usually skeleton drawing on the wall, and the apprentice plastered shape of pattern, and eventually the master made adjustments.	the master drew the skeleton on the gable wall, keeping the patterns of two sides of the gable wall to be the same.	the plasterer use the writing brush to dip in lime water to draw the sketch on the ridge of the roof	

armature	sometimes use the bamboo nails to set into the wall in order to enhance adhesion.	the same with that of the decorative bands.	hammer the long nails into the ridge of the roof, then twist the wires of copper on nails, and add copper wires to the small parts of the body.	use the iron bar (the diameter was about 1.67 cm) to build directly the armature on the ridge of the roofs, with the help of the blacksmith.
support body	walls	walls	ridge of the roof or wall	ridge of the roof
filler				fragments of the brick, tile, and sometimes sand
layers of plaster	three layers			
coloration	pine-black ink and Mineral pigments.			

### 7.3 Summary

#### 1) An ideology of the external decoration

The geographical environment has a direct influence on one position's art and culture, this is an indisputable fact. For the city of Guangzhou, it's located in a humid and rainy zone, with frequent typhoons in summer and autumn, and these factors require special construction on the implementation of the roof for the large buildings,



the best methods were: build large ridges to augment the weight of the roof so that it could perform a waterproof and windproof function. Meanwhile, the wall and the internal structure of wood were suitable to make the Dancheong, but are not suitable for plastering decoration. Also the influence of Taoism on Chinese culture should not be underestimated, its ideology of "*nature and humanity*" affected directly the Chinese architectural philosophy, generally agreed that: the buildings should be one part of the nature, and architectures and nature should be harmonious. To a certain extent, it explained why the civil buildings were mainly focused on outdoor decoration in the Guangzhou's traditional architecture.

## **2) The shortcoming of skills and techniques of plasterers**

The ancient Chinese plasterers were associated to the ranks of craftsmen and their social status were low and not enjoyed a considerable social prestige. The artistic and decorative techniques and skills were transmitted orally from master to apprentice, so there was little literature in the field of decorative plasterwork of Guangzhou. The successive plasterers had achieved excellent achievements in terms of dimensions, materials and techniques and skills of the decoration, however, they had lacked the ability to innovate in terms of tools and techniques. Facing the impact of the new architectural material and technology in the late 1800s, they were still conservative and complacent. Therefore, they lost the opportunity of transformation in terms of skills and techniques in face of the architectural innovation in the early 20<sup>th</sup> century.

## **3) The artistic beauty of the line**

Chinese art began to pursue the beauty of the lines from the Eastern Zhou Dynasty, it was not only particularly obvious in Chinese calligraphy and painting (Li Zehou, 1984), but also used in the art of decorative plasterwork of Guangzhou. Not matter the decorative border lines on the ridge of the dragon-boat or of the fish-tail on the roof of the Jialan Hall (1611), the Mahavira Hall (1654) and the Liuzu Hall

(1692) in Guangxiao Temple in the early Qing dynasty, or the decorative lines on the Bogu ridge, border line on the low relief or on the high relief in the main ridge of the roof in the buildings of the Chen's Clan temple (1894). The plastering lines had artistic beauty of Chinese calligraphy (Li Zehou, 1984), reflecting the diverse free beauty at that time.



## Chapter 8

### Ancient Architectures and Plasterworks in Guangzhou

#### 8.1 The city of Guangzhou

##### 8.1.1 An Ancient City

Guangzhou, also ever called Canton by the European traders during Qing dynasty, is the capital of the Guangdong province in China, located south of the Nanling Mountains<sup>[1]</sup> and on the pearl river (Mai Yinghao, 1990). Southern China's economy, culture, science and education center, an important transportation hub, southern China's largest and oldest trade ports, and one of the world-famous port city, Chinese historical and cultural city (Zeng zhaoxuan, 1991). In Guangzhou, a written history can be traced back to 214 BC, and as early as the Neolithic this region had "the Baiyue people", the history of human activity more than 4 thousand years of history. Guangzhou's unique language, customs, traditional architecture, art and culture are different from the rests of China. According to Yue-man Yeung's<sup>[2]</sup> description:

*Around 100,000 years ago, the Guangdong region, known as Nanyue, Baiyue and Lingnan in the history of China, was inhabited by man, it had already had contact with the north during the Spring and Autumn Period (770- 476 B.C.). During the latter part of the Warring States Period (475- 221 B.C.), the Han people started migrating to Guangdong zone from the north, resulting in the gradual integration of the migrants and the native people through interaction. During the four hundred years or so of the west and east Han dynasties (206 B.C.- A.D. 8 and A.D. 25- 220, respectively), Guangdong's population grew rapidly, partly due to the Han's relative peace and stability. People migrated in great numbers to the south both in the West- East Han transition years (A.D.8- 24) and the final years of the East Han. They*

*went to the south along the coast by sea as well as the usual land route. In addition, followers and descendants of the officials who had taken up residence in Guangdong and soldiers who had stayed behind also added to its growing population.*

Successively, both immigrants and the native people have always transformed the Guangdong area into a rapidly developing one through urban construction and introducing iron wares and advanced agricultural technology. In particular, The introduction of Han culture there led to the change of its social institutions. To a large extent, the large number of Han's immigrants moved to the relative stable region, having greatly promoted local economic development. In fact, during the west Han dynasty, Guangzhou had become an important economic city (Pan An, 1996). Hereafter, it gradually became a main port city of foreign trade through long-time development of the dynasties of Tang, Song, Yuan and Ming.

During the Qing Dynasty, Guangzhou became the capital of Guangdong Province, including Panyu and Nanhai districts. In 1757 (Qing Qianlong 22 years), it was announced that Guangzhou was the only foreign trade port, known to history as *one foreign trading*, and the Guangzhou Thirteen Hong<sup>[3]</sup> that was specified by Qing government monopolize all the country's foreign trade, it's international popularity was rapidly increasing, become the world's third-largest city (the first was Beijing, and the second London at that time), it was also one of the most glorious period in the history of Guangzhou.

Guangzhou's economy has been continuously developed since Tang dynasty, and became the only foreign trade port city in Qing dynasty. However, it's construction of traditional architecture has relatively lagged behind, most people have still lived in thatched houses during 685-688. Before the Qin, Han and Tang Dynasties bricks and tiles were considered building luxuries, later, the governor of Guangzhou Song Jing<sup>[4]</sup> led local inhabitants how to produce the tiles, calcine lime, and thus, the brick structural buildings have been promoted in Folk (Chen Zehong, 1999), having greatly increased the capacity of waterproof and windproof.

### 8. 1. 2 The City Layout and Architecture

In general, affected by the natural environment, folk culture, economic background and historical development, Guangzhou building went through five developmental periods (Li Gongming, 2008) before 1911: The budding period before Qin dynasty (221 BC -207 BC); The initial starting period from the Qin and Han (202 BC-220 CE) dynasties to the Southern and Northern Dynasties (420-589); Tang (618-907) and Song (960-1279) dynasties was the development period; The building mature period from Ming (1368-1644) to the Mid-Qing (1644-1796) dynasties; The last was the Evolution period in the late Qing (1796-1911) dynasty (Chen Zehong, 1999). Among of them, buildings of the Ming and Qing Dynasties were the most influential for that of Guangzhou.

During Qing Dynasty, Guangzhou's urban construction as a whole inherited that of Ming Dynasty, being basically developed along two sides of Pearl River and in the Xiguan<sup>[4]</sup> Plain. The basic layout of the city was that: Administrative organ, located in the northern region, which was a regular square with the north-south main streets, and the business district with east-west streets was designed along the pearl river. This layout was both structured characteristics of China's feudal city (Government Office as the center) and new commercial development plan, reflecting the layout characteristics of trading city, it was just also a typical pattern of urban development during the Qing Dynasty. Among of it, in the east-side of Yuexiu Mountain and the south-side of the Pearl River, the architectural buildings were more gradually up in these two places, such as foreign merchants residential and commercial buildings in the Thirteen Hongs, became the new commercial landscape in Guangzhou's urban construction aspects. In particular, the developments of Xiguan Plan, having made Guangzhou Eighteen Pu commercial district developed rapidly, meanwhile also built a large residential dwellings, called Xiguan Big Houses<sup>[5]</sup>. These building located in commercial district, together with other traditional folk houses and temples and official architectures in official district, constituted the basic outlook of the Guangzhou urban construction.

Qing dynasties, China's feudal political, economic and cultural development reached the peak. And Guangzhou's architectural culture has come into being the style of distinctive local characteristics. With the change of the social life, building types grew in number, the architectural layout tended to larger building groups, and the architectural decoration have also reached a superb level. For the ancient buildings of this period, through natural and manmade disasters, there is still a considerable number of surviving remains, accounting for the vast majority of existing traditional buildings. In general, extant traditional architectures can be classified into the following categories<sup>[6]</sup> in Guangzhou:

1. Buddhist or Taoistic Temple. Such as Guangxiao Temple, Wuxian Taoistic Temple;
2. Ancestral Hall and Private School, such as Chen Clan Ancestral Hall (1894);
3. Tower, Memorial Arch. for example, Guangzhou Pazhou Tower (1600), Fushan Baochong Memorial Arch (1521);
4. City Gate Tower, Clock Tower and Pavilion, such as Zhenhai Tower (1380) and
5. Folk House and Architecture, such as Xiguan Big Houses
6. Garden, such as Qinghui Garden in Shunde (1800), Yuyin Garden in Panyu (1867).

Guangzhou's traditional building style and characteristics can be discussed from the following six aspects in Qing dynasty. First, for the architectural style, converged all kinds of the architectural forms, having formed both solemn, gorgeous and elegant, dexterous architectural style; second, for the building technologies, wooden architecture more used Xieshan Style, Flush Gable roof with the mixed Dougong structure. Third, for the architectural decoration, focus on decorating ridge of the roof, the wooden brackets and beams, wooden windows, extensively use the fine wood carving, stone carving, brick carving, plasterwork and glazed tiles, and applying the architectural decoration materials with strong local characteristics such



Figure 67. Plan of the city of Canton ( Morse, Hosea Ballou, 1900)

as the embedding ceramic, mica, shell lime mortar; Fourth, for the building structure, the majority of buildings have an external closure and internal ventilation and heat dissipation characteristics, connecting to the main building through gallery veranda that has ventilation and shelter from rain, and the architectural design simultaneously also emphasized windproof and flood prevention, anti-corrosion and moisture proof; Fifth, for the building layout, designed according to different topography, used Guangzhou's flowers and trees to create integrated into the natural atmosphere, constructed of number of large scale Inhabitation and large architectural complex, have shown strong economic strength and construction capabilities; Lastly, for the construction scale, all kinds of building, not only building type and quantity increased, but also large-bodied, wide distribution, almost distributed throughout the city of Guangzhou.



### **8. 1. 3 Decorative Plasterwork**

In the period of Ming and Qing dynasties, the Guangzhou plasterwork has become one of the main decorative craft of the traditional buildings, which comprised the Ancestral halls, Buddhist temples and Taoistic temple, monasteries and wealthy mansions and the Folk Houses (Chen Zehong, 1998). After hundreds of years of development, the themes of Guangzhou plasterwork were more rich and colorful, involving fairy tales, folk tales, opera characters, folk culture, auspicious animals, flowers and fruits, decorative Chinese characters and poems, scroll design, Bogu motifs and other patterns (Liu Zhaojiang, 2010). And without exception, these themes have contained rich Folk Cultural elements, reflecting the people's spiritual life and aesthetic taste at that time. Simultaneously, and also presented deeply the necessity of the plastering cultural development and heritage, reflecting vividly the folk psychology and beliefs.

In the early and mid-Qing Dynasty, from the whole society, was a special period, which the Chinese feudal system fell into decline and the capitalism factors was developing (Chen Zehong, 1998). Reunification of Qing Dynasty, Chinese social and economic had a further development, and then entered a prosperous period from 1662 to 1795 (Feng Xianming, 1982). The city of Guangzhou as the only opening trading ports, becoming an exclusive foreign trading status. Therefore, Guangzhou's economic was rapid prosperity, and lots of Cantonese have accumulated a wealth of clan property at that time. It was particularly important that, during the period of the emperor Qianglong (1735-1795), nationwide he strong advocacy on upholding religion in order to win over the people (Nai Ying, 2010). Thus, all kinds of temples and ancestral halls and other public buildings were constructed widely in the city of Guangzhou and other places.

The plastering decorative technology is a traditional folk handicraft, used mainly on the gable wall, lintels on door and window, ridge of the roof, pavilion and memorial arch and other places (Liu Zhaojiang, 2010). It's original function is to protect the roof structure, windproof and rainproof or waterproof. Later, due to the

influence of Xuanxue<sup>[7]</sup>, gradually evolved into the a colorful decorative arts of the ridge of the roof. To a certain extent, Guangzhou plasterwork has skillfully solved the the simple and flat problem of the roof structure.

Chinese ancient buildings are mainly wooden structures, which are most afraid of fire, according to the thought of the overcoming cycle in Wuxing theory, *Water can extinguish Fire*, whereupon the ancient Cantonese took the *Chiwen*<sup>[8]</sup> in water as the auspicious animal to be decorated on the ridge of the roof in order to fireproof. This is the most primitive folk psychological manifestation that the old Cantonese pray for peace. During the Qing Dynasty, decorative plasterwork on the roof is more complex and rich, and historical figures, lions, birds, bats, immortals, dragon and phoenix, Kirin and other plastering patterns have also decorated on the roof of buildings. Theses exquisite plaster subject matter reflected the good wishes that the then people pray for good fortune and desire for happiness. It was probably main reason that the decorative plasterwork art was ever so popular by a large number of house-owners or builders in the Guangzhou region, and they even spared no expense to employ the plasterers to decorate their architectures.

## **8.2 The Architectural Decorative Plasterworks**

### **8.2.1 Religious buildings**

#### **Introduction**

Chinese traditional religious buildings are numerous in the city of Guangzhou and the surrounding area, which involved temples of Buddhist, Taoist and Islamic three buildings before 1840 (Chen Zehong, 1999), many decorative plasters are decorated on the outside of these buildings. And the western religious buildings of Guangzhou had only that of Christian and of Catholic in the second half of the 19th century (Tang Guohua, 2001), were mainly Church, Convent, Seminary and School buildings, lacking the exterior decorative plasterworks. Therefor, mainly discuss the buildings of Buddhist, Taoist and Islamic in this chapter.

The large Buddhist buildings usually applied the structural forms of official

palace, such as that of Guangxiao temple, of Haichuang temple and of Dafu temple; the large Taoist architectures generally used the folk structural forms (Tang Guohua, 2001), like that of Sanyuan temple, Cunyang temple and Renwei temple; And the large Islamic buildings applied the integrated structural forms (the structural form of Chinese palace combined with Islamic decorative style ). From the difference of the architectural style of three religions, it's easy to find out that the religious buildings of ancient Guangzhou not only complied with the Chinese traditional construction ritual system, but also adapted the architectural characteristic of the local geography and climate and cultural customs.

#### **8. 2. 1. 1 Guangxiao Temple**

Guangxiao Temple located in the north end of Guangxiao Road, according to *Records of Guangxiao temple* (Gu Guang<sup>[9]</sup>, etc., 1996), it was originally the mansion of Prince Zhao Jiande of the Nanyue Kingdom<sup>[10]</sup> during the Western Han Dynasty (206 B.C.-A.D.24), it was among the grandest and most influential temples in China with a history dating back more than 1,700 years (Cheng Jianjun etc., 2010). In fact, it is said that 'The Bright Filial Piety Temple existed before the birth of Guangzhou City' (Hu Qiaoli, 2005). Initially built during the Western Han Dynasty (207 BC - 24 AD) as a private house (Chen Zehong, 1999). The scholars Yu Fan<sup>[11]</sup> has ever lived here and given lectures for his students after he was exiled in Guangzhou in 223, his residence was renamed the Zhizhi temple after he passed away (Chen Zehong, 1999).

The temple's name was repeatedly changed, it was renamed '*Guangxiao temple*' in 1151, and still in use until now (Mai Yinghao, 1990). The temple had an important place in Buddhist history because of the Sixth Ancestor Huineng<sup>[12]</sup>, He began to preach the Buddhadharma in 676, he created to make the esoteric India Buddhadharma become very straightforward and understandable, that's to say, he has succeeded to make the Buddhism localized, becoming the true Chinese Buddhism. He was generally thought that the Sixth and Last Patriarch of Chán Buddhism, and the Sixth Ancestor Hall was also very famous due to Huineng in China.

The Guangxiao temple occupied an incredible and grand scale in Ming dynasty (1368-1644), the whole area of the temple ever arrived 2.25 square kilometers (Gu Guang, etc., 1996), the number of buildings were 47 at that time (Cheng Jianjun etc., 2010). Later, it only occupied an area of 31,000 square meters during the period of the Qing Dynasty (1644 - 1911), the building area was greatly reduced, meanwhile the number of the halls and pavilions also reduced 29 halls (Hu Qiaoli, 2005): Mahavira Hall, Sixth Ancestor Hall (Liuzu Hall), Samgharama Hall (Jialan Hall), Heavenly King Hall, the East and West Iron Towers, and the Big Sutra Pillar (Dabei Hall) and so on. Thereamong, most of them were rebuilt after Qing dynasty in terms of buildings or architectures, excepting the Samgharama Hall (1611), the Mahavira Hall (1654), the Sixth Ancestor Hall (1692). Therefore, I will discuss in detail these three hall for the decoration in the Guangxiao temple.



Figure 67. Jialan Hall in Guangxiao Temple

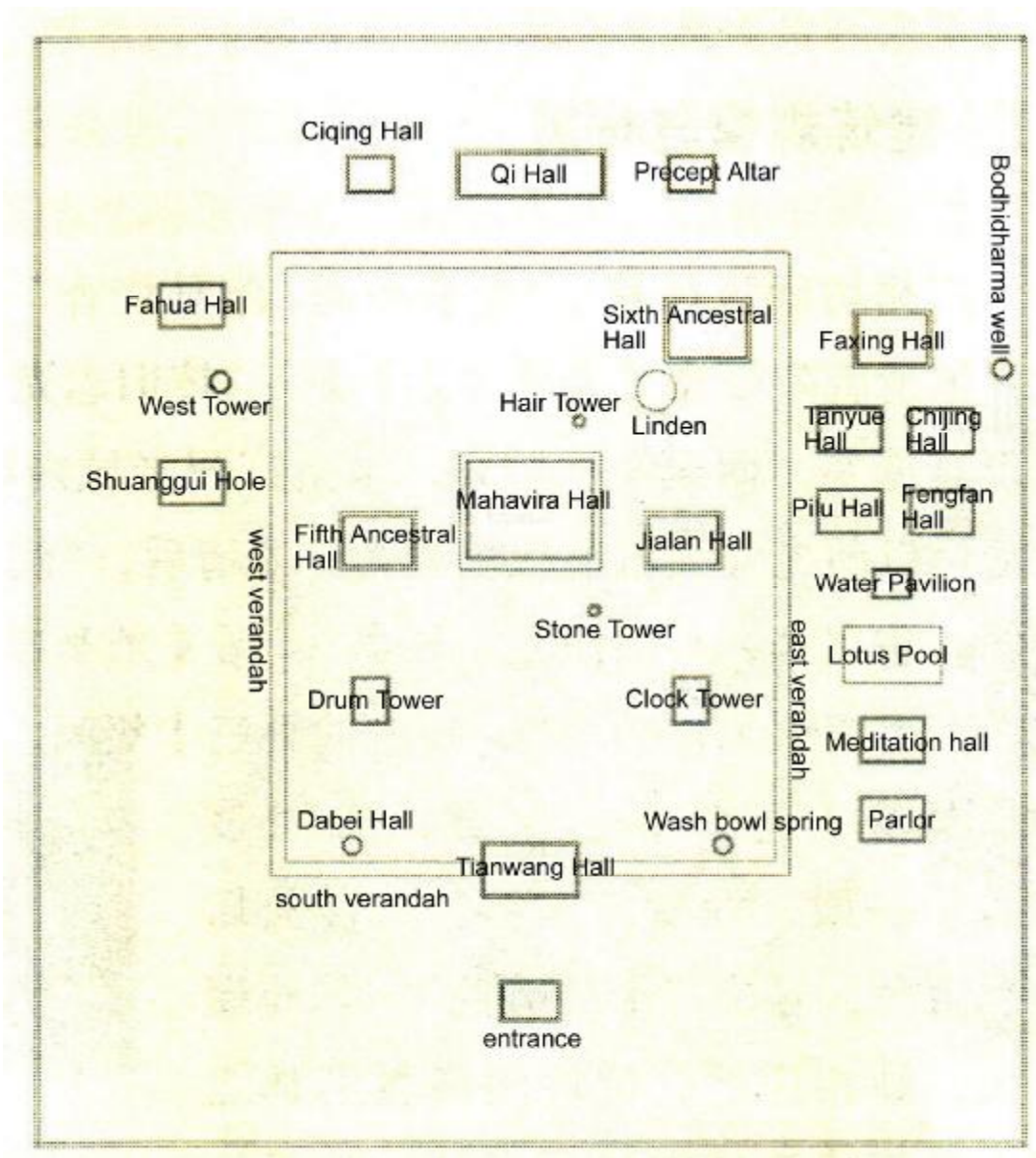


Figure 69. The plan of Guangxiao temple during the period of the emperor Qianlong (1736-1795), drew according to 'the new plan of Guangxiao temple' that was recorded by *the Notes of Guangxiao Temple* (Gu Guang, etc., 1996).

*Note:* In addition to photos and the detail notes, for this Chapter, images were derived from the book 'Reports of Architectural Research and Protective Project of Guangxiao Temple in Guangzhou' (Cheng Jianjun etc., 2010), and the book 'Compilation of Historic Building the Measured Drawings in Lingnan' (Tang Guohua, 2001).

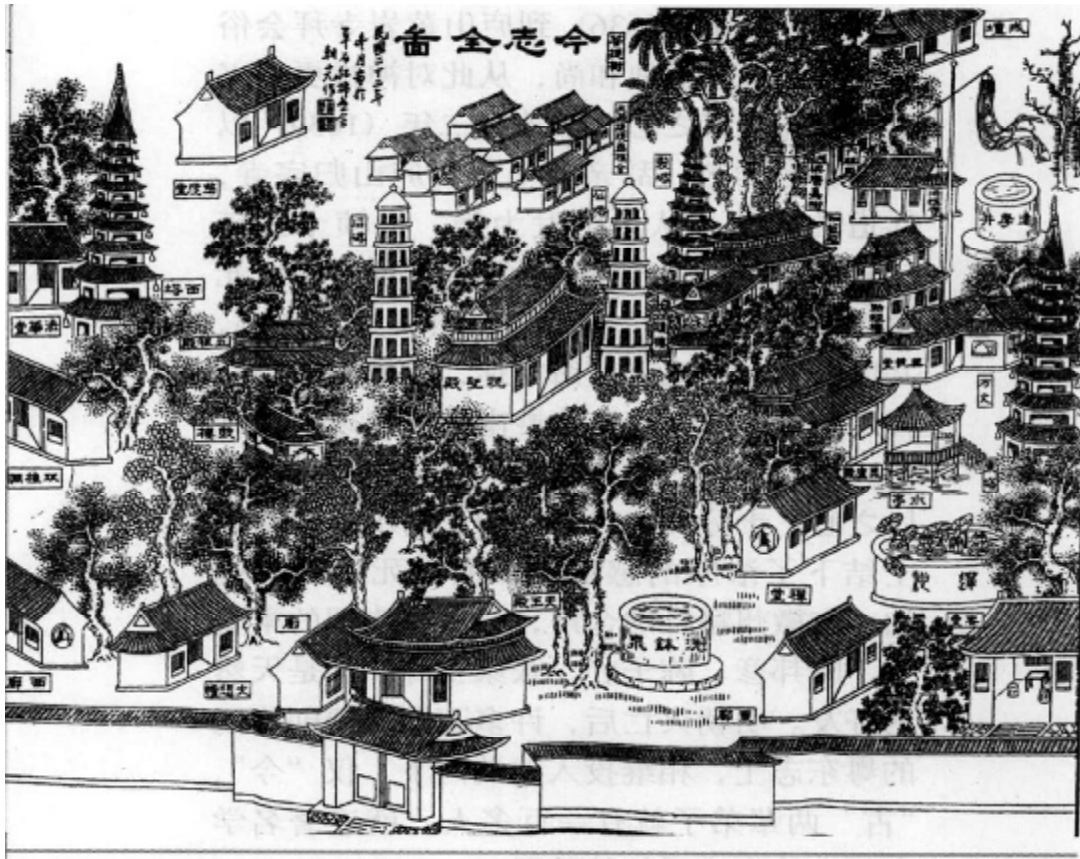


Figure 70. The landscape sketch of Guangxiao Temple (Hu Qiaoli, 2005).

### 8. 2. 1. 1. 1 The Mahavira Hall (Sakyamuni Hall)

The Mahavira Hall was originally built by the ancient Kashmir monk Dharma-yaśas in the fifth year (A.D. 401) of the emperor Long'an<sup>[13]</sup> during the Eastern Jin Dynasty (317 - 420), rebuilt by succeeding dynasties. The presenting Hall was a building that was expanded in 1654 (Chen Zehong, 1999). Located on the stone platform of 1.5 meter high, and the height of hall was 13.6 meters (44.62 feet), and the double eaves in Xieshan Style roof. The architectural area was 35.46 meters (116 feet) long by 24.766 meters (81.36 feet) wide, and the around corridor was 1.46 meter wide, the total area was 1104 square meters (Mai Yinghao, 1990). It was considered the largest and most magnificent Buddhist building in the province Guangdong.

### 1) The Plan of the Hall

The horizontal width of the hall was 33.290 meters, and the vertical depth was 24.766 meters, the science aspect ratio make the temple looked very beautiful, being also in line with the Chinese traditional architectural proportion. Two sides of the east and west were designed small side entrance in order to facilitate the access of Buddhist believers. For the inside of the Hall, on the main altar, were the image of Sakyamuni Buddha and his two foremost disciples - Ananda and Mahakasyapa (Cheng Jianjun etc., 2010). To the right and left of the main altar, were generally the two Great Bodhisattvas, Wen-Shu-Shih-Li and Samantabhadra. Beside the Sakyamuni Buddha, were Amitabha and Yao-Shin-Fwo, the two great Buddhas of past eras. Successively, on the east and west walls, the figures of the Eighteen Arhats could be found (Hu Qiaoli, 2005); and on the north wall, decorated the images of Jan-teng Fwo or Dipankara, the ancient Buddha who predicted Sakyamuni's Buddhahood, and Kun Yin, Wen-shu, Pu-Hsien and Ti-stsang and so on the popular Bodhisattvas (Chen Zehong, 1999). The layout of these placed Buddhas were consistent with that of a Typical Chinese Buddhist Temple.

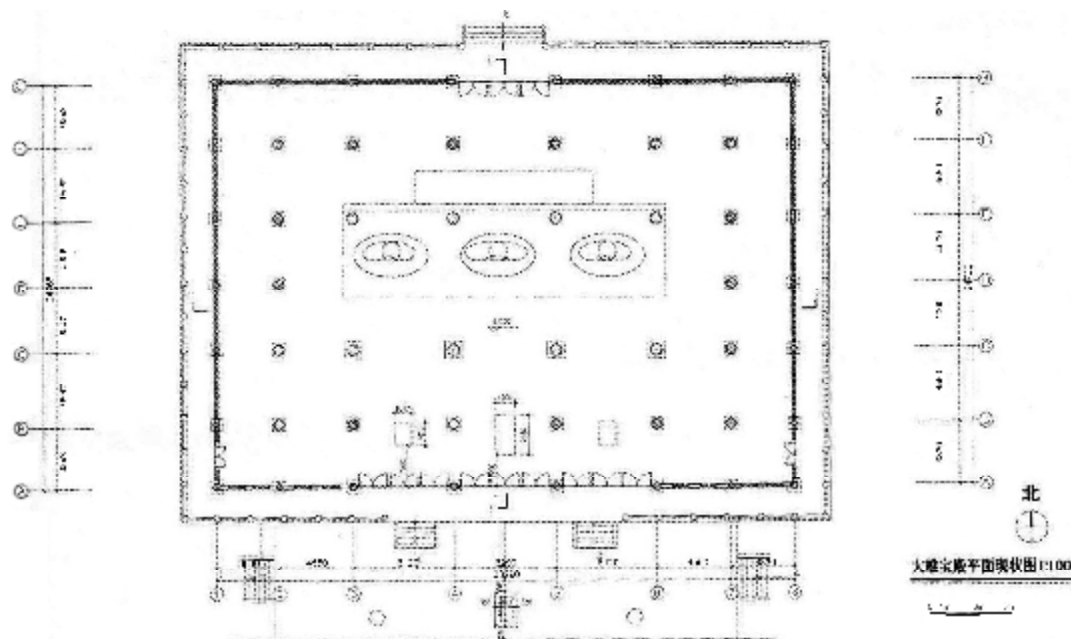


Figure 71. The plan of the Mahavira Hall.

## 2) Elevation and Section of the Hall

The appearance of the elevation of the hall was a building form of the double Xieshan style roof, and the clear height was 12.64 meters (Cheng Jianjun etc., 2010). From the point view of the elevation, the columns of the first eaves was low in rank (the height was only 3.10 meters), and with the large Dougong<sup>[14]</sup>. The eaves extended outwardly 2.52 meters long, the slope of the roof was gentle, showing the characteristics of the architectural style of the dynasties of Tang and Song (Chen Zehong, 1999). The decoration of walls were red and white style, the red was the color of the surface of woods, and white was the stucco of surface of bricks, it was the typical style of color from Han dynasty to Tang dynasty (Li Gongming, 2008).

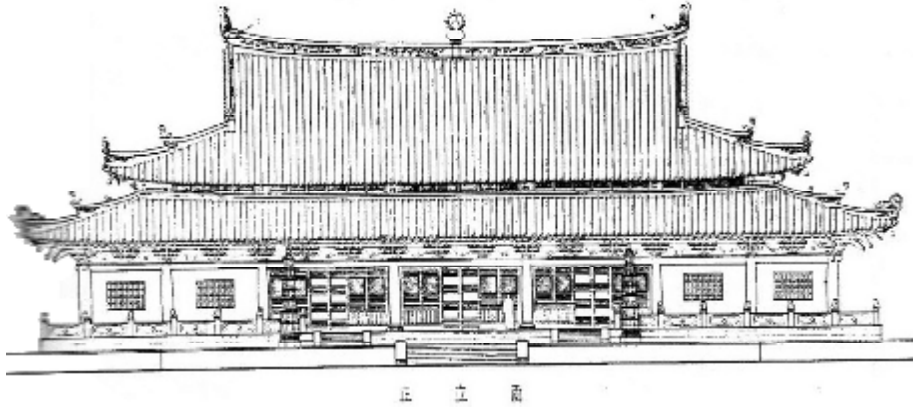


Figure 72. The front elevation of Mahavira Hall.

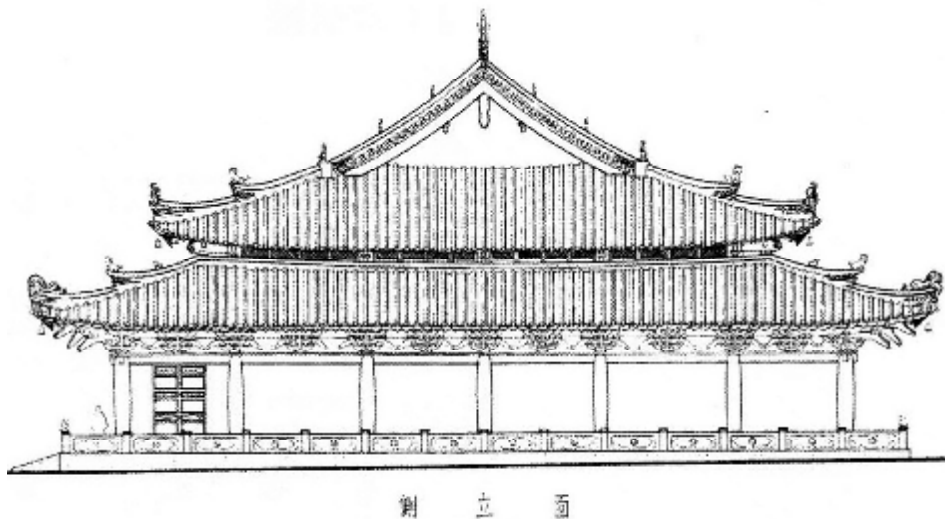


Figure 73. The side elevation of Mahavira Hall.



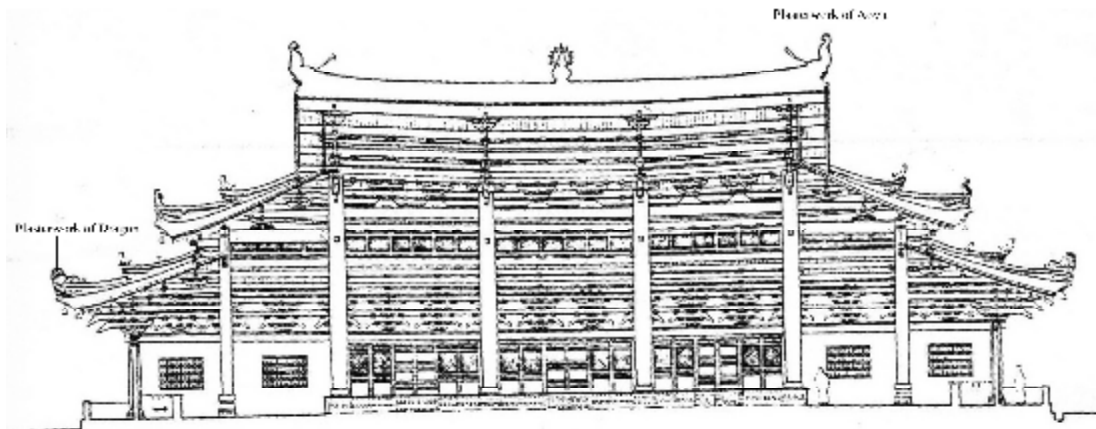


Figure 74. The cross section of Mahavira Hall

### 3) The decoration

The tiles were green and yellow glazed tiles, sizes of the tiles were relatively large, the diameter of pantile was 17.4 cm, and 35 cm in length, the size of flat tile was 33 cm × 35cm. The decoration of tile end was animal mask design, and surface of eave tile with pattern was peony decoration of ceramic flat tile.

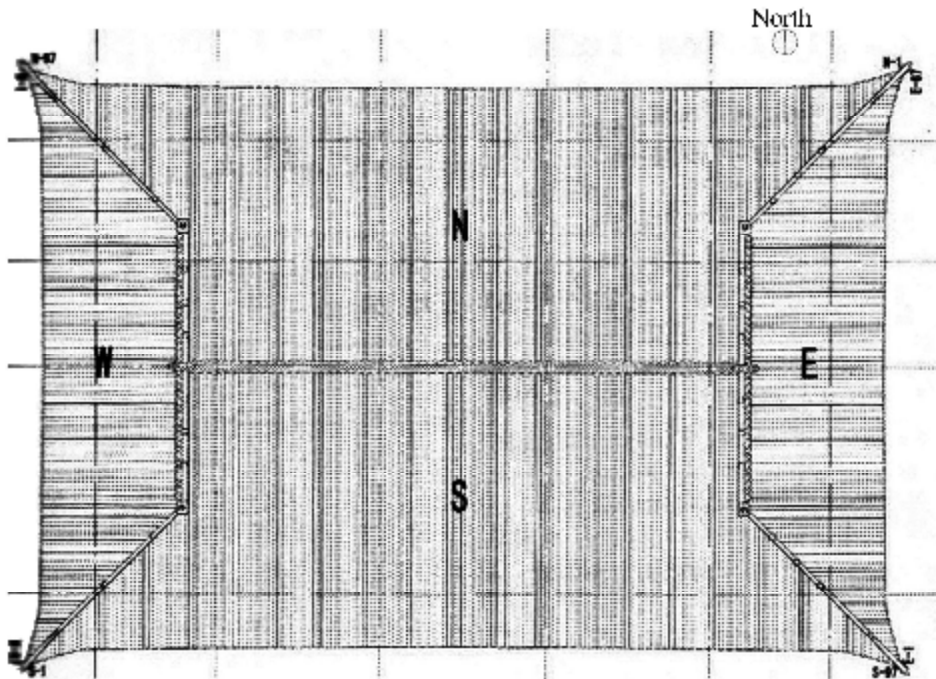


Figure 75. The second plan of the roof of the Hall.

The height of the main ridge of the roof was 82 cm, rising gradually from the middle to the two ends, and the height of the end was 137cm, making change of the main ridge become very soft. It was the ornament of Buddhist Gourd (125 cm high and the diameter was 56 cm) on the center of main ridge.

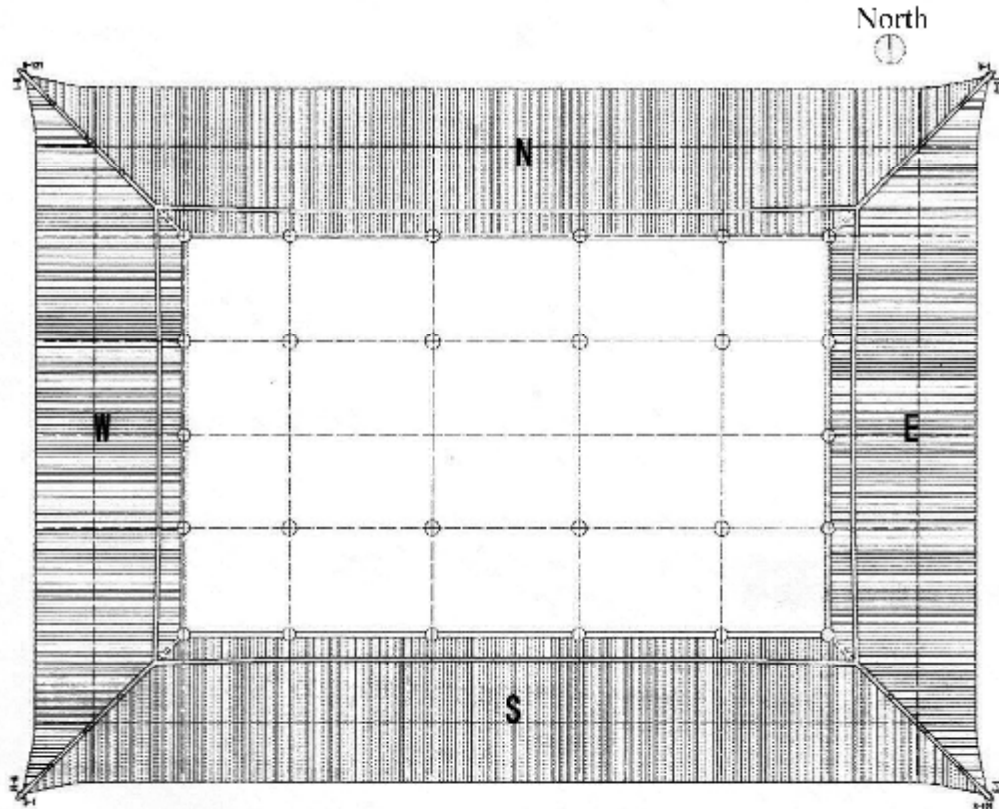


Figure 76. The first plan of the roof of the Hall.

For roofs of the first floor, decorated the ornament of scroll design on the surface of the hip, red background and yellow pattern, and the yellow plasterwork of dragon above the end of it, the form of dragon was very similar with the decoration of dragon of the Buddhist iron tower (963) of Southern Han dynasty (917 - 971) which located in northwest of the Mahavira Hall, every foot had only three claws, showed that the original plasterer has learned from the shape of the dragon that decorated on the surface of the iron tower, when he designed the decoration of dragon on the hip. For roofs of the second floor, the decoration was similar with that of the first roof, except that decorated the plasterwork of Aoyu above the end of the

hip. The whole main ridge was decorated with the yellow plasterworks of Aoyu at two ends of the main ridge, and the decoration of scroll design of bas-relief -- green boards and yellow motif. Chen Zehong thought that the scroll design of the main ridge was a decoration of water plants in his book *'The notes of Lingnan architecture'*. However, his view was questionable from the the point of view of the characteristic of motif: a continuous form of 'S', trifoliate or leafy, and curled inward, these characteristic were very similar with that of *honeysuckle motif* that was very popular in the Buddhist decorative art during the period of Bei dynasty (386-581), and this decorative motif was also very obvious and popular in the early



Figure 77. The plasterwork of scroll design and Aoyu of the main ridge of the roof in Mahavira Hall



Figure 78. The decoration of dragon of the first eaves angle of hip roof in Mahavira Hall.



Figure 79. The decoration of Aoyu of the second eaves angle of hip roof in Mahavira Hall.



Figure 80. The honeysuckle motif in the remnant silverware in 570 (Yan Yan, 2003).



Figure 81. The honeysuckle motif in Gandhāra art (Chang Guang Minxin, etc., 1997).

Buddhist art of the India-Gandhāra style of Buddhist art from the 1st to the 5th century (Yan Yan, 2003). Thereby, it could be determined that, it was the decoration of honeysuckle motif for that of main ridge of the roof in this Hall, it's symbol of continuous stretches is consistent with the ideology of Buddhist reincarnation and eternal life.

### 8. 2. 1. 1. 2 The Sixth Ancestor Hall

The Sixth Ancestor Hall, located in the northeast of the Mahavira Hall, was originally established by Guo Chonghua during the Northern Song Dynasty (1008 - 1016) in memory of Hui Neng (He Fangyao, 2003), who was generally thought the most influential Buddhist monk in the history of Chinese Buddhism (Mai Yinghao, 1990). Successively, it was repeatedly rebuilt in the Ming and Qing Dynasties, and

the abbot monk Wuji donated to rebuild it for the last time in 1692 (Hu Qiaoli, 2005). It's building style was very similar with that of the Mahavira Hall, except that material specifications and building scale were a slight difference (Cheng Jianjun etc., 2010), the large pillars and outstretched far-reaching eaves, reflected that it contained the architectural style of the Song Dynasty.

### 1) The Plan

The Sixth Ancestor Hall was 19.53 meters width, the depth was 13.92 meters, the ridge purlin was 10.10 meters high, and the aspect ration of the plan was 1. 40:1. Doors were designed in the middle of front elevation and of back elevation, it had been ever designed a small door in the west side, but was closed in the later Qing dynasty, probably because of reasons of Feng Shui<sup>[15]</sup> (Cheng Jianjun etc., 2010).

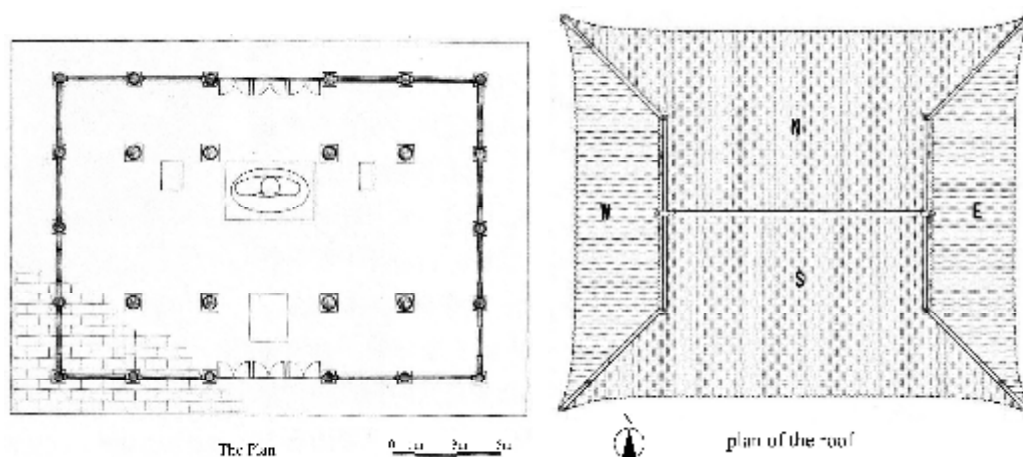


Figure 82. Plans of the Sixth Ancestor Hall.

### 2) Elevation and Section

The Sixth Ancestor Hall was single Xieshan style, the elevation was 10.70 meters high, the main ridge raised from the middle to both ends. Four eaves were outstretched far-reaching and high cocked, the height of the cornice of the facade was 5.585 meters, and that of the side elevation was 5.595 meters high. Chinese blue bricks wall, for the stucco, the first and the second layer were stuccoed by the mixture of loess, lime and sand, the surface was stuccoed by lime mortar, each of

side was installed vermilion latticed windows. The wall foundations were built by red sandstone.

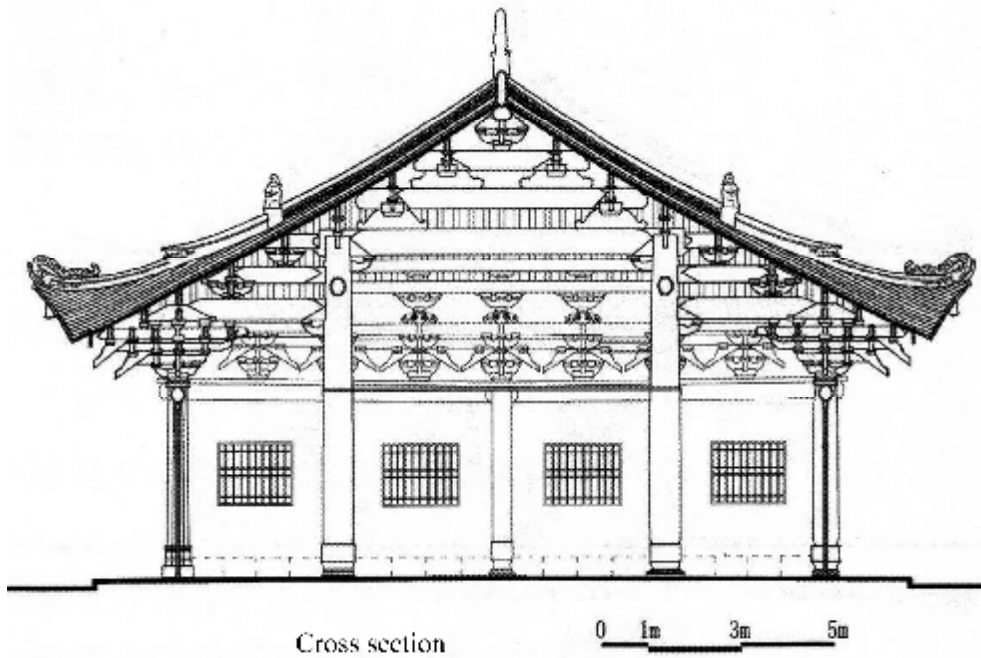
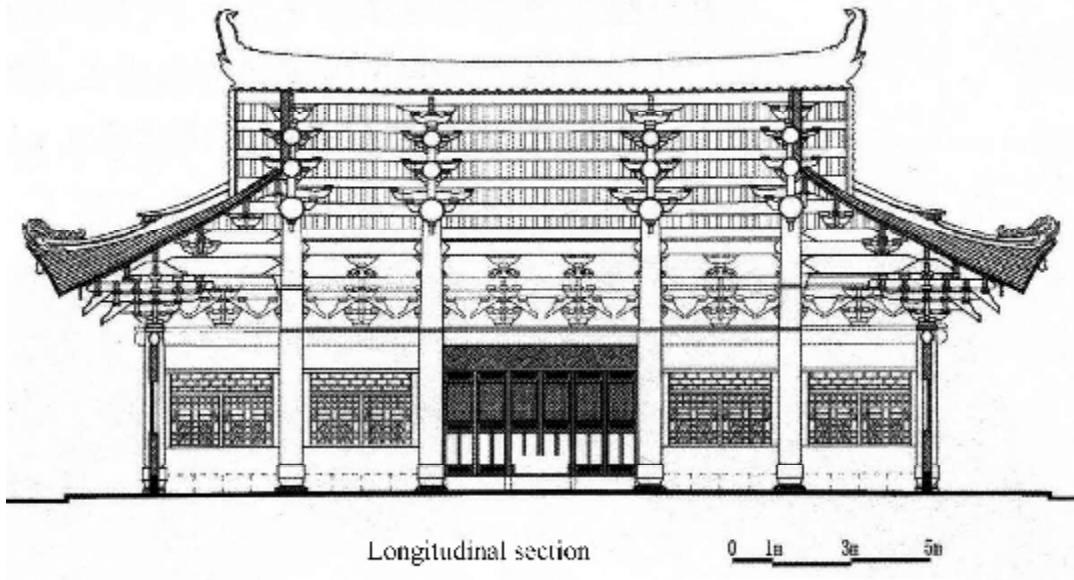


Figure 83. longitudinal section and cross section.

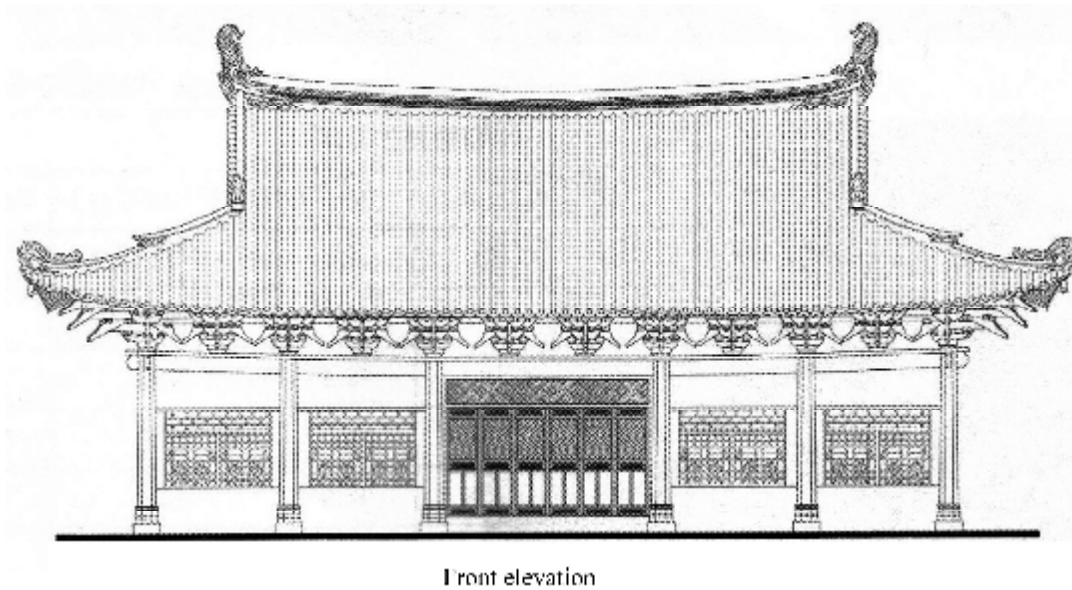


Figure 84. The front elevation of the Sixth Ancestor Hall.

### 3) Roof and Decoration

A gently sloping roof, curves of ridges were smooth, covering green and yellow glazed tiles, sizes of tiles were relatively larger, gray ridges of a roof. Two ends of the main ridge were decorated two big yellow plasterworks of Aoyu, between two white plastering bands, the yellow scroll design of lotus petals was designed on the surface of the main ridge of a roof, forming of a continuous and smooth decoration through the curl form of single leaf in the wavy continual pattern, the concise and simple style, strong sense of rhythm, being the typical pattern style of Northern and Southern Dynasties (Liu Dongming, 2009), and the symbol of lotus motif was also consistent with the religious status of the Sixth Ancestor Buddha. Four yellow plasterworks of dragon were decorated on the ends of four hips, two front claws were heavenward, like chicken claws, and the teeth were serrated, was in line with characteristic of the dragon of Qing dynasty (Zheng Jun, 2005).

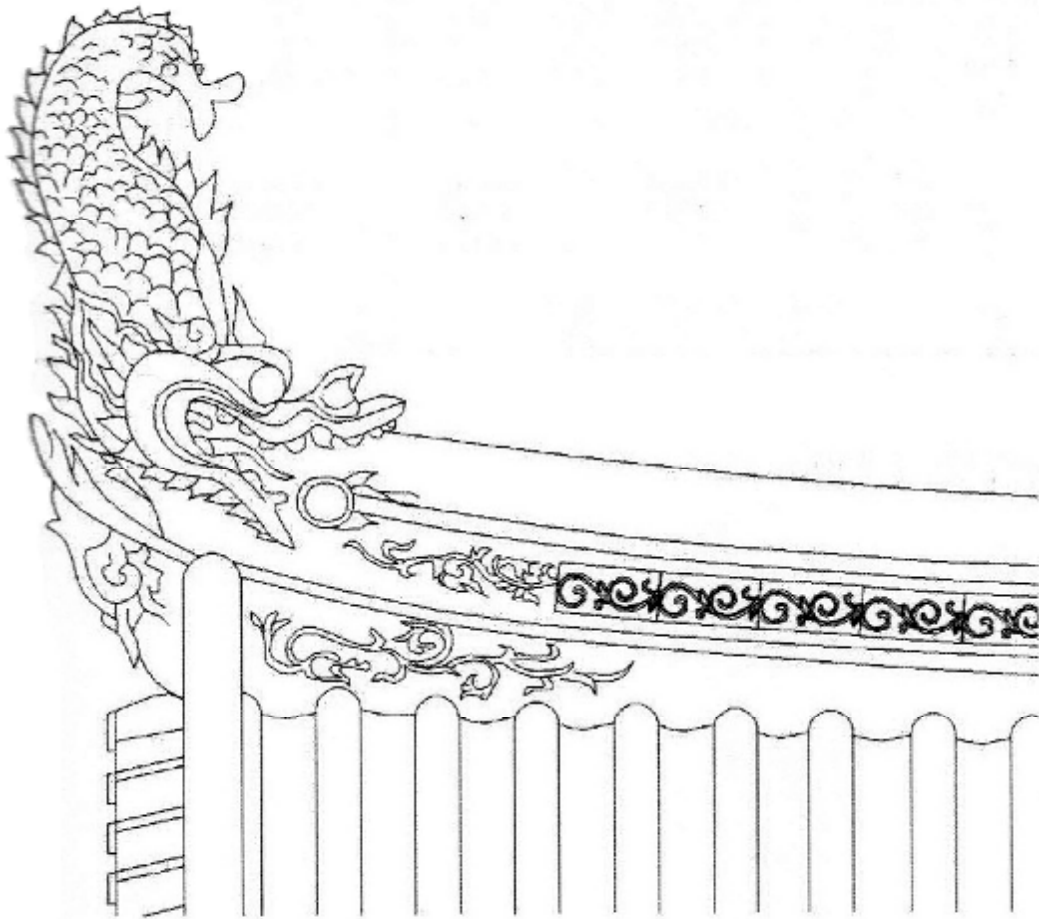


Figure 85. Aoyu plasterwork on the main ridge of the roof.



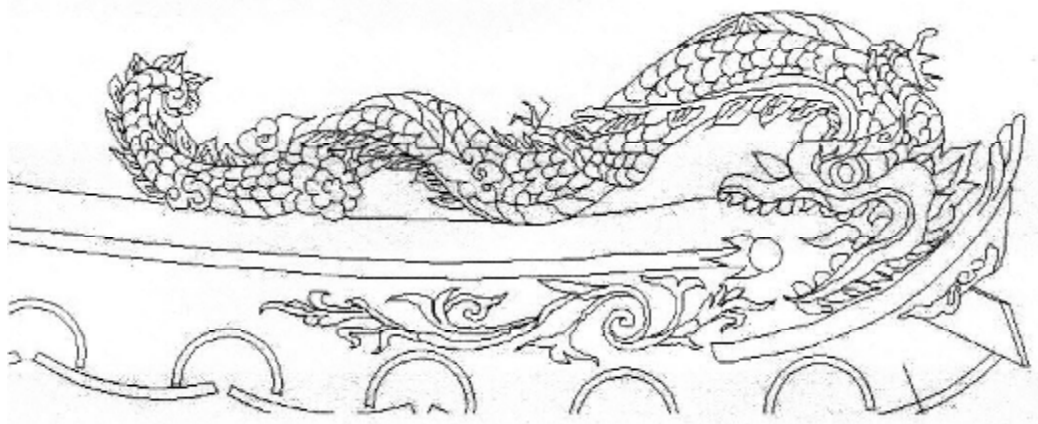


Figure 86. Dragon plasterwork on the hip ridge of the roof.

### 8. 2. 1. 1. 3 Samgharama Hall

The Samgharama Hall<sup>[16]</sup> was located in the east of the Mahavira Hall, the original age of establishment was not recorded in detail according to the record of *Notes of Guangxiao Temple*, rebuilt by the abbot monk Ding Jun in 1494(Chen Zehong, 1999), later was used the study room during the period of Jialong (1522 - 1572) of Ming dynasty, and the extant Samgharama Hall was rebuilt by the monk Lun Tian' donations in 1611.

#### 1) The plan

The hall was 11.87 meters breadth, the depth was 12.06 meters, the aspect ratio was 0.98:1, wooden structure style of Song Dynasty. The middle of the front elevation was designed the two big doors, and other walls were designed vermilion wooden windows.

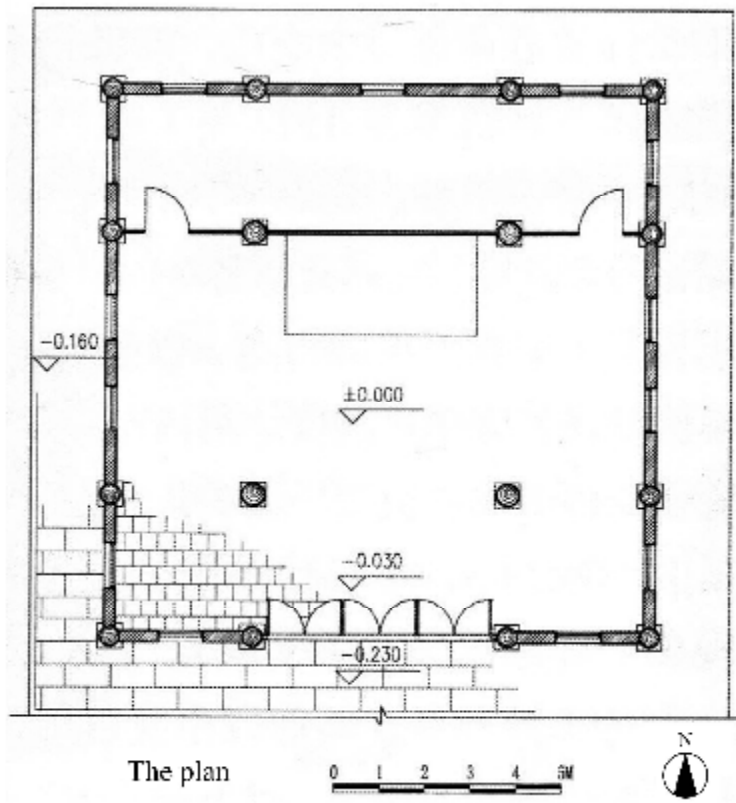


Figure 87. A. The plan of Samgharama Hall.

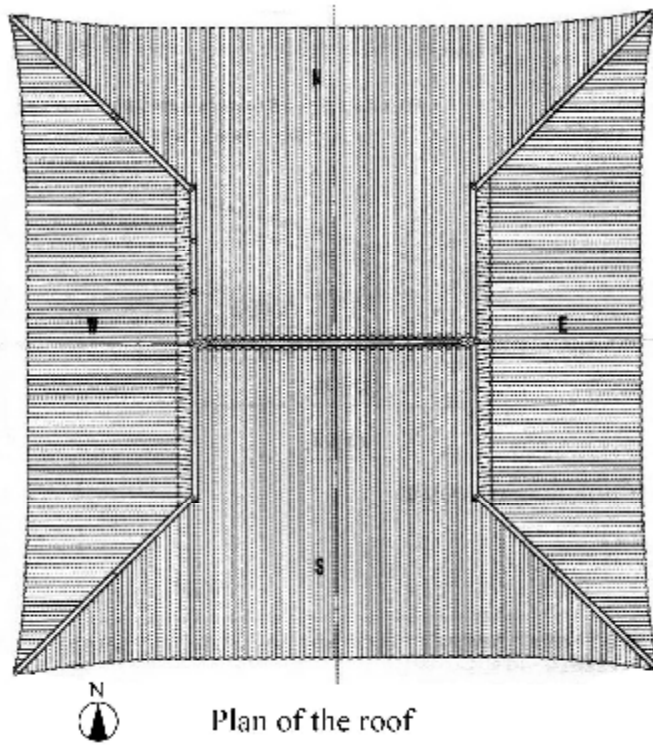


Figure 87. B. The plan of Samgharama Hall.

## 2) Elevation and Section

The hall was single Xieshan style, the height was 9.08 meters, the two ends of the main ridge were raised slowly, the roof was concave hyperboloid. Four eaves were outstretched far-reaching, wing angles of eaves cocked high. Red brick walls were stuccoed by lime mortar, The whole color tone kept the decorative style of Song Dynasty.

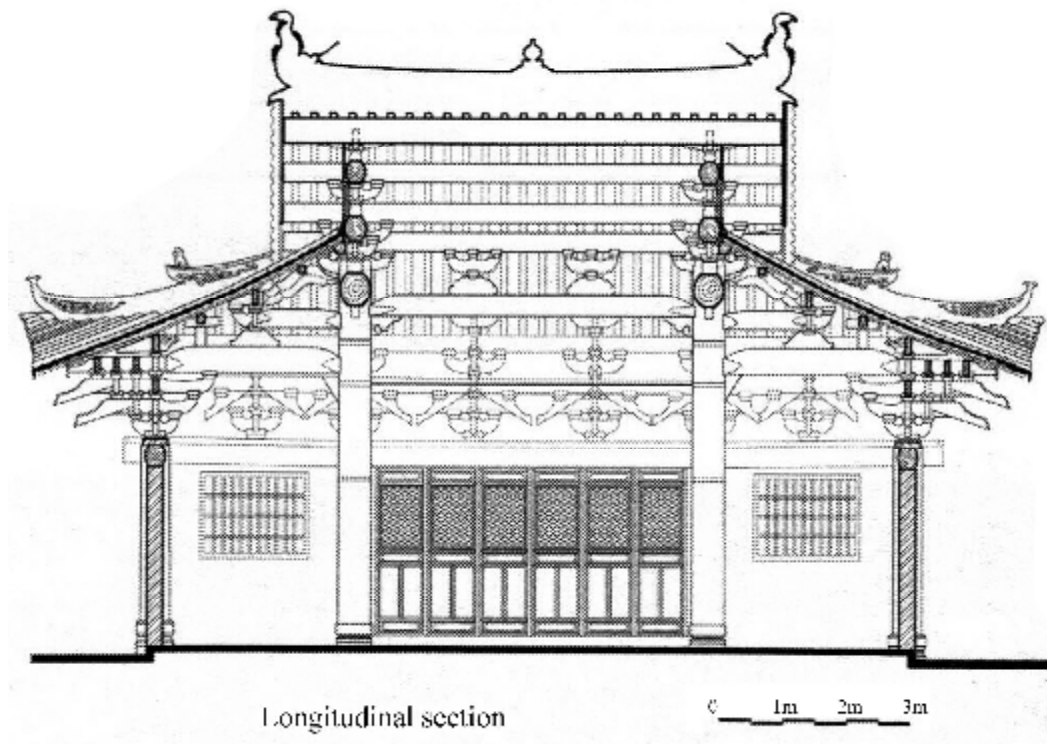


Figure 88. A. longitudinal section and cross section.

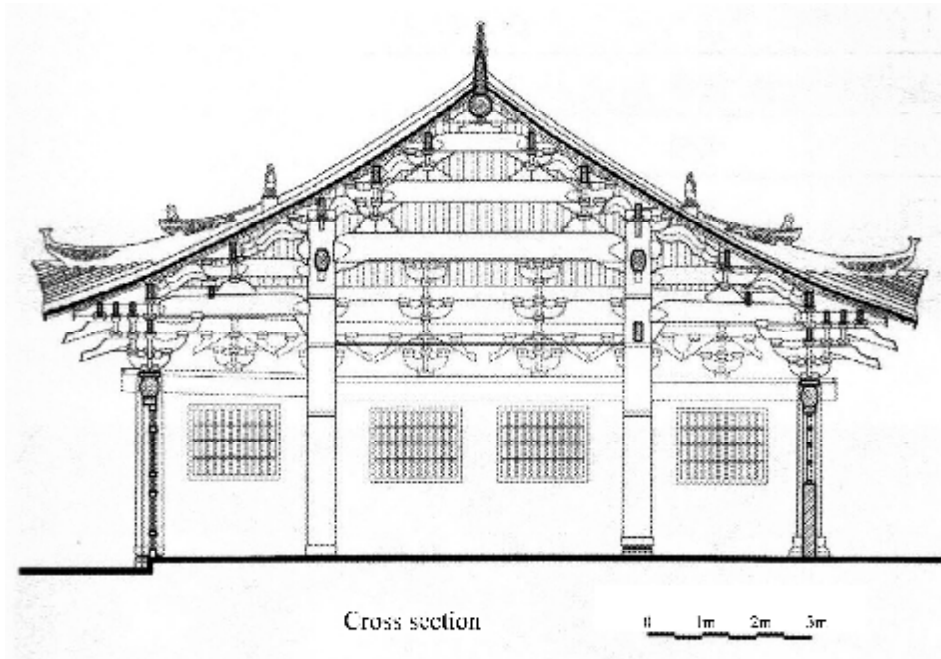


Figure 88. B. longitudinal section and cross section.

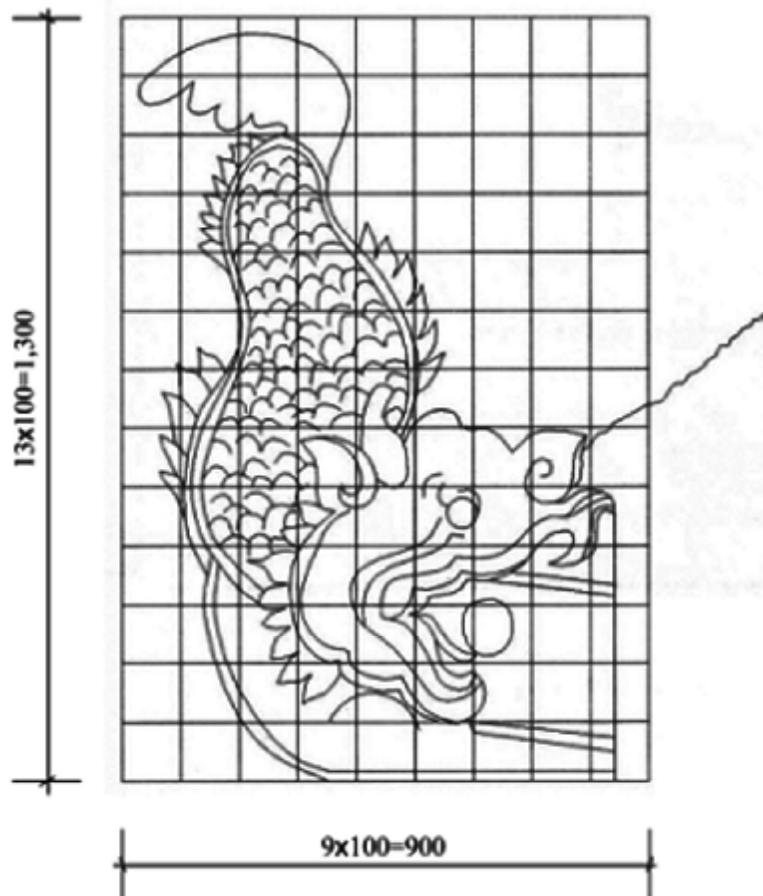


Figure 89. Aoyu Plasterwork detail drawing



Figure 90. Aoyu plasterwork on the main ridge.



Figure 91. The fish-tail plasterwork on the hip ridge.

### 3) Roof and Decoration

The roof slope was gentle, covering green cylindrical ceramic tiles, and the cornice were decorated by green eaves tiles, the ridges were constructed by Chinese blue bricks, stuccoed with gray lime mortar, then decorated plasterwork of scroll design in low relief between two white borders on the surface of ridges, high contrast in black and white. Two big yellow plasterworks of Aoyu were decorated on two ends of the main ridge, their big mouths bit tightly the ends of ridge, tails were unturned, forming a whole decoration with scroll design on the ridge of the roof. In particular, four plasterworks of fish-tail that decorated on four hips were unique and distinctive. It could be said, plasterworks of the whole roof were made up of decoration of fish and scroll design in algae. This unique decoration should be associated with Feng Shui.

#### 8. 2. 1. 2 Sanyuan Temple

Sanyuan Temple, also called Sam Uen Kuung by John Henry Gray in 1875, was the largest and oldest Taoist monastery in the city of Guangzhou, sitting on the north facing the south (Mai Yinghao, 1990). The whole temple was built in several stages of platform depending on the mountain shape because it located at the south foot of Yuexiu Mountain, thus people had to climb 39 stone steps reach the gate. It was originally built by Nanhai Satrap Bao Jing<sup>[17]</sup> in 319 (the Eastern Jin Dynasty) according to the records of *Notes of city of Canton* (Rui Lin, 1879), and called Yuegang Temple, and renamed the Wuxing Temple during the Tang Dynasty (618-907), but, according to Taoist theory, the sky, earth and water are the three elements (Chinese called Sanyuan) that make up the universe (Tang Guohua, 2001), therefore, this ancient Taoist temple was renamed the Sanyuan (the meaning is three elements) Temple in 1643 (Xie Zonghui, 1988) at last, and still in use today. Pingnan Raja Shang Kexi<sup>[18]</sup> and Guangzhou Governor Li Qifeng<sup>[19]</sup> rebuilt and extended it in 1656, the building area of it was 8000 square meters at that time (Li Jiong, 2006). The Abbot Monk Liang Zongqi had the Temple's homestead donated to the official to

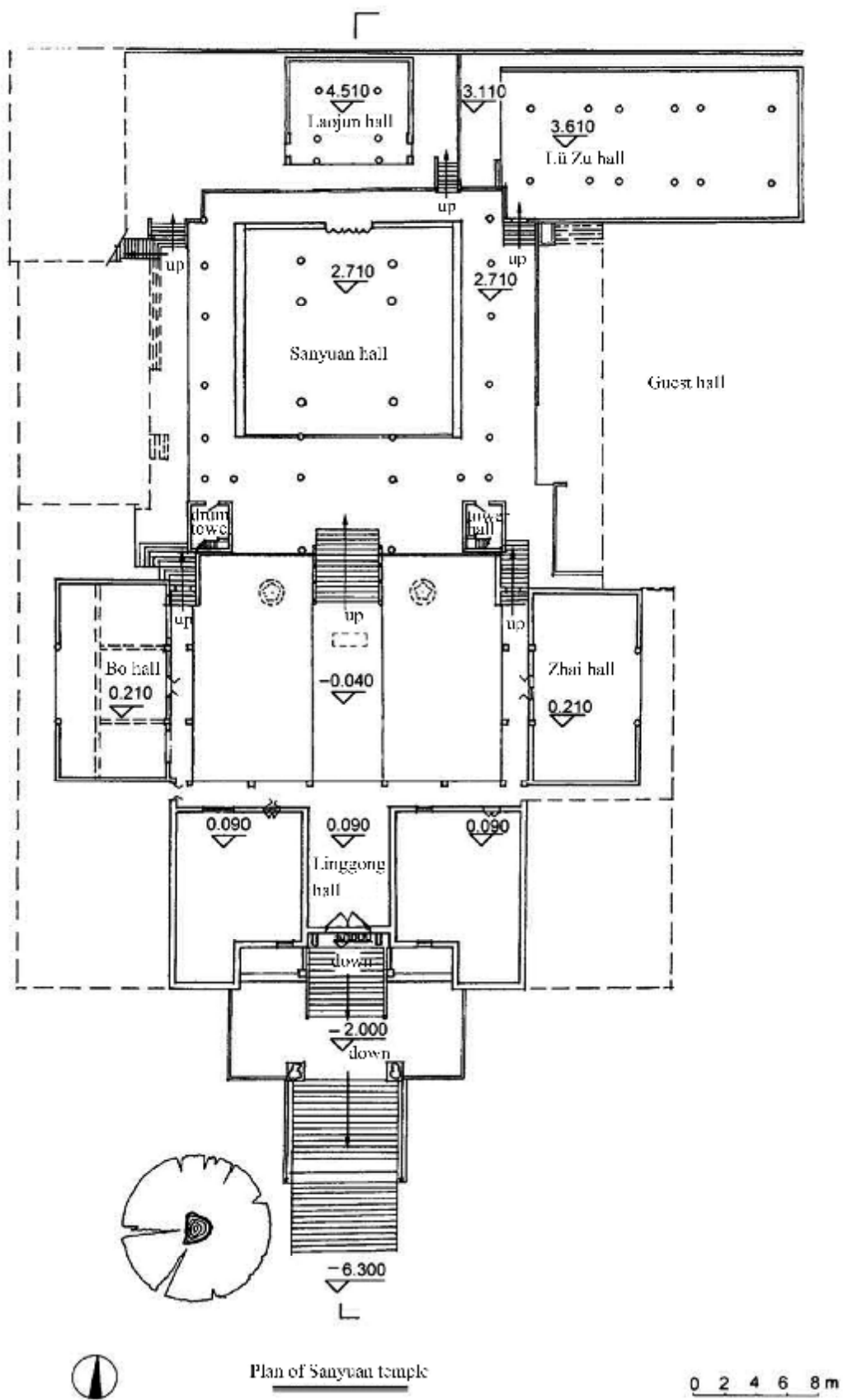


Figure 92. Plan of Sanyuan Taoist Temple (Tang Guohua, 2001).

build a middle school in 1903 (Yu Xincang, etc., 1984), making extant building area reduced about 2,000 square meters.

The extant buildings have been rebuilt since the period of Qing Dynasty. Its building layout was: Sanyuan Hall as the center, the mountain gate hall (also called Linggong hall) was located in front of it, and the Laojun hall situated in the back of it; the east were the Vegetarian Hall, the clock tower, the Guest hall and Lü Zu hall; and the west were Bo hall, Drum hall. Among of them, the Mountain Gate Hall was rebuilt in 1786, the Sanyuan Hall was rebuilt during the emperor Tongzhi period (1862- 1875), and the Lü Zu<sup>[20]</sup> Hall was rebuilt in 1862.

#### **8. 2. 1. 2. 1 Mountain Gate Hall**

##### **1) Plan of the Hall**

The Mountain Gate ( in fact it's a Hall) was actually function of gate, locates above 39 stone steps (Tang Guohua, 2001), 21.50 meters breadth (include the passageway between two buildings) and 12.65 meters depth, the aspect ratio was 1.70:1, approaching rectangular proportion of 1.5: 1, It is a beautiful rectangular plan, which total area was 271.98 square meters, and the whole floor was paved with Chinese blue bricks. In particular, the middle the facade was concave 2.38 meters, 11.85 meters width, making the plan similar with traditional Chinese '門(door)', this plan layout became an unique design in Chinese Taoistic monastery, meanwhile the protective deity of mountain gate was just Taoistic door god -- Wang Shan (in general, called him Wang Linggong<sup>[21]</sup>. So, The Mountain Gate also called *Ling Gong Hall*). It was originally built in 1786, and repaired in 1863. Two sides were the fire-sealing gable walls, having function of fireproof. The middle was a passageway (4.50 meters breadth), the front wall were designed small windows, and two wooden doors were opened in the back elevation.



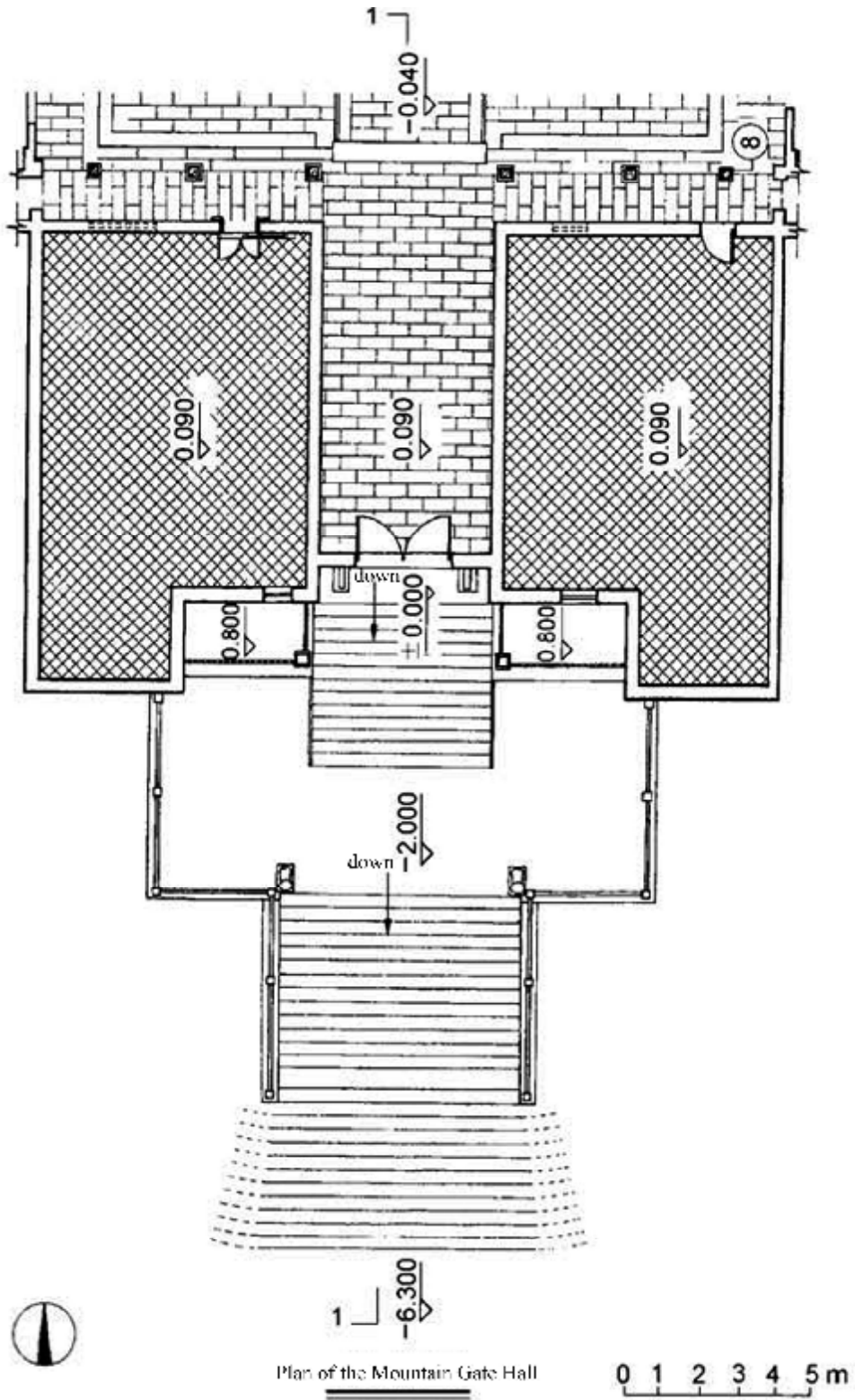


Figure 93.A. The plans of the Hall (Tang Guohua, 2001).

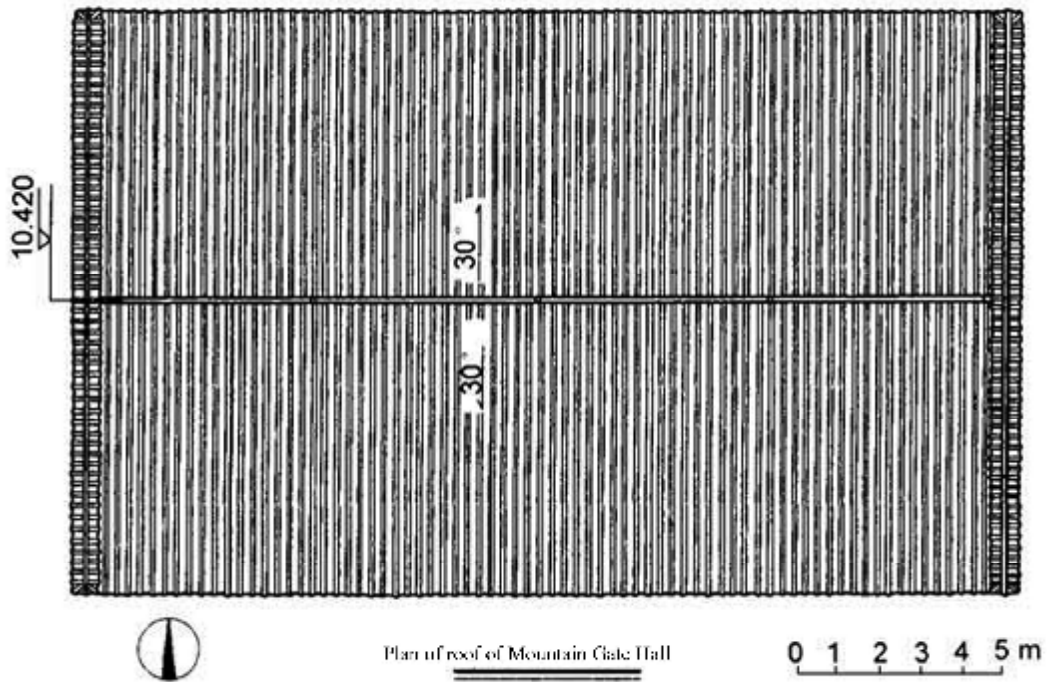


Figure 93.B. The plans of the Hall (Tang Guohua, 2001).

## 2) Elevation and Section of Hall

The Hall was 10.40 meters high, 21.50 meter width, and the eaves of both sides of fire-sealing gable walls extend outwardly 0.40 meter. The whole walls were built by Chinese blue bricks, gray cylindrical tiles and green eaves tiles with pomegranate patterns on the roof. A long main ridge dragon-boat designed on the gentle gray roof. Two gold plastering Aoyu (about 0.68 meter high) stand upside down on the main ridge. The main ridge was built by Chinese blue bricks, then the first layer was stuccoed sand and lime mortar, the second layer was stuccoed gray lime mortar, then the decorative plasterwork could be plastered on the surface of the main ridge. At first the up and down of main ridge were plastered two white ornamental borders, then decorated patterns between two borders, both ends of the ridge of dragon boat were decorated the scroll design of algae, symbolizing the waterproof. Then in it's middle, was the pomegranate plasterwork of through carving, which was two-sides continuous patterns of 10.65 meters long and 0.46 meter high, with green leaves and red fruits. This many-seeded fruit was introduced by the traveler Zhang Qian<sup>[22]</sup> in Xi

Han dynasty (202 BCE - 9 CE), and were planted widely in ancient China (Ji Xinmin, 1995). In particular, grapes, pomegranate were regarded as auspicious motifs and

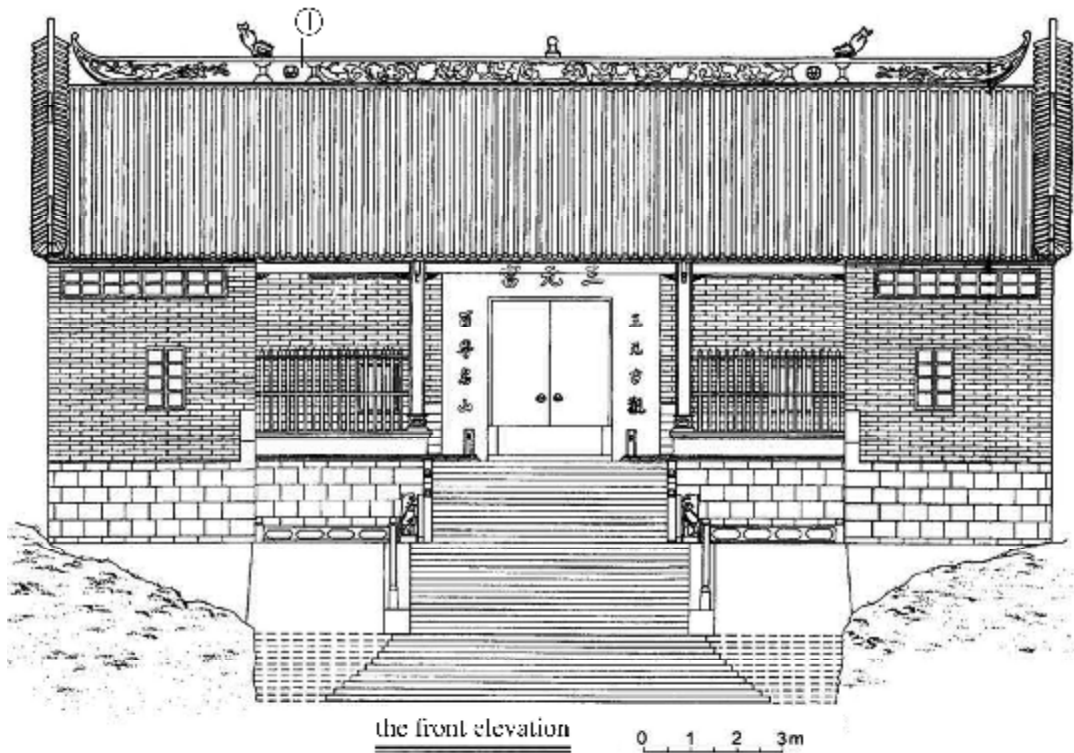


Figure 94. The front elevation of the mountain gate hall.

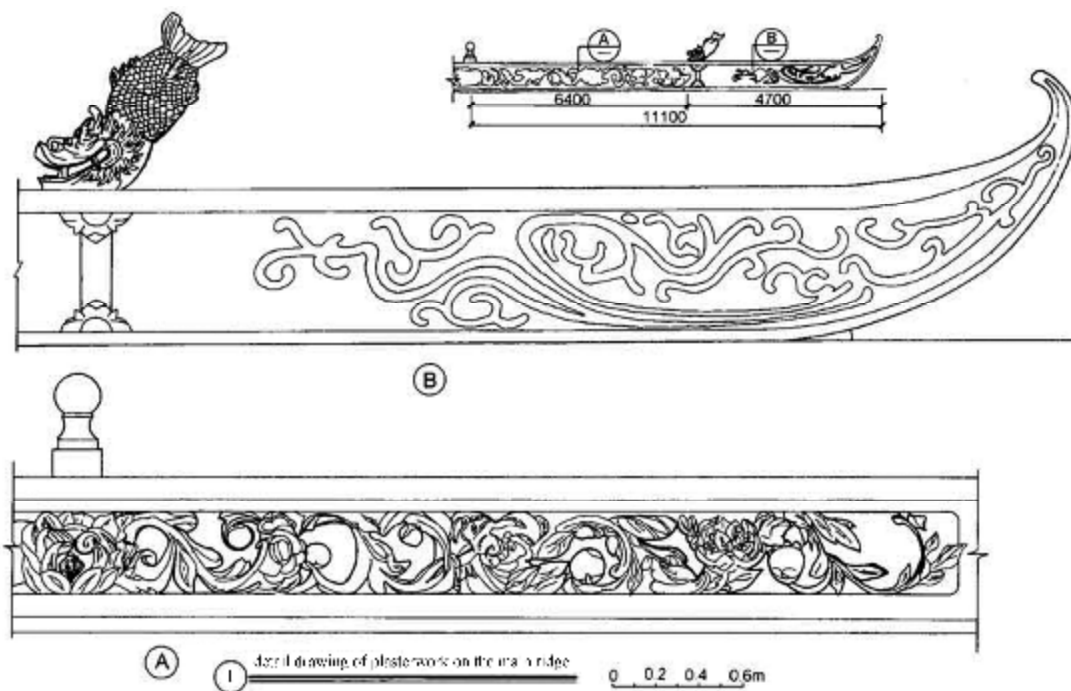


Figure 95. The detail drawing of plasterwork on the main ridge of the roof.

used widely in the Chinese traditional architectural decoration since Tang dynasty. The decorative pomegranate had four symbolizing meanings (Han Jian, etc., 2009): The first is ‘*thriving and prosperous, harmony and happiness*’, symbolizing peaces and hopes; The second is ‘*The more sons the more blessing*’, meaning a family prosperity; The third is ‘*Love and friendship*’, used the relation between people; And the last is ‘*ward off evil spirits, and pursue good fortune*’, wishing the buildings or people have goog lucky forever. The Mountain Gate Hall is a religious building, the pomegranate motif should be the last symbol meaning.

#### **8. 2. 1. 2. 2 Sanyuan Hall**

For the Sanyuan Hall, it was rebuilt several times by dynasties. During Qing dynasty, the earliest mention of the historical data with the Sanyuan hall, was the stone tablet of ‘*the notes that constructed the Sanyuan Hall*’ in 1656, which was built by the Canton governor Li Qifeng, and presented: the Canton governor Li Qifeng built the Sanyuan hall in the south of Yuexiu mountain in the city of Guangzhou. Successively, the *Records of Panyu County* that was compiled by Ren Guo and Chang De in 1774, also described: the Sanyuan Hall located in Guangyin mountain, built by Li Qifeng in Shunzhi emperor thirteenth years (1656). Later, it was repaired in 1785 (John Henry Gray, 1875), in particular, the abbot monk Huang Mingzhi was responsible for the repair of the whole monastery in 1837 (Li Zhitian, 2007), and the last repair was happened in 1862 (Chen Zehong, 1999) during the period of Qing dynasty.

##### **1) The Plan**

After entering the Mountain Gate Hall, it was the main Hall of this Taoistic monastery -- the Sanyuan Hall, which was the center of the layout of the whole palace. This hall was 20.27 meters width, 16.85 meters depth (Mai Yinghao, 1990). The Xieshan style with green glazed tiles, Eaves Tiles with emerald pomegranate decoration. From the plans, the roof have covered the Sanyuan Hall, clock tower in

the right and drum hall in the left. The roofs of clock tower and of drum tower were round ridge roof style, connected with the roof of Xieshan style on the Sanyuan Hall, becoming an unique style of the roof in the city of Canton (Chen Zehong, 1999).

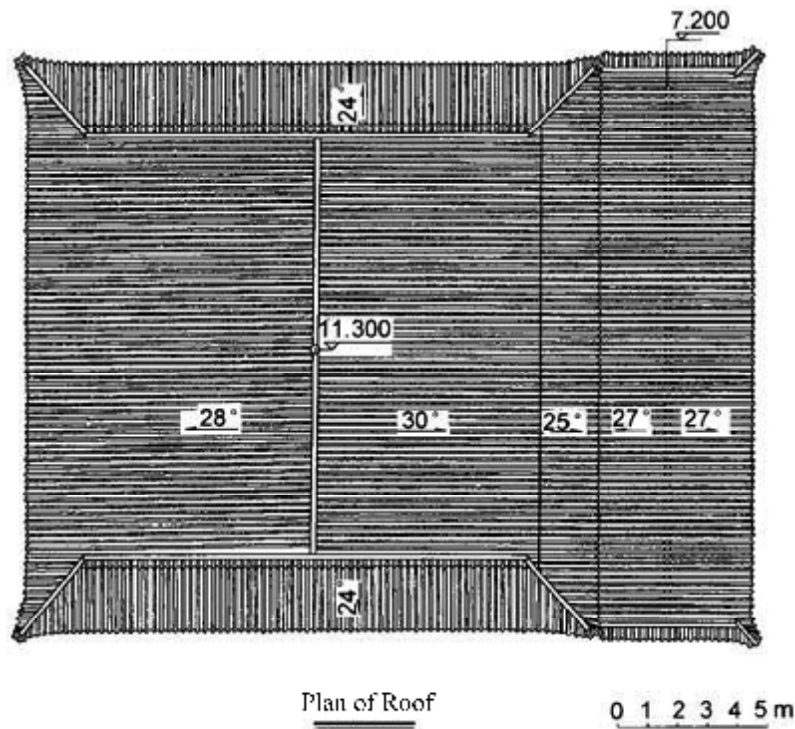
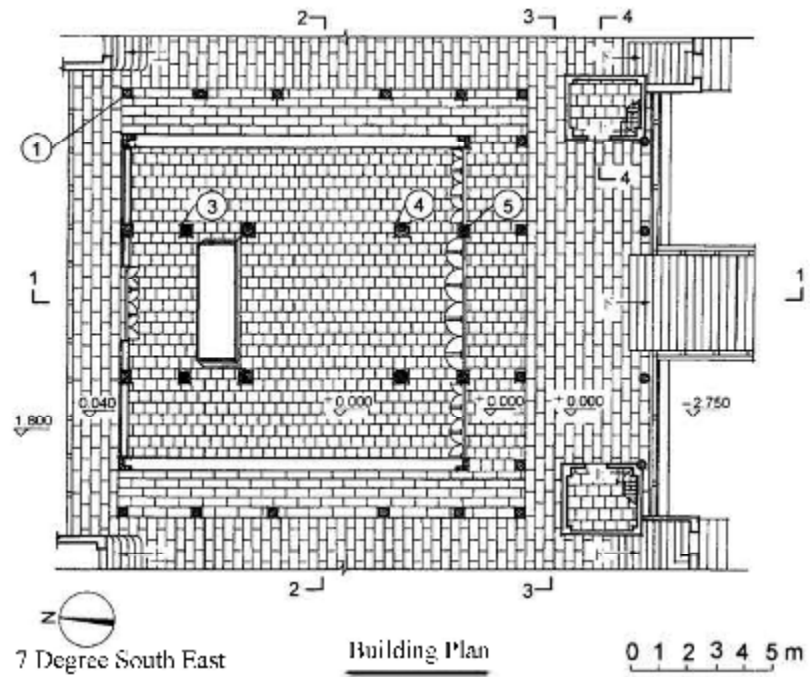


Figure 96. The plan of Sanyuan hall.

## 2) Elevation, Section and Decoration

The Sanyuan Hall was higher 15 steps than the Mountain Gate Hall, the hall was 9.50 meters high, the platform was 2.15 meters high, and the height of the whole

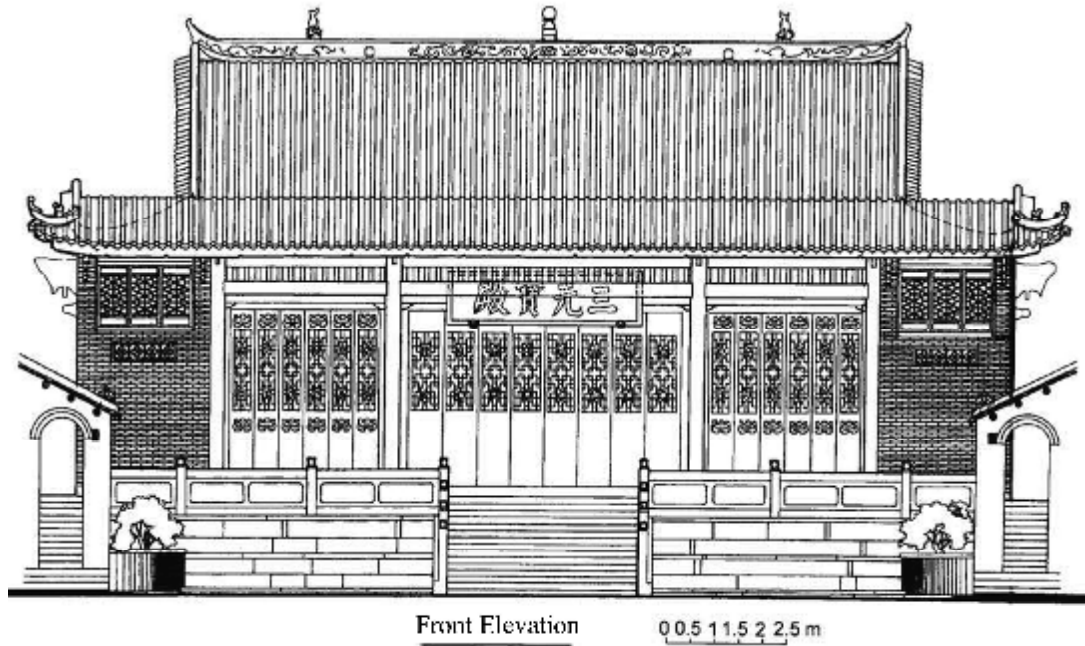


Figure 97. The front elevation of the hall.

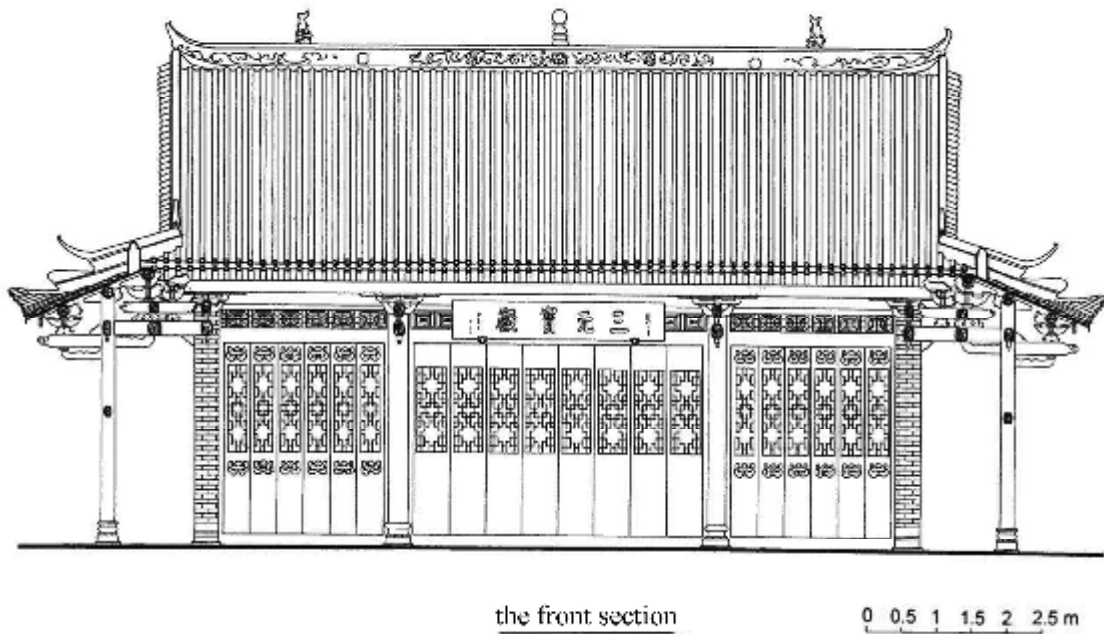


Figure 98. The front section of the hall.

building was 11.65 meters. The middle was red wooden structure with old carved windows, both sides and the back were Chinese blue bricks walls; the front red

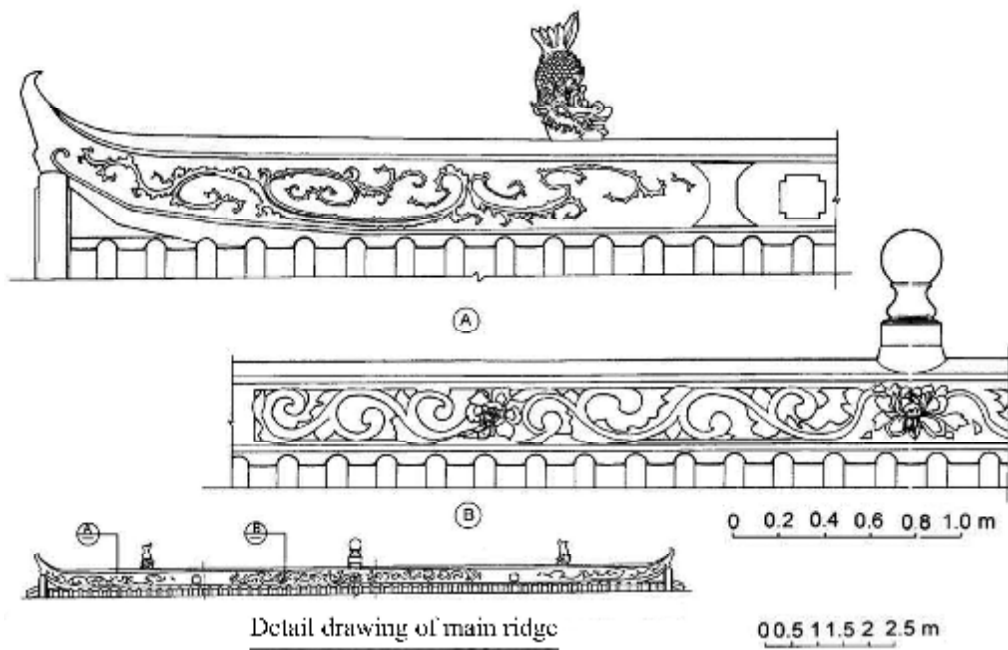


Figure 99. Dtail drawing of main ridge.

wooden door was 4.00 meters high, 5.85 meters width, the back door was 3.20 meters width, 3.35 meters high. The indoor was worshiped three gods of the Taoism (Tang Guohua, 2001), generally called *the Sanguan Governors*<sup>[23]</sup>. Two Aoyu stood upside down on the main ridge of dragon-boat, all decorative plasterworks on the gentle roof were very similar with that on the mountain gate hall.

### 8. 2. 1. 2. 3 Lü Zu Hall

Lü Zu hall located the north-east of the Sanyuan hall, the plan was 18.20 meters long, and 10.65 meters wide, the west to the east with an elevation difference of 1.320 meter. It was originally built in 1786, repaired 1863. Three rooms, two doors were designed the west end on the south side of the building. The Lü Zu statue located in the room of the west, could see it as soon as enter the door.

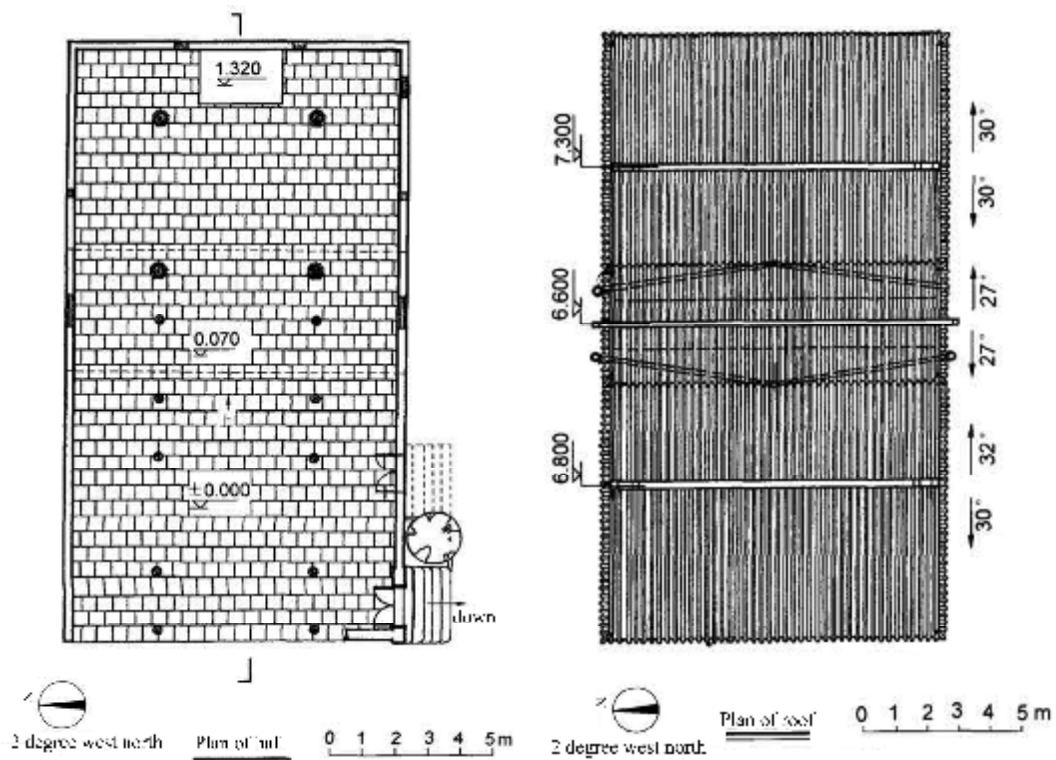


Figure 100. The plans of the Lü Zu hall

## 2) Elevation, Section and Decoration

The hall was 7.65 meters high, gentle roof, Chinese blue brick structure, and the walls were used technique of traditional rubbed brick work, lime-grout, flush solid walls, starting as a ridge of hard-Peak, long gray pantile and green eaves tile with planting decoration, and the tone of the whole hall was gray. The main ridge was very simple, gray lime-mortar plastered on the surface of it. For the decorative plasterwork, designed only decorative bands on both gable walls, white background with 18.65 meters long, 0.65 meter high, symmetrical scroll design (decorative algae motif) decorated on gable walls of both sides for the first and second room, and only white plastering bands on the gable walls for the third room.



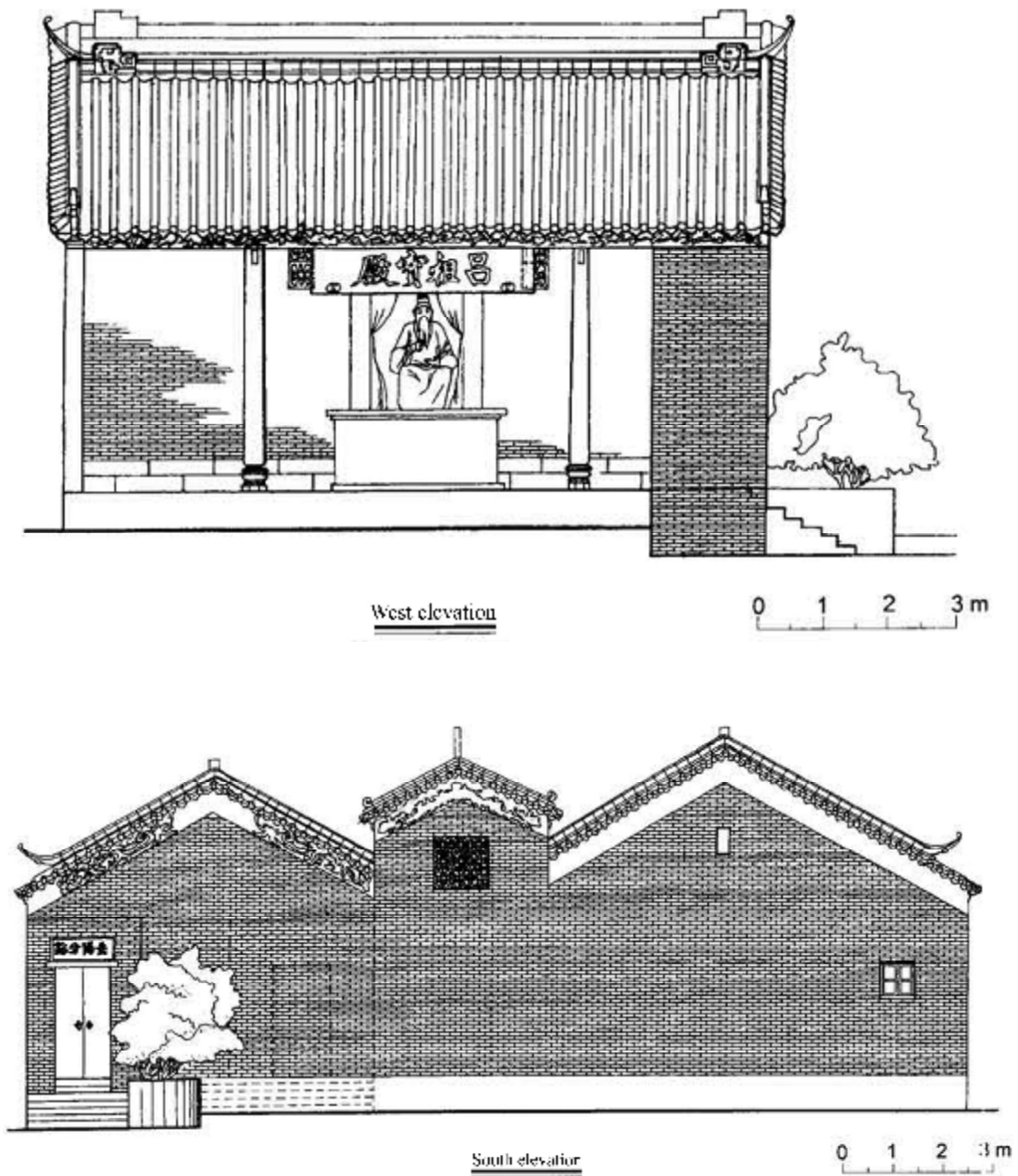


Figure 101. Elevations of the Hall

### 8. 2. 1. 3 Huai Sheng Mosque

The Huaisheng Mosque is situated in No. 56, Guangta Road, Yuexiu District of Canton, it's the largest and oldest mosque in China. It has been ever rebuilt many times over its history, it is traditionally thought to have been originally built by Sa`d ibn Abi Waqqas who was an uncle of Prophet Muhammad in 753 (Den Qisheng, 1985), during the Tang Dynasty (618-907), which would make it the oldest mosques

in China. It was named *Huaisheng* in memory of Prophet Muhammad (Chen Zehong, 1999). This mosque was rebuilt in 1350 then in again in 1695 after being destroyed in a fire. Thereby the extant building was rebuilt in 1695 (Mai Yinghao, 1990). In succession, it was repaired in the emperor of Kanxi 37<sup>th</sup> year (1698), of Daoguang 26<sup>th</sup> year (1846) and of Tongzhi 10<sup>th</sup> year (1871), but it could still reflected some architectural style of Tang dynasty to a certain extent.

The mosque covered an area of more than 2,966 square meters (Chen Zehong, 1999), it was a classical mosque that the Chinese architectural art combined with that of Islamic building. The plan was rectangular, it's facade faced south, and the whole building used traditional Chinese symmetrical layout (Ma Weila, 2003). Six important buildings took in turn the main shaft line: the Prayer Hall (rebuilt in 1935), the Kanyue Attic (rebuilt in 1695), the Covered Corridor, the Light Tower (originally built in 627), the square Pavilions (rebuilt in the early of Qing dynasty), and the Storehouse of Islamic Scripture (Mai Yinghao, 1990).

#### **8. 2. 1. 3. 1 The Light Tower**

The Light Tower was originally built in 753 (Den Qisheng, 1985), it was an Islamic style tower, built by Chinese blue bricks, the whole surface were stuccoed the oyster shell lime mortar, the tower body was very smooth, it should be a classical Islamic plastering technique, according to the Canton plasterer Shao Chengcun's presentation, the plastering technique was divided three layers, the first and second layers were used sand - lime mortar, and the surface layer have applied Chinese traditional glutinous-rice lime mortar to stucco it, so it was very solid and durable. It's cylindrical in shape, and the upper of tower was slightly smaller, like a inverted Chinese writing Brush. The bottom diameter was 8.85 meters (Chen Zehong, 1999), and the diameter of top circular platform was 8.25 meters. Then built a smaller tower on the circular platform, the whole tower body was 37.45 meters. The interior was designed north and south stairways, the north stairway had 154 steps, and the south one had 158 steps, two stairs were twisting upwards, and mutually disjoint (Mai

Yinghao, 1990). Some small rectangular holes were designed on the tower wall in order to making the interior had natural lighting.

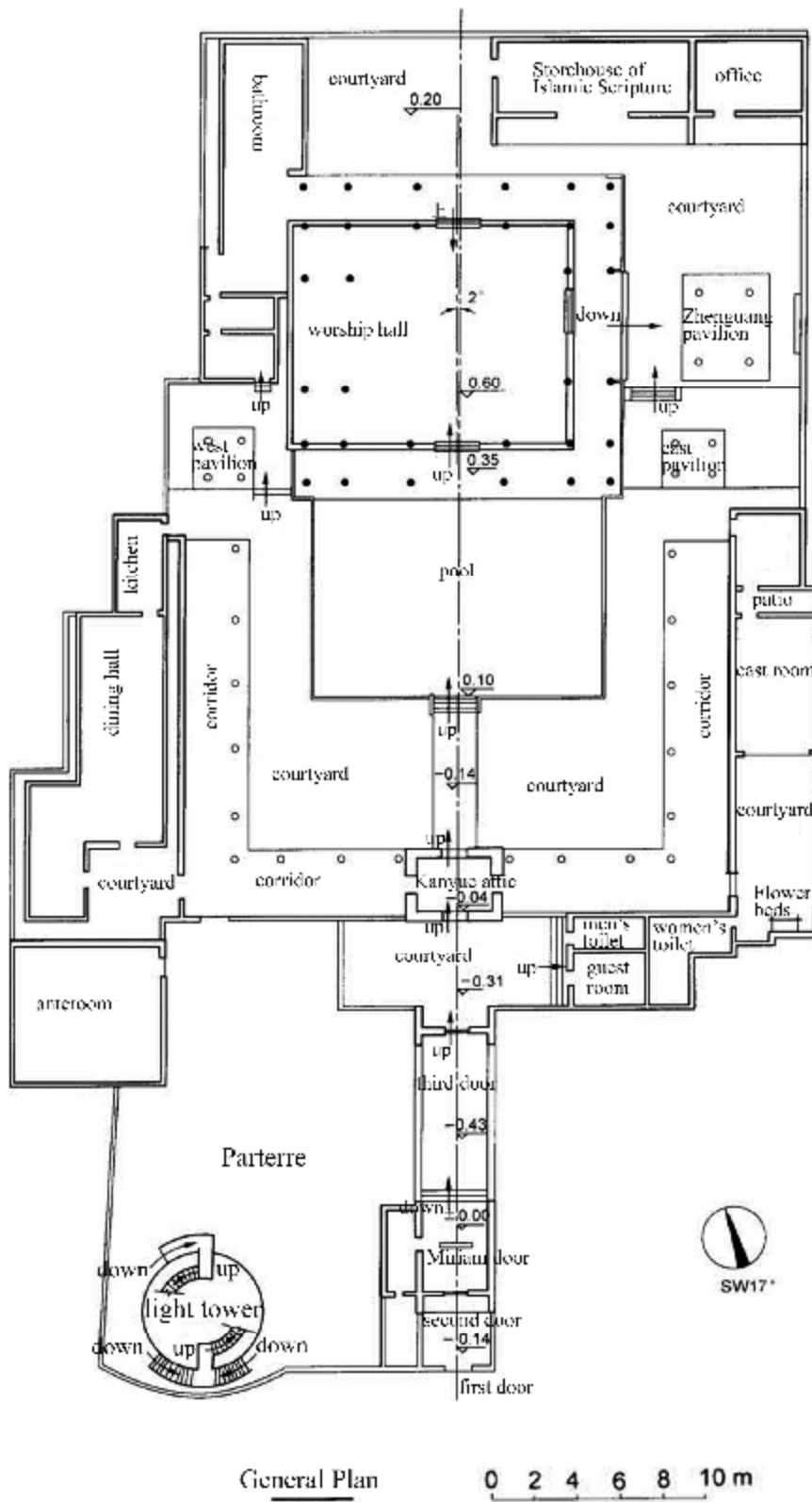


Figure 102. The general plan of Huaisheng Mosque.

The light tower had a unique shape, it has no precedent in China (Ma Weila, 2003). It was an examples of Islamic architecture of Tang dynasty, it was not only mimics Arabic styles, but also attempted to integrate them with the Canton's local building styles (Den Qisheng, 1985). The minaret balcony, which is used for the call to prayer before 1911, was thought once to have had a beacon to guide boats on the Pearl River at night during ancient Canton (Mai Yinghao.1990). It is said that when ships sailing along this segment of the river considered the tower as the sign that they had arrived at the beginning of the *maritime silk road* (Tang Guohua, 2001). Above the balcony, the minaret is capped with a gourd-shaped dome on a thin turret. The base of the dome is decorated with two tiers of Dougong brackets (Chen Congzhou, 1980), having a Chinese character to this Islamic style minaret.

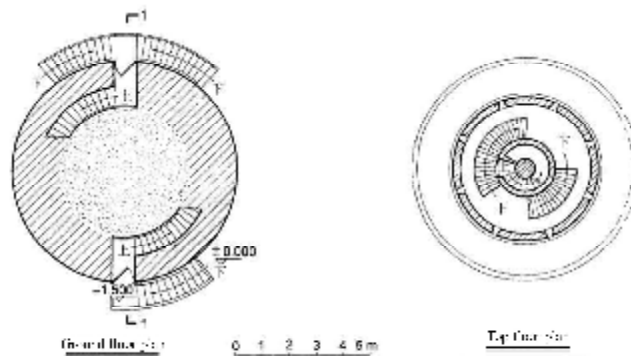


Figure 103. Plans of the light Tower in the Huaisheng Mosque.

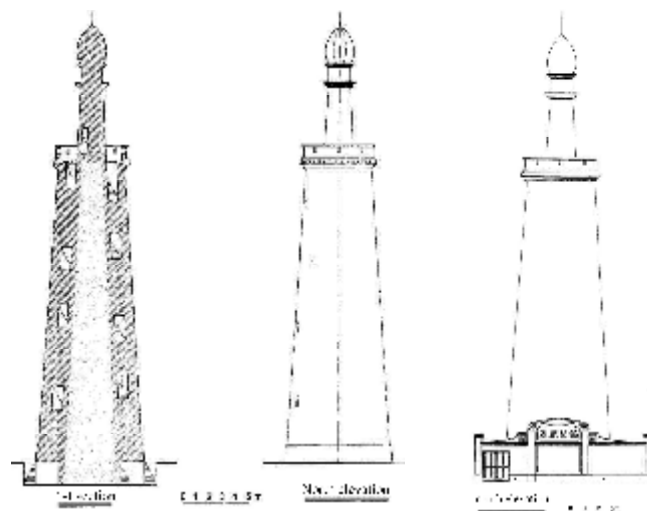


Figure 104. The elevation and section of light tower.



Figure 105. Part of tower body and decoration of oyster shell lime mortar on the surface.

### 8. 2. 1. 3. 2 The Kanyue Attic

#### 1) The Plan

The Kanyue attic located in the main shaft line, it was the first building of Huaisheng mosque when entered the third gate. It was rebuilt in the emperor Kanxi 34<sup>th</sup> year (1695), the last repair was in 1871 during Qing dynasty. Double Xieshan

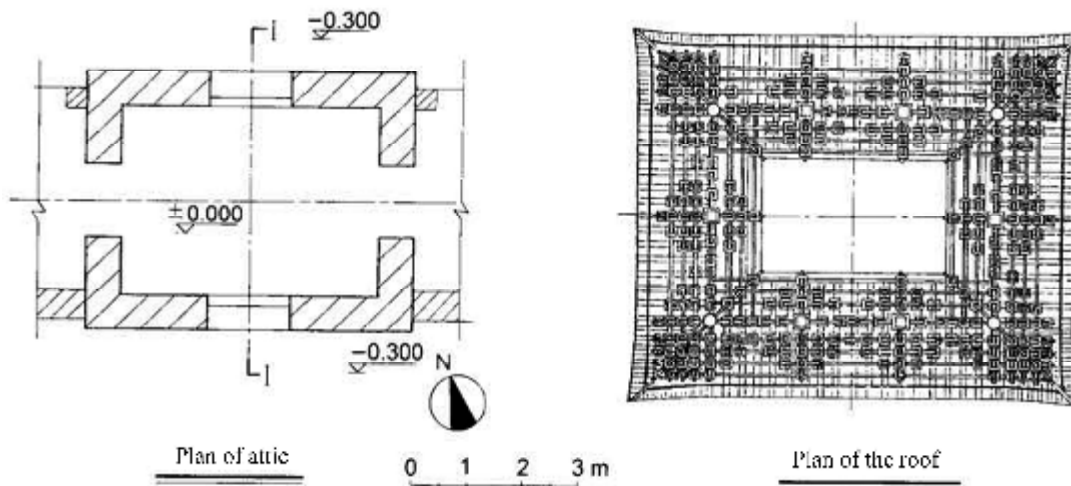


Figure 106. The plans of Kanyue attic.

style, the plan was rectangular, 5.98 meters width, and 4.88 meters depth, the wall was built by Red Sandstone, 0.77 meter thickness, surrounding walls were designed four arch gates, both the east and west arch door connected with corridors. Both the roof of first and that of the second were relatively gentle, covering Chinese blue

pantiles with traditional green eaves tiles, classical building style of Ming dynasty.

## 2) The elevation and decoration

The Kanyue attic was 8.45 meters high, on the double Xieshan style, the main ridge of the dragon-boat was distinctive (Tang Guohua, 2001), the fish-tails cocked up at both ends were very similar with the shape of gondola of Venice. Red Dougong wooden structure with gray roof, and red walls, forming the strong contrast, this red and gray (black) tone had the style of Tang and Song dynasties. The low relief decoration of plasterwork on the main ridge and on the end of hip ridge were the classical Islamic style, two sides continual honeysuckle pattern between two white plastering border lines, simple and smooth, having combined the style of Chinese scroll design, symbolizing the rhythm of the universe and thriving vitality (Liu Li, 2007).

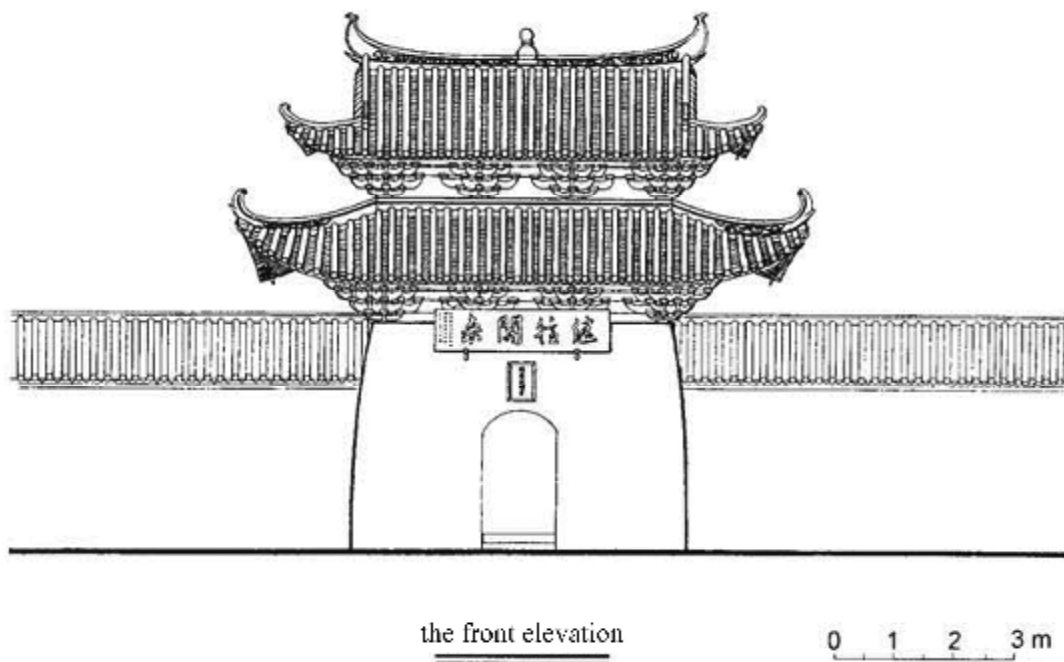


Figure 107. The front elevation of Kanyue attic.



Figure 108. The plasterwork of low relief on the ridges of the roof in the Kanyue attic.

### 8. 2. 2 The Ancestral Temple

In province of Guangdong, the ancestral Temple is in general a place of ancestor worship in the traditional folk culture of China (Tang Guohua, 2001). They are often related to the Confucian and the Taoistic culture.

A general important feature of these ancestral temples are the ancestral tablets that reflect their ancestral spirits, which are generally set up by eldership of the ancestors. Sacrificial altars and other ceremonial objects such as thuribles are also common churchy utensils (Huang Fengqiong, 2010). Meanwhile, these halls are not only used for collective ceremonials and festivities in honor of the ancestors, but also for other family-related uses like wedding ceremonials and mournings (Feng Erkang, 1996). Thus became a multi-functional public buildings in Guangdong. And sometimes, they work for wider society serves such as family meetings and private school (Nai Ying, 2010). During Qing dynasty, some retired officials returned their hometown to engage teaching, then some large ancestral halls became the private school. These private temple and school generated originally in Tang dynasty (618 - 907), a little

development during dynasties Song (960 - 1279) and Yuan (1271 - 1368), but was limited in Ming dynasty (1368 - 1644). Since the emperor Kangxi (1662 - 1722), private and official schools, and ancestral halls have been gotten a large scale development. At that time, these ancient architectures have been extensively built in zones of Dama Zhan, Xiaoma Zhan and Liushui jing of Canton (Huang Fengqiong, 2010), such as Yuexiu official school (built about 1662 - 1722 ), Xihu official school (1803) and Guangzhou Chen Dafu ancestral temple (1847). Now all official schools do not exist, only some private school and a large number of ancestral halls were remained, such as Sanyi private school (1888), Yuyan private school (built originally in 1219, rebuilt in dynasties of Ming and Qing, the detail information was not clear). The building both ancestral halls and private schools were in general architectural layout of 2 bays, 3 bays spacing or 5 bays (Ke Dawei, 2003). The ancestral tablets were often placed in the middle room of the last bay of the building, also some relatively large ancestral temple such as that of 5 bays, book-collecting rooms were built in the last bay. In general, study rooms were designed both sides of ancestral halls (Wu Yingcai etc., 1997). The ancestral temples were generally built by using the best materials and decorations because they were important public buildings (Tang Guohua, 2001) for a big Clan in China. Therefore, they had a high historical, architectural and artistic value.

#### **8. 2. 2. 1 Guangzhou Chen Daifu Ancestral Temple**

Guangzhou Chen Dafu ancestral temple located in Shabei Xiayuanli, western suburbs, Baiyun District of Guangzhou. It was originally built by Chen Tianyou and Chen Yanquan in 1539, later, it was respectively repaired by Chen ShaoRu<sup>[24]</sup> in 1575, and in 1847 (Nai Ying, 2010). Unfortunately, for the last repair in 1927, the wooden-structure pillars of the corridors and of main beams have been changed the brick-concrete structure (Tang Guohua, 2001).

##### **1) The Plan**

The whole temple was 26 meters width, and 32.7 meters depth. There were wide



square and semicircular pond before the temple. The total area of the main building was 795 square meters (Chen Zehong, 1999), being made up of the front hall, courtyard and rear hall. The front was divided three parts -- porch and hallway, wing-rooms of two sides; the middle was composed by the courtyard and wing-rooms of two sides; the rear hall was mainly constituted by Martyrs' shrine, Shide hall and Xiangxian hall. It was an important representative ancestral hall in Canton due to the famous scholar Chen Zizhuang<sup>[25]</sup> (1596 - 1647). Around of the flush gable roof was covered with glazed green tiles and edged with green glazed tile except for the middle patio.

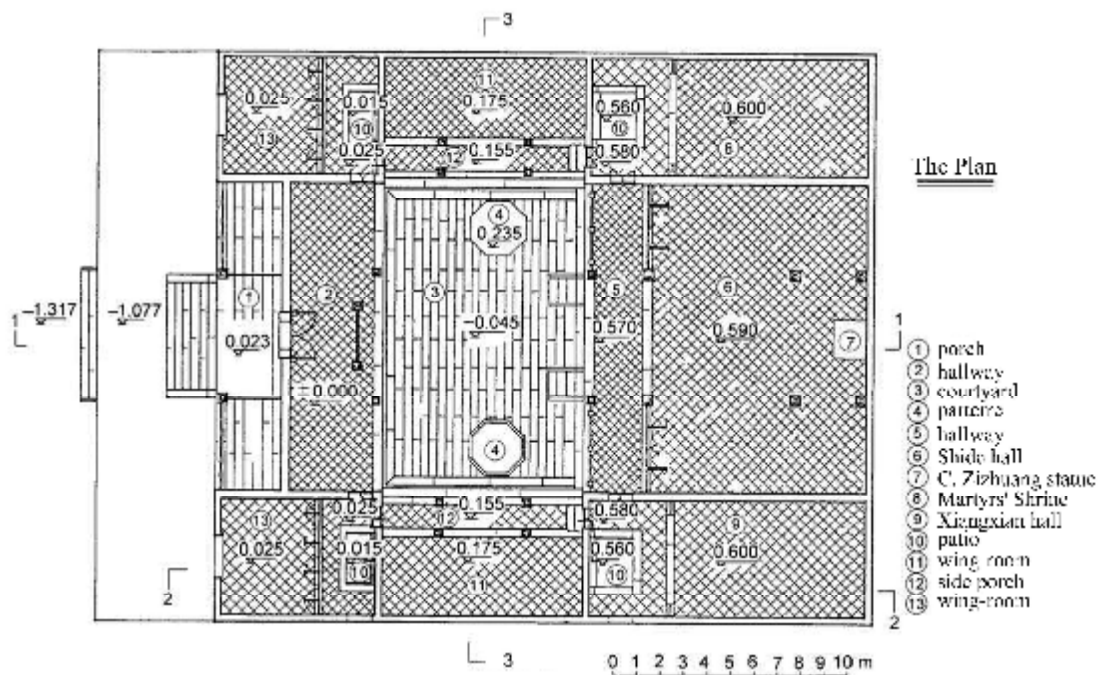


Figure 109. The general plan of Guangzhou Chen Daifu Ancestral Temple.

*note: the ground elevation of hallway is  $\pm 0.000$ .*

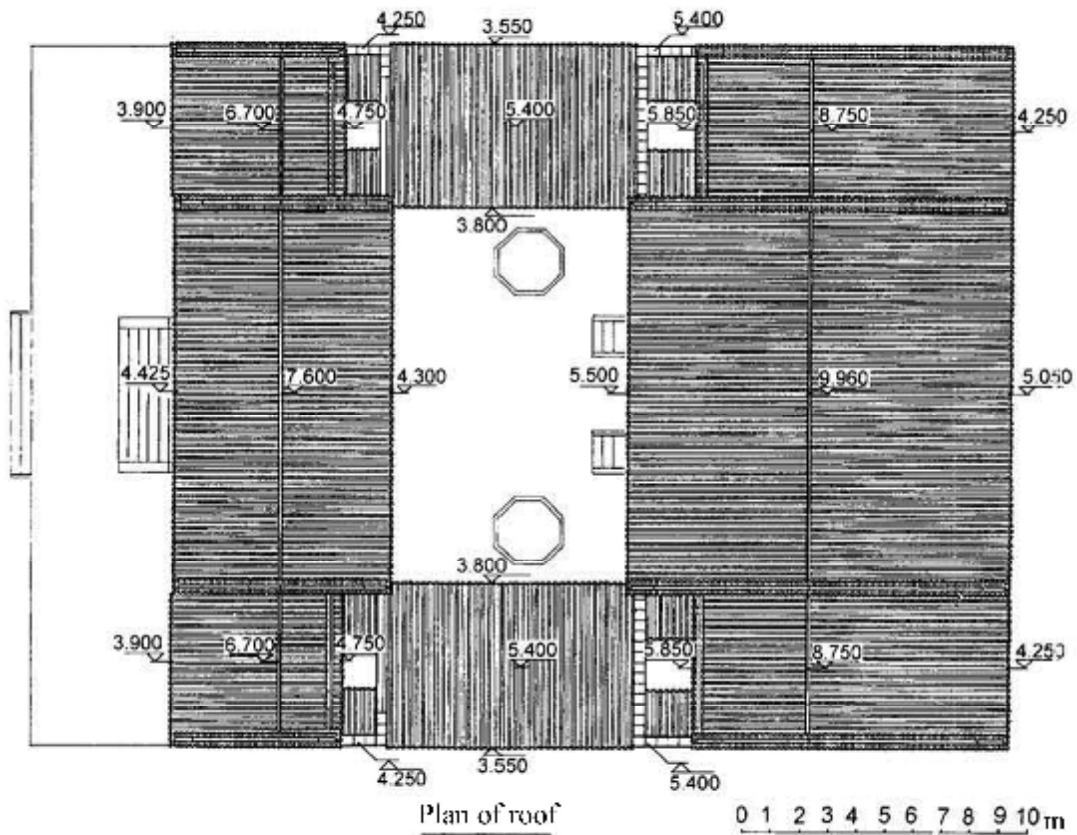


Figure 110. The roof plan of Canton Chen Daifu Ancestral Temple.

## 2) Elevation, section and decoration

For the front hall, the middle hall located on seven steps platform (1.077 meter high), 8.17 meters high, 14.45 meters width; the wing-rooms of two sides were 7.37 meters high, and each room was 5.775 meters width. The walls was built by Chinese blue bricks with techniques of rubbed brickwork. Fire-sealing gable and roof was very gentle, the decorations were rich and beautiful on the main ridges of the first and second hall, which divided three parts: the uppermost decoration was a pair of plasterwork of inverted Aoyu, the upper half of the main ridges were ceramic sculptural decorations, and the lower half of it were the alto-relievo plasterworks, decorative elements comprised auspicious animals (lion, bat and goldfish), historical personage and landscape; the gable walls were plastered simple decorative bands,

two sides of it were decorated the scroll design with white patterns and black background. Successively, the Bogu-decorations on the hip of this building, which had been ever prevalent in the emperor Qianlong (1736 - 1795), were very distinctive,

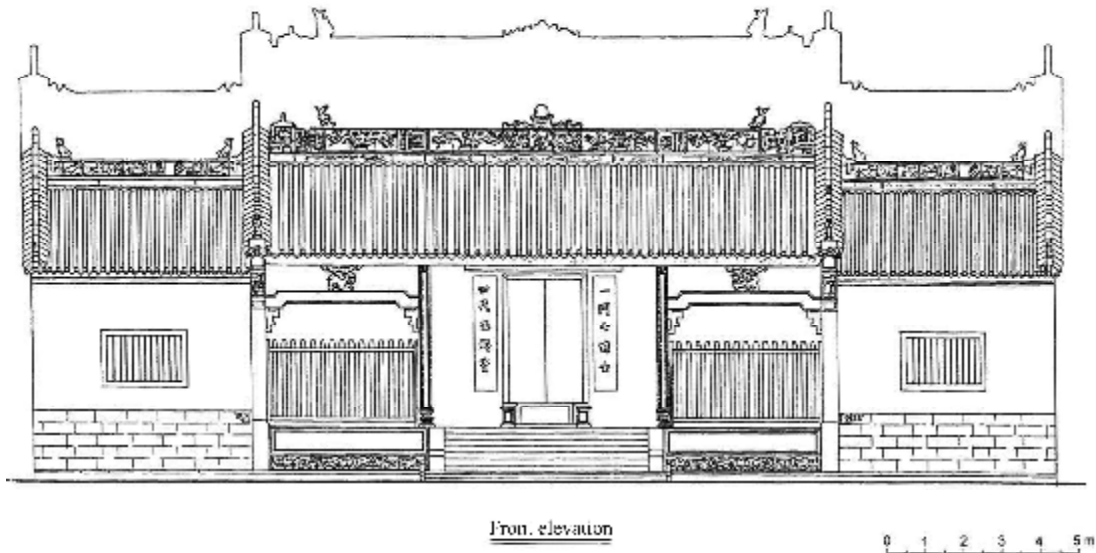


Figure 111. The front elevation of the ancestral hall.

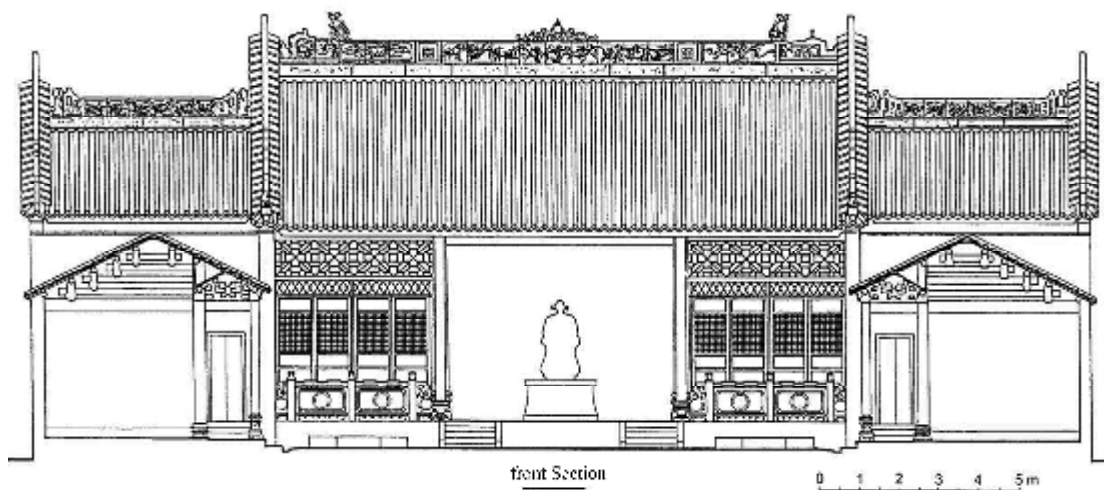


Figure 112. The front section of Canton Chen Daifu Ancestral Temple.

note: wooden-structure pillars of the corridors and of main beams have been changed by brick-concrete structure when rebuilt in 1927, this measured drawings was restored wooden structure according to recount.

their molding-making were both unified and rich variability, each Bogu-model was 150 mm thick, but their length and decorative sloping degree were difference, the shortest Bogu-decoration was that on the back hip on side hall of the first bay (No. ④), 1.2 meter length, and the longest was that on the front hip ridge on main hall of the second bay (No. ⑤), 2.10 meters length; in general, vertical height of Bogu decoration on the front hip ridge (about 0.9 meter high) was slightly higher than that on the back hip (0.85 meter high), white decorative sidelines with black background, presenting strong three-dimensional geometric modeling, having Guangdong's strong local specialties.

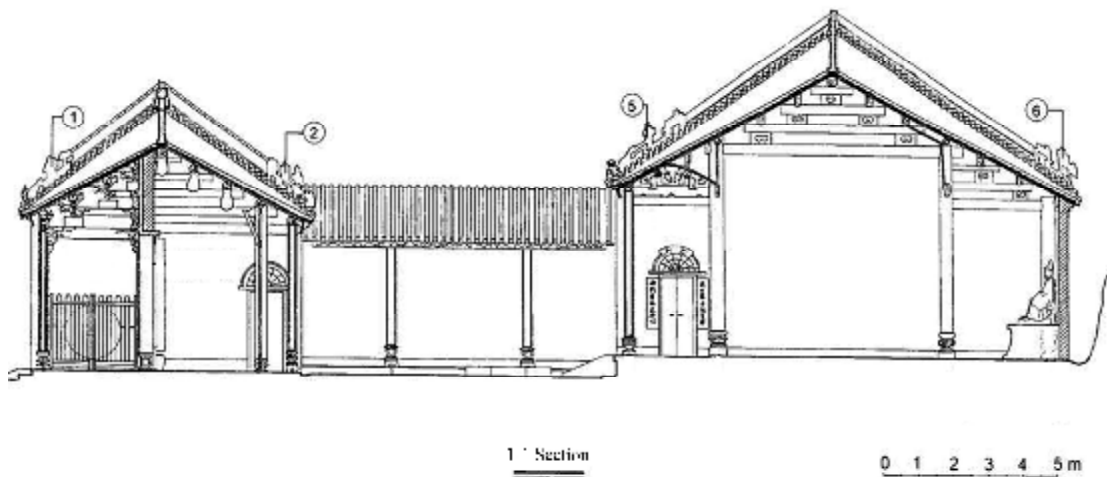


Figure 113. 1-1 section of the ancestral hall.

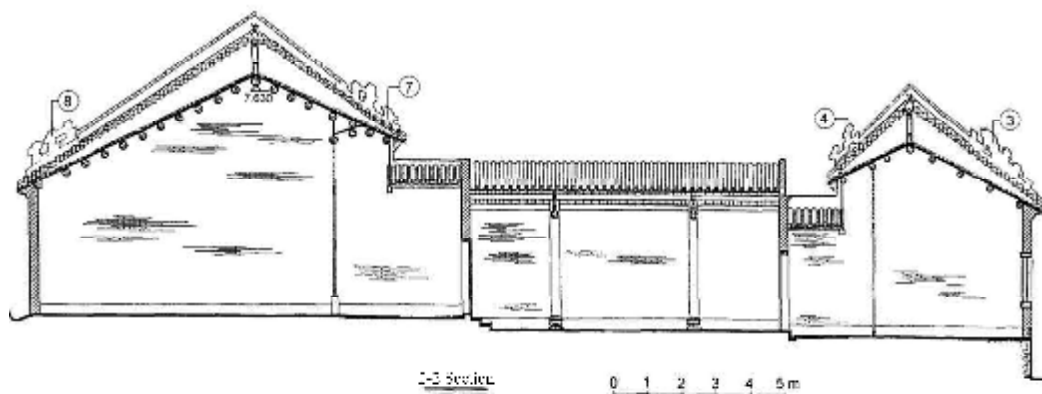


Figure 114. 2-2 section of the ancestral hall.

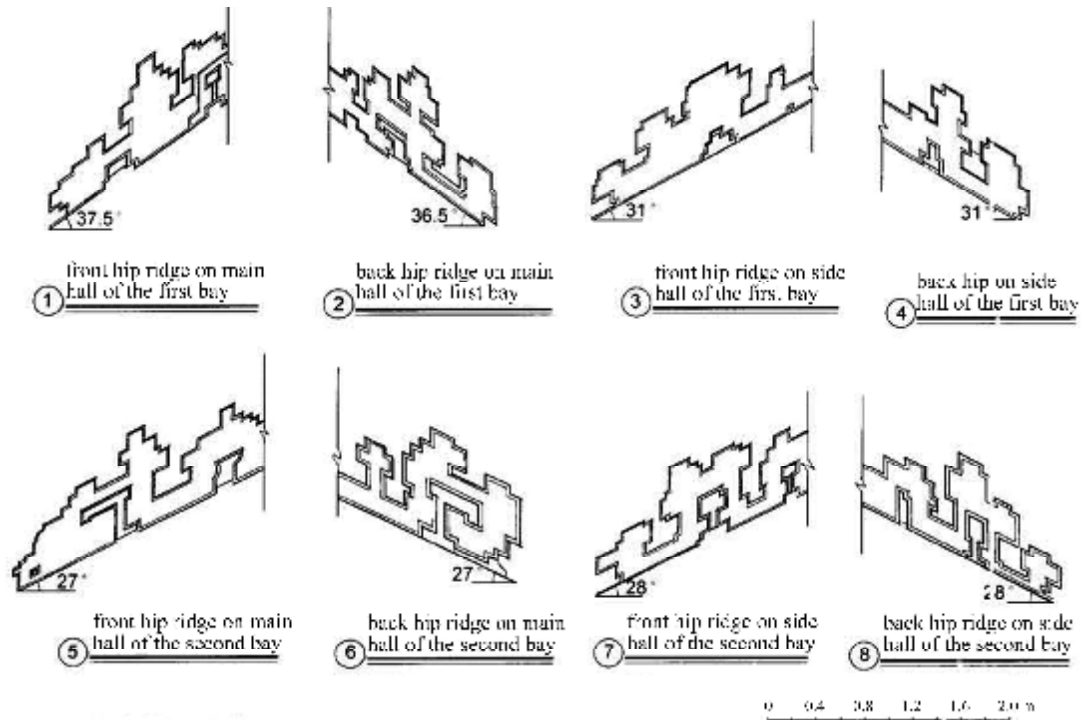


Figure 115. The Bogu decoration on the hip ridges.

*note: all decoration of Bogu ridges were 150 mm thick.*

### 8. 2. 2. 2 Chen Clan Temple

The Chen Clan Temple is in fact an academic building in the city of Canton, located in Enlongli street, Zhongshan 7<sup>th</sup> Road, built by the Chen clans of 72 counties in Guangdong province for their generations' accommodation, and prepared for the imperial exams in 1894 in Qing Dynasty (Yang Ziyuan, 1999). It began to be built in 1890, was completed in 1894. It was very famous because this building was broad in scale with splendid and magnificent (Mai Yinghao, 1990), and converged folk architectural decorative arts in zone of Guangdong, for example, ceramic carvings and decorative plasterworks on the roofs, could be found in this building of late Qing dynasty.

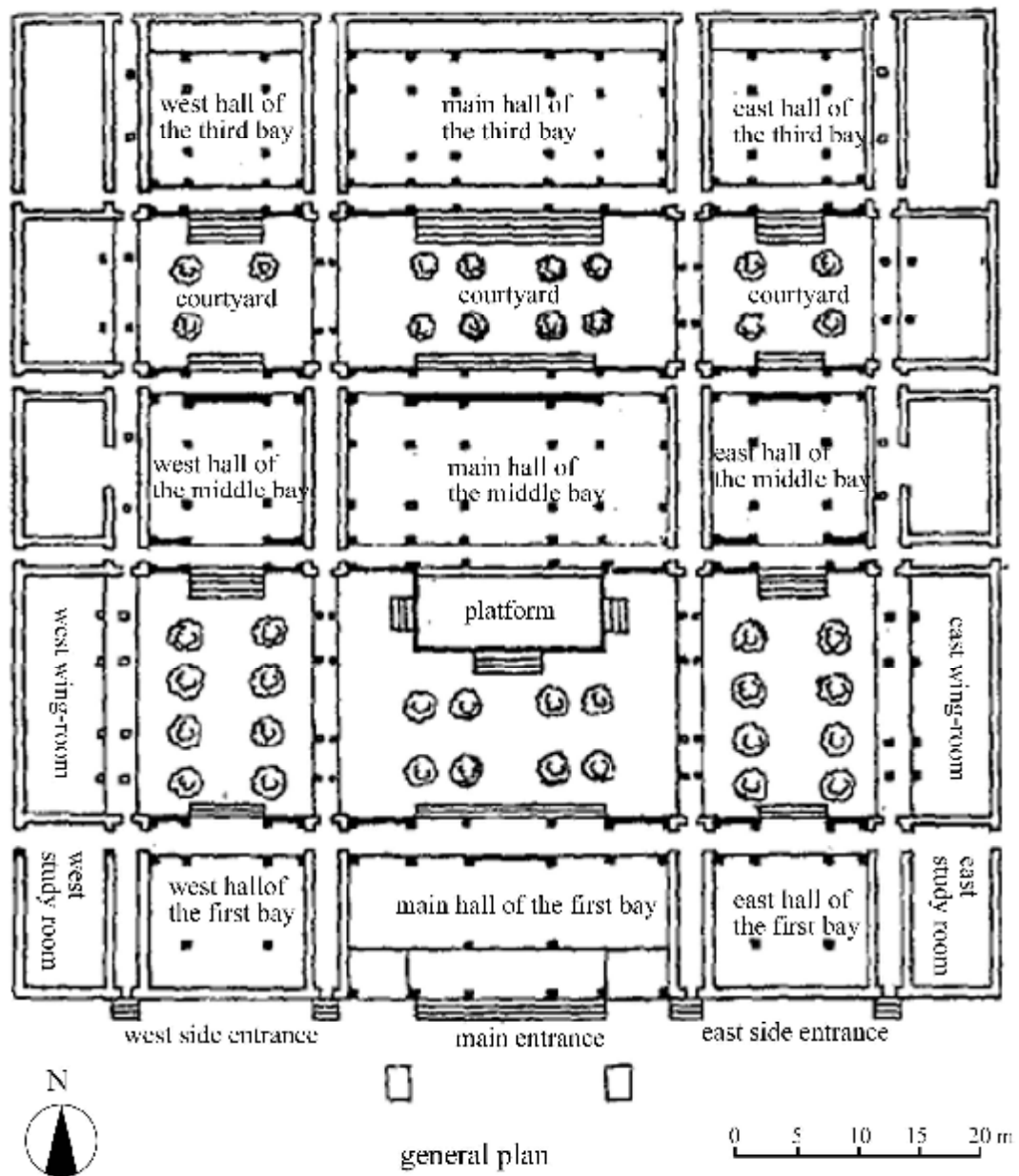


Figure 116. The general plan, derived from the book  
*'the Chen Clan Temple'* (Huang Miao Zhang, 2006)

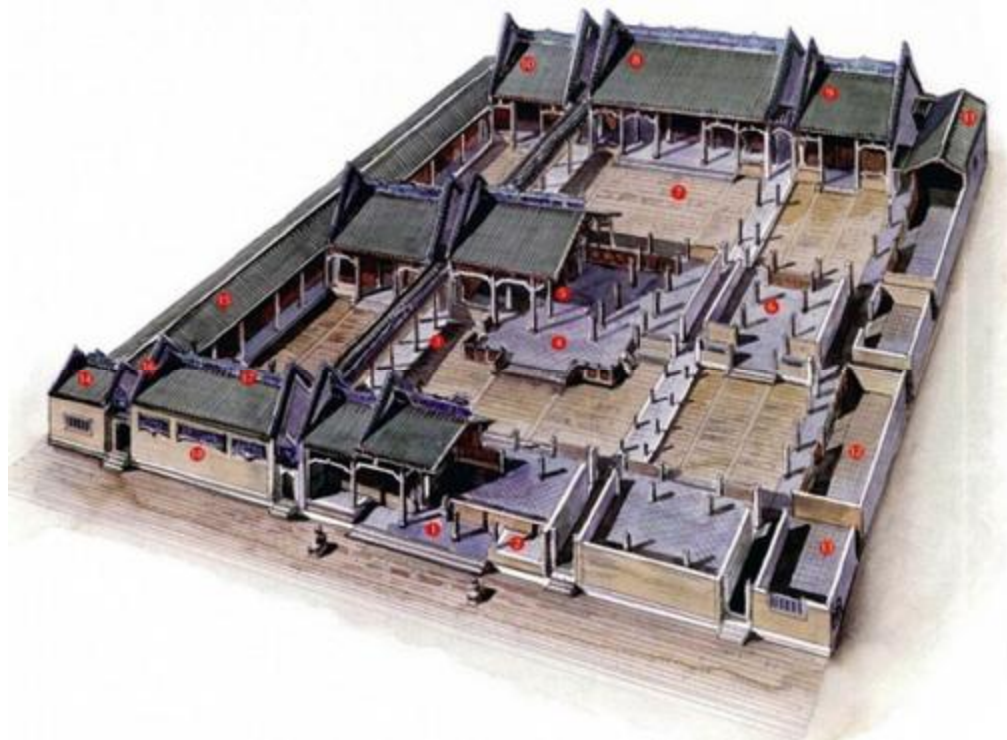


Figure 117. The Model of Chen Clan Temple, image derived from [www, memoryofchina.org](http://www.memoryofchina.org).

### 1) The Plan and Elevation

Chen Clan Temple was a symmetric complex buildings, comprising a large Fengshui pond in front of the ancient building, east courtyard, west courtyard, back garden and main halls, and the total area was 15,000 square meters (Luo Yulin, 1996), among of them, width and depth of the whole main halls were 80 meters, and building area were 6400 square meters, comprising of 19 buildings with 9 halls and 6 courtyards, the whole building layout became a square plan (Nai Ying, 2010). It Faced south, the complex buildings around a north-south axis. For it's middle halls, were in proper order the front hall, courtyard, platform, the central hall, patio and the back hall (Luo Yulin, 1996).

For the first row halls, The middle entrance of the first bay was 26.57 meters width, and 14.91 meters depth with 17 main beams and 4 wooden columns, dividing front room and back hallway, four wooden carving doors were placed in the middle

of the hall, separating the interior and exterior space (Hunag Miao Zhang, 2006). This large wooden doors had function of the screen walls in Chinese traditional Feng Shui theory. And the west and east hall, each was 14.05 meters width and 11.90 meters depth with 17 decorative beams and 3 wooden columns. Every halls were separated with "Qingyun Alleys" and connected with small corridors (Chen Zehong, 1999).

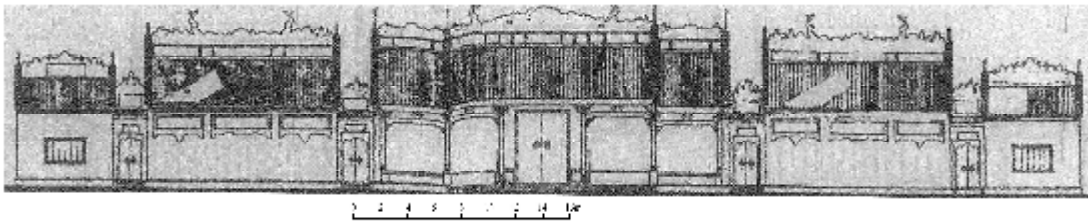


Figure 118. The elevation of the first bay.

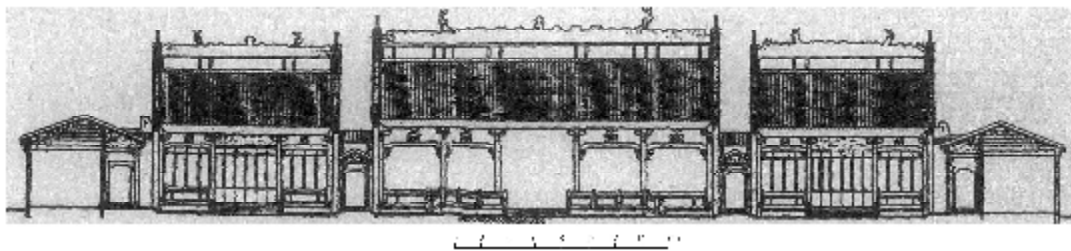


Figure 119. The elevation of the middle bay.

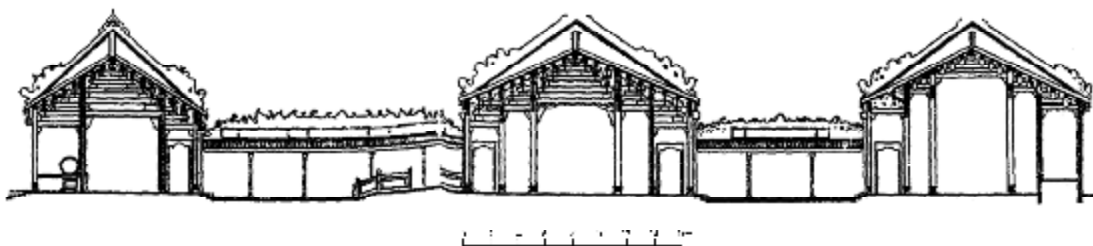


Figure 120. The section of the middle bay.

Note: above-mentioned three images derived from ‘*Canton Chen’s Clan Temple*’ (Luo Yulin, 1996).

For the middle row halls, The Gathering hall (the central hall) of the middle halls were the most important hall, not only materials were the best, also decorative



level was the highest, meanwhile, also a place for the Chen clan's meeting, discuss, and offering sacrifices to ancestors (Huang Miao Zhang, 2006). This hall was 26.57 meters width, 16.90 meters depth with 21 main beams and 6 stone-carved columns, it's building area was 449 square meters (Chen Zehong, 1999), and the platform was 16.84 meters width, 5.76 meters depth, connected directly with the Gathering hall, not only make extended the space of the Gathering hall, but also made the Gathering hall looked more high and spacious. The west and east hall of the middle bays, each was 14.05 meters, and 16.70 meters depth with 21 wooden beams and 6 columns. For the third row halls of the ancestral temple, the central hall was 26.57 meter width, and 14.15 meters depth with 21 beams and 5 columns. In general, Memorial tablets of Chen's ancestors were placed on shrines of wooden shelves (8 meter high) in halls of the third row halls (Mai Yin hao, 1990), which was once used for worship of their ancestors.

### **Plasterworks**

The architectures in the Chen Clan temple were decorated with wood carving, stone carving, brick carving, pottery, plasterworks and iron engraving (Huang Miao Zhang, 2006). In particular, the decorative plasterworks on the roof of this ancestral hall were very splendid and colorful, fully local folk artistic style, being thought a typical example that the folk building practice have combined naturally with traditional decoration in the late Qing dynasty (Nai Ying, 2010). The content of these beautiful ornaments were generally mostly flowers and fruits, auspicious



Figure 121. A. Decorative plasterworks on the roof in Chen Clan Temple, photos were shot in 1894, derived from [www.memoryofchina.org](http://www.memoryofchina.org).

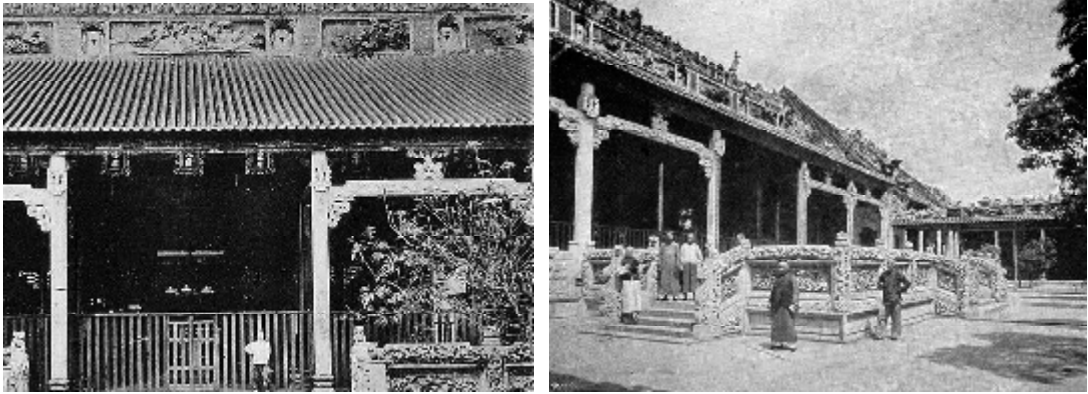


Figure 121. B. Decorative plasterworks on the roof in Chen Clan Temple, photos were shot in 1894, derived from [www.memoryofchina.org](http://www.memoryofchina.org).

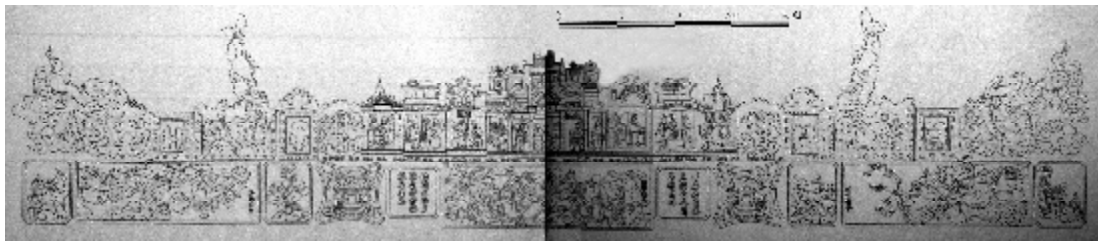


Figure 122. The front elevation of the decorative plasterworks on the ridge of the roof in the entrance hall of the first halls.

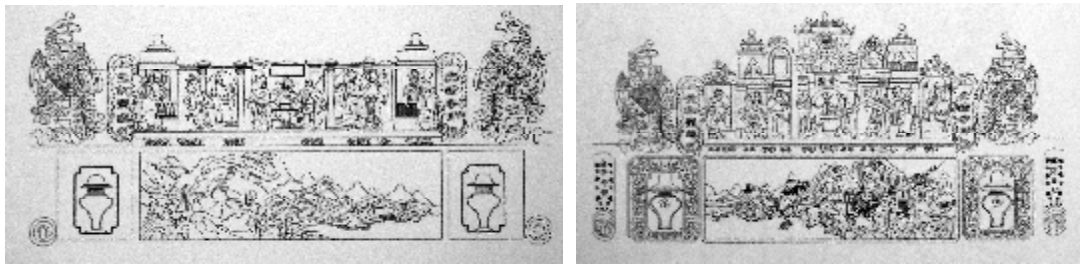


Figure 123. The front elevation of the decorative plasterworks on the ridge of the roof in two sides halls of the first halls.

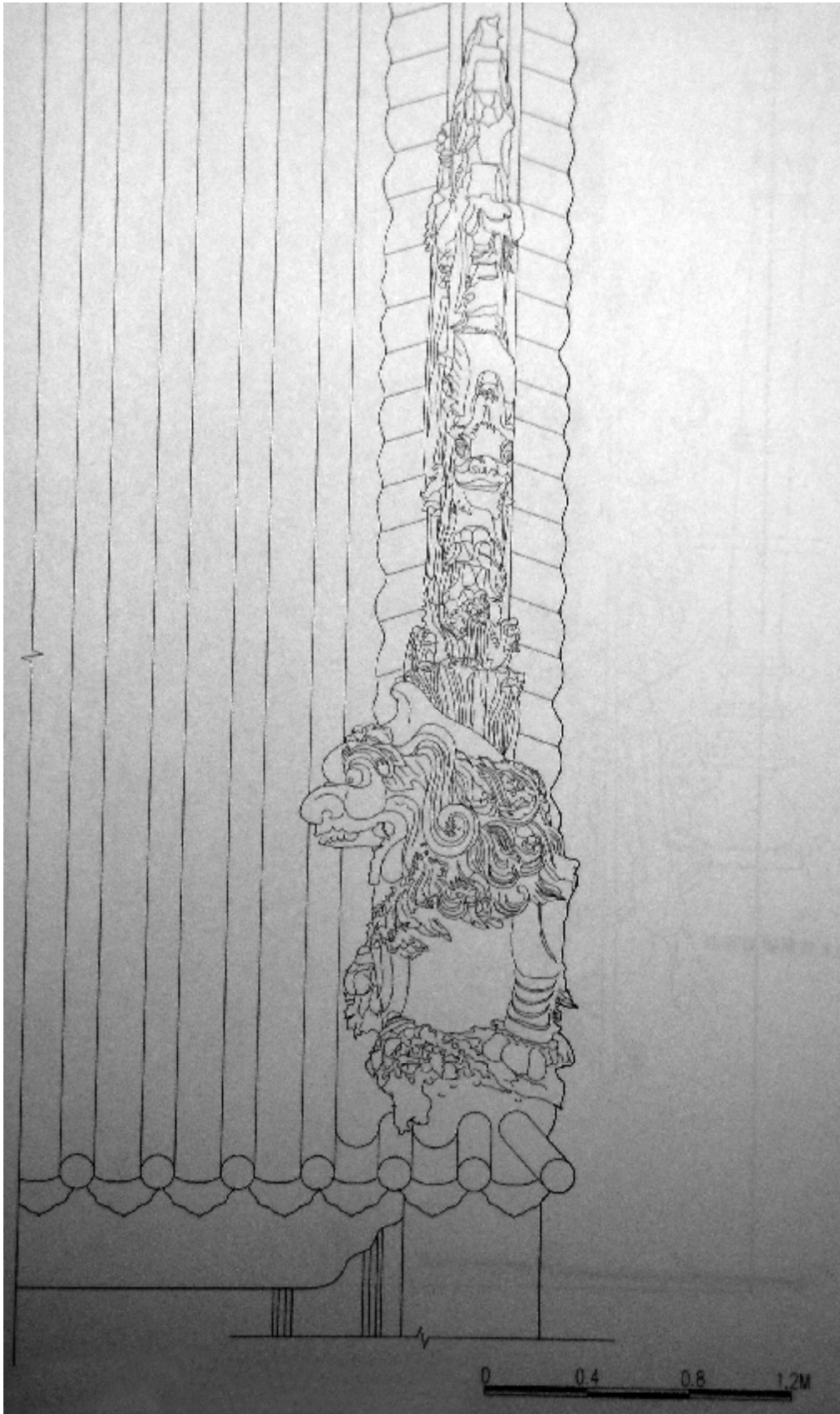


Figure 124. The front elevation of the decorative plasterwork on the hip of the roof in the middle hall of the the second halls.

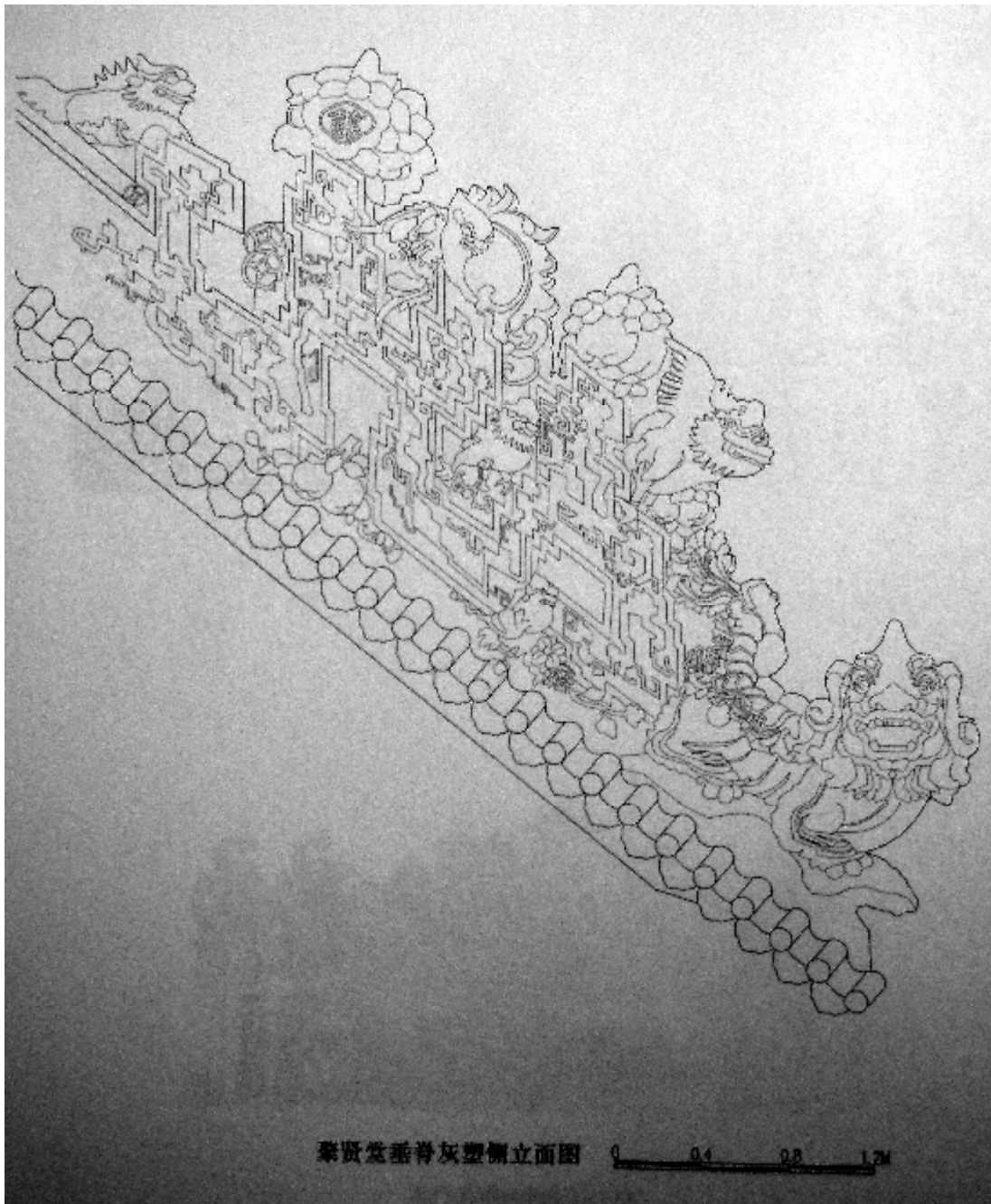


Figure 125. The side elevation of the decorative plasterwork on the hip of the roof in the middle hall of the the second halls.

*Note:* Above three images derived from the book ‘The Factual Record of the Chen Clan Temple’(Li Zhuoqi etc., 2011).

animal, scroll design and geometric pattern, utensil and Bogu pattern, auspicious Chinese characters, historical personages and scenes in traditional dramas<sup>[26]</sup> (Huang

Miaozhang, 2006). The plasterworks in the Chen Clan Temple were decorated mostly on the ridges of the roof and the main ridges of corridors and had a total length of 2,500 meter in the buildings. The general area of decorative plasterworks were about 2,448 square meters (Chen Zehong, 1999). It was the largest scale decoration in the province of Guangdong .

Characteristic of decorative plasterworks in Chen Clan Temple in Guangzhou was bright-colored and beautiful, having strong folk surprised warm-color (Li Gongming, 2008). The most outstanding works were 12 pair of plastering loins of full sculpture that stayed on the front hip ridge of gable walls with a big body, which were very difficult to produce, showing the superb plastering skill in the late Qing dynasty (Luo Yulin, 1996). These decorative loins were 1.00 meter length, 1.00 meter high, and about 0.37 meter thickness, and the whole body was vermilion, single horn, opening mouth and glaring eyes, modeling of each lion was different, and their expressions were magnificent and powerful (Nai Ying, 2010), symbol of exorcising evil spirits and of protecting the safety.

The decoration on the main ridge of the roof in the Gathering hall was divided two parts, the upper was ceramic decoration , and the lower was just rich and colorful plasterworks, most of plastering decorations had symbolizing and auspicious meanings (Nai Ying, 2010), such as *Gods of happiness, prosperity and longevity, Honor and wealth, Pines and cranes bring long life*, and decoration on the roof of corridors like *Swearing to be brothers in the peach garden, Zhang Song read Cao Cao's new book, Seven sages in the bamboo grove* (Liu Zichuan, 2011) and decorsations in other buildings as *More and more happiness, Bogu decoration, scroll design*<sup>[26]</sup> on the gable wall and so on (Mai Yinghao, 1990). The plasterworks in this exquisite ancient building were examples of elegant and perfect plastering art: some low reliefs were made as they go through the gable wall and outer frieze wall; some high reliefs come out up to 50-62 cm from the wall or from ridges, presenting a three-dimensional effect (Huang Miaozhang, 2006). These wonderful plasterworks had not only wide decorative themes, but also comprised various decorative forms

from low relief to full sculptures, having deeply influenced Chinese cultural and architectural developments (Chen Zehong, 1999). it was a real conclusion of plastering arts for the traditional buildings in the Province of Guangdong.

Like other architectural decorative arts in Guangdong, the plasterwork went through a process of development from simple to complicated during period of Qing dynasty:

Date		Plastering Technique	example
Late Ming dynasty	The emperor Hongwu of Ming dynasty	Low relief (scroll design)	The Memorial Archway of Junma Liang Ancestral Hall (1512)
Early Qing dynasty	The emperor Kangxi of Qing dynasty	High relief	Panyu Liugeng Hall (1672 rebuilt)
Middle Qing dynasty	The emperor Qianlong of Qing dynasty	Bogu Plasterworks and boat decoration	Canton Nansha Zhang Clan Ancestral temple (1756)
Late Qing dynasty	The emperor Guangxu of Qing dynasty	The flourishing plasterwork with diverse decorative style and techniques.	Chen Clan Temple (1894)

Evolution of Canton decorative plasterwork.

### **8.3 Thirteen Factories and Architectural complex in Shamian Island**

Lingnan has unique geographical position, located between the Nanling and the South China Sea, the topography is north high and south low, a long coastline and rich marine resources, excellent ocean conditions. From ancient times, Lingnan social and economic life have a close relationship with the marine, Lingnan culture has the characteristics of marine culture, and foreign culture has a profound impact for the Lingnan culture.

The trade exchanges build a bridge of contacts and exchanges between Chinese and foreign cultural, continuation of foreign trade, promoted the dissemination and exchange of foreign culture in Lingnan. The famous Maritime Silk Road which started in Han dynasty, prospered in Tang and Song dynasties, later, Guangzhou became the only one international trade port in China due to policies of forbidding trade on sea of Ming and Qing dynasties, and Europeans opened the trade routes from Guangdong direct shipping to Europe in the 16th century, having begun a direct dialogue between Chinese and Western culture.

The channels of trade exchanges are the main route of transmission of foreign architectural culture in Lingnan. The Fan Fang of Guangzhou has specifically built residential area for foreign businessmen in Tang Dynasty. Trade monopoly period of the Qing Dynasty ‘Thirteen Factories System’, the emergence of foreign commercial buildings of Western architectural style, Western architectural culture entered the city of Guangzhou because of construction and prosperity of the Thirteen Factories.

#### **8.3.1 Trading buildings of the Thirteen Factories**

The Thirteen Factories has even been an area of Guangzhou, where the first foreign trade was allowed in the 18th century since the ban on maritime trade (Wang Yu, 2011). The Sites of the Thirteen Factories located in the outside of city walls in the city of Guangzhou, is about today’s blocks between the Cultural Park and along the 13<sup>th</sup> road. In 1793, as the Deputy Special Envoy of visiting-China delegation of British Government, Sir George Thomas Staunton (1781 - 1859) had ever arrived in

Guangzhou and a short stay, he wrote in the book 'Records of British Special Envoy Meet Qianlong': "Guangzhou as a seaport and the border city, apparently there are many multi-national characteristics. The European countries have established rows of their trading firms along riverside of the outside of the city walls in this city. The national flags are being hanging above Gorgeous Western-style building, matching with opposite Chinese building, and adding many special funny. Western architectural landscape, foreign merchant and businessman, making Thirteen Factories present a rich exotic, whereby, it can be seen that the Thirteen Hongs had signs of prosperity at that time.

The Western-style architectures were foreign commercial buildings in the Thirteen Factories, were complete transplanted. The development of Guangdong's foreign trade, giving birth to the great business opportunities, merchants of European countries came to the city of Guangzhou one after another. Fifty-five years of Emperor Kangxi (1716), the United Kingdom was officially opened the Trading Quarter in the Thirteen Hongs, having become the first foreign trading buildings, subsequently other European countries have followed suit. Western-style buildings of the Thirteen Hongs has long ceased to exist, but as the product of that historical period, the Western architectural culture has already spread to Guangzhou, and having had a huge impact.

Paintings and relevant data depicting architectural landscape of the Thirteen Hongs showed the Western architectural features: sloping roof, pillar and colonnade, Yamahana facade with modeling and so on. The paintings also clearly depicted the detailed features building of outside the gallery style, such as using the architectural details of the composition of 'the Palladian Motive' column style. Usually, the foreign trading buildings facing to the Pearl River had basically designed outside the gallery of coupons-column, which is the main form of Italian Renaissance architecture. The construction of foreign trading buildings in the Thirteen Hongs mainly happened on the first half of the 18th century, and the European construction has just gone through the period of mainstream of the



Renaissance building with neoclassical building, features of building facade of Western architectural style in the Thirteen Hongs have closely related with contemporaries European architecture.

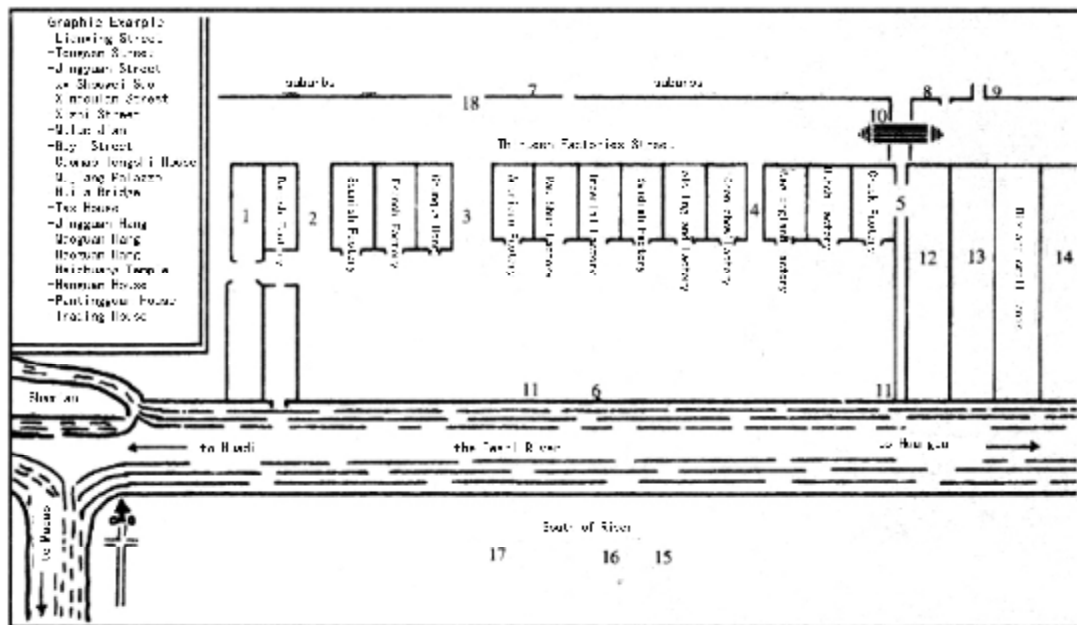


Figure 126. The plan of the Thirteen Factories in Guangzhou (Yang Bingde, 2003).

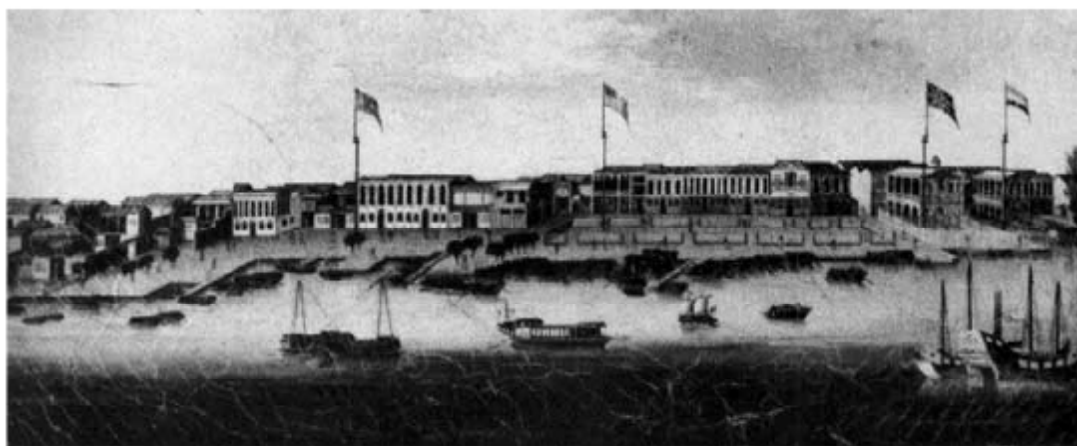


Figure 127. Trading Buildings in the Thirteen Factories in Guangzhou (Yang Bingde, 2003).



Figure 128. Building of the Palladian Motive style in the Thirteen Factories (Yang Bingde, 2003).



Figure 129. One close shot of the Thirteen Factories in Tongwen Street (Yang Bingde, 2003).



Figure 130. One close shot of the Thirteen Factories (Yang Bingde, 2003).



Figure 131. Decorative plasterwork on the ridge of roof of one building in the Thirteen Factories (Yang Bingde, 2003).

### **8.3.2 Architectural complex in Shamian Island**

Shamian Island, the area is about 0.3 square kilometers, it has ever been the foreign concessions of British and French in the history, about the Second Opium War in the 1860s, Britain and France selected this small sandbank in the Pearl River as foreign concessions address, filling it and became Island, and tenancy agreement was signed in 1861. it was divided in two concessions, given to France and the United Kingdom, of which 3/5 belonged to the British, approximately 264 acres, and 2/5 belonged to the French, approximately 66 acres. Each have a bridge to connect to the mainland of China.

There were original 156 Western-style buildings in Shamian Island, Most of the buildings were constructed in the second half of the 19th century, are mainly foreign consulates, trading firms, banks, churches and residential, etc. Most of the existing buildings have the Western architectural style and features.

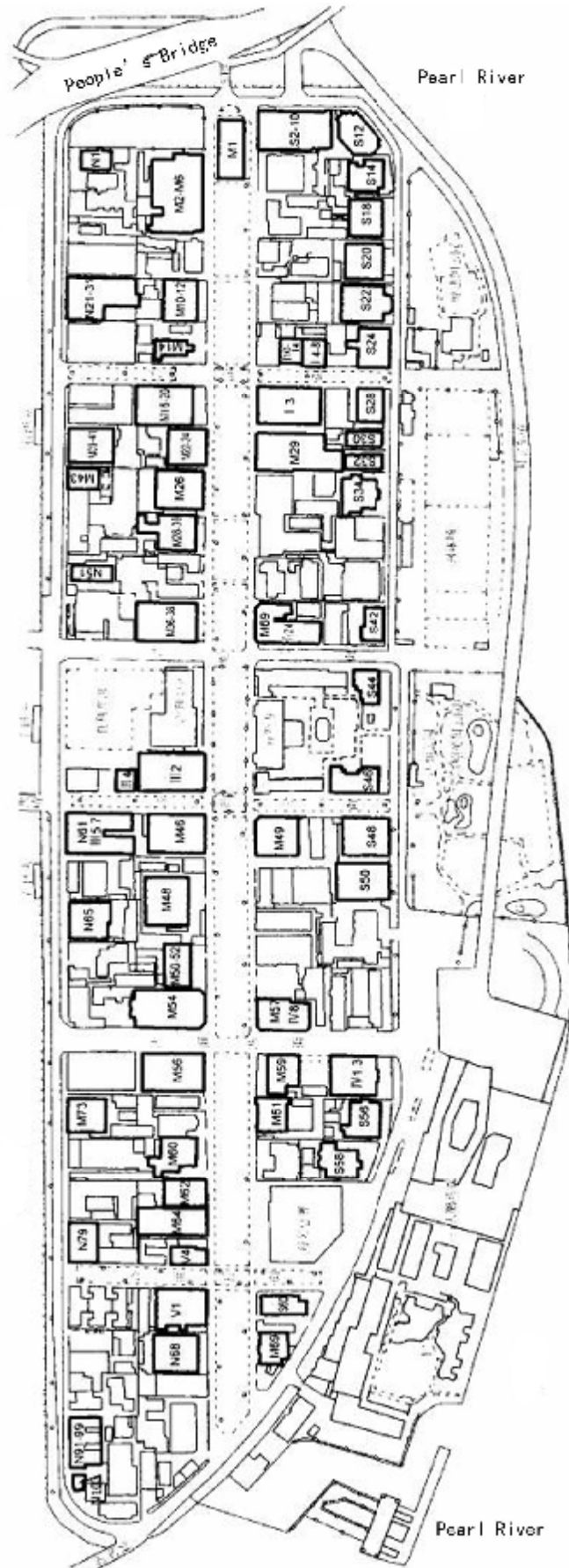


Figure 132. The plan of Shamian architectural complex (Tang Guohua, 2004)

The decoration of the Exterior wall, in the early stages, usually using mainly Italian stucco techniques to plaster walls, mortar was thicker, and rugged surface, it's very three-dimensional in the sun. For that of interior wall, white decorative plaster lines of outwardly projecting of superimposed layers are notable features of Shamian modern architectural decoration, usually applied in the corner of the junction of the interior walls and ceilings. In addition, on some arch friezes of doors and windows, plastering decorative lines, very simple and beautiful. In the following, only one part of images about architectural complex in Shamian Island.

- The Hong Kong & Shang Hai Bank (built in 1865)

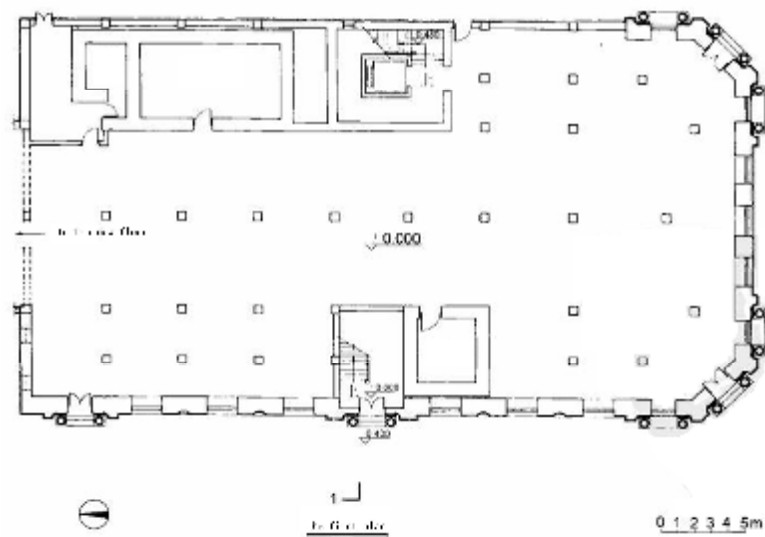


Figure 133. The first plan of The Hong Kong & Shang Hai Bank (Tang Guohua, 2004).

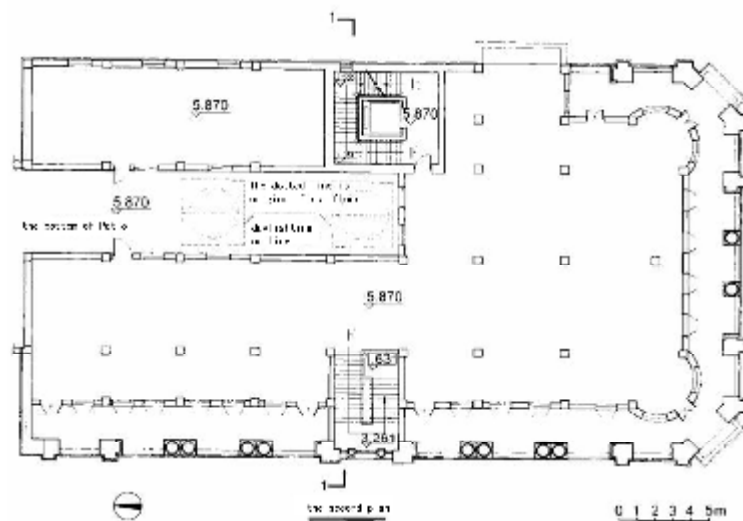


Figure 134. The second plan of The Hong Kong & Shang Hai Bank (Tang Guohua, 2004).

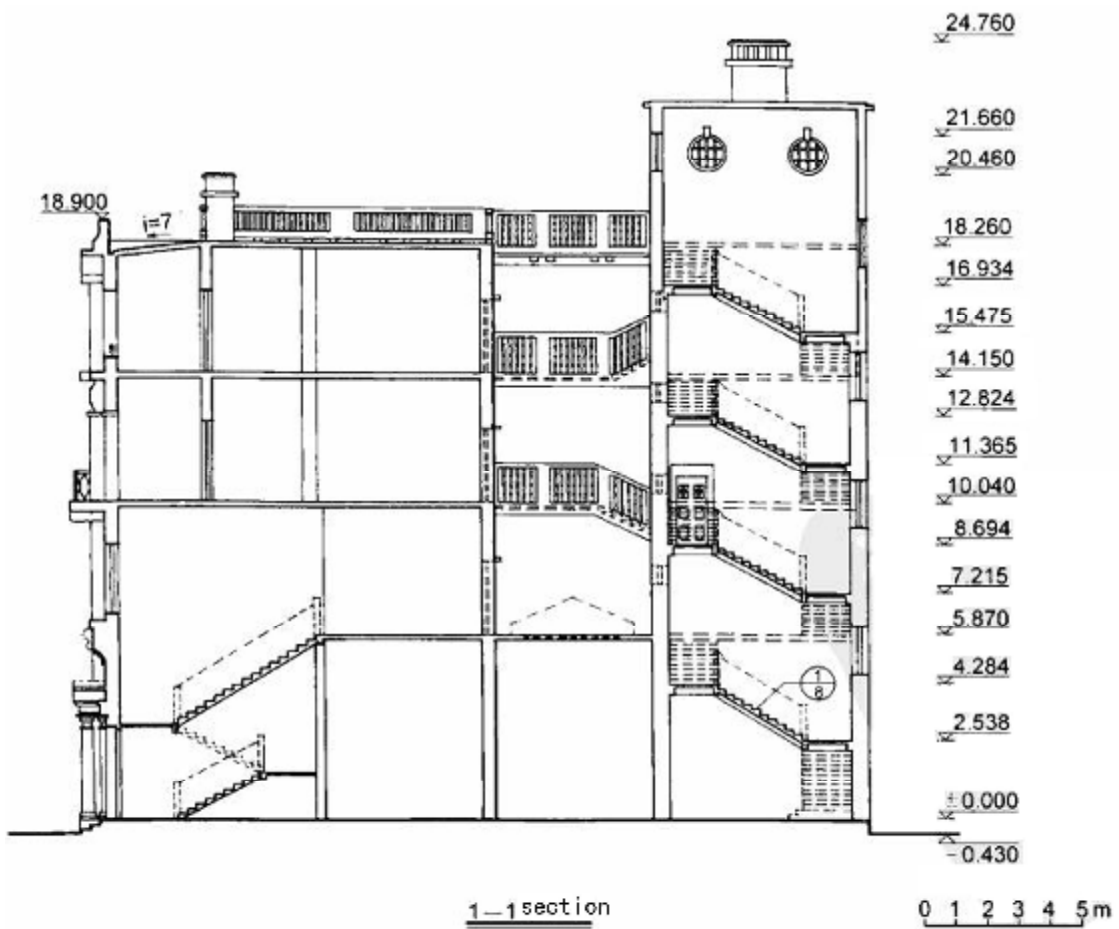


Figure 135. The section of The Hong Kong & Shang Hai Bank (Tang Guohua, 2004).

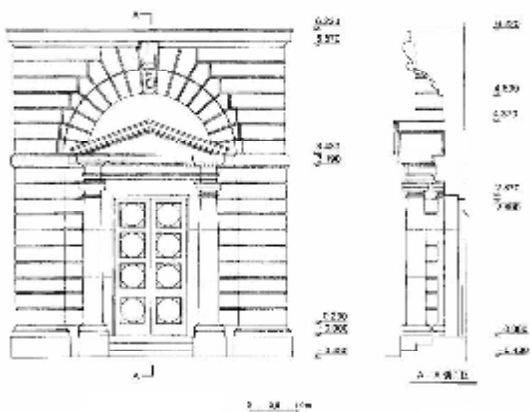


Figure 136. Detail of main entrance  
of the first floor.



Figure 137. The detail of Stair railing.

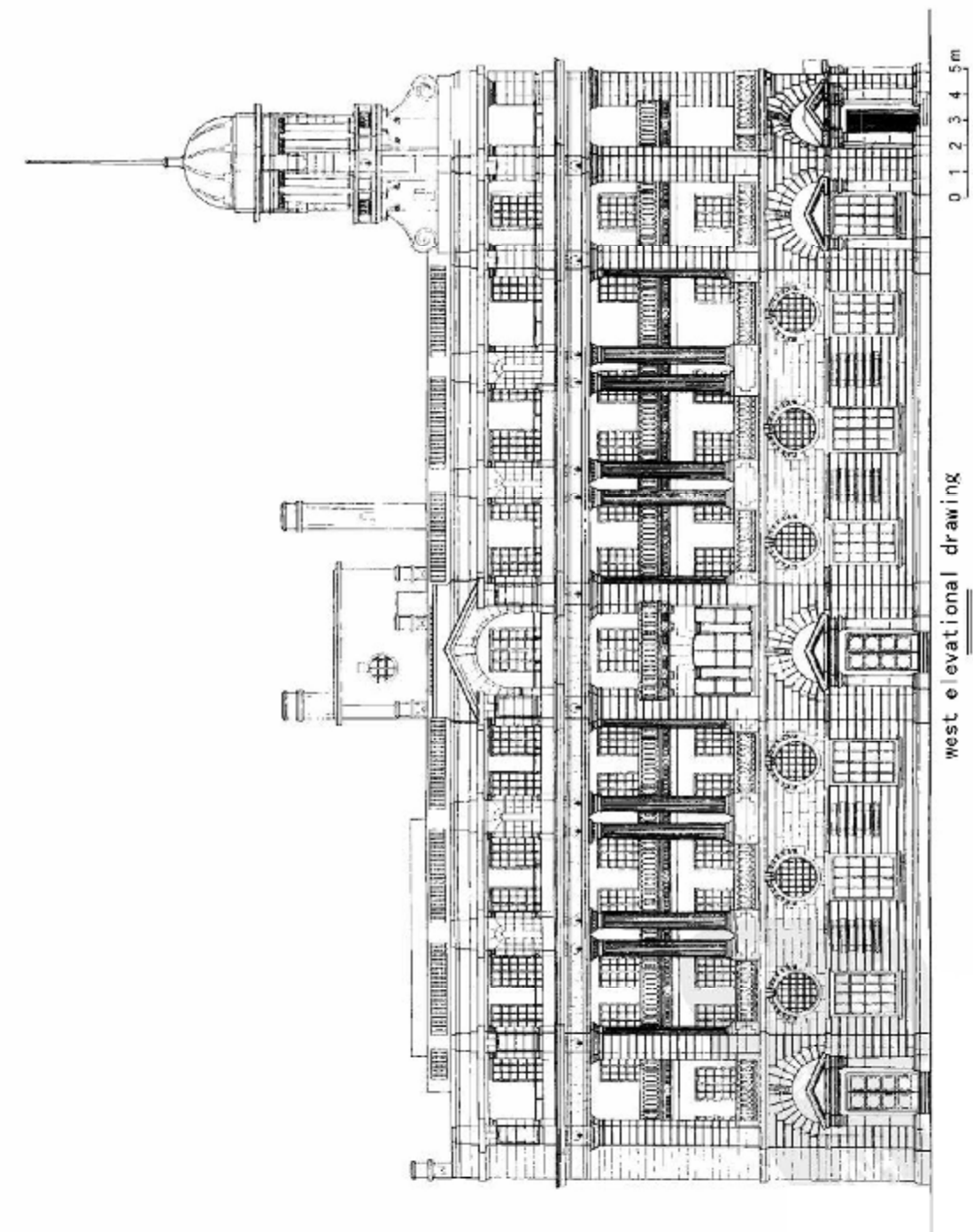


Figure 138. The west elevational drawing of The Hong Kong & Shanghai Bank (Tang Guohua, 2004).



## **8.4 Conservation and restoration about Guangzhou plasterwork**

### **8.4.1 Protection challenges of Guangzhou plasterwork**

Urban development and construction have compressed the living space of the traditional building systems, it's difficult to survive for the Guangzhou local plaster due to continuous decrease of traditional building. This outdoor decorative arts has been already difficult to be applied on the roof of modern buildings in a large scale in contemporary conditions, also difficult to reproduce the brilliant of Ming and Qing Dynasties. Therefore, there are two kinds of effective way to protect it, that is, a complete record of physical form of plasterwork, and extend the life of the existing plaster. This two ways are also urgently need to solve the problem at present.

Firstly, a professional plasterer is difficult to be cultured.

At present, there are mainly five problems for Guangzhou plasterwork, it's difficult to culture the young plasterer: First, learning cycle of plaster skills and techniques is too long; Second, the salary is meager; Third, plaster market is limited; Fourth, the status of the industry is low; Fifth, lack of specialized skill certification.

Secondly, the production year of plaster is difficult to distinguish.

Now the city of Guangzhou is still remained many plasterworks on the roof of ancient buildings during Ming and Qing dynasties, however, few people care about their specific production year for this old decorative art, except for a few plasterwork that located on some roof of famous ancient buildings such as Chen Clan Ancestral temple, Foshan Ancestral temple and so on. This embarrassing situation made the present plasterers not to know how to restore them, facing to the damaged plasterworks.

Thirdly, physical form of plasterwork is difficult to record and reproduce.

Guangzhou plasterwork have learned from Chinese painting, their modeling pay attention to style of freehand brushwork. A plasterer must have special experienced skills and techniques, at the same time, he also know completely plasterwork's manufacturing process, including coloration, decorative position, patterns, even

Fengshui. However, for the plasterers, both master and apprentices universally have seldom education. Maybe, it is also one difficult reason to culture an excellent plasterer.

#### **8. 4. 2 Method of current restoration and conservation**

During my field research in the Guangzhou region, the famous plasterer Shao Chengcun presented me: The damage of plasterwork generally is following several aspects: First, color of surface of plaster has faded, the most patterns are difficult to distinguish the original color; Second, surface of plaster is varying degrees of weathering; Third, part of plaster has incomplete; Fourth, some decorative sculpture in round is cracks and incomplete; Fifth, some plasterwork is breakage or total disruption, only remaining traces. However, the cultural protection of plasterwork is only limited to the simple conservation and restoration, which is a relatively simple, a low level of development and utilization. A result produced by the primary product is only low value-added art; In addition, needs of plasterwork are less and less, fewer and fewer people understand the folk decorative art, as a result, few people wants to learn the craft, it is in danger of disappearing.

#### **8. 4. 3 Influence of weathering factors for the plaster**

Guangzhou is hot and humid and rainy, the annual precipitation is above 1600 mm, relative humidity of annual average is up to 78%, the washing of rain and long-term wind and sun, for without sheltering plaster decoration, weathered phenomena is very common and serious. The Canton Plasterworks are mainly used in the outdoor, having been weathering by the natural factors in long-term, damage of the surface of the decoration is often relatively serious. The plaster surface are detaching and colors are fading. The rain erosion on the originally plaster surfaces is very obvious. Meanwhile, surface of decoration has a lot of cumulation of dirt and dust and so on. These harmful factors greatly reduced the artistic value of the plaster decoration.

There are three unfavorable factors to affect the Canton plasterwork: physical, chemical and biological weathering. Among of them, the physical factor is due to changes in temperature, resulting in thermal expansion and cold contraction so that the plasterwork's internal and surface present uneven distribution of stress, making it generated cracking. The chemical factor mainly refers to the acid rain, nitrogen oxides and sulfur oxides in the atmosphere produce chemical reaction with the body of the plaster decoration, generating water-soluble salts, resulting in the plaster surface corrosion. Biological factor sufficient is that because the the plasterwork surface is often in a wet state, lower organisms, such as algae or mildew, are easy to grow, these biological roots can make plaster surface detached, they can release the acidic substances during the growth process, can also cause corrosion for the decorative plasterwork.

#### **8. 4. 4 Conservation and restoration recommendation**

The Canton plasterwork's weathering phenomenon can be improved by artificial way, that is applied thereto the effective protection for them. Such as, for precious cultural relics of plaster decoration in the outdoor, should avoid continuously to be exposed in outside, can use pavilion, canopies the like components to covered them, minimizing weathered destruction. For a small part of the high artistic valuable plasterworks, should be migrated to the indoors to protect.

##### **8. 4. 4. 1 Brushing the protection layer for the surface of plasterwork**

Brushing the protection layer for the surface of plasterwork so as to cutting off the air, and inhibiting protective objects to be weathered unceasingly. Such as brushing alum-water or clear lacquer of the Nippon Paint on the surface of the plasterwork, having a better waterproof effect.

##### **8. 4. 4. 2 Follow the international restoration principia**

For those weathered severe plasterworks, should use the restoration technique of

*original patterns, raw material and original crafts* to repair, It's also the commonly used method at present.

#### **8. 4. 4. 3 Do a general cultural heritage survey**

For the Guangzhou plasterwork, do a general cultural heritage survey within the whole province, and all of them will be registered, with the help of software of the computer collation census data; And establish a network system in order to allow sharing of information more convenient and effective. Results of general survey are finally sorted out references that are available for inspection by any person, which the main contents are the background information, historical evolution, specific terminology, production process of crafts, used by production of tools and materials, so that facilitate the future's academic research and practical application. At the same time, for survey of cultural artifacts, mobilization should involve heritage owners, local residents and associations, teachers and professors, Scientific research projects personnels, archaeological professionals, specialized architects of the ancient buildings and staffs of museums and cultural system and so on. Through census activities, will validly promote awareness of heritage protection to the society, greatly helping the subsequent heritage protection work.

#### **8. 4. 4. 4 Establish the certification system of inheritor of plasterer**

It's necessary for the inheritor of plasterer set up the independent qualification certification system of construction by the administrative department of construction and related heritage institutions, the plasterer who have gotten certification can undertake independently plaster maintenance tasks, leading their construction team to complete the project, for used by the materials of plaster decoration, plaster theme and color, they can own appropriate rights of deliberations. In particular, the plasterers and their construction team have an independent legal personality, helping to enhance of plasterer's society status in the construction industry.

In general, the protection work of cultural relics of plasterwork is still relatively

backward, it's an urgent need a scientific conservation measures to change the presenting backward protection method of the rescue.

#### **8.4.4.5 As a professional course of University**

Plasterwork will be as a professional decoration art, and will be directly introduced into the professional course of University. On the one hand, can culture higher professional plasterer in the university; on the other hand, can provide a reasonable platform for international exchanges.

### **8.5 Summary**

#### **1) Simple and Splendid decoration**

Simple decoration is opposite with that of magnificence, each of them can become a single decorative style and be used in diverse period and different building, meanwhile, they are also simultaneously able to be decorated in a building such as the various plastering decoration in Chen Clan Ancestral Temple. In general, decorative works of the late period were more splendid than that of the early during the period of Qing dynasty, the early period plastering decoration were mainly simple motifs, little personage pattern, the middle phase a lot of Bogu decoration began to be used on the ridge of the roof in folk buildings, and the late period of Qing dynasty, splendid and magnificent plasterworks were decorated in the ancestral halls or the wealthy houses. The interior plaster were more simple than that of the exterior, such as frieze decoration on the doors in some ancient houses were only single white plastering pattern. For most of ancestral halls and some private schools, the plastering decoration were generally splendid and magnificent, and applying three-dimensions adorning styles like high relief, through carvers and full sculptures with red and yellow warm-color tone. These decoration used rich decorative themes, presenting an secular luxurious atmosphere. However, for the folk houses and gardens, the decoration were generally simple and unaffected, using low relief to decorate on the gable walls, frieze on the outer wall and on the windows or doors,

and combining naturally with buildings.

## **2) Fine and Coarse Decoration**

In general, the experienced plasterers thought over to use the fine or coarse technique according to the visual distance. For the parts that field of vision was better, and lower buildings, the decoration should be fine and meticulous, making the plastering works more exquisite. And for the long distance decoration, the plasterers often used the coarse technique to plaster the decorative works, not depicting the exquisite detail, seeking only an ornamental effects.

## **3) Pursuing the Non-figurative Modeling**

The plaster images of Canton plasterwork did not pursue the realistic artistic creation, and paid even more attention to the abstractive modeling according to one's impressions. At the same time, the plasterers usually used *super spatio-temporal* depicting technique, making images of different time and site combined in the same landscape to express an abstract subject. Such as, the peony and plum-flower could not blossom simultaneously, and litchi and longan can not also fructify in the same season under the natural condition, however, Canton's plasterers could make them unified in a landscape to present an auspicious meaning.



## **Chapter 9**

### **Conclusions**

#### **9.1 Introduction**

The plasterwork as a folk architectural decorative art is mainly used in traditional building and temples in Guangdong, It has been ever testified prosperity during Ming and Qing dynasties and then gradually declined since the late Qing dynasty because of the impact of modern architecture, making number of traditional building shrunk step by step. Fortunately, in recent years, the Canton's decorative plasterwork has been gradually received considerable attention by people, a series of the new conservation policies of cultural heritage are promulgated by the local government of Canton, having also encourage plasterers to organize working groups. In spite of number of plasterers are still limited, the governmental strategy has proved crucial to give new impetus to the development of decorative arts. And some universities like Canton University and South China University of Technology have also invited local experienced plasterers Shao Chengcun to explain plastering techniques for the undergraduate students, having promoted the the academic research of plasterwork.

In my thesis, I focus on studying the decorative plasterwork from historical literatures, materials, techniques, pigments and colors, sites of traditional historic buildings in the Qing Dynasty, and provenance of Guangzhou plasterwork, having creatively solved some fundamental problems.

#### **9.2 Unique Guangzhou Decorative Plasterwork**

##### **9.2.1 Scientific classification of plaster materials**

The Canton decorative plasterwork has been the result of individual production, and therefore the plasterer was both designer and craftsman; for the process of the production of plasterwork, the master was mainly responsible the key and fine techniques such as plastering model, decorative themes and the final coloration for



the works, while apprentices were only responsible for mixing the lime mortar and constructing the scaffold and so on basic works. In general, an apprentices is able to have well in hand techniques of plaster through the long-term (about 10 years) practice following their master by their careful observation and rote learning. Both Master and their apprentices have lacked for the systematic study for plasterwork, and the plastering technique and skills was imparted by generation after generation, moreover, they have rarely studied and thought the characteristic of plastering materials except that they only knew actual operation of technique and skills. Therefore, those plasterers were not at their wits end when faced to modern architectural revolution since the late Qing dynasty.

For the study plaster materials, I have had them scientifically classified, making the function and purpose of each material at a glance, and contributing to the follow-up study.

### **9.2.2 Five Colors Theory of Guangzhou plasterwork**

For China, it has an unique color theory in traditional Chinese painting and architectural decoration before the late Qing dynasty.. As early as in the Neolithic Age in China, it could also be seen use of the red, black and white from colored pottery that was excavated (Zheng Wei, 1985), contrasting colors with simple and plain (Heritage Editorial Committee, 1980). In the literature *The Records of Examination of Craftsman (Kaogong ji)*, a classic book on scientific and technique in old China, has even recorded the relationship between the earliest five colors theory and cardinal direction:

*The East belongs to cyan, the South is red, the West belongs white, the North and the sky are black, the Center belongs to yellow, Meanwhile, one colors can also mix with another, getting a new color, such as mixing red and yellow obtained orange, mixing blue and green obtained cyan and so on.*

It can be seen, black, white, red, yellow and cyan become five basic elements in

Chinese traditional color theory. It's generally based on the ancient Chinese philosophy of the Five Elements (also called Wuxing: wood, fire, earth, metal and water) theory (Hui Shujuan, 2010), it describes two cycles, a creation cycle, and an overcoming cycle, of interactions and relationship between the phases (Sun Shangpu, etc., 2005).

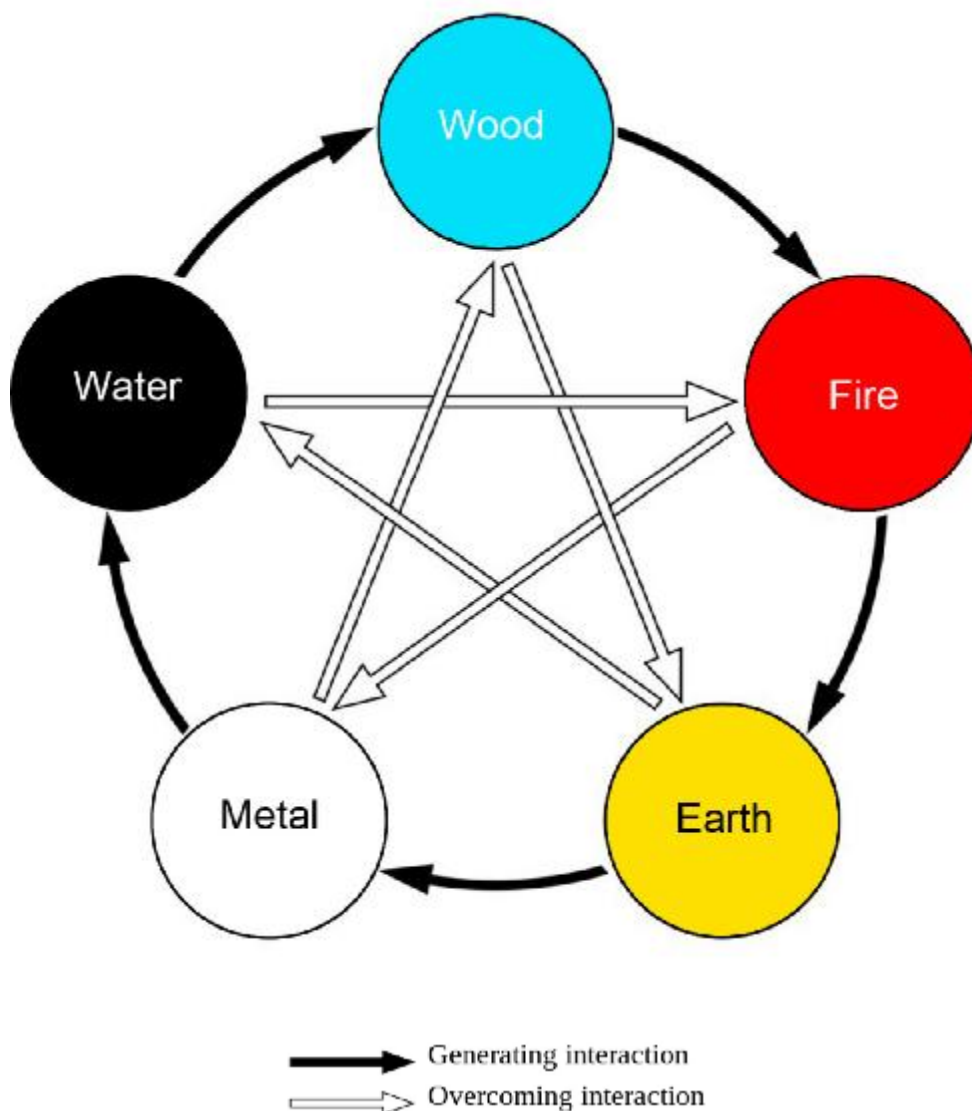


Figure 139. Diagram of the interactions between the Wu Xing. The "generative" cycle is illustrated by black arrows running clockwise on the outside of the circle, while the "destructive" or "conquering" cycle is represented by white arrows inside the circle. Image derived from: <http://is.gbtimes.com/menning/kinversk-stjornuspeki-frumoflin-fimm-malmur>

In general, the relationship between Five Colors, Five Elements and Five Directions as the following table (Wang Wenjuan, 2005):

Element	Wood	Fire	Earth	Metal	Water
Color	cyan(green or blue)	red	yellow	white	black
Cardinal direction	east	south	center	west	north
Auspicious animal	Azure Dragon	Vermilion Bird	Yellow Dragon / Qilin	White Tiger	Black Tortoise
Symbolic meaning	Peace, prosperity	Wealth, happiness	emperor, power, color of the earth	loneliness, sadness	mysterious, steady, color of sky

With the development of science and technology in the Han Dynasty (202 B.C.-220 A.D.), more enriched the color theory of the five elements, making the use of the theory of five elements involved every corner of society (Chen Zhongxian etc., 2006), During Tang and Song dynasties, ultimately formed the Chinese unique five colors aesthetic view (Hui Shujuan, 2010). Thus, colored theory of five elements has become in final an universally recognized philosophic color theory in China.

During my field research in Canton, to my surprise, all plasterers used unconsciously the Five Color Theory do their decoration for the plasterwork when they worked in various traditional buildings, however, no one can explain clearly why they have to use such colors for plasterwork. In the colored chapter, I have already discussed in detail the important role of five colors theory for the Canton decorative plasterwork. Without a doubt, the establishment of five colors theory of Canton plasterwork has certainly the milestone significance.

### 9. 2. 3 The unique mortar

In the field search in the province of Guangdong, I have interviewed some local plasterers such as Shao Chengcun, Shao Yushan and Liang Jing, when I talked with them about the historical origin of the recipes of the plastering mortar, every of them often answered that the recipe was derived from 'master's oral imparting. We have already known that according to the discuss in the part of plaster recipe, for the Canton plastering recipes, whether straw plaster, paper plaster or color plaster, the main materials were lime and glutinous rice juice. Through comparison with related historical documents, such as of Fang Yu Vol, VIII, No. 08 in the book *Song Hui Yao* (Xu Song, 2002) regarding present of glutinous rice plaster and that in Volume X, in the literature *T'ien-kung k'ai-wu* (Song Yingxing, 2005). In fact, the above-mentioned three plasters were just Chinese traditional glutinous rice plaster, which it's excellent waterproof characteristic and ability of acid and alkali resistance, also making the Guangzhou decorative plasterwork very durable, survived in the outdoor of the building for hundreds of years, like the plaster bas-relief with scroll design on the Bao Chong Memorial Arch (1521) in the city of Foshan, still is well preserved.

### 9. 2. 4 Water-related decorative plasterwork in Guangzhou

The Cantonese was ever called Nanyue ethnic in ancient China, as a branch of the Chinese nation. Guangzhou is located in the subtropical coastal, the Tropic of Cancer passes through from the south-central, is a maritime subtropical monsoon climate, summers are hot and multi-snake. Thereby, the Cantonese worship the snake since ancient times, and took it as their totem, *Chinese Explaining and Analyzing Characters*<sup>[1]</sup> (Xu Shen, 1985) thought that the ancient Cantonese was the offspring of snake; and in the the book *Shan Hai Jing • Hainei jing, Classic of Regions Within the Seas*<sup>[2]</sup> called the ancient Cantonese *man-head with snake-body*. The image of the dragon derived mainly from the snake and the crocodile, Dragon worship had gradually replaced the snake worship, and ancient Chinese had carried this dragon culture southward migration since Han dynasty. With the integration of Chinese

various national cultures, Dragon became the sacred symbol that the Chinese nation were collectively worship, and the Cantonese who worshiped originally the snake totem have more worshiped the dragon than before, dragon-motif was painted on walls, pillars and ridges of the roof. Therefore, Canton ancient building decoration were almost everywhere the images of the dragon, especially ridge ornament of the dragon image gave people a profound impression. The dragon image was decorated in the Bogu ridge, or ornamented directly on the ridges of the roof, becoming a symbolic ridge decoration in Canton during the period of the emperor Qianglong, then this special decoration was applied widely by the folk building in whole Guangdong.

On the other hand, the Cantonese hunting and fishing lifestyle was different with that of the northern farming production. Guangdong faces the South China Sea to the south, having rich paddy fields, fisheries and salt industries, the ancient Cantonese fished with boat for a living (Ma Lina etc., 1999). The boat and fish became their living sustenance and hope, they also became naturally worshiping object, and transformed into decoration of boat ridge and of fish ridge with algae scroll design to be built on the roof of the folk buildings. Therefore, whether boat or animals and plant, most of the plaster decorations related with water, having the symbol meaning of fireproof.

### **9.3 Provenance of Guangzhou Plasterwork**

For the Guangzhou plasterwork, not only composition full, rich in content, production of fine, but also dimensional sense, high color saturation, widely decorative themes. It can be located in parts of the building by the wind and rain, having decorative and structural purposes, and also may be provided in parts of the shelter from the storm, with the mainly decorative function. The plasterwork is not Guangzhou's unique decorative art, it has been even widely used in the ancient buildings in China. However, when a large area of decoration is used in cold regions, the surface of the body of decoration would be cracking when the temperature is

below zero (Lin Changbin, 2011) due to this lime mortar is not resistance to low temperature. The Guangzhou region located in central Guangdong Province, summer is hot and winter is warm, the air is low salinity and humidity is relatively large, which is suitable for using a large area lime materials to decorate in the traditional architectures in outdoor. And in other provinces, the plasterwork was only decorated in those parts with no sun, wind and rain, such as under eaves, wall friezes, the upper part of the lintel of doors and the around of the lintel of windows and so on some parts of small area, or decorated in indoors such as in Xinjiang province (Sun Dazhang, 2008). In fact, according to the original cultural sites of archaeological excavations, in Yangshao, Longshan Culture architectural sites, the ancient Chinese have been ever used lime mortar to plaster on the surface of straw mud, making buildings hard and smooth (Yang Bingyu etc., 1998; Li Naisheng etc., 2011; Yang Fuwei etc., 2009). During the Eastern Han dynasty, from the unearthed stilt pottery-house in Guangzhou region, the intagliated geometric decorative patterns could be seen clearly on the walls, showing that the Han Dynasty had already begun to use the tools to decorate on the wall in this area (Shen Jiaren, 2003; Zhou Haixing, 2005). During Wei, Jin and Southern and Northern Dynasties, after Buddhism was introduced into China, the most significant and most lasting impact for this ancient country, not the basic structure of the building itself, but rather the decorative sculpture (Liang Sicheng, 2001). The development of sculpture arts have not only broaden subject matters of the architectural decoration, but also have expand the decorative parts in the buildings. The frescoes and decorative sculptures were



Figure 140. A. The stilt house in Guangzhou region during Han Dynasty (Shen Jiaren, 2003).



Figure 140. B. The stilt house in Guangzhou region during Han Dynasty (Shen Jiaren, 2003).



Figure 141. Brick-carving art of Spirit Wall, image derived from: <http://www.flickr.com>



particularly splendid in Tang Dynasty architectural decoration, among of them, Yang Huizhi<sup>[3]</sup> were the most distinguished sculptors of figure of Buddha. Later, the landscape painter Guo Xi<sup>[4]</sup>, who lived during the Northern Song dynasty, he could use lime mortar (or yellow mud) to plaster freely the low or high reliefs on the Spirit Walls (Yang Shen ect.,1809). And during Yuan, Ming and Qing Dynasties, decorative sculptures were not only applied to the interior and exterior of the building, but also became the main form of decorations (Zhu Heping, 2004). For the provenance of Guangzhou plasterwork, Zhou Haixing thought that: Lime modeling (plasterwork) was started from which dynasty in China, have not yet found any clear record. Guangzhou lime modeling (decorative plasterwork) should derive from the brick-carving art of Spirit Wall in the Song Dynasty, as an independent decorative arts, the usage time of this unique decoration should not be late in the Yuan Dynasty (Zhou Haixing, 2004). Another viewpoint thought that, during Ming dynasty (1368-1644), Coastal areas of Guangdong, a large number of people went abroad to make a living, afterwards, These Chinese workers who had made money in Occident returned their hometown to construct buildings to prevent out banditry. And in the process of the construction of buildings, these ancient overseas Cantonese had learned from architectural style, architectural forms of the Occident, especially in continental Europe, of which included the decorative plaster. However, for above mentioned two views, there is no enough evidences to support their viewpoints through my textual research relevant records documents.

### **9.3.1 Gandhara sculpture art**

Gandhara<sup>[5]</sup>, in today's map, refers to the following regions: The northern part of Peshawar in Islamic Republic of Pakistan as the center, the northwest reached the Hadda of Afghanistan, southeast to the east coast of the Taxila of the Indus River, the north arrive to the Swat, more than 200 kilometers width from east to west. The northwest is Multi-high mountains in this region, the southeast is Indus River Valley (Chao Huashan, 2001). Gandhara was one of the sixteen countries of ancient India in

the Indian Subcontinent. In 327 B.C., Alexander III of the Macedonia led his army and invaded into the Gandhara Empire, and introduced the Greek culture and art into this region. Later, the Buddhism was spread to this kingdom during the period of Maurya Empire<sup>[6]</sup>, it became the Center region of Kushan Empire in the first century, cultural and religious art were very prosperous. Therefore, Gandhara art primarily refers to the Buddhist art of the Kushan period. At the same time, because it was located in the transport hub of India, Central Asia and West Asia, and was also been long reigned by the ancient Greece and Bactria<sup>[7]</sup> Kingdom, deeply influenced by the Greek culture, it's Buddhist art combined the Indian and Greek style, so also called "Greek Buddhist art". After the formation of the Gandhara art, having a major impact for the development of Buddhist art of the native of the Indian subcontinent and the surrounding area.

The major contribution of the Gandhara art lies in the creation of the Buddhist statues. After the rise of the Buddhism in the 6th century B.C., there were no Buddhist statues in hundreds of years, those places who need to carve the image of the Buddha, using Footprints, throne, tree of Buddha and pagoda as the Buddha's symbol. After the first century, along with the popularity of the Mahayana Buddhism, the general mood that believers worshiped Buddha statues had gradually become popular, hence having the creation of the Buddha statues. In fact, the Gandhara sculpture art, the third king of the Kushan Empire Kanishka was strong proponent of Buddhism, Imitating the Greek statues to carve directly the image of Buddha, being a manifestation of the Buddha statues, also being a kind of manifestation mode that studied the ancient Greeks how worshiped their gods on the basis of the local Buddhist teachings, using the sculptural techniques of Greece to show the new art form of the Buddhist contents (Su Libo, 2008).

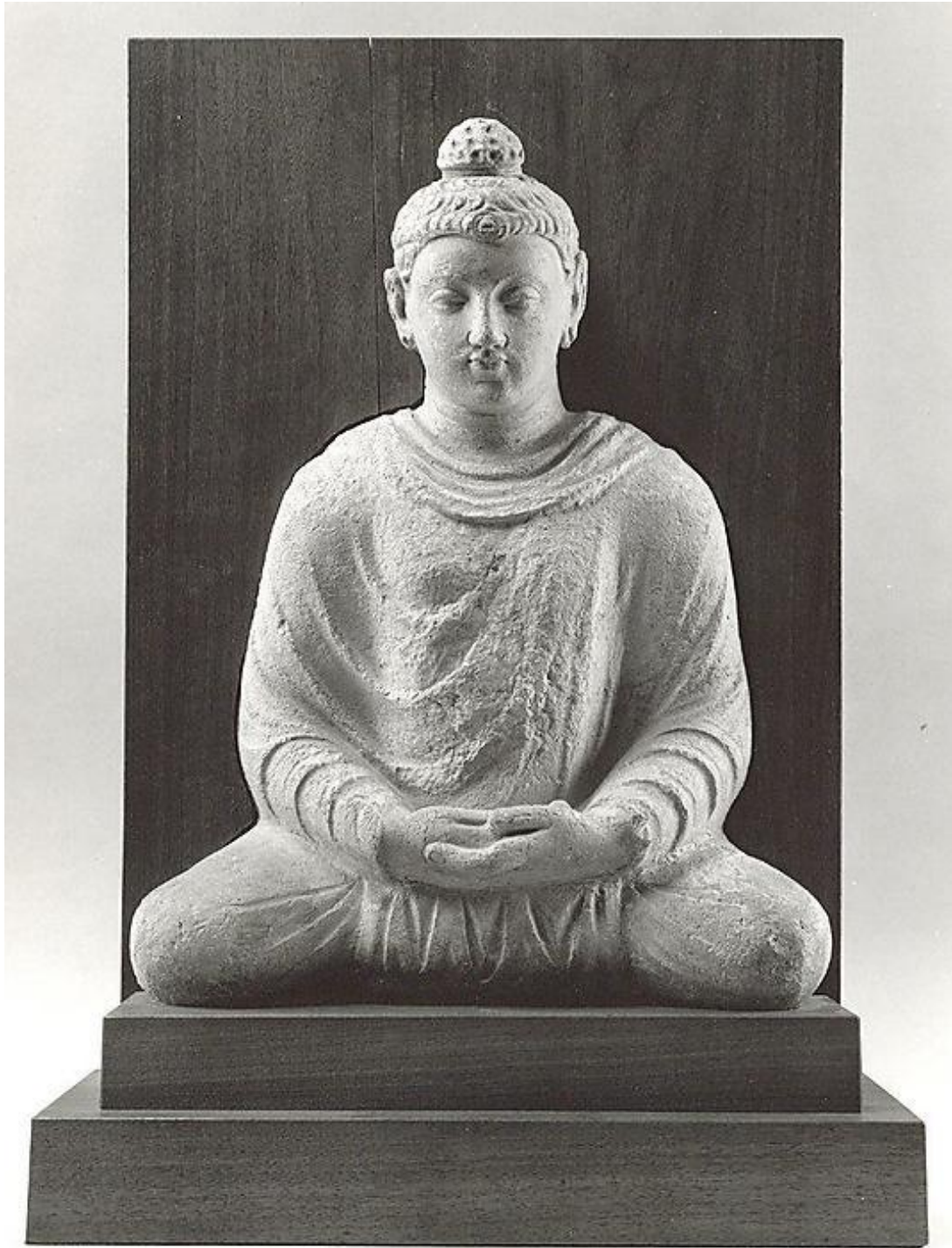


Figure 142. *Meditating Buddha*. ca. 3rd–5th century. Pakistan (ancient region of Gandhara). Stucco. H. 20 in. (50.8 cm); W. 15 1/2 in. (39.4 cm); D. 5 in. (12.7 cm). Gift of The Kronos Collections, 1984. P. 486.

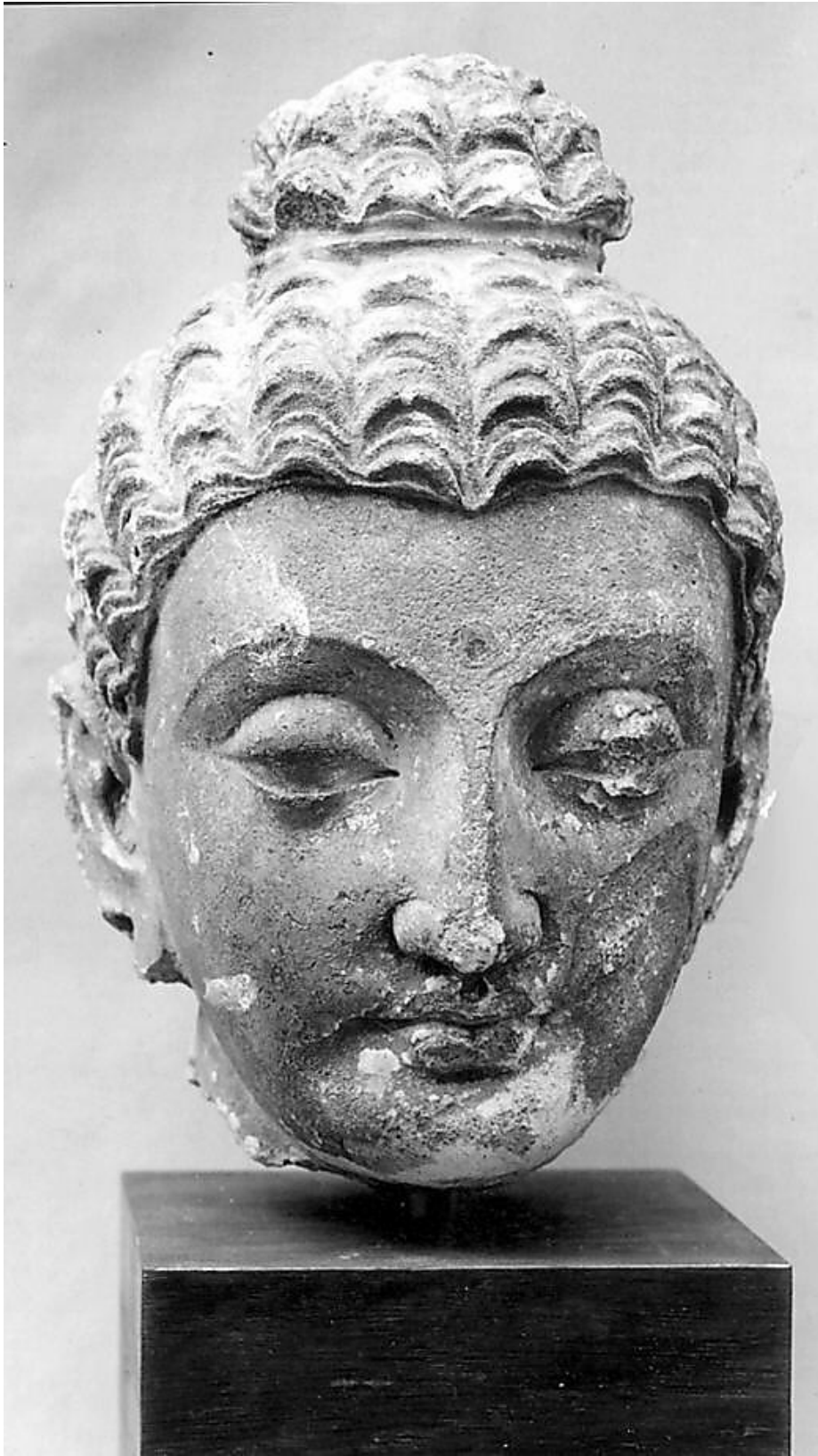


Figure 143. *Head of Buddha*. 4th century. Pakistan (ancient region of Gandhara).

Stucco. H. 9 1/4 in. (23.5 cm). Rogers Fund, 1913. P. 13.96.3.

Sir John Hubert Marshall<sup>[8]</sup>, was ever the Director-General of the Archaeological Survey of India from 1902 to 1928, He have presided over the archaeological excavations for 21 years at Taxila, the famous Buddhist sites in India. According to the archaeological excavations made by the study, the Gandhara Buddhist sculptural arts were divided into two main periods by John Marshall, and the prior period was the Kushan Dynasty, that was, the beginning of the first century to the middle of the third century, Buddha statues of this period tended to the carving style of the Greek Archaic period, the materials of the stone carvings were mainly the blue-gray mica schist. Meanwhile, the change of sculptural fundamental was the creation of the Buddha images, having broken the taboos of early Buddhist sculpture in India -- could only use the Falun, tree of Buddha, throne, footprints and so on symbols implied that the rules of the existence of the Buddha. But, after the Parthian of philhellenic culture conquered the Gandhara in 25 A.D., shortly after, there had been ever a powerful Greek art revival movement. There was evidence that, the craftsmen of the Mediterranean coast came to Gandhara area at that time, and a large number of craftmanships and technologies were introduced in this region (John Hubert Marshall, 1960), having arisen therefrom some outstanding decorative plasterworks. It can be proved that the craftsmen were able to use skillfully the plastering material, among of them, the main materials of the statues were the lime, mixing with a lot of crushed stone and sand and so on filling materials (Fan Yuquan, 2005). And the later period of Gandhara art, from 4<sup>th</sup> century to 5<sup>th</sup> century, the craftsmen have extensively used materials of lime plaster to produce the Buddhist statues and Buddhist pagodas, and have begun to use fine mortar to plaster the surface of statue-works (John Hubert Marshall, 1960). It is worth mentioning that, it was just the period of prosperity of spread of Buddhist art in China during the same period. The decorative plasterwork and statue of the terracotta tiled as the representatives, was more rich a new style than the first period, being seen as a Roman classicism of Hellenization (Guo Liang, 2003).

### 9.3.2 The Gandhara Sculpture Arts were introduced China

Along with the Buddhism into China, the Gandhara sculpture art was also introduced to this country along the Silk Road (including the Land Silk Road and the Maritime Silk Road). Ways that the Buddhism arts were introduced into China were three routes (two land roads and one maritime road): First, from Gandhara, along the ancient Silk Road into China's Xinjiang, Gansu, Hexi Corridor, then arrived in the mainland of China, which called *Buddhism Spread in Han*, Gandhara sculptural arts were also follow. Second, across Nepal and the mountain pass of Himalayas from the north of the East India into China's Tibet, and this channel began in the 7th century. Third, Buddhism and Gandhara sculptural arts were spread along the Maritime Silk Road. There is a long coastline in India Eastern, in the first century, the Buddhism and its decorative sculpture arts was gradually introduced to the Southeast Asian countries, among of them, *Theravada Buddhist* into Myanmar, Thailand, Indonesia and other countries from the sea lanes, and *The Mahayana* reached directly the southeast coastal areas of China (Li Binwu, 1988). For the city of Guangzhou, from the 30s of second century, it has become the one of main port of the Maritime Silk Road, simultaneously because of it was the largest port in southern China (Hu Qiaoli etc., 2001) until Tang and Song dynasties, it was the birthplace of the Maritime Silk Road, and Canton had been already formed an important port city of the Foreign Trade in China from the Western Han Dynasty, continued to two Jin, Sui, Tang, Song, Yuan, Ming and Qing dynasties, and so far the city of Guangzhou remains the Building Berth Site of the Qin Dynasty (Qin and Han dynasties), the South China Sea Temple(Sui dynasty), the light tower of Huaisheng Mosques, and Guangzhou Thirteen Factories and so on a large number of cultural relics and historical sites. Foreign Trade of Guangzhou has successfully opened the first of its kind in the history of China, it firstly made Chinese and world civilizations connected, finally becoming China's most prosperous trading port.

The ancient Maritime Silk Road has made an outstanding contribution to the world economy, cultural exchanges, thereby promoting the prosperity and progress



Figure 144. *Three Bodhisattvas*. Kucha kingdom. 4th–5th century. Xinjiang Uyghur Autonomous Region. Water-based pigment on mud plaste. 9 1/2 x 15 3/8 in. (24.1 x 39.1 cm). Fletcher Fund, 1951. P. 51.94.6.

of human society. Through this Sea Route, China has not only exported his Productions and excellent culture to the coastal countries in Asia and Europe, having produced a beneficial effect. But it also has imported philosophy, literature, music, art, decorative sculpture, architectural art, modern natural science and social science from India, Arab and European, having greatly promoted the development of Chinese society (The Development Center of Historical and Cultural City of Guangzhou etc., 1993).

### **9. 3. 3 Development of Buddhism in Guangzhou**

After the Buddhism was introduced in the Guangzhou Region between the late Eastern Han Dynasty (25-220) and the early of Three countries (220-280), the land transport between Chinese and Western was greatly affected because the wars were frequently in Central Plains of China since the end of Han during this period. This

state of affairs prompted that the utilization of the sea routes was greatly improved. Since then, Chinese and Western maritime traffic was increasingly developed, in the



Figure 145. *Attendant*. Kucha kingdom. 4th–5th century. Xinjiang Uyghur Autonomous Region. Water-based pigment on mud plaster. 9 7/8 x 5 3/8 in. (25.1 x 13.7 cm). Fletcher Fund, 1951. P. 51.94.3.



2nd century, Guangzhou as the starting point, the Maritime Silk Road had eventually formed. Located in the Lingnan south and the relative stability Guangdong, the Foreign Trade thus had a greater development. The trade route was also one route that the monks promote Buddhism, the formation of the Maritime Silk Road and the development of foreign trade, making the Guangzhou region become important gateway that Buddhism was introduced to China by sea. In the middle of the third century and the beginning of the fifth century (the period of Wu and Jin dynasties), due to the above-mentioned reasons, the Guangzhou region's Buddhist had the initial development.

*First*, some famous monks that entered to Guangzhou to preach the Buddhism, or some that engaged in the translation of Buddhist scriptures were more and more. According to historical records (The Development Center of Historical and Cultural City of Guangzhou etc., 1993), during period of Wu and Jin dynasties (about 3<sup>th</sup> and 5<sup>th</sup> century), foreign monks which had promoted the Buddhism in Guangzhou were: the Monk Zhijiang Liangjie, Ka<sup>^</sup>laruci, Kamala, Jiva Jivaka, Dharmayas and Monk Fadu.

Monk Zhijiang Liangjie, people of Western Regions<sup>[9]</sup>, during Dongwu dynasty (229-280), according to Fei Zhangfang(Birth and death unknown, about born in Sui dynasty, ) recorded ‘*Sanbao Records in Past Dynasties*’: the foreign monk Zhijiang Liangjie promoted the Buddhism and did the Scripture Translating in Guangzhou in 256, and translated ‘*Hokke Sūtra*’ six volumes.

Ka<sup>^</sup>laruci, a monk of Western Regions, Birth and death unknown, according to the records of ‘*Sanbao Records in Past Dynasties*’: Ka<sup>^</sup>laruci came to the city of Guangzhou in the late Dongwu Dynasty, and having translated ‘*Twelve Buddhist Bible*’ one Volume in Guangzhou in 266.

Kamala, was born in the ancient India, he came to Guangzhou about in the emperor Wu (265-290) of Western Jin dynasty (265-316), and built the Sangu Temple and Renwang Temple in this city (Hu Qiaoli etc., 2001).

Jiva Jivaka, was born in the ancient India, he reached the city of Guangzhou

through Maritime Silk Road and did missionary work (Zhu Di, 1993) from Guangzhou to Luoyang and Xiangyang in the emperor Hui (295-307) of Western Jin Dynasty.

Dharmayaśas, also called Monk Faming, was born in ancient Kashmir. In the records of *Memoirs of Eminent Monks*: Dharmayaśas was very intelligent, and very studious when he was in teenager (Zhu Di, 1993). He was already 85 years old when He arrived in the city of Guangzhou in the emperor An (397-401) of Eastern Jin dynasty (316-420), he lived in the Baisha Temple, and widely recruited Buddhist believers, including the Buddhist nun Zhang Puming, a daughter of the provincial governor of Guangzhou Zhang Mu ( he was in office from 465 to 468) at that time, it showed that there were a certain number of local people for the monks in the city of Guangzhou. In addition, he also taught Buddhist Bible ‘*Vipassana Salad*’ to his believers, and translated ‘*Chamo Buddhist Bible*’. Later, he built the Wangyuan Temple in Guangzhou (Shi Huijiao etc., 1992).

The Monk Fadu, one disciple of Dharmayaśas, also was one Monk of the ancient India (Shi Huijiao etc., 1992) and born in Guangzhou, his father was a Indian merchant, usually lived in Guangzhou for trading. He often preached Buddhism to his believers after he became a famous monk.

The above-mentioned monks are the recorded famous monks, no recorded unknown monks were probably more. In fact, apart from, according to records of *Guangxu Prefecture Records of Guangzhou* (Li Guangting, 1879): Also there have been some famous local monks in the Guangzhou area, such as the monks Shi Huijing and Fa Xian were the Cantonese. Emergence of the local monks, indicating that the Buddhism arts has taken root in Guangzhou. The subsequent Northern and Southern Dynasties (420-589), foreign monks that entered into inland of China from Guangzhou through the Maritime Silk Road were an endless stream. It can be seen that, since Wu and Jin dynasties (3<sup>th</sup> -5<sup>th</sup> century), Guangzhou has become an important gateway that Buddhism was introduced to China along the sea route.

Second, some religious buildings have been built in the Guangzhou region.

During the period of Wu and Jin dynasties, Guangzhou Buddhist temples were seen in historical records, having the following buildings:

Zhizhi Temple and Wangyuan Temple, now the Guangxiao Temple, was first built in Jiahe years of the King Sun Quan (232-238) of Three Kingdoms. According to the records of Local Chronicles of Guangxiao Temple: The former address of the temple was the palace of Nanyue King Zhao Jiande. During the Three Kingdoms, the officials Yufan (164-233) of Dongwu for repeated remonstrances, offended the king Sun Quan, was demoted to Guangzhou, and live in this building. After Yu Fan's death, his descendants did magnanimous bestowal Yufan's house to the local government, changed it for the temple, called the Zhizhi Temple (Li Guangting, 1879). This was the first Buddhist temple that had the historical records in Guangzhou. Dharmayas rebuilt the Wangyuan Temple in the former site of Zhizhi Temple in the emperor An (382-419) of the Eastern Jin dynasty. Later, it was renamed the Guangxiao temple in 1153, and has been in use ever since.

Sangui Temple and Renwang Temple, the early Jin dynasty (265-420), the monk Kamala built it in the city. According to records of Huang Zuo in '*Guangdong Annals*', the former address of the temple was still a surviving in Ming dynasty.

The Baisha Temple, not know when was built. During the emperor An of Western Jin dynasty, the famous monk Dharmayas came to Guangzhou, lived in this temple, and widely recruited Buddhist believers, it can be seen that Baisha temple had a certain scale at that time.

This showed that, during the period of Wu and Jin dynasties(3<sup>th</sup>-4<sup>th</sup> century), the Buddhism had a preliminary development in Guangzhou region, and Guangzhou had become the center of Lingnan Buddhism. Moreover, for the before-mentioned monks and temples, coincidentally, they were happened between the third and the fifth century, almost occurred at the same time with the decorative plasterworks of the later Gandhara Art (4<sup>th</sup> - 5<sup>th</sup> century), The main propaganda ways of the Buddhist were mainly decorative Buddha Statues, which was one kind decorative style of Hellenistic Roman classicism (Ma Xueren, 2001). Deeply affected by later period of

Gandhara art, foreign monks of Guangzhou were extremely likely to use Buddha Statues of decorative plasterwork to publicize the Buddhist Thought.

#### 9. 3. 4 The Earliest Chinese Plasterwork Literature

According to *Biographies of Eminent Monks in Song Dynasty, Vol. XVIII*: In Pu Zhao Wang Temple of the city of Sizhou, Jiangsu Province, there was a Mucha Monk, one disciple of famous monk-- Sengjia Monk<sup>[10]</sup>, which came from the ancient India



Figure 146. *Flying Celestial Figure*. Khotan Kingdom. 6th–7th century. China (Xinjiang Autonomous Region). Stucco with white, red and green polychrome. 6 1/4 x 4 in. (15.9 x 10.2 cm). Rogers Fund, 1930. P. 30.32.14.

to preach in Tang Dynasty (Xun Delin, 2003). The Xizong emperor of Tang Dynasty ordered monks of above-mentioned temple to do the plaster figure for Mucha Monk in 884 because Mucha monk could be spirit appeared after he died; Then according to *Guangzhou Annals of Local History, Vol, XVI --The Cultural Relics Records*: In the county of Zengcheng, the Zhengguo Temple was first built in the third year of emperor Qingyuan (1197) of the Southern Song Dynasty, the width was 16.83 meters, and the depth was 6.45 meters. The walls of the surrounding of the main entrance

were constructed by Red Sandstones, the roof was the Xieshan style, green mortar and pantiles, main ridge of the dragon boat with decorative plasterwork (The Guangzhou Local Records Compilation Committee, 1999).



Figure 147. *Bodhisattva*. Uyghur kingdom. 9th–10th century. Xinjiang Uyghur Autonomous Region. Water-based pigment on mud plaster. 14 1/2 x 13 in. (36.8 x 33 cm). From the Collection of A. W. Bahr, Purchase, Fletcher Fund, 1947. P. 47.18.132.

Note: Figure 139-144 derived from:

<http://www.metmuseum.org/Collections/search-the-collections/>

The common characteristics of above-mentioned two literatures are related with the Buddhism, one was the plaster figure of monk, another was the dragon boat plasterwork on the roof of the temple architecture, which means that the provenance of Chinese decorative plasterworks related with the Buddhism.

### **9.3.5 Instances of decorative plasterwork**

In addition to above-mentioned the missionary activities of foreign monks and literatures about decorative plasterwork, the Light Tower of Huaisheng Mosque and the Baochong Memorial Arch in Foshan Ancestral Temple are two architectural instances about decorative plaster. For the Huaisheng Mosque and its Light Tower, during the years of the emperor Tang Gaozu(618 -626 years), the Islamic prophet Muhammad sent his four disciples to preach in China, Sa`d ibn Abi Waqqas landed in the city of Guangzhou in the first year of Zhenguan (627) of Tang Dynasty (618-907) by the Maritime Silk Road, began to preach in China. And in the same year, Abi Waqqas and Arab Muslims of emigration in Guangzhou have donated to build a mosque, called Huaisheng Mosque ( Lipman, Jonathan Neaman, 1997), in order to commemorate the Prophet Muhammad. From the presentation in 8.2.1.3.1, we have already knew that, the Light Tower was originally built in 753 (Den Qisheng, 1985), it was an Islamic style tower, built by Chinese blue bricks, the whole surface were stuccoed the oyster shell lime mortar, the tower body was very smooth, it just be a classical Islamic plastering technique.

And for the the Baochong Memorial Arch, which was built in 1521, was the earliest building instances of the plasterwork in Guangdong province. Its architectural structure is the four columns and the third floor style, the main floor and deputy floor are the roof of dragon boat (Zhou Haixing, 2004). Two sides of the ridge of the roof are decorative Honeysuckle pattern, a Typical Buddhist pattern, and the peony flower of bas-relief is decorated in the middle of the ridge. A pair of Aoyu plasterworks just locate above the ridge of the dragon boat. The entire group of plasterwork is full composition, lines of the pattern is smooth and soft, a very



Figure 148. *Figure seated on lotiform base.* early Ming dynasty (1368 - 1644). China stucco, a. H. 22 3/4 in. (57.8 cm); W. 15 3/4 in. (40 cm); D. 10 1/2 in. (26.7 cm) b. H. 8 1/4 in. (21 cm); W. 19 in. (48.3 cm); D. 12 3/4 in. (32.4 cm). Image derived from:

<http://www.metmuseum.org/collections/search-the-collections/60033061?img=1>

dynamic. It showed that, the plasterwork has already been rather long development, composition and technology skills were basically mature in Ming dynasty.

Above historical literatures about plasterwork, preach the Dharma of foreign monks, the way that the Gandhara Sculpture Arts have spread in Guangzhou along the Maritime Silk Road, and instances of decorative plasterwork in Guangdong, these evidences show that, in Asia, using lime mortar material to plaster the Buddhist art, first began in the the Gandhara region after 25 AD, and thrived in the later Gandhara art during the 4<sup>th</sup> -5<sup>th</sup> century. At the same time, with the dissemination of Gandhara sculpture arts was introduced into China (On the one hand, spreading in Guangzhou region along with the Maritime Silk Road, on the other hand, propagating in north

China along with the overland Silk Road (Su Libo, 2008), such as Gansu and Xinjiang provinces). The lime plaster techniques should have even been widely used from north to south in China. And, this technique and lime plaster material have very deep origin with the Central Asian region, even with the Mediterranean region architectural decorative culture (Fan Yuquan, 2005). However, for the decorative plasterwork, large area of using straw plaster and paper plaster of cold intolerance in outside, these materials would be cracking when the temperature is below zero (Lin Changbin, 2011). Presumably influenced by the environment, having had only the Guangdong region that the temperature in winter is above zero to retained the out-of-door plasterwork up to the present.

In Guangzhou region, so far there, we can not find instances of plaster from 3<sup>rd</sup> century to early Ming dynasty (1368-1644), but, a lot of historical relics were kept by the Metropolitan Museum of Art, where located in 1000 Fifth Avenue at 82nd Street New York, New York, among of them, there were some examples of stucco in Xinjiang Uyghur Autonomous Region and other provinces during the same period (3<sup>rd</sup>-early Ming dynasty). The above-mentioned evidences showed that, Guangzhou decorative plaster derived from the Gandhara plaster emblem of 3<sup>rd</sup> - 5<sup>th</sup> century, and was directly related to the Roman and Alexandrian plaster through the Greek art revival movement dating back to 25 A.D.

#### **9.4 Suggestions for Further Study**

My research starts from presence of problem of Guangzhou decorative plasterwork during Qing Dynasty (1644-1911), have scientifically solved material classification of plasterwork, five colors theory about the colorful system, and the provenance of Guangzhou plasterwork. These exploration and study are just as a beginning, due to the studying time and researching resources are limited, there are a lot of issues can either wait for future researchers to continue to study. I sort out my study's suggestions for further study, as the following three aspects:

*First*, at present, Guangzhou plasterworks are only limited to use for the



restoration and conservation in ancient buildings, and the development of modern architecture has already made the ancient decorative art closed in a dead end. How to set up a creative team to cope with the construction and production of the plasterers, and the decorative plasterwork how to be used in the modern buildings, being a big subject that need great supports of manpower, material and financial resources.

*Second*, materials of Guangzhou plasterworks have deeply affected by climate change and environmental factors, having resulted in problems of durability and cohesiveness of plasterwork. How to use the modern technology, methods and theory, enhance the quality of plastering works, conservation and restoration of materials of Guangzhou plasterwork, being worthy of discussion and research.

*Third*, With the development of 3D printing technology, the production of the art of plasterwork will become considerable easy in the future. It means that, it is maybe no longer the plasterer's professional skills under the 3D printer's help. And facing to the impact of these high-tech, how the future plasterer use an effective innovation to adapt this change in aspects of forms, shapes and decorative patterns and techniques and so on, it will become an important research topics.

## Appendices A

**Table of Traditional Buildings in the city of Guangzhou**

No. One: Temple Building				
Date	Building Name	Main Halls	Decorative Position	Decorative plasterwork
Southern Song to the Qing Dynasties (built in 1151, rebuilt in 1644-1661)	Guangxiao temple. (Guangxiao Road)	Sakyamuni Hall, The Sixth Ancestor Hall and Samgharama Hall.	Ridges of the roof.	Aoyu, Dragon and scroll desogn decorative plasterworks.
Tang to the Qing dynasties (built in 627, rebuilt in 1695)	Huasheng Mosque Tower. (Guangta Road)	Kanyue Attic, Light Tower, worshipping Hall and Tripitaka Hall.	Plaster for the body of Light Tower, Ridge of the roof.	Scroll design, Fishtail decoration.
Southern Dynasty to the Qing (built in 989, rebuilt in 1875)	flower tower LiuRong temple. (Liurong Road)	the King of Heaven Hall, The Sixth Ancestor Hall and Flower Tower.	Gable wall, Ridge of the roof.	Scroll design on gable wall, low relief plasterwork on the ridges of the roof.
The Southern Song Dynasty to the Qing Dynasty (built in 1237, rebuilt in 1385, repaired in 1747, 1818 and 1822)	Wanshou temple in Zengcheng District.	Sakyamuni Hall.	Main ridge on the Xieshan style.	Dragon-boat plasterwork on the main ridge.

The Liang to Qing dynasty (built originally in 526, and rebuilt in 1655)	The Hualin Temple. (Hualin Temple Qian Street, The Xiajiu road)	Hall of Five Hundred arhats, Sakyamuni Hall.	Main ridge of the roof on the Hall.	Dragon plasterwork on the main ridge of the roof. Aoyu decoration,
Ming to Qing (built in 917-971, rebuilt in 1649)	Large Buddhist temple. (Huixin Middle Street, Huifu East Road)	Sakyamuni Hall and the East Corridor.	Main ridge of the roof and Hip ridge on the Xieshan Style,	Dragon decoration on the main ridge. Passionflower scroll design on both sides of the gable wall.
Ming to Qing dynasty (built in 1672)	Haitong Temple. (Nanhua middle Road No. 188)	Sakyamuni Hall.	Double Xieshan style.	Two dragon plasterwork on the main ridge.
Ming to Qing dynasty (built in 1706)	Haopan Mosque. (Haopan Street, People's Middle Road)	Mountain Gate and Sakyamuni Hall.	Main ridge on the Xieshan Style.	Low relief plasterwork of scroll design on the main ridge.
The Southern Song dynasty to the Qing dynasty (built in 1193, rebuilt in 1465-1487, repaired in 1817 and 1877)	Zhengguo Temple in Zengcheng Town. (Locate on the North of Zhengguo town in Zengcheng).	Memory Arch, Mountain Gate, Sakyamuni Hall and the Back Hall.	Main ridge of the roof. That on the Xieshan Style in Sakyamuni Hall.	Dragon-boat plasterworks.

Qing dynasty (built in 594, rebuilt during the period of the emperor Kangxi )	Nanhai Temple. (Miaotou rural village Nangang town, Huangpu District)	Memory Arch, Mountain Gate, Sakyamuni Hall and the Back Hall.	Ridges of the Roof and gable wall.	Auyo Plasterwork, and scroll design decoration.
Ming to Qing dynasty (built in 1370, rebuilt in 1723-1735 )	City God Temple. (Zhongyou Street Four Zhongshan road)	Sakyamuni Hall and Worshipping Pavilion.	Main ridges.	Chinese decoration, scroll design and Aoyu plasterwork.
Song to Qing dynasty (built originally in 1052, and rebuilt in 1622, 1736-1795, 1862-1874)	Ren Wei Temple. (Pantang Miao Qian Street, Longjin West Road)	Mountain Gate, Worshipping Pavilion, Sakyamuni Hall The Mid-Hall, Back-Hall.	Ridges of the roof.	Bogu plasterwork, scroll design on the gable wall and Dragon decoration on the main ridge.
Ming Dynasty to the Qing Dynasty (built in 1573-1619, )	Sanyuan Temple. (Should Yuan Road Spring Street)	Sanyuan Hall, Linggong Hall, Lü Zu Hall and Mountain Gate. (Xieshan Styel)	Ridge of the roof, Gable wall.	Aoyu and scroll design plasterwork.
Qing dyansty (1809)	HuaXian Pangu Temple. (Xinlong Tianmian Village, Shiling District Huadou )	Altar Hall.	Main ridge of the roof on the Xieshan Style.	Dragon decoration and scroll design on the main ridge.

No. 2 Ancestral Hall and Private School.				
Ming to Qing dynasty (built in 1495,)	Conghua Academic Palace. (Conghua middle school, Conghua Jiekou Town)	Hall of Great Achievement.	Hip ridge of the roof.	Lion plasterwork.
Ming dynasty (1370)	Panyu Academic Palace. ( Zhongshan No. 4 Road)	Lingxing Gate, Hall of Great Achievement and Shrine of Adoring the Sage.	Main ridges of the roofs.	Low relief plasterwork, and scroll design on the gable walls.
Qing dynasty (1808)	Lujiang Ancestral Hall. (West Lake Road Liushui wells)	Screen wall, Main Hall.	Main ridge.	Bogu plasterwork.
Qing dynasty (1887)	Guangya Ancestral Hall. (Xizeng Road, Xicun)	Shanchang Hal and Mister Lianxi Hall.	Main ridge of the roof.	Bogu plasterwork.
Qing dyanty (1894)	Chen Clan Ancestral Hall. (Zhongshan No.7 Road)	all buildings.	Ridges of the roofs and gable walls, frieze wall, frieze on the windows or on the doors.	Animals and plants plasterwork, historic figures decoration and scroll design decoration on the gable walls.

Yuan to Qing dynasty (built in 1275, rebuilt in 1716)	Panyu He Clan Ancestral Hall. (North Village, Panyu Shawan)	Entrance Hall, Memory Arch, Worshipping Hall, Liugeng Hall.	Main ridges of the roof.	Dragon boat plasterworks.
Ming to Qing dynasty (built in 1522-1566, repaired in 1769)	Panyu Chen Clan Ancestral Hall. (West Street, Yi Village, Shilou Town, Panyu)	Entrance Hall, Memory Arch, Main-hall.	Main ridges of the roof and gable walls.	Bogu plasterwork and scroll design.
Ming to Qing dynasty (built in 1522-1566, repaired in Qing dynasty)	Zengcheng Tianxiashi Ancestral Hall.	Entrance Hall, Memory Arch and Back Hall.	Main ridge of the roof.	Dragon boat plasterwork.
Ming to Qing dynasty (built in Ming dynasty, repaired in 1891)	Zengcheng Zhan Huaide Ancestral Hall. (Nanyue Stone street, Qunxing, Xingtang )	Worshipping Pavilion, Entrance Hall, Mid-Hall and Back Hall.	Ridges of the roofs and gable walls.	Bogu plasterworks and scroll design decoration.
Ming to Qing dynasty (built in 1687)	Panyu Ni Clan Ancestral Hall. (Banqian Village Nancun Town, Panyu)	Entrance Hall, Memory Hall, Mid-Hall.	Main ridges of the roof.	Bogu plaster on the main ridge of the roof in Entrance Hall, Dragon boat plaster on the main ridges in Xieshan Style in Mid-Hall.
Qing dynasty (built about in 1782, rebuilt in 1891 )	Nan Ming Li Ancestral Hall. (Luntou Village Xinjiao )	Main Hall and Side Hall.	Main ridge of the roof.	Low relief with plaster of Scroll design on the main ridge.

Ming to Qing dynasty (built in 1522-1566, rebuilt in 1847)	Song Mianxian Chen Daifu Ancestral Hall. (Xiayuanli, Shabei)	Main Hall, two sides Corridors.	Main ridges of the roof.	Low relief plasterwork on the main ridges.
Qing dynasty (built in 1855)	Panyu Wu Clan Ancestral Hall (Nancun town, Panyu)	Entrance Hall, Memory Arch, Worshipping Hall, Guangda Hall, and Back Hall.	Main ridges of the roof.	Scroll design plasterwork on the main ridges of the roof and on the gable walls.
Qing dynasty(1863)	Huadou Zizheng Daifu Ancestral Hall. (Sanhua Village, Huadou District)	Main Halls.	Main ridges of the roof on the Xieshan style.	Bogu plasterwork and dragon boat decoration on the main ridges of the roof.
Qing dyansty (built in 1871-1908)	Zengcheng Huang Clan Ancestral Hall. (Baishi Village Xintang Town, Zengcheng)	Entrance Hall, Main Halls.	Main ridges of the roof and gable walls.	Dragon boat plasterwork on the main ridge, and Bogu motif plaster on the gable wall.
The Southern Song Dynasty (built in the late Qing dynasty)	Zengcheng Cuitaishi Ancestral Hall. (Cuiwu, Xintang, Zengcheng)	Entrance Hall, Main Hall.	Main ridge of the roof.	Dragon boat plasterwork on the main ridge.
Ming to Qing dynasty (built in 1615, repaired in Qing dynasty)	Wei Clan Ancestral Hall. (Fusiyue, Lijiao)	Entrance Hall, Memory Arch, Worshipping Hall, Mid-Hall, Back Hall.	Main ridges of the roofs on the Xieshan style.	Dragon boat plaster on the main ridge, scroll design decoration on gable wall.

Qing dynasty (built in 1875)	Chaozhou Clan Hall. (Changti Da Road)	Worshiping Hall and Mid-Hall.	Main ridge of the roof on the double Xieshan Style.	Low relief with scroll design plasterwork on the main ridge.
No. 3 Tower and other Buildings				
Ming dynasty (built in 1380, repaired in 1687)	Zhenhai Tower (small Panlong Gang, Yuexiu Mountain)	Five floors.	Gable walls and ridges of the roof on the Xieshan style.	Scroll design decoration.
The late Qing dynasty (built from 1863 to 1908)	Xiguan Dawu Buildings (Liwan District, Xiguan region).	Xiguan Dawu Style.	Gable walls and part of interior.	Low relief plasterwork and Chinese Couplet decoration.
Qing dynasty (1867)	Yuyin shan Garden. (Nancun Town Panyu District)	All buildings.	Ridges of the roofs and ganble walls, frieze wall, frieze on the windows or doors.	Bats plasterworks, interior dragon plasterwor, Bogu decoration and low relief decoration tiwh scroll desgin.
Qing dynasty (built from 1859 to 1911)	Shamian Buildings.	More than 150 European style Buildings.	Interior stucco and plaster.	Stucco and plaster.





## APPENDICES B

Note: Information of this appendices derived from: the Museum of Guangdong Folk Art. *Stories & Legends in the Architectural Decoration of Chen's Lineage Hall*. Lingnan Art press. 2010.

### Auspicious Patterns of Guangzhou Decorative Plasterwork

#### 1 Single-horned Lion



This is single-horned lion, a unique ornament in Lingnan style architecture. It is usually located on the front edge of vertical ridge, with red body and imposing look. Its design of this single-horned lion comes from a Foshan folklore. Legend has it that in the early Ming dynasty 1368-1644, there was a monster in Foshan [a city near Guangzhou]. It ate the poultry, destroyed the farmland, causing great losses for the farmers. Nothing could defeat the monster until people made a Single-horned Lion using bamboo which looked quite hideous, and carried it to attack the monster, along with beating gongs and drums, and setting off firecrackers. As a result, the monster was scared away, and people had a peaceful life again.

## 2 Du Zhan Aotou



Aotou, huge turtle is a legendary animal with dragon's head and fish's body, which is said to be one of the sons of the dragon. Its image is usually used in the auspicious patterns. As shown by the sculpture, man standing on huge turtle [du zhan aotou] symbolizes to get the first prize in the imperial exam[civil service exam in feudal China]. The tradition dates back to Tang and Song dynasties. Those who had passed the exam would stand in front of the palace, waiting to hear the official announcement of winners. The first place winner would stand on the place where the pattern of turtle was carved. That's why huge turtle is used to symbolize the No.1 of the imperial exam.

## 3 Fairyland in the Mountain





Fairyland in the Mountain refers to the scenic mountain where the Taoists used to practice Taoism. They would usually build temples in the mountain and live there. Luofu Mountain in Guangdong province is one of the examples.

#### **4 Swearing to Be Brothers in the Peach Garden**





The story is taken from The Romance of Three Kingdoms, one of the greatest Chinese novels. It happened during the late Eastern Han dynasty. Three famous persons, Liu Bei [ who later became an emperor], Zhang Fei and Guan Yu [ two generals who worked for Liu Bei], were taking an oath to become sworn brothers. According to age, Liu Bei was the eldest brother, Guan Yu the second, and Zhang Fei the youngest. The sculpture shows the scene that three were swearing in the peach garden.

## 5 Zhao Meirong Breaking the Bear



The picture describes a story about Zhao Meirong, who was the younger sister of the emperor of the Northern Song dynasty [960-1127]. It was said that she was extremely skillful in martial arts. Once a vassal state sent Song a wild bear in purpose of making fool of Song, unexpectedly, Zhao Meirong tamed the bear in no time, and the vassal state dared not to look down upon Song any more.

## 6 Guan Yu Met Zhang Fei at the Old Town



General Guan Yu, the sworn brother of Liu Bei and Zhang Fei [see page7], was escorting Liu Bei's two wives to look for Liu Bei. When they got to the Old Town, learning that Zhang Fei was there, they were very excited and tried to meet him. However, Zhang Fei suspected Guan Yu of having submitted to Cao Cao [ the rival of Liu Bei], because Guan Yu was followed by the soldiers led by Cao Cao's general Cai Yang. The sculpture shows Guan Yu [on the red horse] killed Cai Yang[on the white horse] to prove himself. Misunderstanding removed, removed, the two brothers

finally got together.

### 7 Happiness Appears on the Eyebrows



‘Happiness Appears on the Eyebrows’ is a traditional Chinese idiom which means someone is so happy that you can easily tell it from his eyebrows. In Chinese, the expression of ‘magpie’ includes the character of ‘happiness’; the character of ‘plum’ is the homonym of ‘eyebrow’. Therefore, this pattern of magpies standing on the branches of plum blossoms, means that happiness appears on the eyebrows.

### 8 Gold and Jade Fill the Hall





The Chinese character of ‘fish’ is a homonym of the character of ‘abundance’, thus the image of fish is one of the common auspicious patterns in the folk arts. What’s more, ‘goldfish’ pronounces the same as ‘gold and jade’ in Chinese, thus this pattern of several goldfish implies to have lots of gold and jade in the house, that is to possess abundant wealth.

## 9 Gods of Happiness, Prosperity and Longevity





The gods of happiness, prosperity and longevity are three popular gods in folklore. In this pattern, the one in the middle is the god of happiness who is in charge of giving blessings; the one on the left with a baby in his arm is the god of prosperity, the symbol of high position and handsome salary; the one on the right with white moustaches is the god of longevity symbolizing long life. In the past, people would put up a picture of these three gods in their house when the lunar New Year came, to express their wishes for better life.

## 10 Hundreds of Sons and Thousands of Grandsons



In Chinese culture, lion is the symbol of status, and is believed to have the function of exorcising evil spirits. What's more, since the character of 'lion' has the same pronunciation with that of 'descendant', this pattern of a pride of lions indicates the hope of prosperous descendants.

## 11 Honor and Wealth





The design includes pheasants and peonies, of which the former is the symbol of honor, getting high rank in the government, while the latter stands for ranks and riches. Together they mean both honor and wealth.

## 12 Images with Meaning of Celebration



The two patterns above consist of pot, vases, flowers, coins, bats, etc.. These

images are used to express the meaning of celebration.

### 13 The Apricot Blossoms and Swallow



The palace exam was the highest level of the imperial exams. It took place in February when the apricot is in blossom. Those who passed the exam would be entitled to attend the celebration banquet given by the emperor. Therefore, this pattern of apricot blossoms and swallows [the character of ‘swallow’ is a homonym for that of ‘banquet’] means achieving great success in the imperial exams.

### 14 Pines and Cranes Bring Long Life





Pines are evergreen and never grow old, and legend has it that cranes can live as long as one thousand years, thus people usually use the combination of the two to wish for good luck and long life.

### 15 Taishi and Shaoshi



In Chinese, lion was called shi , which was the same pronunciation for master or tutor . In ancient China, taishi and shaoshi [grand tutor and deputy tutor] were both senior officers giving advices to the emperor. So the picture of lions was usually used as a symbol of success in one's official career.

### 16 Liu Hai Teased a Toad



In history, Liu Hai was once the prime minister of Yan Kingdom during the Five Dynasties [907-960]. Legend has it that traveled around and met the famous immortal Lv Dongbing who taught him the secret of practicing Taoism and finally became an immortal. According to folklore, he liked to tease a frog that only had three legs. In Chinese, the character of ‘toad’ is a homonym of that of ‘money’, so people liked to use the image of ‘Liu Hai teasing a frog’ as an auspicious pattern as shown by this sculpture, and worshiped Liu Hai as a god who can bring happiness.

### 17 Swallows and Magpies Celebrate Spring



Both of swallows and magpies are considered as lucky birds and the signs of the coming of spring. This design including swallows, magpies, peach blossoms and willows, means to share the joy and peace of spring.

### 18 Yellowbird and Grapes



The yellowbird was a token of the eighth-grade official during Ming dynasty; grapes bear well. Therefore, this design, combining yellowbird and grapes, means holding both high ranks and having lots of children.

### 19 Have a Good Journey



Deer were viewed as lucky animals in ancient time, and their images were commonly used to represent the high position and good pay in the government. The six deer in this pattern has an extra meaning, that is to have a good journey.

### 20 Birds Paying Respect to Phoenix





Phoenix, an imaginary animal regarded as the head of all birds and symbol of benevolence, was worshipped as the patron saint by people in primitive time. When it came to feudal society, phoenix was viewed as the symbol of ‘queen’ which matched with dragon that stood for ‘king’. In folklore, phoenix is used to symbolize auspiciousness, and Birds Paying Respect to Phoenix is one of the common patterns.

## 21 Five Cardinal Relationships



In feudal China, emperors used the five cardinal relationships between rulers and subjects, fathers and sons, husbands and wives, between brothers and between friends as a moral standard. Ancient Chinese used the phoenix, crane bird, mandarin duck, golden oriole, and egret to represent these five relationships.

## 22 Couples Celebrate Birthday Together



In the period of Eastern Han dynasty, there was a scholar called Liang Hong whose wife was very nice to him. Everyday when he got home, she had the meal prepared and handed it to him respectfully. Their story became a must-told tale afterward. According to this story, this pattern uses plum blossom, paradise flycatcher, and stone, to celebrate the deep love between couples, and wish them long life.

## 23 Liu Ling Got Drunk







In this sculpture, the figure on the left is called Liu Ling, one of the Seven Sages of the Bamboo Grove during Wei and Jin dynasties. He was against the dark rule and deceptive ritual of government, yet his policy was not accepted by the emperor and then he was relieved of his post. To avoid political persecution, he pretended that he had gone mad, and drank a lot. Wherever he went, he carried wine with him, and even told his servant that if he died of drinking, just buried him. At the time, there was another famous scholar called Zhang Hua, a highly-respected literary leader. The two became good friends. Once Liu Ling went to visit Zhang Hua. Zhang Hua regaled him with the best local wine which was so sweet and mellow that Liu Ling was very fond of it. As a result, he spent the rest of his life there to enjoy the fine wine.

#### **24 Lions Play the Ball**





Lion is known as the king of animals. Is originally came from the west regions. The lion culture enjoys a long history in China, and designs of lions can be seen everywhere. It is said that when a male lion play with a female lion, their wools would form a ball where the little lion is born. Lion playing the ball is a very common subject in the folk game, to add to the celebratory and festival atmosphere.

## **25 Five Bats Surround the Character of Longevity**





In the middle of this pattern is a Chinese character of longevity shou, which is surrounded by five bats. In Chinese, 'bat' and 'fortune' have the same pronunciation which is fu, so five bats mean five fortunes. The five fortunes refer to longevity, wealth, peace, virtue, and natural death. Although there are some other versions of the five fortunes, they all contain longevity. Thus five bats surrounding the character of longevity has become a commonly used auspicious pattern.

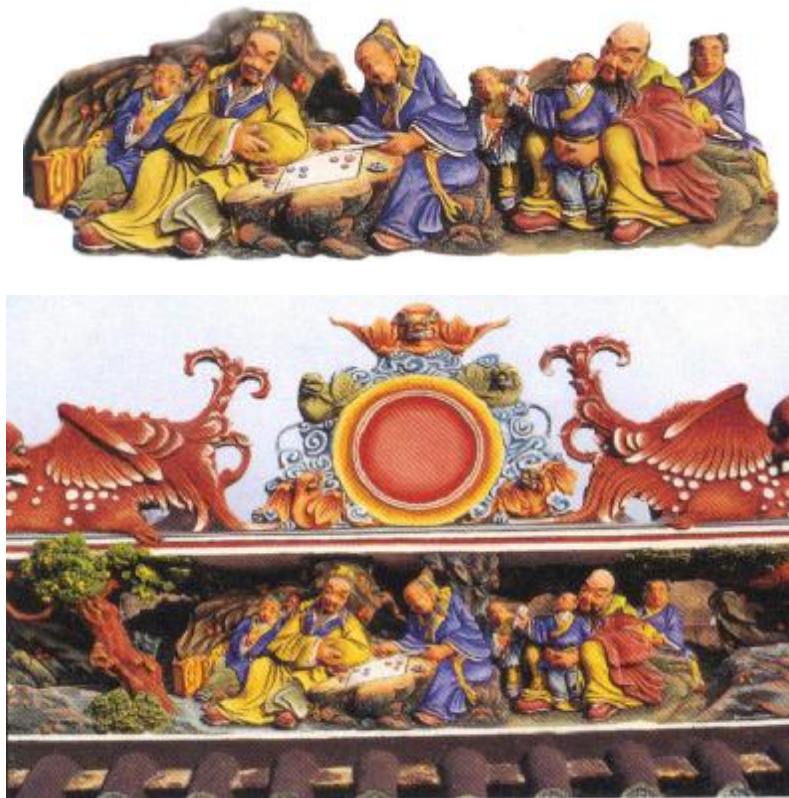
## 26 Zhang Song Read Cao Cao's New Book



The sculpture shows a story from The Romance of Three Kingdoms. Liu Zhang, one of the warlords during the Three Kingdoms period [220-280], sent his advisor Zhang Song to meet Cao Cao, a famous politician who founded the Wei kingdom. Cao Cao's advisor, Yang Xiu, asked Zhang Song to read Cao Cao's new book, to show off Cao Cao's talent. However, Zhang Song pointed out that the book was

copied from other's, and he even recited the book from beginning to the end without dropping a word, saying every kid in his state could do that. In the end, Cao Cao was so embarrassed that he burned his book.

## 27 The Joy between Grandpas and Grandchildren



In this sculpture, grandpas and grandchildren are having fun together. Two old men are playing chess, one of their grandsons watching nearby. Next to them there is another old man taking care of his grandchildren. They are all enjoying this family happiness. The design expresses people's wishes for happy and peaceful life. There are a couple of bats on the top, which are used to show lucky meanings.

## 28 Kylins



These are Kylin, mysterious animals from ancient Chinese myths and legends. Kylin was viewed as an auspicious and precious animal which could also bring people the luck of having sons. This is associated with a legend about Confucius. It is said that on the day when Confucius was born, a Kylin went to his home and left a jade book. Later, people used the image of a boy riding on a Kylin coming down from heaven, to imply to have lovely babies.

## 29 Eagle and Lion



The sculpture, including an eagle and a lion of which the pronunciations are the same with the characters 'hero', implies to be as brave as hero.

### 30 Fan Lihua and Xue Dingshan



The sculpture is about a story taken from the book *The Biography of Conquering the West*. During the reign of Emperor Tai Zong [627-649] of the Tang dynasty, the Xiliang state [a small state in the west of China] tried to invade the central China. The emperor appointed General Xue Rengui to conquer the intruders. However, Fan Lihua, the daughter of the General of the Xiliang state, fell in love with Xue Dingshan, the son of Xue Rengui. The two went through many difficulties, and finally became a couple. This is the scene that Fan Lihua and Xue Dingshan got engaged.

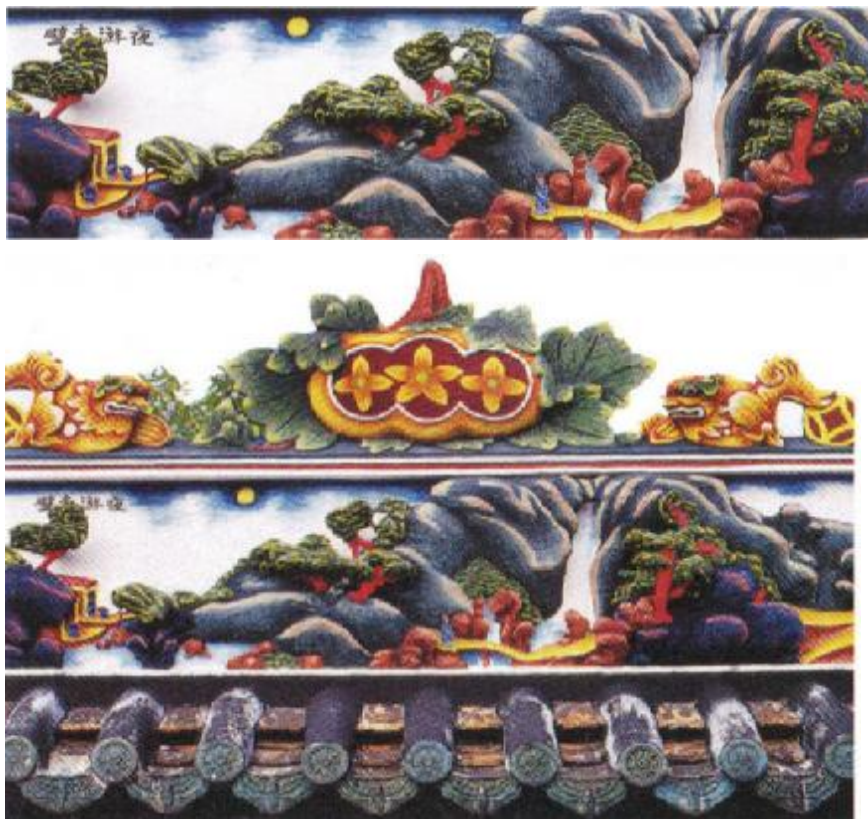
### 31 The Seven Sages in the Bamboo Grove





The sculpture shows that in the bamboo grove, seven scholars are gathering together, some drinking wine, some playing chess, some reading books, and some writing poems. They are those people called the Seven Sages in the Bamboo Grove during Wei and Jin dynasties. Owing to dark officialdom, the seven sages resigned from government and no longer focused on politics. Instead, they often gathered in the bamboo grove sipping wine and writing poems.

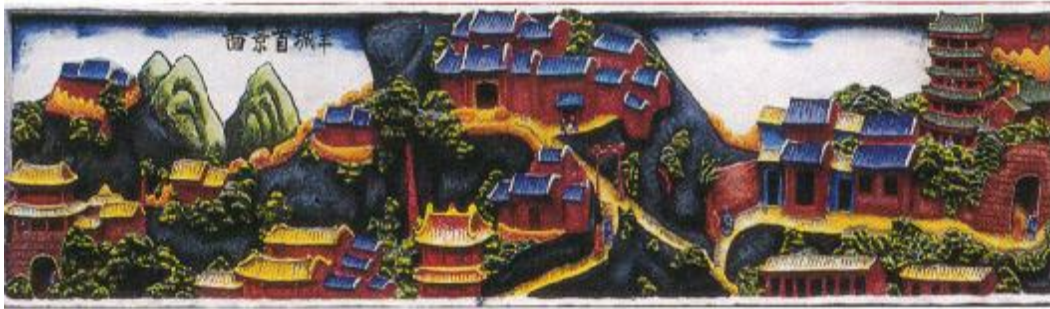
### 32 A Night Tour to the Red Cliff



This is a beautiful night view of Red Cliff, a place in today's Hubei Province, which became well known for the poem written by the famous poet Su Shi [1036-1101] in Song dynasty. Su Shi was a literary giant in Chinese history, yet he

went through a lot of frustration in his political life. One night, he visited the Red Cliff with his friend. Touched by the splendid landscape, he wrote a poem to express his sadness on his unsuccessful career, which was so classical that it won great reputation.

### 33 The Finest Scenery of Guangzhou in Qing Dynasty



The sculpture displays the finest scenery of Guangzhou in Qing dynasty, the Yuexiu Mountain. The rolling hills, lovely and green, surrounded by the cloud and mist, formed a gorgeous landscape. On the right of the pattern, there is a five-story building called Zhenhai Tower which was built during Ming dynasty, the 13<sup>th</sup> year of Emperor Hongwu's reign [1380]. In the past, standing on the top of Zhenhai Tower, people could have a bird's eye view of Guangzhou's beautiful scenery. Both Yuexiu Mountain and Zhenhai Tower were selected into the Top Eight Sights of Guangzhou in Qing dynasty.



### 34 Golden Pheasants, Magpies, Peonies and Plum Blossoms



Golden pheasant was a symbol of the second official rank in Ming and Qing dynasty. This pattern uses the combination of golden pheasants, magpies, peonies and plum blossoms to pray for high ranks.

### 35 The Eight Immortals





There were Eight Immortals in ancient Chinese myth, who were originally human beings before they learned Taoism and became immortals. Each one had their own prowess. According to the book *The Journey to the East*, on the third of March Xiwangmu would give a banquet of peach and the Eight Immortals were invited. They went to the party carrying their magic weapons with the help of which they crossed the East Sea smoothly on their way. The pattern above shows the scene when the Eight Immortals were about to cross the East Sea.

### 36 Happiness Is Before Your Eyes



In Chinese, the character of 'bat' is pronounced the same as the character of 'happiness', while 'coin' also has the same pronunciation with 'eye'. Thus this

pattern of a bat in front of coins creates the saying that ‘bat in front of the coin’ which sounds exactly like the saying ‘happiness is before your eyes’.

### 37 Bat



There are a lot of designs of bats in the architectural decorations of Chen’s Lineage Hall. Since bat is the symbol of happiness and good fortune, it has become one popular auspicious design among the Chinese people. As shown by the sculpture, the bats here look cute and lovely, because the craftsmen had adopted the methods of transformation and exaggeration based on their rich imagination. Thus the plain-looking bats became so lively and vivid, which meets people’s aesthetic standard.

### 38 Continuous Happiness



In this design, there are a couple of bats among the cloud, which implies to have continuous happiness.

### 39 To Enjoy Both Happiness and Longevity





Fruit like finger citron and peach are symbol of longevity. This pattern of bats together with the character of longevity, or finger citron, or peach, has the meaning of enjoying both happiness and longevity.

#### 40 To Hold the Highest Position in the Government



Apart from the symbol of longevity, crane is also a sign of the first official rank during Ming and Qing dynasties. In this pattern, cranes standing on the rocks, with heads facing the sun, implies to hold the highest position in the government. What's more, there are pine trees next to the cranes. The combination of cranes and pine trees is a symbol of long life.

#### 41 Three Ducks



Due to similar pronunciation, three ducks are used to represent the first three places of the imperial examinations in feudal China. So this pattern expresses people's wishes for achieving great success in the exam.

#### 42 Nine fish



The Chinese character of 'fish' is a homonym for the character of 'abundance', thus fish is one of the common auspicious patterns in the folk arts. The design of a couple of fish refers to having abundant wealth as well as being talented. Here, there are altogether nine fish, which has an additional meaning that everything is working out well.

#### 43 Roosters Standing on the Rocks



Rooster is viewed as lucky animal which can drive away evil spirit and pray for blessing. What's more, ancient people believed it had the virtue of sincerity, benevolence, courage, and so on. Here, in this design, roosters standing on the rocks means the house is peaceful, because the character of 'rooster' is a homonym for the character of 'luck', while 'rock' is for 'house'. In traditional auspicious patterns, roosters usually go with paradise flycatcher, rock, peony, plum blossom, and daffodil, to express various lucky meanings.

#### 44 Prosperity and Longevity





The sculpture consists of peonies, banana trees, paradise flycatchers, rocks, and a flock of birds, which implies prosperity and longevity. For example, the big leaves of banana trees stand for great career because of their similar pronunciation; peonies mean prosperity; paradise flycatchers and rocks are symbol of long life. What's more, the flying birds have added to the pattern with nature's freshness and vitality.

#### 45 More and More Happiness







In this sculpture, bats standing upon each other has the meaning of ‘more and more happiness’. The bottom is decorated with the designs of composite flowers which also imply good fortune and longevity.

#### 46 Pazhou Pagoda



Pazhou pagoda, one of the Eight Scenic Sights of Canton in Qing dynasty, is located in Xinjiao, Haizhu District. It was built in Ming dynasty [1600], about 60 meters tall, with surface looks like an octagon. Look from outside, there are 9 stories but in fact it has been divided into 18 stories inside. The foot of the pagoda was carved with several vivid portraits of Heracles who hold the pagoda on their

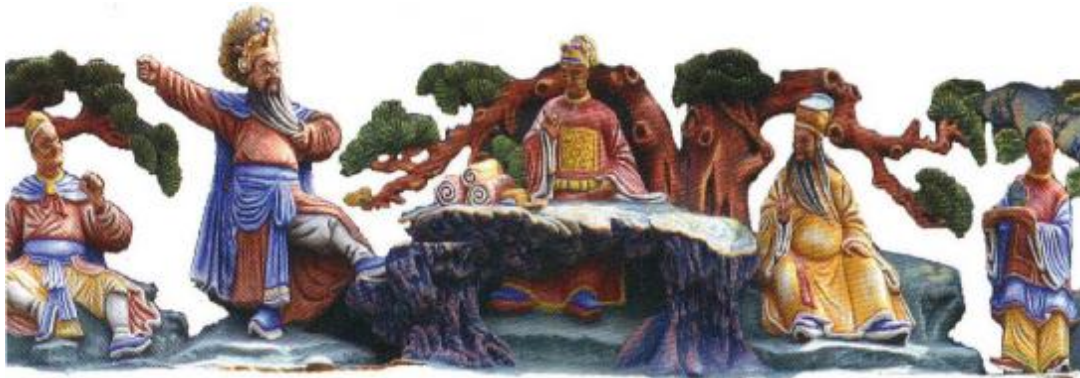
shoulders. The pagoda stood like a giant near the Pear River and was once a landmark for ships. Pazhou Pagoda, together with Hai'ao Temple and Beidi Temple nearby, used to form a spectacular view against the background of the rough Pearl River.

#### 47 Waterfall in Xiqiao Mountain



The sculpture shows the spectacular waterfall in Xiqiao Mountain, which was once selected as one of the Eight Scenic Sights of Canton on Qing dynasty.

## 48 Li Jing, Hong Funv, and Zhang Zhongjian



The sculpture tells a story adapted from the book *The Romance of Sui and Tang Dynasties*. During the late Sui dynasty [581-618], there were three persons, Li Jing, Hong Funv, and Zhang Zhongjian, who helped Li Shimin [later became the emperor of Tang dynasty] to overthrow the Sui dynasty and found the Tang. Li Jing and Hong Funv were a couple. They met Zhang Zhongjian on their way to join Li Shimin's army. Zhang Zhongjian was a person who had the ambition to rule China, yet when he saw Li Shimin he figured that Li was more fit than him to govern the country. Then he gave up and left, giving all his gold and jewels to Li Jing and Hong Funv to aid Li Shimin. Ten years later, Zhang Zhongjian became a king of Fuyu kingdom [a small kingdom in northeast ancient China]. This pattern shows the scene that Li Jing and Zhang Zhongjian were discussing political issues.

#### 49 The God of Sun and the God of Moon



In this pattern, the man on the left is called Fu Xi, the god of sun, and the one on the right is called Nv Wa, the god of moon. According to Chinese legend, Fu Xi was transformed by Pan Gushi's [a mythical figure who created heaven and earth] left eye, while Nv Wa by his right eye. Hence there is a popular Chinese saying 'men on the left and women on the right' There are a lot of myths and legends related to the god of sun and the god of moon, sun as Hou Yi shooting nine suns, and Chang'e flying to the moon.

#### 50 Happiness, High Official Salary, Health and Peace





This pattern uses bats, deer, chrysanthemum, peaches, and antiques to express various wishes; happiness, high official salary, health and peace. In Chinese auspicious patterns, it is very common to use bats, fingered citrons to imply the meaning of happiness, while the image of deer represent high official salary, and chrysanthemums, peaches, cranes symbolize longevity.

#### 51 Happiness as Immense as the Eastern Sea



This sculpture consists of bats, chrysanthemums, antiques and so on, with inscription of Chinese characters fu ru dong hai meaning happiness as immense as the eastern sea, which is also used to express the wishes for good luck and prosperity.

## 52 Peacock



In ancient time, people believed that peacock had so many virtues that it was a civilized bird, and its graceful manner could be regarded as a good example to follow. What's more, the image of peacock also implied the high official position in the government during Ming and Qing dynasties.

## 53 Fish Leaping Over the ‘Dragon Gate’



The left pattern shows that a fish is trying to leap over the ‘Dragon Gate’’. ‘Dragon Gate’ came from the story of Da Yu controlling the flood. According to Chinese legend, in ancient time the Yellow River Valley suffered a lot from severe flood. Da Yu, the founder of Xia dynasty, conquered the flood by cutting a door in the mountain from which the water could went through directly to the sea. The door was named ‘Dragon Gate’ later. Legend has it that fish could become dragon after it leaps over the Dragon Gate, and there were no more than 72 fish which could jump over the ‘Dragon Gate’ each year. Afterward, fish leaping over the ‘Dragon Gate’ also referred to passing the imperial exam and becoming a high official in the court.

#### 54 The Pattern of Antiques



This is a pattern of antiques including auspicious images such as vase, fan, pot, coins and so on, adorned with flowers, fruit and lovely image of bats, which is used to display an elegant taste.

## 55 The Designs of Curly Grass (Scroll Design)



As shown by the pattern below, there are a lot of designs of curly grass under the roof of the building of Chen's Lineage Hall. They were taken and adapted from the pattern of honeysuckles, lotuses, orchids, peonies, and grasses, arranged in an S-shaped curve after artistic treatment. The designs of curly grasses which is also called 'water grass' or 'grass dragon', were widely used in the ancient buildings in South China. Since they are associated with water [considering the name 'water grass'], and the background color 'black' also stands for water, therefore ancient people hoped that the designs of curly grass could protect the building from fire.

## 56 Composite Flower



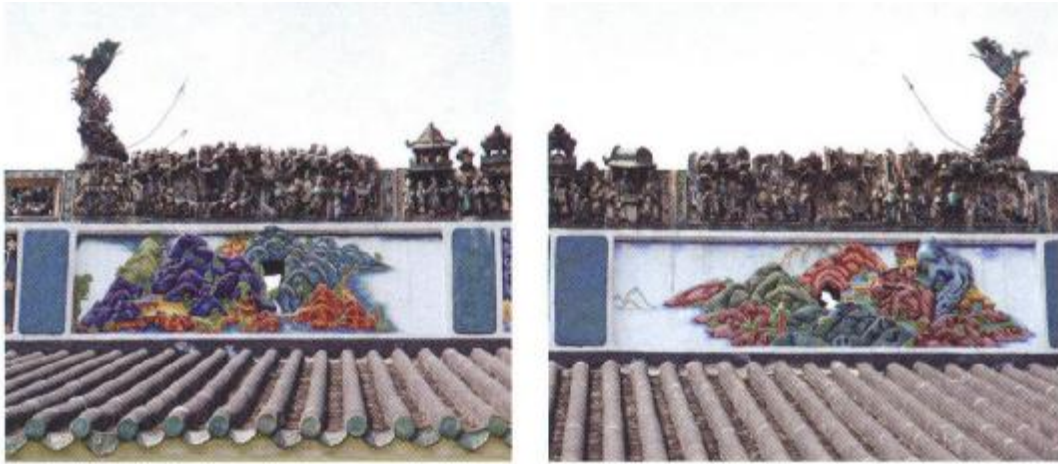




The pattern above is called Composite Flower which is an imaginary flower integrated with the features of some famous flowers such as peony, lotus, chrysanthemum, pomegranate flower and so on, which is decorative as well as auspicious. It is said that Composite Flower has the meanings of ‘treasure’ and ‘immortal’, usually with certain flower [for example, peony or lotus] as the main body, and leaves of different shapes and sizes set in the middle. Especially in the stamens and the base of petals, there are pearls arranged regularly which look like glittering precious pearls and make the flower even more elegant.

## 57 The Beautiful Spring of South China





There are a lot of lime sculptures featuring mountains, rivers, and landscape in South China, which reflects Chinese people's traditional enthusiasm for traveling around mountains and rivers.



## Appendices C

### Timeline of Chinese history from Prehistoric China to Qing Dynasty.

Prehistoric China	400,000 BC - 2853 BC
Ancient China	2852 BC - 2195 BC
Xia Dynasty	2194 BC - 1676 BC
Shang Dynasty	1675 BC - 1035 BC
Western Zhou Dynasty	1034 BC - 771 BC
Eastern Zhou Dynasty	770 BC - 362 BC
<b>Imperial China</b>	
Qin Dynasty,	361 BC - 206 BC
Western Han Dynasty,	206 BC - 8
Xin Dynasty,	9 - 23
Eastern Han Dynasty,	23 - 220
Three Kingdoms,	221 - 280
Western Jin Dynasty,	265 - 318
Eastern Jin Dynasty,	317 - 420
Southern and Northern Dynasties,	386 - 581
Sui Dynasty,	581 - 617

Tang Dynasty,	618 - 907
Five Dynasties and Ten Kingdoms Period,	907 - 979
Liao Dynasty,	907 - 1125
Northern Song Dynasty,	960 - 1127
Southern Song Dynasty,	1132 - 1279
Western Xia,	1038 - 1227
Jin Dynasty,	1115 - 1234
Yuan Dynasty,	1260 - 1368
Ming Dynasty,	1368 - 1644

### **Qing Dynasty (1644 - 1911)**

#### **Timeline for Ten Emperors of Qing Dynasty.**

Date	Emperor
1644 - 1661	Shunzhi Emperor
1662 -1721	Kangxi Emperor
1722 - 1735	Yongzheng Emperor
1736 - 1796	Qianlong Emperor
1796 - 1820	Jiaqing Emperor

1820 - 1850	Daoguang Emperor
1850 - 1861	Xianfeng Emperor
1861 - 1875	Tongzhi Emperor
1875 - 1908	Guangxu Emperor
1908 - 1911	Xuantong Emperor



## NOTES

### Chapter 1 Introduction

[1] Cultural Revolution: was a social-political movement that took place in the People's Republic of China from 1966 through 1976. This Revolution has greatly destroyed the Chinese traditional culture, arts and historical relics. All parts of the country, China's historical sites, artifacts and archives suffered devastating damage as they were thought to be at the root of “old ways of thinking”. Many artifacts were seized from private homes and museums and often destroyed on the spot.

[2] Institute of Archaeology of Chinese Academy of Science Compiles. *Archaeology Articles of Liang Siyong*. Beijing Science Press. 1959. P. 01.

[3] Natural Chinese Science Academy Science Compile, *The History of Science and Technology Articles*. Shanghai Science and Technology Press. 1985, p.107.

-- *Yangshao culture*: was a Neolithic culture that existed extensively along the central Yellow River in China. it is dated from around 5000 BC to 3000 BC. The culture flourished mainly in the provinces of Henan, Shaanxi and Shanxi.

[http://en.wikipedia.org/wiki/Yangshao\\_culture](http://en.wikipedia.org/wiki/Yangshao_culture)

*Longshan culture*: was a late Neolithic culture in China, centered on the central and lower Yellow River and dated from about 3000 BC to 2000 BC. The Longshan culture is named after the town of Longshan in the east of the area under the administration of the city of Jinan, Shandong Province, where the first archaeological find (in 1928) and excavation (in 1930 and 1931) of this culture took place at the Chengziya Archaeological Site.

[http://en.wikipedia.org/wiki/Longshan\\_culture](http://en.wikipedia.org/wiki/Longshan_culture)

[4] *Kaogongji (The Records of Examination of Craftsman)*, is a classic work on science and technology in Ancient China, compiled towards the end of the



Spring and Autumn Period (771BC to 476 BC, ).

[5] The Wu Xing, it is sometimes translated as Five Elements, it's chiefly an ancient mnemonic device, used by many traditional Chinese fields.

The five elements are: Wood, Fire, Earth, Metal, Water. And the system of five phases was used for describing interactions and relationships between phenomena. It was employed as a device in many fields of early Chinese thought, including seemingly disparate fields such as geomancy or Feng shui, astrology, traditional Chinese internal or external decoration, and martial arts.

One of the most important thought is: The doctrine of five phases describes two cycles, a generating or creation cycle, and an overcoming or destruction cycle, of interactions between the phases.

[http://en.wikipedia.org/wiki/Wu\\_Xing](http://en.wikipedia.org/wiki/Wu_Xing)

[6] Ji Cheng (1582- 1642), *Yuanye (The Garden Treatise)*, is a 1631 work on garden design. First printed in 1634, and reprinted by Shanghai ancient books Press in 1931.

[7] The Chinese Economic Reform: refers to the program of economic reforms in the People's Republic of China, started in December 1978 by Deng Xiaoping.

## **Chapter 2 Plaster Decorative Materials**

[1] *Zuo Zhuan*, is among the earliest Chinese works of narrative history, covering the period from 722 to 468 BC. It is one of the most important sources for understanding the history of the Spring and Autumn Period.

[2] Song Wengong, a king of Song Vassal State during the Spring and Autumn Period (722 BC - 476 BC).

[3] Nanyue Kingdom (203 BC-111 BC), was an ancient kingdom that consisted of parts of the modern Chinese provinces of Guangdong, Guangxi, Yunnan and northern Vietnam. The site of corridor of government office of Nanyue kindom locate in the today's Yuexiu District of the city of Guangzhou, and the total area is 150,000.00 square meters.

[4] Shui Lu An: a Buddhist Temple, located in Wangshun Mountain, Puhua Town, Lantian County, Shanxi province. Built in Tang dynasty, repaired in 1563 and in 1567. It's famous due to having preserved ancient exquisite and rare painted sculpture in interior of the temple.

[5] Brown sugar, From Wikipedia, the free encyclopedia,  
[http://en.wikipedia.org/wiki/Brown\\_sugar](http://en.wikipedia.org/wiki/Brown_sugar)

[6] straw, <http://en.wikipedia.org/wiki/Straw>

[7] Li Zhao ( he was alive about the year 813-854), his birth and death years were unknown, he wrote *The Complement of History of Tang Dynasty*. Re-published in 1957, he described in detail the material of paper in the city of Shaoguan from the Tang Dynasty.

[8] Alumen, and Pliny the Elder (2011). *The Natural History*, Vol 35, chapter 52. the Perseus Digital Library at Tufts University.

### **Chapter 3 Pigment and Color**

[1] Marcelino Sanz de Sautuola (1831-1888), was a Spanish jurist and amateur archaeologist, who owned the land where the Altamira cave was found. He was led by his nine year-old daughter to discover the Altamira cave's drawings.

[http://en.wikipedia.org/wiki/Marcelino\\_Sanz\\_de\\_Sautuola](http://en.wikipedia.org/wiki/Marcelino_Sanz_de_Sautuola)

[2] Giuseppe Castiglione (*Lang Shining* 1688 –1766) was an Italian Jesuit Brother, missionary in China, painter at the court of the Emperor. In 1715, he went to China as a missionary. His skill as an artist was appreciated by the Emperor Qianlong.

In addition to his demonstrable skill as a painter, he was also in charge of designing the Western-Style Palaces in the imperial gardens of the Old Summer Palace. This prominent Jesuit artist, architect, and missionary died in Beijing.

[http://en.wikipedia.org/wiki/Giuseppe\\_Castiglione\\_%28Jesuit%29](http://en.wikipedia.org/wiki/Giuseppe_Castiglione_%28Jesuit%29)

[3] The Self-Strengthening Movement (1861–1895), was a period of institutional reforms initiated during the late Qing Dynasty following a series of military defeats and concessions to foreign powers.

[4] *Qi min yao shu* (*Main techniques for the welfare of the people*): is the most completely preserved of the Ancient Chinese agricultural texts, and was written by the Northern Wei Dynasty () official Jia Sixie. The book is believed to have been completed in the second year of Wu Ding of Eastern Wei, C.E. 544, while another account gives the completion between C.E. 533 and 544.

[5] *Tian Gong Kai Wu*, written by Song Yingxing of the Ming Dynasty, the work was first published in 1637 in three volumes. It systematically records the production techniques and experience of agriculture and the handicraft industry in ancient China, with 121 illustrations.

[6] The plaster information derived from the oral account of the Guangzhou plasterer Shao Chengcun.

[7] Tao Hongjing (456 - 536), was a Chinese painter and pharmacologist in the Nan dynasty (420 - 589), he wrote *Ming Yi Bie Lu*, a book about Chinese traditional medication.

[8] Shen Zongqian (?), a artist of Qing dynasty, he has ever compiled *Compilation of Painting Zongqian* in 1781, was a work for the theory of painting.

[9] Yu Yin Garden: it located in Nancun Town, Panyu, Guangzhou. The garden and the house shares a history which is 145 years old and the construction of this historical relic took place in the 6th year of the period of the emperor Tongzhi in the late Qing Dynasty.

[10] Ying-Hsing Sung, and E-Tu Zen Sun. *Chinese Technology in the Seventeenth Century: T'ien-Kung K'ai-Wu*. Mineola, N.Y. Dover Publications, 1997. p. 202.

#### **Chapter 4 Three Glutinous Rice Mortars**

[1] According to presentation of the plasterer Shao Chengcun, the main materials of Guangdong fresco are lime and sand mortar as the basal layer, then use mineral pigment to draw on it after drying.

[2] The plaster information derived from the oral account of the Guangzhou plasterer Shao Yushan.

#### **Chapter 5 Decorative Position and Theme**

[1] The Dragon Boat: it is a human-powered watercraft traditionally made, in the Pearl River delta region of southern China - Guangdong Province, of teak wood

to various designs and sizes. Dragon boats are the basis of the team paddling sport of *dragon boat racing* an amateur watersport which has its roots in an ancient folk ritual of contending villagers held over the past 2000 years throughout southern China.

[2] Aoyu: Carps jumping over the dragon gate is a legend handed down in china for generations, the carp makes its way up a waterfall, hoping to become a dragon, symbolizing someone endeavors to get a great success, like a carp leaping into the dragon's gate; gain literary advancement; get rapid promotion.

According to Chinese ancient legends, gold carp and silver carp would like to jump the dragon's gate, then fly into the clouds and go into the heaven, become a true dragon at last, but they swallowed slinkingly the god-pearl in the sea, only became an animal of dragon's head and fish's body, called it Aoyu in China. It's a fireproof mascot when it decorated on the main ridge.

[3] Baozhu: also call it Buddhist pearl, it's a place that is laid the Buddha's relics in Buddhist tower, propitious symbol. In general, it is laid the midpoint of ridge in Buddhist architecture.

[4] Bogu Ridge: in general, Chinese call all auspicious objects Bogu, the Auspicious patterns that were designed on the utensils, called Bogu pattern, which derived from the pattern of Taotie images in the period of Shang dynasty (Liu Xianjue etc., 2005), The ancient Cantonese masters made this ornamental pattern decorated on the both ends of the main ridge or the lower extreme of vertical ridge, and formed the unique Bogu decorative ridge (Sun Hai etc., 2005). This distinctive decoration were applied widely the traditional buildings in the province of Guangdong during the Qing dynasty (Dou Yibing, 1990).

[5] Five Mountains and Ten Monasteries System: (*Chinese: Wushan Shicha,* ) system,

more commonly called simply *Five Mountain System*, was a network of state-sponsored Zen Buddhist temples created in China during the Southern Song Dynasty (1127–1279). The term "mountain" in this context means "temple" or "monastery", and was adopted because many monasteries were built on isolated mountains. The system originated in India and was later adopted also in Japan during the late Kamakura period (1185–1333).

*The Japanese Monk Chetong Yijie (1219-1309)*, he came to China in 1259, he painted the images of Five Mountains and Ten Monasteries according to the Chinese Five Mountains and Ten Monasteries System in 1259-1262, therefore, the images were thought universally the important reference work that research the buildings of Tang and Song dynasties.

[http://en.wikipedia.org/wiki/Five\\_Mountain\\_System](http://en.wikipedia.org/wiki/Five_Mountain_System)

[6] The Qilin (Chinese unicorn): is a mythical hooved Chinese chimerical creature known throughout various East Asian cultures, and is said to appear with the imminent arrival or passing of a wise sage or an illustrious ruler. It is a good omen that brings serenity and prosperity.

[7] Pattern of Kui dragon: Kui is a type of dragon that has only one leg in the Chinese myth, to a certain degree, it is also an ancient symbol of the imperial power.

[8] *Ruyi motif*: Ruyi is a curved decorative object that is a ceremonial scepter in Chinese Buddhism or a talisman symbolizing power and good fortune in Chinese folklore, and it also symbolize achieving prosperity in fengshui practice.

The ruyi shape appears as a motif in decorative knots, Oriental rug patterns, folk artifacts, and even modern corporate logos. Stylized *ruyi* often function as a kind of ante-fixae or palmette in traditional and modern architecture.

[http://en.wikipedia.org/wiki/Ruyi\\_%28scepter%29](http://en.wikipedia.org/wiki/Ruyi_%28scepter%29)

[9] The Tale of King Mu, Son of Heaven: is a fantasy version of the travels of King Mu of Zhou, historical fifth sovereign of the Chinese Zhou Dynasty, r. 976-922 BC or 956-918 BC.

[http://en.wikipedia.org/wiki/Tale\\_of\\_King\\_Mu,\\_Son\\_of\\_Heaven](http://en.wikipedia.org/wiki/Tale_of_King_Mu,_Son_of_Heaven)

[10] Wang Zhenpeng: was a Chinese landscape painter who worked in the imperial court during the Yuan Dynasty (1271–1368). His specific dates of birth and death are not known, though he was active 1280-1329. Wang was born in Yongjia in the Zhejiang province. Wang's painting of landscapes and follow in the style of Li Gongling in their ease and grace of appearance. His architecture drawings were mostly uncolored, in a fine line style known as 'jiehua'.

[11] Qiu Shicong (? , ?), the writer of Ming dynasty, *Tianshan Cottage Collection*, recorded in detail production and dimension of Guangdong's dragon boat.

[12] *Qingyun Alley*: indicates lanes between two buildings, in general, designed gates between two buildings, and ridges of the roof above the gates.

[13] The Seven Sages of the Bamboo Grove: were a group of Chinese Taoist Qingtan scholars, writers, and musicians who came together in the 3rd century CE. Key members of the seven were linked with the "Taoist" Cao Wei.

As is traditionally depicted, the group wished to escape the intrigues, corruption and stifling atmosphere of court life during the politically fraught Three Kingdoms period of Chinese history. They gathered in a bamboo grove near the house of Xi Kang (aka Ji Kang) in Shanyang (now in Henan province) where they enjoyed, and praised in their works, the simple, rustic life. This was contrasted with the politics of court. The Seven Sages stressed the enjoyment of ale, personal freedom, spontaneity and a celebration of nature.

[http://en.wikipedia.org/wiki/Seven\\_Sages\\_of\\_the\\_Bamboo\\_Grove](http://en.wikipedia.org/wiki/Seven_Sages_of_the_Bamboo_Grove)

- [14] *Five Bats Surround the Character of Longevity*: symbol of longevity, wealth, peace, virtue, and natural death. Detail informatio can reference Appendices B.
- [15] *Congratulate on Guo Ziyi's Birthday*: also called 'Hitting the Princess While Drunk' it is an auspicious image, symbolizing to win honor and distinction for one's family. This allusion derived from the story of Guo Ziyi(697 - 781), was a general during the Tang Dynasty. He is reputed to be one of the greatest generals in Chinese history and was revered as the best general in East Asia during his lifetime. After his death, he was immortalized in Chinese mythology as the God of Wealth and Happiness.  
[http://en.wikipedia.org/wiki/Guo\\_Ziyi](http://en.wikipedia.org/wiki/Guo_Ziyi)
- [16] Cintamani(or the *Chintamani Stone*): is a wish-fulfilling jewel within Buddhist traditions, equivalent to the Ruyizhu in Chinese Buddhist and Taoism and to the philosopher's stone in Western alchemy. <http://en.wikipedia.org/wiki/Cintamani>
- [17] Buddhist Gourd: the 'Gourd' is the homophone of 'fu ' and 'lu' in Chinese, symbolize the '*Good luck and Prosperous*'. It's a mascot used widely the folk architecture and the Buddhist buildings in China.
- [18] Huang Chaoying (?, ?): he was born in the city of Jian'ou in Fujian province, a writer of the period of Zhezong and Huizong emperors (1077- 1135), in the *Jin Kan Xiang Su Za Ji* , Volume I, he described: the fishtail ridge was used on the roof of the Buddhist and Taoistic temples since the Tang dynasty.
- [19] Chinese Screen Wall (Spirit wall) is used to shield an entrance gate in traditional Chinese architecture. Spirit wall can be positioned either on the outside or the inside of the gate they are protecting. The Cantonese term "*spirit wall*" is used to refer to screens positioned on the inside. They can be constructed from a



variety of materials such as brick, wood, stone, or glazed tile. The spirit screens could be often richly decorated. Common decorations include symbols of good luck, such as the character for good fortune. Spirit walls are tied to the belief that evil spirits cannot move around corners, hence the spirit wall blocks them from entering through the gate they shield.

[20] Chinese Couplet: is a pair of lines of poetry which adhere to certain rules (see below). Outside of poems, they are usually seen on the sides of doors leading to people's homes or as hanging scrolls in an interior.

[http://en.wikipedia.org/wiki/Couplet\\_%28Chinese\\_poetry%29](http://en.wikipedia.org/wiki/Couplet_%28Chinese_poetry%29)

[21] Big House of the Tsangs: is a Hakka walled village in Hong Kong, and one of the best preserved. The construction of Big House of the Tsangs was begun in 1848 by the wealthy granite merchant and stonemason Tsang Koon-Man as a stronghold for the Tsang clan, and took around 20 years (1867) to complete. The original granite, bricks and solid timber are still preserved today.

[http://en.wikipedia.org/wiki/Tsang\\_Tai\\_Uk](http://en.wikipedia.org/wiki/Tsang_Tai_Uk)

[22] Semi-cursive script: is a cursive style of Chinese characters.

*Cursive script* (Grass script): it's a style of Chinese calligraphy. People who can read standard or printed forms of Chinese may not be able to comprehend this script at all, but it is the most artistic in all of Chinese calligraphy. Semi-cursive script and Cursive script are often used on the architectural decoration in Chinese traditional building. *Seal script* (*zhuan shu*): is an ancient style of Chinese calligraphy.

[23] The detail information about decorative themes can reference the *appendix B* 'auspicious pattern and themes of plasterwork in the city of Guangzhou'.

[24] *Caihui*: refers to Chinese traditional decorative coloring on wooden buildings and artifacts for the purpose of style.

## Chapter 6 The Plasterers

[1] Empress Dowager Cixi: (1835 -1908), was a powerful and charismatic woman who unofficially but effectively controlled the Qing Dynasty in China for 47 years, from 1861 to her death in 1908. She has ever ordered to rebuild the Summer Palace in Beijing in 1886, and Employ a large number of craftsmen, in which included the plasterer Li Wenyuan.

[2] Summer Palace: is a palace in Beijing, China. The garden survived and was rebuilt in 1886 and 1902. It is mainly dominated by Longevity Hill and the Kunming Lake. It covers an expanse of 2.9 square kilometers, three quarters of which is water.

[http://en.wikipedia.org/wiki/Summer\\_Palace](http://en.wikipedia.org/wiki/Summer_Palace)

[3] Wei Chou (? , ?), also called Wei Wuzi, a famous army general of Jin State during the Spring and Autumn Period (771 - 476 BC ), and *the Wei Chou tames the bear* is a auspicious image in China.

[4] Bao Gong: was originally called Bao Zheng (999–1062) was a much-praised official who served during the reign of Emperor Renzong of Northern Song Dynasty (960-1127). Culturally, Bao Zheng today is respected as the symbol of justice in ancient China.

[http://en.wikipedia.org/wiki/Bao\\_Zheng](http://en.wikipedia.org/wiki/Bao_Zheng)

[5] *Image of Eight Immortals*: point to 'Immortal Woman He, Royal Uncle Cao, Iron-Crutch Li, Lan Caihe, Lü Dongbin, Philosopher Han Xiangzi, Elder Zhang

Guo, and Han Zhongli': are a group of legendary immortals in Chinese mythology. *The image of Tom, Dick, and Hairy*: 'it's collectively known as the of *Zhang Qiuran, Li Jing and his wife Zhang Chuchen* three people during the end of Sui dynasty and the beginning of the Tang Dynasty.

[6] *Four Famous Gardens* point to the Qinghui garden in city of Shunde, Yuyinsha garden in Panyu district, Ke garden in the city of Dongguan, Liang garden in the city of Foshan.

[7] Liang Qiu (?, ?): was born in Nanhai district in the city of Foshan, he won the examination of *Juren* (a successful candidate in the imperial examinations at the provincial level in the Ming and Qing dynasties) in 1756, a famous Chinese painter, which was expert in painting buddhist figures and maid.

Li Shizuo (1687 - 1770): was born in the city of Shenyang, a famous Chinese painter of Qing dynasty, Li was good at painting landscapes, figures, flowers, birds, fruit.

## **Chapter 7 Technical Processes of Decoration**

[1] Lu Ban (507–440 BC) was a Chinese carpenter, engineer, philosopher, inventor, military thinker, born in the State of Lu (circa 1042–249 BC) and is the patron Saint of Chinese builders and contractors.

The *Treatise of Lu Ban*, an attributed texts to Lu Ban written by Wu Rong (?, ?), an architect in Ming Dynasty (1368-1644).

[2] During my field research, the plasterer Shao Chengcun presented me his old plaster-tools, derived from his ancestor, a plasterer of the late Qing dynasty, used them to plaster the decoration for Chen's Clan temple in 1894.

[3] According to the oral dictation of the plasterer Shao Yushan, this methods of work can be pieced.

## **Chapter 8 The Architectural Decorative Plasterworks in Guangzhou**

[1] Nanling Mountains: they are a group of mountain ranges of southern China, running through Guangxi, Guangdong and Hunan provinces.

[2] Yue-man Yeung and David K. Y. Chu. *Guangdong: survey of a province undergoing rapid change*. Chinese Univ. Press. Hong Kong. 1998.p. 446.

[3] The Guangzhou Thirteen Hong: is also referred to as the Thirteen Factories, was an area of the city of Guangzhou, where the first foreign trade was allowed in the 18th century.

[http://en.wikipedia.org/wiki/Thirteen\\_Factories](http://en.wikipedia.org/wiki/Thirteen_Factories)

[4] Xiguan: is a traditional geographical division of Guangzhou, It's located in Liwan District. And Pearl River lies on its west and south. The area outside the west gate of Guangzhou is collectively called Xiguan in Ming and Qing Dynasties.

<http://en.wikipedia.org/wiki/Xiguan#Geography>

[5] Xiguan Big Houses (*Xiguan Dawu*), is the grand mansion which high official or rich businessman used to live in Xiguan (today's Liwan District).

<http://www.excelguangzhou.com/xiguan-big-house.html>

[6] Detail classification of traditional buildings in the city of Guangzhou, can reference the Appendices A.

[7] *Xuanxue (Neo-Daoism)*: is the focal school of thought in China's philosophy

from the third to sixth century CE. The philosophers of Xuanxue combined elements of Confucianism and Taoism to reinterpret the Chinese traditional culture.

*Xuanxue* involves mainly *have and no, life and death, movement and stillness*, and other metaphysical question. In fact, folk beliefs are one part of the Chinese culture, closely related to people's daily life.

<http://en.wikipedia.org/wiki/Xuanxue>

[8] Chiwen: is an auspicious animal of fireproof, as a decorations and an ornamental motif, it often decorated on the Imperial roof or on other buildings in traditional Chinese architecture and art.

[9] Gu Guang, was a prefect in the city of Guangzhou during the period of the emperor Qianlong (1736-1795), he revised '*Notes of Guangxiao Temple*' in 1769.

[10] Nanyue Kingdom: was an ancient kingdom that consisted of parts of the modern Chinese provinces of Guangdong, Guangxi, and Yunnan and northern Vietnam. The ancient city of Guangzhou was ever it's capital, established in 204 BC at the final collapse of the Qin Dynasty (221BC to 206 BC) by Zhao Tuo. Zhao Jiande was the last king of the Nanyue Kingdom. His rule began in 112 BC and ended in the next year.

<http://en.wikipedia.org/wiki/Nanyue>

[11] Yu Fan (164–233), was born in the city of Yuyao in Zhejiang province. A famous the sociologist and philosopher during the period of Three Kingdoms (220-280). He was exiled to Guangzhou in 223 and lived the former site of the present Guangxiao temple and gave lectures for his hundreds students here. His residence was renamed the Zhizhi temple after he passed away.

[http://en.wikipedia.org/wiki/Yu\\_Fan](http://en.wikipedia.org/wiki/Yu_Fan)

[12] the Sixth Ancestral Huineng: he was one of the most important figures in the entire tradition, according to standard Zen hagiographies. He began to preach the Buddhadharma in 676, he created to make the esoteric India Buddhadharma become very straightforward and understandable, becoming the Chinese Buddhism. Mao Zedong has ever evaluated that Huineng was the true first Chinese Buddhist Ancestor.

<http://en.wikipedia.org/wiki/Huineng>

[13] Long'an (397-401): it was the reign title of the emperor Sima Dezong of the eastern Jin dynasty (316-420).

[14] Dougong: is a unique structural element of interlocking wooden brackets, one of the most important elements in traditional Chinese architecture.

<http://en.wikipedia.org/wiki/Dougong>

[15] Feng Shui: The traditional Chinese art of geomancy, the placement and arrangement of space called feng shui, Historically, feng shui was widely used to orient buildings—often spiritually significant structures such as tombs, but also dwellings and other structures—in an auspicious manner. Depending on the particular style of feng shui being used, an auspicious site could be determined by reference to local features such as bodies of water, stars, or a compass.

[http://en.wikipedia.org/wiki/Feng\\_shui](http://en.wikipedia.org/wiki/Feng_shui)

[16] Samgharama Hall located the east of The Mahavira Hall, and the east is wood in the theory of Chinese Feng Shui, Wood is afraid of fire, and fire is afraid of water. Therefore, used plasterworks of fish and scroll design of algae to decorate the roof, symbolizing the fireproof.

[17] Bao Jing (about 260, ?): Nanhai Satrap in the Eastern Jin Dynasty, was born in the city of Changshu, Jiangsu Province. People in general called him immortal Satrap because he was proficient in methods of immortality.

[18] Shang Kexi (1604 - 1676): was a Chinese general of the Ming and Qing Dynasties (1368-1644). He fought for the Qing in Southern China and established his power in Guangdong where he ruled the territory as his own domain amassing wealth and possessing a trained army.  
[http://en.wikipedia.org/wiki/Shang\\_Kexi](http://en.wikipedia.org/wiki/Shang_Kexi)

[19] Li Qifeng (? ,1664): was born in Guangnin, Guangdong, as a governor in Guangdong province from 1658 to 1661.

[20] Lü Zu: it's the Chinese immortal Lü Dongbin. He is one of the group of deities known as the Eight Immortals and considered by some to be the de facto leader. He is also called Lü the Progenitor by Daoists. The Lü Zu Hall was rebuilt due to memory of him in 1862.

[21] Wang Linggong: is a special protective deity in the Taoist Temple, whose real name is Wang Shan, was born in Song dynasty (960-1279).

[22] Zhang Qian (about 164 BC - 114 BC): was born in Chenggu county the province of Shaanxi. As a Gentleman between 140 B.C. and 134 B.C., he served the Emperor Han Wu of the Xi Han Dynasty (202 BC - 9 C). The Han court dispatched Zhang Qian to the Western Regions two times in 138 BC (the first time) and then in 119 BC (the second time), and returned Han dynasty in 126 BC (the first time) and in 115 BC (the second time) in succession, with detailed news for the Emperor, showing that sophisticated civilizations existed to the West, with which China could develop advantageously relations. In particular,

On his missions, he introduced seeds of grapes, alfalfa, pomegranate, walnuts, flax, etc. from central Asia, and were planted widely in ancient China. Among of them, some plants such as grapes, pomegranate were regarded as auspicious fruits, and used widely in the Chinese traditional architectural decoration.

[http://en.wikipedia.org/wiki/Zhang\\_Qian](http://en.wikipedia.org/wiki/Zhang_Qian)

[23] The Sanguan Governors: They are three gods in the Taoist mythology, specifically refers to the Gods that symbolize Heaven, Earth and Water, in general, God of Heaven can bless, God of Earth can forgive sins, and God of Water can relieve people's doom. Therefore, Chinese people are very common belief in The Sanguan Governors.

[24] Chen Tianyou (? , ?), Chen Yanquan (? , ?) and Chen ShaoRu (? , ?): they were famous scholars of Chan Clan during Ming dynasty.

[25] Chen Zizhuang(1596 - 1647): an important scholar of Chen's Clan, he was very famous in Guangdong because of resisting Manchus invasion from 1644 to 1647 . Then he was killed by the government of Qing dynasty in November 6, 1647.

[26] Detail information can reference the Appendix B.

## **Chaptter 9 Conclusion**

[1] *Chinese Explaining and Analyzing Characters*: was an early 2nd century Chinese dictionary from the Han Dynasty. Although not the first comprehensive Chinese character dictionary by Xu Shen (58-147), it was still the first to analyze the structure of the Chinese characters and to give the rationale behind them, as well



as the first to use the principle of organization by sections with shared components, called radicals.

[2] *Shan Hai Jing · Hainei jing (Classic of Regions Within the Seas)*: it is a Chinese classic text, and a compilation of early geography and myth. Versions of the text have existed since the 4th century BC, and by the early Han Dynasty (202 BC-220 AD) it had reached its final form.

[3] Yang Huizhi, a most famous sculptor in Emperor Xuanzong of Tang Dynasty (685-762).

[4] Guo Xi (c. 1020–c. 1090): a Chinese landscape painter from Henan Province<sup>[2]</sup> who lived during the Northern Song dynasty. He was a court professional, a literatus, well-educated painter who developed an incredibly detailed system of idiomatic brushstrokes which became important for later painters. One of his most famous works is *Early Spring*, dated 1072. The work demonstrates his innovative techniques for producing multiple perspectives which he called "the angle of totality." This type of visual representation is also called "Floating Perspective," a technique which displaces the static eye of the viewer and highlights the differences between Chinese and Western modes of spatial representation.

[http://en.wikipedia.org/wiki/Guo\\_Xi](http://en.wikipedia.org/wiki/Guo_Xi)

[5] Gandhara: The Kingdom of Gandhara lasted from the early 1st millennium BC to the 11th century AD. It attained its height from the 1st century to the 5th century under the Buddhist Kushan Kings. The Hindu term Shahi is used by history writer Al-Biruni to refer to the ruling Hindu dynasty that took over from the *Turki Shahi* and ruled the region during the period prior to Muslim conquests of the 10th and 11th centuries. After it was conquered by Mahmud of Ghazni in

1021 CE, the name Gandhara disappeared. During the Muslim period the area was administered from Lahore or from Kabul. During Mughal times the area was part of Kabul province.

<http://en.wikipedia.org/wiki/Gandhara>

[6] Maurya Empire: was a geographically extensive Iron Age historical power in ancient India, ruled by the Mauryan dynasty from 321 to 185 BCE. Originating from the kingdom of Magadha in the Indo-Gangetic plains (modern Bihar, eastern Uttar Pradesh and Bengal) in the eastern side of the Indian subcontinent, the empire had its capital city at Pataliputra (modern Patna). The Empire was founded in 322 BCE by Chandragupta Maurya, who had overthrown the Nanda Dynasty and rapidly expanded his power westwards across central and western India taking advantage of the disruptions of local powers in the wake of the withdrawal westward by Alexander the Great's Greek and Persian armies. By 320 BCE the empire had fully occupied Northwestern India, defeating and conquering the satraps left by Alexander.

[http://en.wikipedia.org/wiki/Maurya\\_Empire](http://en.wikipedia.org/wiki/Maurya_Empire)

[7] Bactria: also called Greco-Bactrian Kingdom, was — along with the Indo-Greek Kingdom — the easternmost part of the Hellenistic world, covering Bactria and Sogdiana in Central Asia from 250 to 125 BC. The expansion of the Greco-Bactrians into northern India from 180 BC established the Indo-Greek Kingdom, which was to last until around AD 10.

[http://en.wikipedia.org/wiki/Greco-Bactrian\\_Kingdom](http://en.wikipedia.org/wiki/Greco-Bactrian_Kingdom)

[8] Sir John Hubert Marshall (1876-1958): Englishman, he was the Director-General of the Archaeological Survey of India from 1902 to 1928. He was responsible for the excavation that led to the discovery of Harappa and Mohenjodaro, two of the main cities that comprise the Indus Valley Civilization.

[9] The Western Regions (Xiyu): a historical name specified in the Chinese chronicles between the 3rd century BC to 8th century AD that referred to the regions west of Jade Gate, most often Central Asia or sometimes more specifically the easternmost portion of it, though it was sometimes used more generally to refer to other regions to the West of China as well, such as the Indian subcontinent.

[http://en.wikipedia.org/wiki/Western\\_Regions](http://en.wikipedia.org/wiki/Western_Regions)

[10] Sengjia Monk (627-710), a famous India monk, came to Tang Dynasty preach in 661, and died in 710. It was said that he was Incarnation of the Guanyin Bodhisattva in folk.

## Bibliography

Adam, J.-P.

- 1994 *Roman Building Materials and Techniques*. Trans. from French by A. Mathews. London: Batsford. Pp. 79. 73.

Alois Riegl.

- 1893 *Stilfragen: Grundlegungen zu einer Geschichte der Ornamentik*. Berlin: G. Siemens.

Anthony Bonanno.

- 1986 Archaeology and fertility cult in the ancient Mediterranean: papers presented at the First International Conference on Archaeology of the Ancient Mediterranean. Amsterdam: B.R. Grüner Pub. Co. Pp. 118-123.

Augusti, S.

- 1967 *I Colori Pompeiani*. Studi E Documenti I. Roma: De Luca Editore.

Bankart, George Percy.

- 1908 *The art of the plasterer*. London, B.T. Batsford.

Baoren Nuofu.

- 1958 *Binding Material*. Building Engineering Press.

Binding Material Science Writing Group.

- 1980 *Binding Material Science*. China Architecture & Building Press. Pp. 35.

Brian Hook.

- 1996 *Guangdong: China's promised land*. Oxford University Press.

Brown, G. E.

- 1990 *Testing of Concretes, Mortars, Plasters and Stucco*. *Archaeomaterials* 4. Pp.185-191.  
*Analysis and History of Cement*. Ontario: Gordon E. Brown.1996, Pp. 03,14.  
1996 *Analysis and History of Cement*. Ontario: Gordon E. Brown.

Bureau of Cultural Relics in the City of Zhoucheng in Shandong.

- 2005 *Historical Relic in Liubiao Tomb in the City of Zhoucheng in Shandong in Xijin Dynasty*. Historical Relic, No.1. Pp. 4- 26.

- Cao Huangxu.  
1996 *The Chinese ancient craftsmen*. The Commercial Press International Co., Ltd.
- Cao Yunhui.  
2008 *Application of Mineral Dye in Modern Chinese Ink Painting*. The Chinese artistic Institute, master dissertation. Pp.10.
- Chang Guang Minxin, Shui Ye Qingyi and Wang Yanqin.  
1997 *The Decorative Significance in Yungang Grottoes*. the Cultural Relics Quarterly Journal, No. 02. Pp. 99.
- Chao Huashan.  
2001 *The Light of Buddha: The Buddhist Famous Historical Sites of India and Central Asia*. Cultural Relics Press. Pp. 131.
- Chen Congzhou, Lu Bingjie.  
1980 *Canton Huaisheng Temple*. Social Science Front Bimonthly, No. 01. Pp. 215 - 217.
- Chen Feihu.  
2007 *Theory of architectural color*. China Architecture & Building Press. p. 20.
- Chen Jiazhi.  
2006 *The Study of Color Application of Chinese Traditional Religion*. National Kaohsiung Normal University, master dissertation. Pp. 10-12.
- Chen Jian.  
1958 *Use Shell to calcine shell lime, obtaining products of high quality*. China State Farms, , Vol 12. Pp. 30.
- Chen Qiyun.  
2012 *The Original Work of Yang Ruishi Is found in Nansha District*. The Propaganda Department of the Nansha District.  
[www.guangzhou.gov.cn](http://www.guangzhou.gov.cn)
- Chen Zehong.  
1999 *Lingnan Architectural Notes*, Guangdong People's Press. Pp. 102.  
1998 *The Lingnan Building of the Early Qing Dynasty*. Academic Research, No. 04. Pp. 68-72.  
1999 *Lingnan Architecture Records*, Guangdong People's Press. Pp.51-53. 69, 102.

Cheng Jianjun.

- 1988 *The Study of the Ridge Adornment of the Ancient Buildings in Lingnan.*  
Ancient building garden techniques. 1988, No.04. Pp. 26-32.  
2008 *Sanshui Xujiang Ancestral Temple.* China Building Industry Press.

Cheng Jianjun, Li Zheyang.

- 2010 *The Report of Architecture Research and Protection Project about Guangzhou Guangxiao Temple.* Chinese Building Industry Press.  
Pp. 26-32, 55, 86, 151,etc..

Claudia Owen, Diane Pirie, Grenville Drape.

- 2010 *Earth Lab: Exploring the Earth Sciences.* Belmont, CA : Brooks/Cole,  
Cengage Learning. Pp. 80- 81.

Compilation Committee of Annals of Local History in Guangzhou.

- 1998 *Annals of Local History in Guangzhou.* Guangzhou Press. Pp. 06-08.

Compilation Committee of Guangzhou Local Chronicles.

- 2010 *Guangzhou Local Chronicles, Vol XVI:Buildings of Historical Relic.*  
Guangzhou Press. Pp. 707- 708.

Committee for Compilation of Local Records in Panyu.

- 1995 *Panyu County Annals.* Guangdong People's Press. Pp. 1009.

Craig W Baird.

- 2011 *The complete guide to building your own greenhouse: everything you need to know explained simply.* Ocala, Fla. : Atlantic Pub. Group.  
Pp. 31.

Da Liang.

- 2005 *Chaozhou Kaiyuan Temple.* Guangdong People's Press. Pp.20- 39.

Dai Zhijian.

- 2003 *The Origins and Forms of the Civil Buildings in Fujian and Taiwan.*  
Fujian People's Press. Pp. 280.

Den Qisheng.

- 1985 *The Architectural Textual Research of Canton Huaisheng Temple.*  
Guangzhou Research, No. 05. Pp. 57 - 59.

Deng Yan.

- 2011 *The Art.* No. 03. Zhujiang College of South China Agricultural University. Pp. 127-128.

- Dou Yibing.  
 1990 *Craftworks in the Dream of the Red Chamber*. Beijing Arts and Crafts Press. Pp. 70
- Du Xianzhou.  
 1983 *The Technology of Restoration of Chinese Ancient Building*. Chinese Architectural and Industrial Press. Pp. 364 - 370.
- E. H. Gombrich.  
 1984 *The Sense of Order: A Study in the Psychology of Decorative Art*. Zhejiang Photographic Press.
- Eugene Clute, Russell Fenimore Whitehead, Kenneth Reid, Elizabeth L. Cleaver.  
 1931 *Progressive architecture*. Volume 12, Reinhold Pub. Corp. Pp. 159.
- Fan Meng.  
 1991 *Oriental Artistic History*. Yunnan People's Publishing House.
- Fan Yuquan.  
 2005 *A Comparative Study on the Materials and Techniques used for the Dunhuang Murals and the Indian Murals*. Lanzhou University. The Doctor Dissertation. Pp. 77-80.
- Fan Zhanjun.  
 2006 *The Art of Screen Wall in the Chinese Traditional Building*. Shanxi Architecture, Vol. 32 No. 22. Pp. 64-65.
- Feng Erkang.  
 1996 *Chinese Ancient Patriarchal Clan and Ancestral Hall*. The Commercial Press International Co., Ltd. Pp. 66-78.
- Feng Xianming.  
 1982 *The History of Chinese Ceramics*. Cultural Relics Press. Pp. 415.
- Forbes, R. J.  
 1965a *Extracting, Smelting and Alloying*. Pp. 572-599 in C. Singer and E.J. Holmyard (eds.), *A History of Ancient Technology*. vol. 1. Oxford: Clarendon.  
 1965b *Studies in Ancient Technology*. vol. 3. Second Edition. Leiden: E.J. Brill.
- Foshan Museum.  
 1994 *Foshan Ancestral Temple*. Cultural Relics Press.

- Fu Xinian.  
2009 *History of Chinese Ancient Architecture*. Vol. II. China Building Industry Press.
- Geoffrey Beard.  
1983 *Stucco and decorative plasterwork in Europe*. Thames and Hudson. Pp. 11,15, 20,18.
- George Percy Bankart.  
1908 *The art of the plasterer*. B. T. Batsford. Pp. 05-06.
- Giorgio Torraca.  
2009 *Lectures on Materials Science for Architectural Conservation*. Getty Conservation Institute. Pp. 50.
- Giorgio Vasari.  
1907 *Vasari on Technique*. J. M. Dent & Company. Pp. 171, 172.  
2010 *Lives of the Most Eminent Painters, Sculptors, and Architects*, Volume 5. Translated from the Italian of Giorgio Vasari. with Notes and Illus. General Books LLC.
- Gu Guang and Hui Rong.  
1996 *The Historical Records of Guangxiao Temple*. Jiangsu Guangling Ancient Book Press.
- Guangdong Folk Art Museum.  
2010 *Stories & Legends in the Architectural Decoration of Chen's Lineage Hall*. Lingnan Art press.
- Guo Liang.  
2003 *Gandhara Art and the Early Chinese Buddhist Art*. The Silk Road Studies. No. S01. Pp. 78-79.
- Graham Edwin Johnson, Glen Peterson.  
1999 *Historical dictionaries of cities of the world. volume VI: Historical dictionary of Guangzhou (Canton) and Guangdong*. Scarecrow Press.
- Han Jian, Weng Mangling and Jiang Weibing.  
2009 *Cultural Connotations of Pomegranate and their Application in Landscape Architecture*. Chinese Agricultural Science Bulletin, No. 25(15). Pp. 143-147
- Heritage Editorial Committee.  
1980 *Collected Papers of Cultural Relics*. Cultural Relics Press.



He Fangyao.

2003 *Ningnan Guangxiao Temple*. Guangdong Buddhism, No. 01. Pp. 11-16.

He Xuebai.

2010 *The Decorative Plasterwork is watchable*. Wuxi New Weekly. 26. 11.  
[http://58.214.255.28/epaper/wxxzk/html/2010/11/26/A07/A07\\_25.htm](http://58.214.255.28/epaper/wxxzk/html/2010/11/26/A07/A07_25.htm)

Hong Huangkai.

2003 *The study for micro-property and mechanics of Ancient Mortar*. the Institute of Constructive Engineering of National Cheng Kung University, masteral dissertation.

Hong-Ming Lee.

2005 *The Study the Characteristic of traditional Mortar Material and Optimization of Mixture Ratio*. the Faculty of Civil Engineering of National Cheng Kung University. Master Dissertation.

Hu Qiaoli and He Fangyao.

2001 *A Few Questions about History of Buddhism in the Early Stage of Guangzhou*. Culture and History in Lingnan, No. 02. Pp. 20-24.

Hu Qiaoli.

2005 *The Guangxiao Temple*. Guangdong People's Press. Pp. 8.

Huang Fengqiong.

2010 *Investigation and Research of the Ancestral Temple Culture in Panyu*. Zhongshan University, Master dissertation. Pp. 25-36.

Huang Miaozhang.

2005 *Guangdong Folk Art Museum Collected Works*. Guangdong Tourism Press. Pp. 192- 196.

2006 *The Chen's Ancestral Temple*. Guangdong People's Press. Pp. 11-24, 29.

Huang Yafeng.

1998 *Arts of mural of tombs of Han Dynasty in Henan Province*. Nandu Journal 18 (2). Pp.17- 20.

Hui Shujuan.

2010 *Performance and Technipues of Chinese Traditional Pigments*. Shanxi Normal University, Master Dissertation. Pp. 41.

Hong Huangkai.

- 2003 *The study for micro-property and mechanics of Ancient Mortar.* the Institute of Constructive Engineering of National Cheng Kung University, Master Dissertation.

Hornng-Ming Lee.

- 2005 *Study the Characteristic of traditional Mortar Material and Optimization of Mixture Ratio.* the Faculty of Civil Engineering of National Cheng Kung University, Master Dissertation.

Ji Cheng.

- 1931 *Yuanye.* Shanghai ancient books press.

Ji Xinmin.

- 1995 *The Earliest Messenger of Open-door Policy in China: Zhang Qian.* Journal of Urumqi Adult Education Institute, No. 02,

Jia Sixie.

- 1965 *Qi Min Yao Shu.* Yuanfang Press. Pp. 533 – 544.

Jiang Xunyi.

- 1986 *History of Materials of Chinese Painting.* Shanghai Painting and Calligraphy Press. Pp. 97.

Ji Shibin.

- 2004 *Constructive Materials.* Qinghua University press. Pp. 23-26, 30.

JoAnn Cassar and Roberta de Angelis and John F. Gleeson,  
*Glossary of terms.* Pp. 46.

[http://www.skillsup.eu/pdf/glossary\\_of\\_terms.pdf](http://www.skillsup.eu/pdf/glossary_of_terms.pdf)

John Henry Gray.

- 1875 *Walks in the city of Canton.* Pp. 382 - 385.

John Hubert Marshall.

- 1960 *The Buddhist Art of Gandahara.* The Syndics of the Cambridge University Press. Pp. 109.

Ke Dawei.

- 2003 *Ancestral Hall and Family Temple.* Journal of Historical Anthropology, Vol I, No. 02. Pp. 1-20.

Kirkbride, D.

- 1966 *Five Seasons at the Pre-Pottery Neolithic Village of Beidha in Jordan*. PEQ 98. Pp. 8-72.

Kurt A Behrendt.

- 2007 *The art of Gandhara in the Metropolitan Museum of Art*. New York : Metropolitan Museum of Art. 2007. p. 11.

Lai Ying.

- 2010 *Research on Ancestral Halls of Guangfu Clan in Pearl River Delta*. South China University of Technology, the Doctoral dissertation. Pp. 195-203.

Li Binwu.

- 1988 *History of Social Life in Sui, Tang and Five Dynasties*. China Social Sciences Press. Pp. 245.

Li Gongming.

- 2008 *Artistic History in Guangdong*. Guangdong People's Press. Pp. 167, 445-447, 457.

Li Guangting.

- 1879 *Guangxu Prefecture Records of Guangzhou*. Shanghai Bookstore Press. Pp. 446.

Li Jie

- 1956 *Treatise on Architectural Methods*. Taiwan Commercial Press.

Li Jiong.

- 2006 *100 Cantonese Mountain and Ancient Building--Canton Sanyuan Temple*. China Religion, No. 04. Pp. 50-51.

Li Naisheng, He Nu, Wang Lihua and Fan Xiaopan.

- 2011 *The Research of Discrimination Method of the Artificial lime in the New Stone Age*. Spectroscopy and Spectral Analysis, Vol 31, No. 03 Pp.635-639.

Li Pengcheng and Wang Wei.

- 2003 *The Mechanics of Color*. Shanghai People's Fine Arts Publishing House. Pp. 8-13.

Lipman, Jonathan Neaman.

- 1997 *Familiar strangers: a history of Muslims in Northwest China*. University of Washington Press. Pp. 29.

- Li Ruizhi.  
1991 *Chinese Dragon Boat Cultural Studies*. Guizhou Ethnic Press. Pp. 105.
- Li Song  
2009 *Shanxi Buddhist Art, Vol, VIII*. Cultural Relics Press. Pp. 230-237.
- Li Zhao.  
1957 *The Complement of History of Tang Dynasty*. Classical Literature Press.
- Li Zehou.  
1984 *The Course of Beauty*. Chinese Social Sciences Press. Pp. 40-44.
- Li Zhuoqi.  
2010 *Chen's Lineage Hall*. Lingnan Fine Art Press. Pp.03  
2011 *The Factual Record of the Chen Clan Temple*. China Building Industry Press. Pp. 376-379.
- Li Zhitian.  
2007 *Guangdong Local Taoistic Research*. The Chinese University Press.  
Pp. 99 -108.
- Liang Sicheng.  
2006 *Qing dynasty Architecture Methods*. Tsinghua University Press. Pp. 246.  
2001 *Liang Sicheng Collected Works*. China Building Industry Press. Pp. 58.
- Liao Jisheng etc.  
1981 *Study of Chinese ancient coagulating material*. the Silicate Transactions.  
Pp. 237.
- Lin Changbin.  
2011 *Study of Architecture Lime Modeling Craft and Its Preservation in Guangfu Region of Lingnan District*. South China University of Technology, Mater Dissertation. Pp. 07-08, 14 - 18.
- Liu Dongming.  
2009 *Discussion on the Development of Lotus Motif in the Wei, Jin and Southern and Northern Dynasties*. Popular Literature and Art, No. 01.  
Pp.128.
- Liu Li.  
2007 *Comparison between the Chinese Scroll Design and that of Arabesque in A.D. 7-10 Century*. Central China Normal University, Master Dissertation. Pp. 20.

Liu Shuting.

- 2008 *Chinese Traditional Buildings: the decorative art on the roof.*  
China Machine Press. Pp. 77-86, 103.

Liu Xianjue etc.

- 2005 *Macau architectural heritage.* Southeast University Press. Pp. 70.

Liu Zhaojiang.

- 2010 *Guangzhou Plasterwork.* Guangzhou Press. Pp. 1-8, 25 – 179.

Liu Zichuan.

- 2011 *Symbols of Architectural Decorative Carves in Canton Chen Clan Temple.* Art and Criticism, No. 07. Pp. 138-141.

Lu Liancheng.

- 1985 *Study of Performance of the architectural white plaster in Chinese Neolithic.* Natural Chinese Science Academy Science Compile, Literary Writings of history of Science and Technology, No.14. Pp. 107.

Luo Yulin.

- 1996 *Guangzhou Chen Clan Academy.* Lingnan Fina Art Press. Pp. 31-32.

Ma Lina and Zhang Pusui.

- 1999 *Macau Spring and Autumn.* Chinese tax Press. Pp. 32.

Ma Linchun.

- 2011 *The Overview of Aesthetic Culture of Cyan in the Horizon of Traditional Culture.* Institute of Fine Arts, Journal of Shandong Education Institute, No. 01. Pp. 113 – 117.

Ma Sumei.

- 2002 *Wishes on the ridge of the roof.* Sanlian Publishing (Hong Kong) Co., Ltd. Pp. 60.

Ma Weila.

- 2003 *Huasheng Mosque's Unique Architectural Art.* China Muslin, No. 01. Pp. 38 - 40.

Ma Xueren.

- 2001 *Gandhara Art and Production of Buddha Statues.* Northwest Ethnic Studies, No. 04. Pp. 120.

- Mai Yinghao.  
1990 *Records of Cultural Relic in the City of Guangzhou*. Lingnan Fine Art Press. Pp. 53, 183, 190, 574- 626.
- Marcus Vitruvius Pollio, etc.  
1960 *The ten books on architecture*. New York : Dover Publications.
- Mario Fogliata, Maria Lucia Sartor.  
2004 *L'arte dello stucco: storia, tecnica, metodologie della tradizione veneziana*. Antilia. Pp. 04.
- Masi Girolamo.  
1788 *Teoria e pratica di architettura civile: per istruzione della gioventù specialmente romana*. Presso A. Fulgoni.
- Miao Li.  
2008 *The Study of the protect and smriti, and use and develop of intangible cultural heritage*. Northwest University, Master's Dissertation. Pp. 12.
- Morse, Hosea Ballou.  
1900 *The International Relations of the Chinese Empire*. Volume 1. New York : Paragon Book Gallery. Pp. 118.
- Nai Ying.  
2010 *Research on Ancestral Halls of Guangfu Clan in Pearl River Delta*. South China University of Technology, Guangzhou, Doctoral Dissertation. Pp. 160 - 175, 195.
- Pan An.  
1996 *Research of Traditional Houses in the City of Guangzhou*. Huazhong Architecture. Pp. 104-107.
- Palladio and Andrea.  
1997 *The Four Books On Architecture*. MIT Press, subject: Architecture--Early works to 1800. Publication date.
- Paula I. Figoni.  
2010 *How Baking Works: Exploring the Fundamentals of Baking Science*. Hoboken, N.J. : John Wiley & Sons, New York: Wiley. Pp. 170-172.
- Qiu Shihua.  
1980 *Archaeology and Cultural Relics*. No. 03. Pp.126.

- Richard McDermott Miller.  
1971 *Figure Sculpture in Wax and Plaster*. Watson-Guptill Publications. Pp. 59.
- Rollefson, G.O. and Kafafi, Z.  
1994 *The 1993 Season at 'Ain Ghazal: Preliminary Report*. ADAJ 38: 11-32.
- Rose, G.  
2001 *Visual Methodologies: An Introduction to the Interpretation of Visual Materials*. London: Sage Publications. Pp. 188.
- Rui Lin.  
1879 *Notes of City of Canton*. Cheng Wen Press,.
- Seng Jisun.  
1939 *Summary of Methods of Ink-Making*. The Commercial Press.
- Shaer, M.  
1997 *The Nabataean Mortars in Petra Area: Investigation of Types and Applications*. Unpublished Masters Thesis. Yarmouk University, Irbid.  
2000 Plaster and Color on the Rock-Cut Tomb of Façades of Petra. Pp. 133-148 in M. Kühlenthal and H. Fischer (eds), *Petra*. Arbeitshefte des Bayerischen Landesamtes für Denkmalpflege, Band 105. Munich: Bayerisches Landesamt für Denkmalpflege.
- Shan Deqi.  
2003 *Chinese Folk Residences*. Wuzhou Communication Press. Pp. 53.
- Shanxi Archaeological Institute.  
2004 *Shangzhou and Han dynasties Relics were found in Linshi Jinjie*. Historical Relic, No.8. Pp. 29- 37.
- Shanxi Institute of Archaeology.  
2005 *Clearing Briefing of Tombs of Bei Dynasty in Xi'an Northern Suburbs*. Cultural Relics and Archaeology, No.1. Pp. 7- 16.
- Shen Jisun.  
1988 *Summary of Made Ink Techniques*. Guang Ya Shu Kuk.
- Shen Jiaren.  
2003 *The History of Lingnan Pottery and Porcelain*. Guangdong Higher Education Press. Pp. 65-69.

- Shi Donglu.  
2009 *Nanoscience in biomedicine*. Beijing: Tsinghua University Press.  
Berlin: Springer. Pp. 167.
- Shi Huijiao and Tang Yongtong.  
1992 *Memoirs of Eminent Monks*. Zhong Hua Publishing House. Pp. 42-43.
- Song Fengdi.  
2001 *Relation Between Qing and The Aesthetic Psychology of The Chinese Nation*. Journal of Shandong University (Social Science), No.01.  
Pp. 99-103.
- Song Yingxing.  
2005 *T'ien-kung k'ai-wu*. Taiwan Study-room Publication of Ltd.
- Song Yingxing, Cao Xiaou.  
2009 *Tian Gong Kai Wu*. Shandong Pictorial Publishing House.
- Song Xin.  
2005 *Traditional Bogu Building Fastigium of Guangzhou Region*. Hundred Schools in Art, No.02. Pp. 144.
- Stewart MacPherson, Yushuo Zheng.  
1996 *Economic and social development in South China*.  
Edward Elgar Publishing.
- Su Libo.  
2008 *The Impact of Gandhara Statues on the Rock-cave Statues of China*.  
Northeast Normal University, Master Dissertation. Pp. 11.
- Sun Dazhang.  
2002 *History of Ancient Chinese Architecture: Qing Dynasty Architecture*.  
China Building Industry Press. Pp. 472.
- Sun Hai etc.  
2005 *Chinese Archaeological Compilation: Fujian, Guangdong, Hainan, Guangxi, South China*, No. 02. Zhongzhou Ancient Books Press.  
Pp. 1176.
- Sun Dunxiu.  
1993 *Chinese Four Treasures of the Study*. Xinhua Press. Pp.49, 94-104.
- Sun Shangpu and Cheng Jianjun.  
2005 *Fengshui and Architectures*. Jiangxi Science and Technology Press.  
Pp. 01-15.



Sung Ying-hsing, and E-tu Zen Sun.

1997 *Chinese technology in the seventeenth century*. Mineola, N.Y.: Dover Publications. Pp. 201 - 206

Tang Guohua.

2001 *Compilation of Historic Building the Measured Drawings in Lingnan*. South China University of Technology Press.  
Pp. 41, 59, 71,73, 177-211.

2004 *The Shamian Modern Architectural Complex*. South China University of Technology Press.

The Development Center of Historical and Cultural City of Guangzhou, Institute of the Ancient Capital of Guangzhou and Research Association of Historical and Cultural City of Guangzhou.

1993 *The Status and Role of the Guangzhou in The Maritime Silk Road*. Zhongshan University Press. Pp. 67-93. 179-183.

The Encyclopedia of China Press.

2004 *Encyclopedia of China*. The Encyclopedia of China Press. Pp. 171

The Guangzhou Local Records Compilation Committee.

1999 *The City of Guangzhou Local Records, Vol XVI*. Guangzhou Press.  
Pp. 579.

Tian Hengming.

2004 *Hui ink stick*. Anhui science and Technology Press.

The Chinese State Cultural Relics Bureau.

1981 *The Chinese places of interest Dictionary*. Shanghai Lexicography Publishing House. Pp. 828.

Torraca, G.

2009 *Lectures on Materials Science for Architectural Conservation*. Los Angeles: Getty Conservation Institute. Pp. 50.

[http://www.getty.edu/conservation/publications/pdf\\_publications/torraca.pdf](http://www.getty.edu/conservation/publications/pdf_publications/torraca.pdf).

Vasari, Giorgio,Translator De Vere, Gaston du C.

1912 *Lives of the most Eminent Painters Sculptors and Architects Vol 08 (of 10) Bastiano to Taddeo Zuccherro*. Philip Lee Warner Press. Pp.76.

Wang Kai.

1989 *History of Ancient Road Transportation in Shanxi*. People's Communications Press. Pp. 10.

- Wang Gai, Wang Zhi ect.  
1982 *Mustard Seed Garden*. China Bookstore Press. Pp. 27.
- Wang Longsheng,  
2003 *Procedure and Basic Character of Bricklaying Used Syrup-lime Mortar in Taiwan during The Ching-Dynasty*. National Taiwan University of Science and Technology.
- Wang Shuqin.  
2009 *Polychromy art of Chinese traditional architecture*. Construction and Architecture, No. 01. Pp. 68-70.
- Wang Wenjuan.  
2005 *Five Xing and Five Colors*. Fine Arts Observation, No. 03. Pp. 80-87.
- Wang Xiaoqing.  
1996 *Chinese Ancient Architecture Glossary*. Shanxi People's Press.  
Pp. 92, 207, 351, 388, 417.
- Wang Yu.  
2011 *The Spread and Impact of the Ancient Foreign Architectural Culture in Lingnan*. Ancient Building Garden Techniques, No. 04. Pp. 52-55.
- Wassily Kandinsky.  
2008 *Concerning the Spiritual in Art*. The Floating Press. Pp. 84.
- Wei Guofeng etc.  
2011 *Influence of Admixture on Properties of Traditional Sticky Rice-lime Mortar and Their Mechanisms*. Journal of Civil, Architecture & Environmental Engineering, Vol.33 No. 5. Pp. 144.
- Wen Jue.  
1933 *Local Records of Guangxiao Tempe*. Shunde Daliang Changxing Press.
- Wu Chunnian.  
2009 *Characteristics of Honeysuckle Patterns and Historical Background in the Northern and Southern Dynasties*. Chronicles in Heilongjiang province, No. 15, , Pp. 19 -21.
- Wu Jinyong.  
2011 *Research of Pigments in the Pre-Qin and Han Dynasties*. The art of Architectural Environment Tian University, Doctoral dissertation.  
Pp. 22- 28.

Wu Lin and Wu Pingxiang.

- 2011 *Study of Decorative Words on the Ancient Building*. Journal of Fuzhou University (Philosophy and Social Sciences), No. 01. Pp. 70-78.

Wu Qingzhou.

- 1997 *Study of Cultural Origins of the Ridge-decoration of Chinese Ancient Architecture*. Huazhong Architecture, Vol. 15 No.02-04.

Wu Qingzhou.

- 2011 *Architectural Research in Guangdong Foshan Ancestral Temple*. Traditional Chinese Architecture and Gardens, No. 01. Pp. 35, 47.

Wu Jinyong.

- 2011 *Research of Pigments in the Pre-Qin and Han Dynasties*. Art of Architectural Environment Tianjin University, Doctoral Dissertation. Pp. 22- 28.

Wu Yingcai and Guo Junjie.

- 1997 *Chinese Ancestral Temple and Former Residence*. Tianjin People's press. Pp.187-197.

Xia Yin.

- 2009 *Exploring Chinese Historical Pigments by Optical Microscopy*. Relics and Museology, No.06. Pp. 345.

Xiao Haiming.

- 1994 *Foshan Ancestral Temple*. Cultural Relics Press. Pp. 70.

Xie Shengbao.

- 1996 *Dunhuang Patterns*. Gansu People's Fine Arts Press. Pp. 30.

Xie Zonghui.

- 1988 *Sanyuan Temple in the City of Canton*. China Taoism, No. 04. Pp. 50- 52.

Xie Zongrong.

- 2004 *Exorcising evil spirit and bringing in auspiciousness: antique charm motif and cultural images*. the National Traditional Artistic Center. Pp. 45.

Xing Jingwen.

- 1995 *Shanxi ancient science and technology*. Chinese Science and Technology Press. Pp. 161 - 163.

- Xu Shen.  
1985 *Chinese Explaining and Analyzing Characters*. Art Chinese Network Press.
- Xu Song and Ye Weiqing  
2002 *Song Hui Yao, Vol. Fangyu*. Shanghai Ancient Books Publishing House.
- Xun Delin.  
2003 *Sengjia Monk and Sizhou Pu Zhao Wang Temple*. Jiangsu Chorography, No. 04. Pp. 38-40.
- Yang Bingde.  
2003 *The Combination History Sino-west Architectural Culture in Modern Times of China*. Hebei Education Press. Pp. 107-115.
- Yang Bingyu and Feng Yuhuai.  
1998 *Preliminary Study of Lime historical data*. Geology of Chemical Minerals. Vol. 20, No. 01. Pp. 55-60.
- Yang Fuwei and Zhang Bingjian, etc.  
2007 *Sticky Rice Mortar as the Representative of Traditional Mortar, Volume XXXIX, No.1: One of the great inventions in ancient China*. Chinese Science Press. Pp. 2  
2009 *Sticky-Rice Mortar as the Representative of Traditional Mortar: One of the great inventions in ancient China*. Chinese Science Press, No, 2. Pp. 1--7
- Yang Lianggong.  
1984 *Today's Note and Explanation for Four Books*. Taiwan Commercial Press. Pp.76.
- Yang Shen and Li Diaoyuan.  
1809 *Yilin Fashan*. Vol. IX. Lee Rolls of Floor. Pp. 57.
- Yan Yan,  
2003 *Foreign Motif Decoration in North Dynasty: The Study on Honeysuckle Motif*. Shanxi University, Master's dissertation. Pp. 15.
- Yang Ziyuan.  
1999 *Records of the city of Guangzhou*. Guangdong Press. Pp. 590.
- Yao Yuan.  
1993 *Chang'an's Dictionary in Han Dynasty: Science and Technology*. Shanxi People's Press. Pp. 477 - 478, 480.

- Yin Jicai.  
1990 *Description of Use of Chinese Traditional Mineral Pigments*. Ore Beneficiation for Foreign Metallic Ores, No. 01. Pp. 54.
- Yu Fei'an.  
1955 *Research of Chinese Traditional Painting Materials*. Chao Hua Fine Art Press. Pp. 6-11.
- Yu Xincang and Huang Chengtong.  
1984 *Bao Jing, Bao Gu and Caton Sanyuan Temple*. Taoist Association Journal, No. 15. Pp. 70- 74.
- Yuan Runzhang.  
1996 *Cementitious Materials*. Wuhan University of Technology. Pp. 33- 36.
- Yue-man Yeung.  
1998 *Guangdong: survey of a province undergoing rapid change*. Chinese Univ. Press. Pp. 467- 470.
- Zeng Zhaoxuan.  
1991 *Guangzhou History and Geography*. Guangdong People Press. Pp. 1-14.
- Zhang Fuhe.  
1999 *Modern architectural study and protection in China*. Tsinghua University Press.
- Zhang Yanjie.  
2007 *Scroll Pattern: Eternal Symbol of the Decorative Arts*. Journal of Liaoning Educational Administration Institute, No. 08. Pp. 174.
- Zhang YuHuan etc.  
1985 *History of Chinese Ancient Architectural Technology*. Science Press. Pp. 272-273, 275.
- Zhao Quanli.  
2001 *Essentials of Chinese ancient painting technology, materials and tools history*. Chinese National Academy of Arts, doctoral dissertation. Pp. 108, 110.
- Zhao Yanwei(about 1140 - 1210).  
1206 *Yunlu Manchao*. Pp. 135.
- Zhao Ye (Donghan dynasty), Zhang Jue Note.  
1996 *Wu Yue chun qiu*. Ancient Books Press in Taiwan. Pp. 447.

Zheng Jun.

2005 *Ancient Chinese dragon and Decorative Arts*. People's Fine Art Press.  
Pp. 221- 293.

Zheng Wei

1985 *Chinese painted pottery art*. Shanghai People's Press. Pp. 26-30.

Zhou Haixing.

2004 *Study of Decorative Art of Lime Model in Guangzhou Region Lingnan District*. South China University of Technology. Master Dissertation.  
Pp.42. 57.

Zhuang Minxin.

2003 *Work Methods and Applications in Traditional lime Work*. Taiwan.  
Pp. 24.

Zhu Di.

1993 *Memoirs of Eminent Monks*. Jiangsu Guangling Ancient Engraving Press.  
Pp. 17.

Zhu Heping.

2004 *History of Chinese Arts and Crafts*. Hunan University Press. Pp.161.

Zuo Qiuming (556 BC-451 BC).

2001 *ZuoZhuan*. Changsha: Yuelu Press. Pp. 289.