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Collana diretta da Luisa Ferro e Federica Pocaterra

The project presented here originates from a consultancy on the problem of large-scale enhancement of the historical landscape heritage Hakka in Huiyang (Huizhou prefecture, Guangdong Province, PRC) carried out by the School of Civil Architecture of the Politecnico di Milano based on a cooperation agreement with the Office of Rural and Urban Planning of Huizhou Prefecture stipulated in 2010 and lasted until 2013, with a queue in 2015. The project was elaborated by a multidisciplinary team from the Politecnico di Milano departments DASTU and ABC. After its partial presentation in 2011 to Huizhou authorities, and in two exhibitions in Milan in 2012 and 2013, we publish here now the complete research with all the detailed projects considering that its methodological approach resulted relevant for the feedback it had in the update of the Huiyang Master Plan published in 2021, that follows historical landscape and architectural heritage enhancement criteria suggested by the research.

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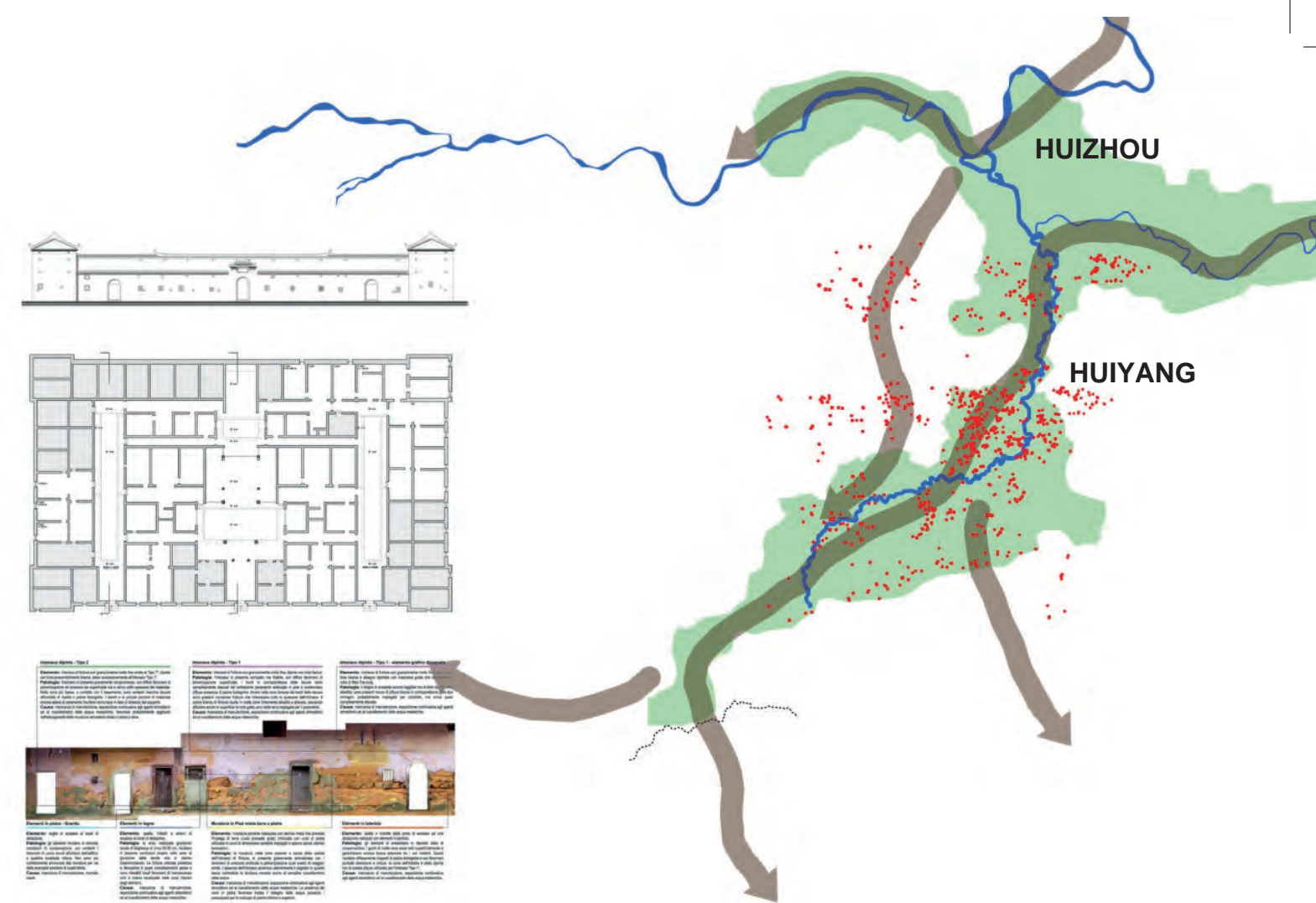
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Rebuilding from the countryside. Huiyang Hakka Heritage Conservation Project

Edited by  
Zhen Chen, Maurizio Meriggi, Zhu Tan



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Huiyang Hakka Heritage  
Conservation Project

乡村再造  
惠阳客家围屋建筑遗产保护发展研究

Edited by  
Zhen Chen, Maurizio Meriggi, Zhu Tan

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arabAFenice

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The work presented in this book is originated from a consultancy report from the School of Civil Architecture of the Milan Polytechnic for the Office of Rural and Urban Planning of the Huizhou Prefecture (Guangdong Province). The work is part of the actions carried out by the Italy-Guangdong Committee on Territorial Partnerships following agreements stipulated between the Italian Ministry of Foreign Affairs (MAE) and the Government of the Guangdong Province of the People's Republic of China (Resolution n. 99/2007 of 28 September 2007 of the Interministerial Committee for Economic Planning relating to the financing of the multi-regional program for the support of relations of the regional territories with China). The consultancy began in 2009 and lasted until 2015.

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## Foreword

Ye Maoting

Chairman of the Standing Committee of the  
People's Congress of Huiyang

Huiyang District of Huizhou municipality is in the south-central part of Guangdong, eastern part of the Pearl River Delta, adjacent to Daya Bay in the south, near Hong Kong, and bordering on Shenzhen City.

In the Eastern Jin Dynasty, it belonged to Xinle and Youping counties. In the Southern Song Dynasty, it belonged to Anhuai and Huai'an counties. In AD 589 (Sui Dynasty), it was called Guishan County, the largest of the ten administrative divisions of Huizhou municipality. In the first year of the Republic of China (AD 1912), it was renamed Huiyang County. In 1994, the Huiyang county was renamed as Huiyang city and In 2003 the Huiyang City was renamed as Huiyang District of Huizhou Municipality.

Huizhou City has a long history with outstanding people and abundant cultural heritages. It is a Hakka settlement and is known as the "capital of overseas Hakka".

The Hakka ancestors came from the central plains of China. Hakka culture retains the mainstream characteristics of Confucian culture, which emphasizes benevolence, righteousness, etiquette, wisdom, trustworthiness, loyalty, filial piety, and integrity.

The ancestors of the Hakkas continued to migrate southward in the process of resisting foreign invasions and civil wars. In order to survive and develop, they lived together in the barren mountainous areas at the junction of Fujian, Jiangxi and Guangdong provinces, and gradually formed the spiritual and cultural characteristics of advocating literature and martial arts, farming while studying, family inheritance, hard work and pioneering spirit.

"You maybe don't know Hakka people, but you must know the Hakka architectures".

The Hakka enclosed architecture, one of the five representative vernacular houses in China, is the residence where the Hakka people have flourished and survived for generations.

It is known as "the ancient Roman castle in the east" and "the living fossil of the Wubao (a kind of castle) of Han and Jin Dynasties", is an important symbol of Hakka culture which contains traditional Chinese etiquette, ethical concepts and was built following the Feng Shui principles.

As the representatives of Huizhou Hakka culture, there are more than 100 Hakka enclosed houses in Huiyang, with a huge number of styles, unique features and well-preserved. Huiyang Hakka enclosed house has so-called Guishan-style, which came from the original name (Guishan County including today's Huiyang, Huicheng, Huidong, Longgang districts), is a hybrid from Tangheng Wu (layout of halls and vertical rooms), Weilong Wu (layout with arc shaped Weilong rooms) and Sijiao Lou (rectangle layout with watchtowers on four corners).

Their internal spaces and decorations absorbed the advantages of the folk houses of Guangzhou, Chaozhou, and Shantou areas. It not only strengthens the defensive performance of enclosed

## 前言

叶茂庭

惠阳区人大常委会主任

惠州市惠阳区位于中国广东中南部，地处珠江三角洲东部，南临大亚湾，毗邻香港，与深圳市接壤。东晋时属欣乐、西平县地；南朝宋时分属安怀、怀安县地。隋开皇九年（公元589年）后称归善县，州、郡、路、府均设在县境，为惠州十属之首。民国元年（公元1912年）更名惠阳县，1994年撤县设市，2003年撤销惠阳市设立惠州市惠阳区。

惠州历史悠久、人杰地灵、文化底蕴深厚，乃客家人聚居地，有“客家侨都”之称。客家先民来自中原，客家文化保留了儒家文化的主流特征，强调仁、义、礼、智、信、忠、孝、廉。客家先民在抵御外族入侵和朝代更替中不断南迁，为了生存和发展，在闽、赣、粤交界的贫脊山区聚族而居，逐渐形成了崇文尚武、耕读传家、刻苦耐劳、开拓进取的精神文化特质。

“未见客家人，先见客家楼。”中国五大特色民居建筑之一的客家围屋是客家民系世代繁衍生存的居所，被誉为“东方的古罗马城堡”、“汉晋坞堡的活化石”，蕴含中国传统礼制、伦理观念及风水意识，是客家文化的重要象征。作为惠州客家文化的代表，惠阳现存客家围屋100余座，其年代之久、数量之多、风格之全、特色之最、保存之完好，在粤东地区首屈一指。惠阳客家围屋又称归善式围楼，因其发源并主要分布在原归善县城即今天的惠阳、惠城、惠东、龙岗等地，是粤东北地区堂横屋、围龙屋和四角楼的结合体，内部空间布局和装饰又吸收了广府和潮汕民居的优点，既强化了围龙屋的防御性能，又改进其内部空间布局，使更加科学实用，是兴梅地区围龙屋的优化演进型，成为客家围屋发展的高峰，其博采众长、兼容并蓄的理念和做法正是客家文化开放包容、与时俱进特质的体现。

惠阳客家围屋最集中的地方在秋长，不但数量多，且涵盖了各个时期的多种形制和风格，堪称客家围屋博览园。随着明末清初兴梅地区客家人的陆续迁入，带来了先进文化与耕作技术，秋长客家人胼手胝足、薪尽火传，与原住民一道开发建设家园。康熙乾隆之治，社会生产力得到较大发展，秋长地区人口迅速增长，大型城堡式围楼开始出现。近代以来，为数众多的秋长客家人为生活所迫，“卖猪仔”到东南亚等地谋生，经过几代人的努力打拼，又陆续在家乡建起形制不同、风格各异的围屋，部分还兼带西洋风格。

这些围屋保留了兴梅客家民居堂屋、横屋、禾坪、月池、转斗门等主要结构。内部格局以“三堂两横”为核心，呈对称式布局。进入大门穿过门厅为天街，将围楼和堂横屋隔开。围屋中央的三进建筑分别为下厅、中厅、祖堂，有精美的木雕和墙绘，乃围屋的核心和文化精粹所在。外墙为三合土夯筑，朴实厚重。循墙上建女儿墙，女儿墙内侧筑巡道，俗称“走马道”。四角筑碉楼，屋顶一般做成官帽状，部分围屋后围中央建有望楼，碉楼和望楼顶端两侧做成锅耳状山墙。围屋四周由两层高的“斗廊式”单元房围合，每个单元由两房一厅和两廊一天井构成。秋长叶氏建于乾隆年间的南阳世居、桂林新居，内建围龙屋，外建方形四角楼围寨，是围龙屋和四角楼向城堡式围楼的演变例证。

这些围屋历经百年风雨仍屹立不倒，但随着原住民不断外迁，围屋内人烟凋零，年久失修终至破旧不堪，保护客家文化的“活化石”——客家围屋刻不容缓。笔者在围屋中长大，对围屋的现状和前景深感忧虑。为抢救这些文化瑰宝，2002年组织开展了对秋长围屋

houses, but also improves its layout of internal space to make it more scientific and practical.

The Hakka enclosed architecture here is the best evolution of Weilong Wu in Meizhou and Xingning area, it shows the pinnacle of the development of Hakka enclosed houses.

Its concepts and practices of learning from others' strengths and being inclusive are the specific embodiment of the characteristics of Hakka culture which are open, inclusive, and advancing with the times.

The most assembled of Hakka houses in Huiyang district is in Qiuchang area. Not only are they numerous, but they also cover a variety of types and styles from various periods.

It can be called as an expo park of Hakka architecture. In the late Ming and early Qing dynasties, as the Hakka people gradually migrated here from the Meizhou & Xingning area, they brought here advanced culture and farming technology.

In Qiuchang, the Hakka people, with diligent hands, worked with the aborigines to develop and build their homes.

During the periods of Emperor Kangxi, Yongzheng, and Emperor Qianlong (from the end of 17th century to the end of 18th century), social productivity was greatly developed, the population of Qiuchang area increased rapidly, and large castle-style enclosure residences began to appear.

In 19th century, many Qiuchang Hakka people have been forced to make a living abroad in Southeast Asia. With the effort of several generations, Hakka houses of different shapes and styles have been successively built in their hometown, some of them also have a western style.

These Hakka houses retain the basic layout of Meizhou & Xingning Hakka houses, such as the main halls, vertical rooms (Hengwu), platform (Heping), moon pond (Yuechi), and Zhuandou gate and so on.

The internal pattern take "three halls and two verticals" as the core part and presents a symmetrical layout.

Entering the gate and passing through the foyer is a long sky street, which separates the enclosure wall and the core part. The three halls in the center on the middle axis are the first hall, the middle hall, and the ancestral hall. There are exquisite wood carvings and wall paintings, which are the core and cultural essence of the enclosed residences. The outer walls are rammed with three-component soil, which are simple and heavy. A parapet wall is built along the wall, and patrol roads are built inside the parapet wall, commonly known as "walking horse roads". Watchtowers are built at the four corners, and their roofs are generally made into the shape of official hats. In some houses, a watchtower (Wang Lou) is also built in the middle of the back enclosure, and all the watchtowers have wok ear walls.

The enclosure is composed by a series two-story "corridor-style" units, and each unit consisted of two rooms, one hall and two corridors, one patio. Qiuchang Ye Family built Residences Nanyang Shiju and Guilin Xinju during the Qianlong period. The houses have Weilong Wu inside and enclosure with squared Sijiao Lou outside, was the prototype of the evolution of the castle-style Hakka residence.

These Hakka houses are still standing after hundreds of years. However, recently as the residents continue to move out, less and less people live inside, and the houses become dilapidated because of lacking restoration. It is urgent to protect these "living fossil" of Hakka culture.

I grew up in a Hakka house and is deeply worried about the current situation. In order to save these cultural treasures, in

2002, a field survey of Qiuchang Hakka houses was organized, the city planning department was entrusted to formulate a conservation plan, therefore the work of applying for cultural relics conservation units and historical and cultural towns was started.

In 2004, 33 Hakka houses were announced as cultural relics conservation units in Huizhou City. In 2007, Qiuchang was announced as one of the famous historical and cultural towns in Guangdong Province. And in 2008, it was awarded the title of "famous historical and cultural town in China". The Qiuchang Hakka enclosed architecture has since known to the world and attracted the attention of the architectural community.

Italy is the country with the largest number of UNESCO heritages. Its advanced conservation concepts and measures have made many cultural heritages still vibrant. It has not only accumulated many successful practices and experiences in the field of cultural relics conservation, but also focused on the creative transformation and innovative development of traditional culture, giving traditional culture a modern strength.

In 2008, according to the urban planning and development cooperation memorandum signed between Guangdong Province (China) and Italy, experts and scholars from the School of Civil Architecture of Politecnico di Milano visited Huiyang many times to conduct an on-site investigation and research on Huiyang Hakka enclosed houses.

On March 10, 2011, the Huizhou Municipal Bureau of housing, urban-rural planning and construction and School of Civil Architecture of Politecnico di Milano signed a cooperation framework agreement in Huizhou to cooperate in cultural heritage conservation planning. As the first phase of the agreement, the research of conservation and tourism development of Huiyang Hakka enclosed houses started. Professor Angelo Torricelli, a member of the Conference of Deans of Italian Architectural Faculties and dean of the School of Civil Architecture of Politecnico di Milano, attended the signing ceremony.

The two parties set up a collaboration group, established the cooperative and exchange measures, took the existing 40 to 50 Hakka houses in Huiyang as samples, analyzed and summarized the preservation status of Hakka traditional dwellings. Then for Hakka houses in Gaoling Village, Tiemenshan Village, and Zhoutian Village of Qiuchang area, the group conducted special research on the tourism development according to the history and culture of Huiyang, conceived planning and conservation schemes, and proposed the tourism development. With high enthusiasm and rigorous academic attitude, the group went to the villages to conduct field surveys, entered the houses to carry out detailed investigation and mapping, and interviewed with the people to know the history and story of the houses.

In Milan, June of 2012, the School of Civil Architecture of Politecnico di Milano and the Huizhou Municipal Bureau of housing, urban-rural planning and construction held an exhibition and seminar on the result of the collaborative work about the Hakka culture architectural heritage in Huiyang (Huizhou).

The report of the seminar fully considered the development of modern cities in relation to the historical buildings.

With the report, the two parties agreed with the conservation and renewal principles and plans which were proposed according to the original Fengshui layout of the Hakka houses community.

The two parties also decided to increase the cooperation to select one or several Hakka enclosed houses in Qiuchang area as demonstration samples to make conservation planning, and



to strive the achievements to exhibit in the Expo of Milan.

The selected enclosed houses will be restored and reused in a protective manner and integrated with surrounding agricultural landscape environment to form a sustainable development within the contemporary city.

On April 18 of 2013, the exhibition of the conservation and renewal research of Huiyang Hakka houses inaugurated in the city center of Milan - Urban Center, the famous galleria Vittorio Emanuele II where hundreds of thousands of tourists pass through.

It was the achievement of the deep cooperation between Huizhou City and the School of Civil Architecture of Politecnico di Milano, was also the first time that the Milan Urban Center displayed an exhibition about China.

The theme of this exhibition was "Rebuilding from the countryside. The Hakka Heritage for the Green City of the Future". Pictures, models, videos, and other methods have been used to display the research progress that lasted 4 years.

The exhibition elaborated the relationship between the conservation of Hakka architectural heritage and the construction of green city in the future, and introduced systematically the architectural cultural meaning and the landscape value of Hakka enclosed residences, and finally proposed the strategies and projects for conservation and renewal.

After ten years of hard work, another result of the research, this book "Rebuilding from the countryside. Huiyang Hakka Heritage Conservation Project" is officially published. In this book, the theory of green city and the research methods for village and architectural heritage conservation provide useful academic reference for the construction of green cities in China's rural revitalization and urban-rural integration.

How to make cities and villages coexist harmoniously is currently a worldwide topic. The architectural cultural heritage of rural areas can guide and shape the development of future cities, forming a different model from the way of "city spread to the countryside". The concept of "renew the countryside inside the future city" proposed in this book is in line with the requirements of national cultural relics conservation and rural revitalization strategy, and it also provides scientific guidance for the conservation and revitalization of Huiyang Hakka houses.

Cultural heritage is an important symbol of the historical and cultural achievement of a nation and a country.

The conservation and inheritance of cultural heritage is of great significance to preserve the cultural roots and the soul of the nation.

It is gratifying that the conservation and revitalization of Hakka architectural heritage in Huiyang has received more and more attention and has achieved certain results. Among the houses, Biyan Lou, Liuzhao Lou, Gongxiu Lou, Shigou Wu, Changyi Lou, and so on have been restored and protected. Yap Ah Loy's former residence, Biyan Lou, was restored and opened as an exhibition hall. Huishui Lou was partially converted into an inn after restoration. The restoration works of Tingxiu Academy, Peng House in the Chayuan village, Liao House in Zhoutian village, and Huixin Lou are about to start.

We are looking forward to more Hakka houses and other historical buildings could be rejuvenated in the "Rebuilding from the countryside", to let the city have memories, and to let people remember nostalgia.

的田野调查, 委托规划部门制订保护规划, 并着手申报文物保护单位 and 历史文化名镇工作。2004年, 会龙楼等33处客家围屋被公布为惠州市文物保护单位。2007年, 秋长被公布为广东省首批历史文化名镇, 2008年荣膺“中国历史文化名镇”称号。秋长客家围屋从此为世人所知, 并引起建筑学界的关注。

意大利是文化遗产数量最多的国家, 其先进的保护理念和措施, 使众多文化遗产至今仍然散发着独特的文化气息。他们不但在文物保护领域积累了许多成功的做法和经验, 且注重传统文化的创造性转化、创新性发展, 为传统文化赋予现代力量。根据2008年中国广东省与意大利签署的城市规划发展合作备忘录, 来自意大利米兰理工大学建筑学院的专家和学者多次莅临惠阳, 实地考察调研惠阳客家围屋。2011年3月10日, 惠州市住房和城乡建设局和意大利建筑学院院长全国委员会在惠州签署合作框架协议, 在文化遗产保护规划方面开展合作, 首期推进惠阳客家围屋保护与旅游开发研究。意大利建筑学院院长全国委员会委员、米兰理工大学建筑学院院长托里拆利教授等参加签约仪式。

双方成立联合工作小组, 建立合作交流机制, 以惠阳现有的40到50个客家围屋为样本, 对客家传统民居保护现状进行分析与总结; 对惠阳历史文化等方面的旅游开发进行专项研究; 构思秋长高岭村、铁门扇村、周田村客家围屋的规划保护方案和旅游发展策略。联合工作组以高涨的工作热情和严谨的学术态度, 深入村落进行田野调查, 走进围屋开展勘察测绘, 坐在田间地头倾听围屋故事……

2012年6月, 米兰理工大学建筑学院与惠州市住建局在米兰举行了关于惠州市惠阳客家围屋建筑文化遗产的合作设计成果展览和研讨会, 成果报告充分考虑了现代城市发展与历史建筑的关系, 双方形成按照客家围屋群落原有风水格局进行整体保护和再利用的原则和方案。双方还决定加大合作力度, 在秋长选择一处或几处客家围屋作为保护规划的示范样本, 将样本围屋进行保护性修复及再利用, 并与周边农业相融合, 形成可持续发展的、当代城市中的农业景观环境, 争取在米兰世博会上展示。

作为惠州市与意大利米兰理工大学建筑学院就惠阳客家围屋保护、修复、再利用及可持续发展项目深入合作的成果, 惠阳客家围屋保护与发展研究项目专题展2013年4月18日在米兰城市中心展馆开幕。展馆位于著名的米兰十字拱廊, 展览期间数十万游客从这里经过, 这也是该馆第一次展示中国的内容。此次展览主题为“乡村再造--客家建筑遗产与未来绿色城市”, 用图片、模型、视频等方式展示了历时4年的研究成果, 讲述了客家建筑遗产保护与未来绿色城市建设之间的关系, 系统介绍了客家围屋深厚的建筑文化和景观价值, 以及保护、更新发展的策略和设计方案。

十年磨一剑, 惠阳客家围屋保护与发展研究又一成果《乡村再造--惠阳客家围屋建筑遗产保护发展研究》正式出版。书中倡导的绿色城市理论、村落和建筑遗产保护的研究方法, 为中国乡村振兴和城乡一体化中的绿色城市发展提供了有益的学术参考。如何让城市与乡村和谐共生是当前有世界意义的研究课题, 乡村的建筑文化遗产能够指引和塑造未来城市的发展, 形成与当前“城市向乡村蔓延”不同的一种发展模式。书中所提出的“在未来城市中再造乡村”的理念契合国家文物保护和乡村振兴战略要求, 为惠阳客家围屋的保护和活化利用提供了科学指引。

文化遗产是一个民族和国家历史文化成就的重要标志, 要留住文化根脉, 守住民族之魂, 文化遗产保护传承意义重大。令人欣慰的是, 惠阳客家围屋的保护和活化利用得到越来越多的关注和重视, 并取得一定成效。其中碧滢楼、榴兆楼、拱秀楼、石狗屋、常益楼等得到修缮保护, 叶亚来故居修复后开辟为展览馆, 会水楼修复后部分被改建为民宿, 挺秀书院、茶园彭屋、周田廖屋、会新楼等的修缮准备动工。期待更多的客家围屋及其他历史建筑, 在“乡村再造”中焕发新的生机和活力, 让城市留下记忆, 让人们记住乡愁。



# Revitalizing the Chinese Rural-Urban Continuum. Introduction to an architectural and urban design research for the enhancement of Hakka Settlements in Huiyang (Huizhou).

Zhen Chen, Maurizio Meriggi,  
Zhu Tan

1. The Hakka are a sub-ethnic group of the majority Han ethnic group, who emigrated here from the central regions of China starting from the Song dynasty following the invasions of peoples from the north.

2. The consultancy was developed as part of the actions carried out by the Italy-Guangdong Committee on Territorial Partnerships following agreements signed between the Italian Ministry of Foreign Affairs (MFA) and the Government of the Guangdong Province of the People's Republic of China (Resolution no. 99/2007 of 28 September 2007 of the Interministerial Committee for Economic Planning on the financing of the Multiregional Program for the support of territorial relations regional with China). The MFA approached the Conference of the Deans of Italian Architectural School for the construction of a working group to work on 5 areas in the Pearl River Delta: Zhao Qing, Guangzhou, Huizhou, Foshan, Zhongshan. In the attribution of cases to the Italian schools of architecture of the time, the School of Civil Architecture of the Politecnico di Milano was assigned to work in the area of Huizhou.

3. On the Hakka "urban-rural continuum" see: M. Meriggi, 2018.

4. With the denomination Qiuchangzhen – literally the town of the Commune of Qiu, is named the northern part of the city of Huiyang. For a clarification of the settlement structure of the city see here the text by F. Acuto and M. Meriggi on pages 82-85.

5. See: Huiyang Bureau of Housing and Urban-Rural Development, 2009.

6. See: Guangdong Provincial Government, 2009.

7. Thanks to the funding by Politecnico di Milano for internationalization and Fondazione Politecnico.

8. Italian Ministry of Foreign Affairs/Guangdong Province, Conference of the Deans of Italian Architectural School, School of Civil Architecture and Department of Architectural Design of Politecnico di Milano, Municipality of Huizhou Municipal Bureau of Housing and Urban-Rural De-

The project presented here originates from a consultancy on the problem of large-scale enhancement of the historical landscape heritage Hakka<sup>1</sup> in Huiyang (Huizhou prefecture, Guangdong Province, PRC) carried out by the School of Civil Architecture of the Politecnico di Milano based on a cooperation agreement with the Office of Rural and Urban Planning of Huizhou Prefecture<sup>2</sup> stipulated in 2010 and lasted until 2013, with a queue in 2015.

The reason why we decided to publish this project only now (which was presented in 2011 to the authorities of Huizhou and in two exhibitions in Milan in 2012 and 2013) is that its methodological structure is still relevant for the feedback it had in the update of the Huiyang Master Plan published in 2021 with respect to the instances of the enhancement of the historical landscape heritage Hakka.

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The city of Huiyang is in the eastern area of the Pearl River Delta (PRD), one of the largest urban regions on the planet. In its rural territory, the settlement structure of the urban-rural continuum<sup>3</sup> and the architectural vestiges of the Hakka tradition are still preserved in an appreciable way.

The initial object of the consultation was the production of a report indicating guidelines for the restoration and enhancement of five Hakka architectural complexes consisting of fortified residences of varying sizes - with fronts from 30 to 90 meters long - of considerable artistic and historical value, located in the territory of the Qiuchang Commune<sup>4</sup>, in the northern part of the city.

Already during the preliminary surveying in 2009 it emerged that the five complexes were just a selected sample of about a hundred architectural artefacts of this heritage<sup>5</sup>.

Despite the growing attention of the Guangdong Province authorities for the preservation of historic centers and environmental protection of the most urbanized area of the Province – the PRD6, the Huiyang Master Plan of the time, in use since 2007, provided for a substantial development of the city in the agricultural areas to the north where a substantial part of the Hakka residences was located by 2020 (See Figure 10).

For their protection, was used that protocol, which provided for the definition of a buffer zone of a few tens of meters deep around the architectural arte-

fact, which however protected only the building of the residence, but not its agricultural land which was an integral part of the landscape unit (see Figure 13).

The development of industrial areas to the west of the city, however, had already occupied most of the agricultural territories pertaining to the Hakka residences, saving only the architectural artefacts according to the methodology just described. However, although formally protected, these were in a state of physical decay due to their abandonment. Some of these complexes, built in rammed earth, had in fact almost completely disappeared because, in the absence of maintenance of the roofs, the walls had dissolved into the ground due to the rains.

Must be considered also that the consistency of the Hakka heritage of Huiyang counted as well the villages in the valleys adjacent to the city, included in the municipal territory, and that they were in a situation of risk no less serious than that of the peri-urban areas.

Given these conditions and by virtue of the presence of a large number of buildings to be preserved in a large territory affected by the planning of the city, it became clear that a project for the conservation and enhancement of the Hakka heritage could not disregard the identification of a strategy that assigned a role to these buildings and to the agricultural landscape that surrounded them, in the meshes of the future city. So, it seemed crucial to extend the survey to the scale of the city's Master Plan.

In autumn of 2010, the School of Civil Architecture of Politecnico di Milano organised a group of professors and PhD students (nearly 25 people) with expertise in Architectural and Urban Composition, Architectural Restoration, Urban Planning, and Interiors Design. The first surveying of the group in Huiyang territory was organised in 2010-11.

The surveying conducted in the march 2010 considered more than the five cases of Hakka residences originally required arriving to investigate nearly 55 cases.

This number of cases was considered necessary to produce a sample of the much more extended Hakka heritage in Huiyang territory (probably some hundreds) and just enough to draft a strategy for



1  
 development. Scientific managers: prof. Angelo Torricelli, Maurizio Boriani, Adalberto Dal Bo, Vincenzo Donato, Maurizio Meriggi. Research coordination: Maurizio Meriggi, Zhen Chen.

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 their conservation at the appropriate scale in the framework of the future of the city of Huiyang. The materials collected here are extracted from three research reports (2011, 2012 and 2013) and two exhibitions (in 2012 and 2013), elaborated by a group that since 2010 has expanded involving numerous master students and international exchange students from China who have contributed to exhibitions and to the drafting of demonstration architectural projects. To these materials were added projects developed for degree theses that developed specific proposals for some of the areas identified by the strategic Master Plan developed by the research group of the Polytechnic for the conservation of the Hakka heritage. In presenting the selection of materials published here we will proceed following the chronological line of the stages of research development and highlight the evolution of the methodological assumptions and proposals matured during the work in a permanent dialogue with the administration of Huizhou and the Huiyang Bureau of Housing and Urban-Rural Development between 2010 and 2015.

**Figures 1-4**  
 Images of the Exhibition: "The Hakka culture architectural heritage in Guangdong province (China). An urban and architectural enhancement project for the city of Huiyang (Huizhou)". Scuola di Architettura Civile del Politecnico di Milano, June 2012.

**Figures 5-8**  
 Images of the Exhibition: Rebuilding from the Countryside. The Hakka Heritage for the Green City of the Future. Milan Urban Center, April 2013.

*First Research Report*  
 The first results of the research were presented to the Chinese authorities in Huizhou in 2011 with the report: "Huiyang Hakka Heritage conservation research report"<sup>8</sup>. The report was structured in three parts.

Part 1 - Survey.  
 Construction of a list of the heritage of the residences of the Hakka culture and its conservation status in the territory of Huiyang based on a sample of 40-50 cases detect-

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 ed and analyzed by inspection, filing, referencing maps and identification of possible measures for restoration.  
 Part 2 - Tourism Plan.  
 Elaboration of a tourism development plan for the area of the city of Huiyang. The study starts from an analysis of the socio economic structure and the new accessibility in the large area due to the development of an infrastructural network.  
 Part 3 – Proposals.  
 Elaboration of a master plan indicating the measures of protection, enhancement and conservation to be implemented on the areas identified by the city of Huiyang: Gao Lin, Tie Men Shan, Zhou Tian.

The research thus centred around a Tourism Plan, the problem of a census of the consistency of the existing heritage susceptible to the enhancement and its state of conservation, on the one hand, and the problem of the elaboration of a project strategy for the reuse and development of the historical heritage in the context of planning the future of the city, on the other.

*Exhibition: "The Hakka culture architectural heritage in Guangdong province (China). An urban and architectural enhancement project for the city of Huiyang (Huizhou)". Scuola di Architettura Civile del Politecnico di Milano, June 2012.*

The general strategy defined in the first report was refined in the exhibition held in June 2012 coinciding with the visit to Politecnico di Milano of an official delegation from the Bureaus of Housing and Urban-Rural Development of Huiyang and Huizhou. The exhibition followed the structure of the 2011 research report, specifying its contents.



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9. This part of the Project, developed by V. Donato, S. Recalcati and A. Terenzi, has not been reported here as it was based on economic indicators and simulations of the accessibility network referring to the situation of 2010. These data are no longer relevant today, as the overall picture of the development of the PRD has radically changed over the last decade. We have summarized some of the elements of the Tourism Development Plan in the contribution of F. Acuto and M. Meriggi on page 87, Table 6.

10. See: Construction Department, Guangdong Province - Development Bureau, Hong Kong Special Administrative Region - Secretariat for Transport and Public Works, Macao Special Administrative Region, 2009. See here: F. Acuto, M. Meriggi, p. 86.

11. This new plant on an urban scale is described in the essay by F. Acuto and M. Meriggi in the introduction to Part 2.

12. This cataloguing constitutes Part 3 of this volume edited by Z. Tan with the help of Shenzhen University students in international exchange at the School of Civil Architecture of the Politecnico di Milano in 2013: Luo Yuanhang, Qui Jinjin, Wang Weiyang, Zhao Dongming.

13. Demonstration projects of these assumptions are documented in the two contributions in Part 2 - Projects.

14. "Research in cooperation between China and Italy on the theme of harmonious development between countryside and city. An exhibition in Milan". New China Press Agency (Xinhua News Agency), Milan 18 April 2013, correspondent Song Jian. "On April 18, the exhibition illustrating the research 'Conservation and development of the Hakka heritage of the Chinese city of Huiyang' opened at the Urban

The survey on the state of conservation of the Hakka heritage is returned here in the contributions published here in Part 1 - Surveying Huiyang's Hakka Villages, and it is enriched with some specific insights on the furnishings and interior architecture of the Hakka residences, and on the application of the rules of Feng Shui in the settlements of the villages of Tie Men Shan and Zhoutian.

The part relating to the macro-territorial aspects (accessibility and resources) of the Tourism Plan is summarized here in the introductory essay of Part 2- Projects<sup>9</sup>.

The conservation and reuse projects of the five residences covered by the initial agreement are reported in the contributions published here in Part 2 - Projects, relating to the villages of Tie Men Shan (area A), Zhoutian (area B) and Gao Lin (area C).

Following the June 2012 exhibition, the Huiyang and Huizhou Bureau requested an update on the part relating to the issue of the protection of the Hakka settlement areas in the Qiuchang Commune.

The administration of the city was pressed by a request for land from a motor company to set up a large plant.

The land under attention by the company was precisely those of greater landscape value in the village of Tie Men Shan.

A second report was thus drawn up which, coherently developing the assumptions of the project of enhancement and in-depth protection in the exhibition, provided to: 1) fix a well-defined park area around the Hakka settlements of the Tie Men Shan and Lin Hu Villages; 2) define a system of protected green areas for agricultural parks, to increase the already existing one of Zhou Tian, also in other villages where there were Hakka historical settlements; 3) link these areas together through a "parkway" to be traced between the Station then under construction of the Guangzhou-Xiamen-Shanghai high-speed railway line, and the north-west side of

the Qiuchang Commune, passing along the Danshui River natural park areas; 4) define a controlled regime of land use in areas adjacent to the concentrations of Hakka residences and historic villages. The "parkway" with its buffer zones could represent the link between the South Green Corridor and the Central Green Corridor of the East Pearl River Delta envisaged by the Government of Guangdong Province<sup>10</sup>.

The proposed boundary of the park area in the territory of the villages of Tie Men Shan and Ling Hu, which appears in Figure 11, was immediately implemented by the Technical Bureau of Huizhou.

*Exhibition: Rebuilding from the Countryside. The Hakka Heritage for the Green City of the Future. Milan Urban Center, April 2013.*

The opportunity offered by the Urban Center of the Municipality of Milan to present the project was an opportunity to coherently rearrange and develop parts of the research carried out not yet formalized in three respects:

1) The urban structure of Huiyang that could have resulted from the "parkway" project<sup>11</sup> compared to the update of the Master Plan of 2012.

2) Deepen the cataloguing of the Hakka heritage with sheet per any residence in Huiyang<sup>12</sup>.

3) Identification of the architectural / landscape units of the Hakka settlements - consisting of ritual hill, residence, irrigation network originating from the half-moon water basin, and cultivated fields of relevance - to be considered as minimum units of urban intervention of environmental requalification.<sup>13</sup>

The research presented in the exhibition was then reported by several Chinese press agencies including "Xinhua News Agency" which pointed out an innovative methodological approach to the theme of conservation of the Hakka heritage as it was linked to the theme of the role of agricultural settlement and countryside in future urbanization<sup>14</sup>.

In July 2013, the Huizhou authorities asked to formulate a proposal for a professional assignment for the drafting of a series of detailed plans of architectural/landscape units.

In 2014 the research group of the Polytechnic was offered to elaborate on one of these detailed plans to develop a preliminary project in the architectural scale for a landscape unit located in the village of Zhoutian, on the Yanizishan hill, intended for tourist use and composed of a hotel, a resort and a series of holiday homes.

The latter project ended in 2015 and will be the subject of another publication in progress<sup>15</sup>.

In 2018 the book by M. Meriggi "L'architettura del continuo urbano-rurale. Insediamenti Hakka nel Guangdong Orientale [The Architecture of urban-rural continuum. Hakka settlements in Eastern Guangdong Province]" which frames the case of Huiyang with respect to an extended panorama of Hakka architectural / landscape units in eastern



On the opposite page:

**Figure 9**

Qiuchang Commune (Huiyang), 2023. The Hakka settlements (dark tone) and the path of the proposed "parkway" (in green). (© Chen, Meriggi, Tan, 2023).



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On this page:

**Figures 10-12**

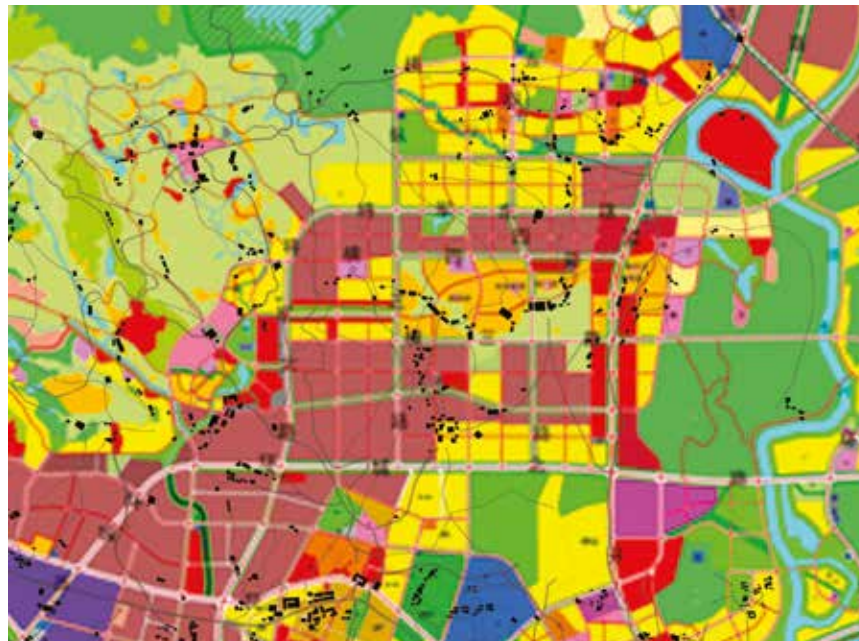
Qiuchang Commune (Huiyang), in the Huiyang Master Plan 2007, 2012 and 2021, with enhancement of Hakka residences (in black) (© Chen, Meriggi, Tan, 2010, 2012, 2023).

**Figure 13**

Conservation Plan of the Hakka residence Jiang Tian Nan Yang Shi Ju in Tie Men Shan village, with the enhancement of the conservation boundary (© Huiyang Bureau of Housing and Urban-Rural Development, 2009).

**Figures 14,15**

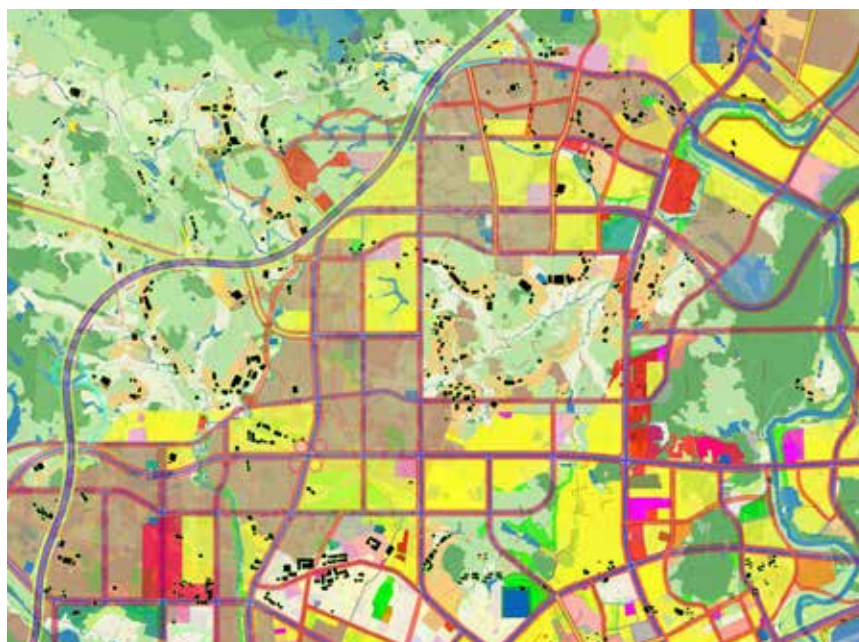
Proposed conservation boundary of the Tie Men Shan Hakka residences. System of the protection areas of Hakka villages and residences along the proposed "parkway": A-B areas - agricultural parks with highest level of Hakka heritage protection including rural landscape; C area - definition of new conservation boundary surrounding the Hakka residences to be combined with the public facilities network; D areas - Development areas with medium and low density of the urban fabric respecting the land morphology and facilities in Hakka villages and residences; E areas - natural parks. (© Politecnico di Milano 2012, 2013).



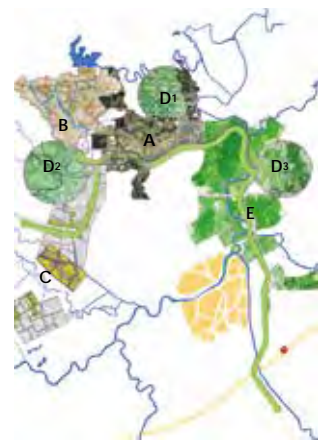
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Center in Milan. The title of this exhibition sounds like "Rebuilding from the Countryside" proposing to associate the preservation of Huiyang's Hakka heritage with the construction of a 'green city of the future'. The exhibition thus addresses in a scientific and proactive way the problem of harmonious development between the countryside and the city. The exhibition (...) proposes a strategy and a series of projects for its conservation, reuse, and development. (...) The authors state that the problem of harmonious development between rural and urban is today a global issue and that the architectural heritage in the countryside can indicate ways and forms of urban growth alternatives to undifferentiated diffusion, proposing the slogan 'rebuilding the countryside within the future city.' (...) The final report of the research focused on the relationship between the development of the modern city and architectural heritage, proposing a project of integral conservation and reuse of the Hakka heritage considered as a system of architectural / landscape unity following the rules of the original settlement".

15. The project for the resort complex was drawn up by Z. Chen, D. Chizzoniti, G. Comi, A. Del Bo, V. Donato, M. Meriggi, C. Pallini, S. Perego, Z. Tan, A. Torricelli, between 2014 and 2015. We report on page 117 an extract of the Master Plan with the project of the hotel by G. Comi and A. Torricelli.

and northern Guangdong, and which is, in fact, the introduction to the project presented here.

#### *Ten years after*

A comparison of the planned Master plans for the area of Qiuchang Commune and its current state (Figure 9), ten years after Our project, shows that the feared settlement of an industrial settlement in the hills of Tie Men Shan and Xiang Ling villages did not take place.

The landscaped units of architecture, hills and cultivated fields of the Hakka villages and residences are still well recognizable.

The only interventions in progress are a tourist settlement near Zhou Tian, mentioned above, and a residential settlement between Tie Men Shan and Xiang Ling, both recognizable in Figure 9.

The New Huiyang Master Plan 2021-2035 (Figure 12) incorporates the following indications provided by the project developed by the Polytechnic team, such as:

- 1) the establishment of a large park to protect the Hakka residences of the villages of Tie Men Shan and Ling Hu;
- 2) the location of low-density service and residential areas in correspondence with the historical nuclei of the villages of Cha Yuan and Wei Bu, surrounded by the industrial settlement;
- 3) the extension of the agricultural park areas on the northwest side of the villages of Cha Yuan and Wei Bu, where there are several Hakka nuclei and residences, previously included in areas intended for industry.

In this context, the state of health of the Hakka residences has potentially improved for several reasons: 1) in the new Master Plan the historical settlements have been isolated from the rest of the zoning and it is assumed that they are intended to be preserved; 2) their maintenance is encouraged by a change in attitude towards the heritage and by greater attention to land-use also of the neighbouring areas where there are villages and historic residences (with destination for services, as suggested by the Politecnico project, see pages 102-107).

The mortgage of a future transformation into an industrial area of the hills of Xiang Ling village remains in this plan, however, at this time this transformation has not taken place.

A detailed analysis area by area is illustrated in Part 2 - Projects, following their order by degrees of the conservation constraint of the Hakka heritage of Huiyang (from A to D) and which together constitute the pieces of the project of "green city" along the "parkway" within the city.

## Part 1 - Surveying Huiyang's Hakka Villages

Fast speed Urbanization process in PRD and the Destiny of Hakka Heritage.

*Chen Zhen*

A comprehensive inventory of the Hakka sites in Huiyang: a tool to know and to preserve an important cultural landscape Heritage.

*Alberta Gazzani, Maria Cristina Palo*

Architectural survey of Hakka residences in Huiyang.

*Domenico Chizzoniti*

Architectural Survey of six Hakka residences in Huiyang.

The conservation of Hakka earthen building. Conceptual tool and technical notes.

*Rossana Gabaglio, Mariacristina Giambruno*

Surveying of the furniture and interior space of Hakka culture residences in Huiyang.

*Lucilla Zanolari Bottelli*

Fengshui in Huiyang northern Hakka villages.

*Chen Zhen*



# Fast speed urbanization process in PRD and the destinies of Hakka Heritage.\*

Zhen Chen

\*References to the text are en-listed at p. 244, in the section: *Chinese Official Planning documents and literature on Chinese rural planning referring to the Present Research.*

The case of the Jiang Tian Nan Yang Shi Ju residence in Gao Ling village in the territory of Qiuchang Community is an eloquent example of the complex phenomenon of Hakka heritage preservation in Huiyang. Together with the twin residence of Gao Bu Lao Wei, belonging to the same Ye family, it is the testimony of the first Hakka settlement in Huiyang, in the second half of the thirteenth century, during the Song dynasty. As the satellite photo shows, until the early 2000s (Figure 15) this nucleus was still immersed in an agricultural landscape with cultivated fields in the northern part and the two basins of the residences to the south were part of the system of water mirrors of the Lake Qiuyue basin. Since 2008, the conversion of the rural areas of the western part of the territory of the Commune of Qiuchang into industrial areas has begun (Figures 18-19) with the occupation of the cultivated fields of the two residences from industrial warehouses. The sheds were accompanied by the dormitory residences of workers (Figures 10-13) immigrants from other provinces. The residents of the two complexes had begun to abandon them since the beginning of the 2000s, creating single-family houses of two floors (Figures 8, 16 -17), self-built and arranged without control and an urban design around the historical crescent-shaped basins. It should be noted that this phenomenon was possible due to the fact that the local villagers had collective ownership of the residences and surrounding land, which they leased to industrial enterprises. The phenomenon can be framed in the form of fast speed process of urbanization that has affected the entire area of the Pearl River Delta since the Reforms of the 80s with the establishment of the Shenzhen SEZ. But this development continues in a very aggressive way even in the Master Plan 2007-2020 (Figures 19, 21).

Regarding the general state of conservation of the Hakka villages in Huiyang it can be resumed as follows: only few villages have an official status of protection (national, provincial, city level), but this does not mean that the building is in perfect condition; almost all the buildings are abandoned and lacking of roof maintenance and many of them are falling down since they are made of rammed earth (Figure 7); few of them are restored for living with not always appropriate technologies; in some of them is restored only the family temple (*citang*) and the central halls (Figures 4-6) where the clan members only come back to make sacrifices

to the ancestor once a year during the spring festival. By facing this conservation problem, the canonical methodology used in Chinese technical offices provides around a historical complex a buffer zone of 30-60 meters drawn as an offset of the outer perimeter of the complex (Figure 14). However, this procedure is completely ineffective in preserving the landscape units built around historic residences through the practice of *Feng Shui* of which we will give some examples to Huiyang later (see pages: 76-82).

The Jiang Tian Nan Yang Shi Ju residence is now barely recognizable in the hybrid landscape that was formed through recent urbanization (Figure 9).

So our research, initially developed as a consultancy on issues of restoration of five Hakka residences in the territory of Qiuchang Municipality in Huiyang, including Jiang Tian Nan Yang Shi Ju, necessarily had to address issues related to another scale - of urban design and city planning.

In the following lines will be shortly explain the mechanisms of the Chinese planning system and the recently open new perspectives that seem to be more open to new ways to preserve the cultural identities of the area. We will explain this situation in an historical perspective. To understand what happened in the past 20 years in this area we have to consider at first the effect of "real estate" economy in the hinterland of big metropolitan regions as Pearl River Delta (Figures 18-19). The enclosure-build that characterized city hurricane "urbanization" movement, expanded without any control the dimension of big cities and it caused troubling urban disease and unbalanced regional development.

## 1. The problem of past year urbanisation and new policy of "Townisation".

In December 2013, the Chinese leadership Politburo Standing Committee held a "townisation conference" (Central Committee of the Communist Party of China, 2013) focused on problem of solving of rural issues and the townization as the prerequisite for modernization. In comparison with the item "urbanization" used by the Chinese government before, "townization" now can be considered as the result of the reflection on the rapid urbanization happened through past 20 years. While urbanization focuses development on large and medium-sized cities, "townization" focuses on upgrading rural sites and advocates transferring the rural population to nearby towns instead of to more distant

On the opposite page:

### Figures 1-13

Hakka residence Jiang Tian Nan Yang Shi Ju in Huiyang in Gao Ling village.

1. State of conservation - in brown lost roofs (© Zhu Tan, 2023).

2.-3. Views from the south with the crescent-shaped basin.

4.-6. Views of the complex of the "ancestral hall (*citang*)".

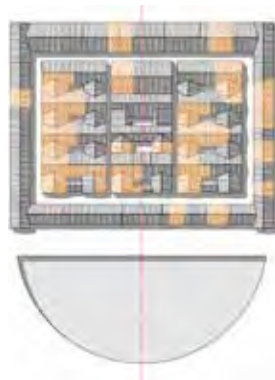
7. View of a secondary courtyard with the rammed earth masonry in decay.

8. New houses of the former inhabitants of the abandoned residence.

9. View from the south of the contemporary landscape of the residence (in the centre).

10.-13. Views of the factories and workers' houses-dormitories surrounding the residence (photos by the author).





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metropolises. Huiyang case-study is quite interesting regarding both phenomena. On the one hand, by being at the border of a fast growing big metropolis as Shenzhen, is already experiencing the effects of urbanization. On the other hand, since the process of urbanization is not completed, it still has the chance to experience the “towninsation” development. In the following lines we will explain this situation in an historical perspective.

## 2. Problem of past years “urbanization” in China. Urbanization kidnapped by real estate.

To understand what happened in the past 20 years in this area we have to consider at first the effect of “real estate” economy in the hinterland of big Metropolitan Regions as Pearl River Delta. The enclosure-build that characterized city hurricane “urbanization” movement, expanded without any control the dimension of big cities and it caused troubling urban disease and unbalanced regional development. Moreover, the motivation for real estate profit attracted enthusiastic private investment and land-based finance, which means selling land, became the most important revenue for some municipal government. As a result, this rapid and rough urbanization destroyed irreversibly the rural landscape and farm in areas close to big cities, and some of them have been transformed into their outskirts. Focusing on Huiyang case we have to remind that the territory of China’s southern coast can be considered as a pioneer of urban development after the start of the policy “Reform and Open up” in late 1970s promoted by Deng Xiaoping.

One of the first actions of this policy had been the establishment of the SEZ (Special Economic Zone) cities of Shenzhen, Zhuhai, Shantou, Xiamen and later Hainan where special “liberal economy addressed” policies were officially introduced to boost the development. Among those Shenzhen had always been regarded as a pilot city reflecting the achievement of this policy.

In the past three decades Shenzhen has kept about 10% average GDP annual increase, and has been transformed from an ordinary county into a megacity whose GDP in 2014 equals to Finland, and accumulated more than 10 million inhabitants, and in the recent data of 2022 GDP equals 150% of Finland and 120% of Hong Kong, with 17.6 million inhabitants.

With the rapid development, Shenzhen government deliberately restricted the low level industry and encouraged higher added value economic activities since the free land suitable for construction became less and less. Meanwhile the value of land became more and more expensive, that forced many of these low-end manufacturers had to move out. Some went to the distant hinterland and some moved to the nearby developing cities like Huiyang. In Figure 21 we can see that the factories were agglomerated to the northwest of the city in past decade. In the near future this urbanization will extend to a quite large north zone involving some valleys of Hakka architectural heritage and in the east area where new high speed railway station



On the opposite page:

**Figures 14-17**

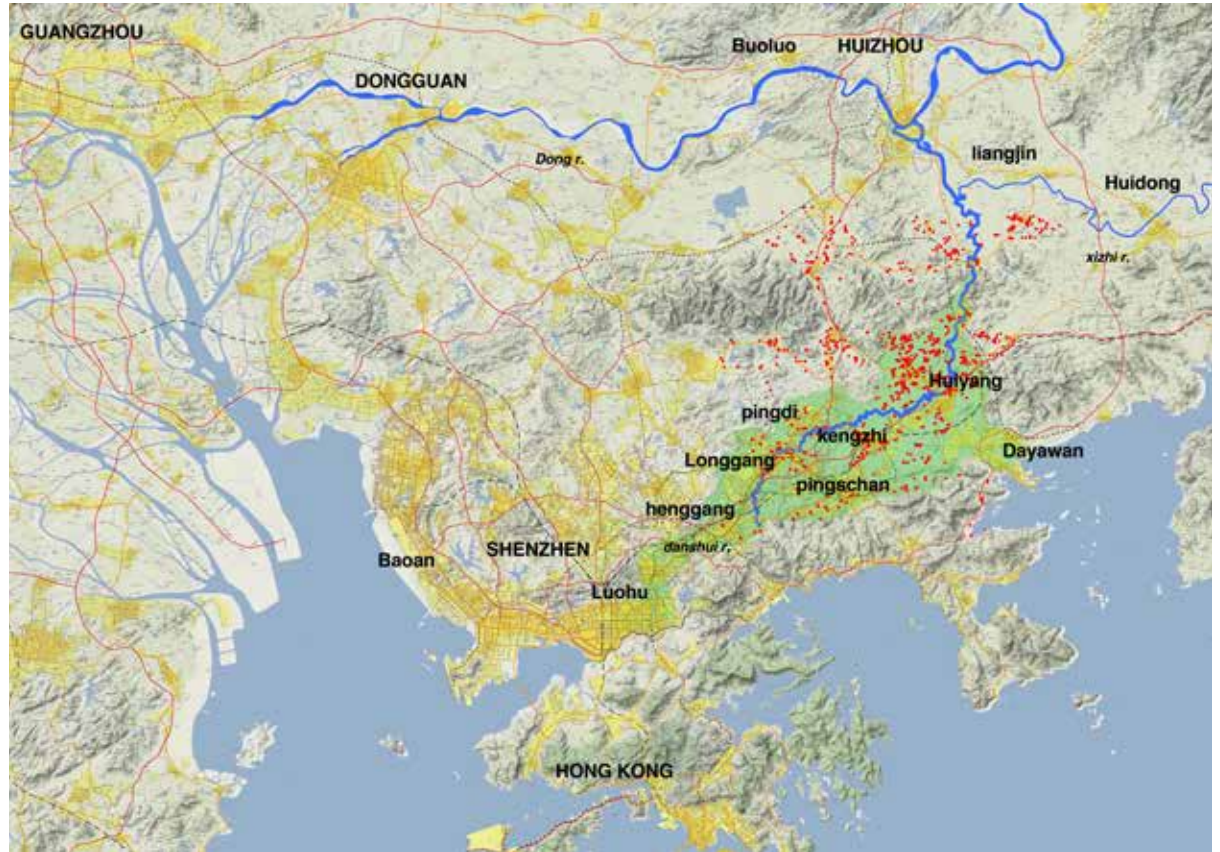
The nucleus of Jiang Tian Nan Yang Shi Ju (left) and Gao Bu Lao Wei (right) residences, Gao Ling village, Qiuchang Commune (Huiyang), XIII c. 14. Extract from Preservation plan of Hakka Heritage in Qiuchang Commune by Huizhou Municipal Bureau of Housing and Urban-Rural Development (2010). 15.-17. Transformation of the area in satellite view 2002, 2008, 2010 (Huizhou Municipal Bureau of Housing and Urban-Rural Development).

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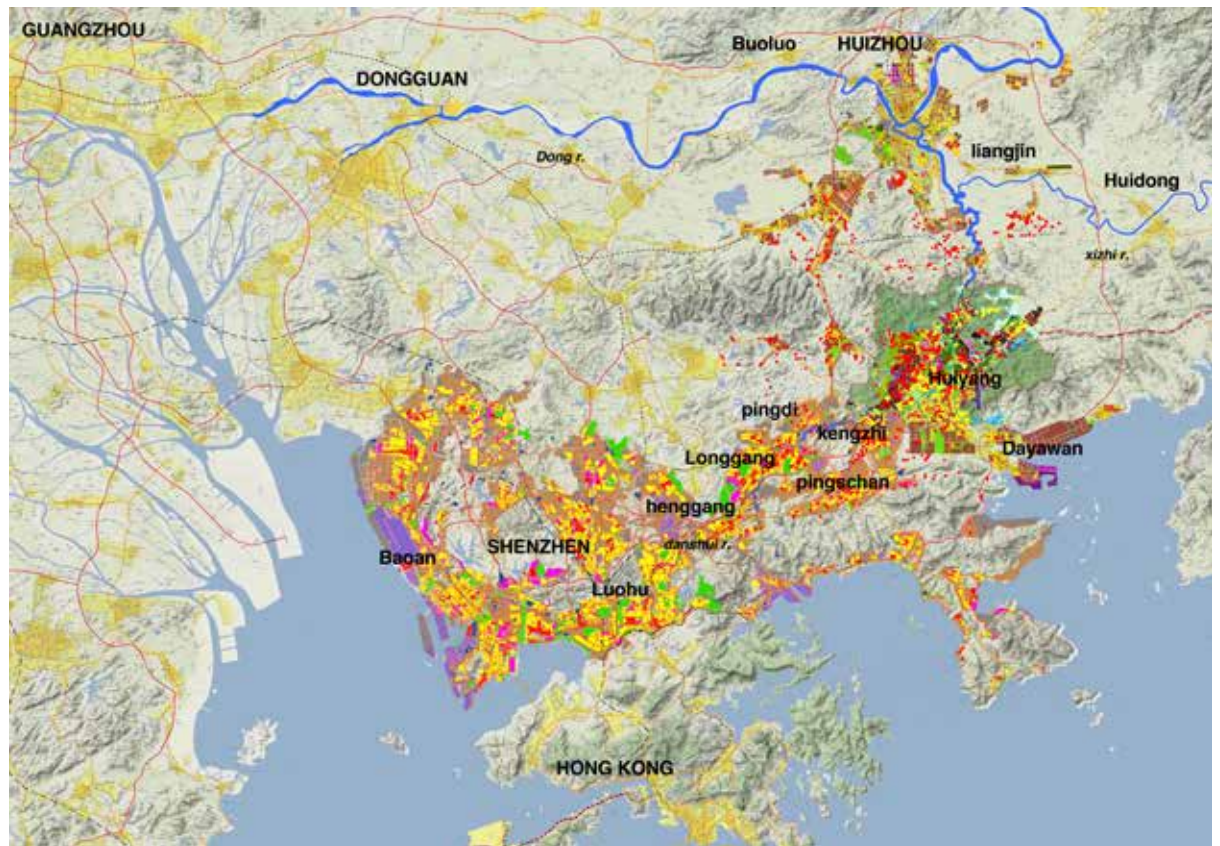
**Figures 18,19**

18. Map of east Pearl River Delta with the enhancement of urbanised area and in red the areas of concentration of Hakka heritage (elaboration by the author on base map 2010).

19. Map of east Pearl River Delta with the enhancement of future urbanisation after the Master Plans of Shenzhen and Huizhou - in red Hakka heritage concentration areas (elaboration by the author on base map 2010).



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plays the role of accelerator.

**3. The new policy of neo-townization and the opportunities for Huiyang.**

The central government requests the future development to guarantee the agricultural land and the ecological/urban boundary, in order to put cities into the

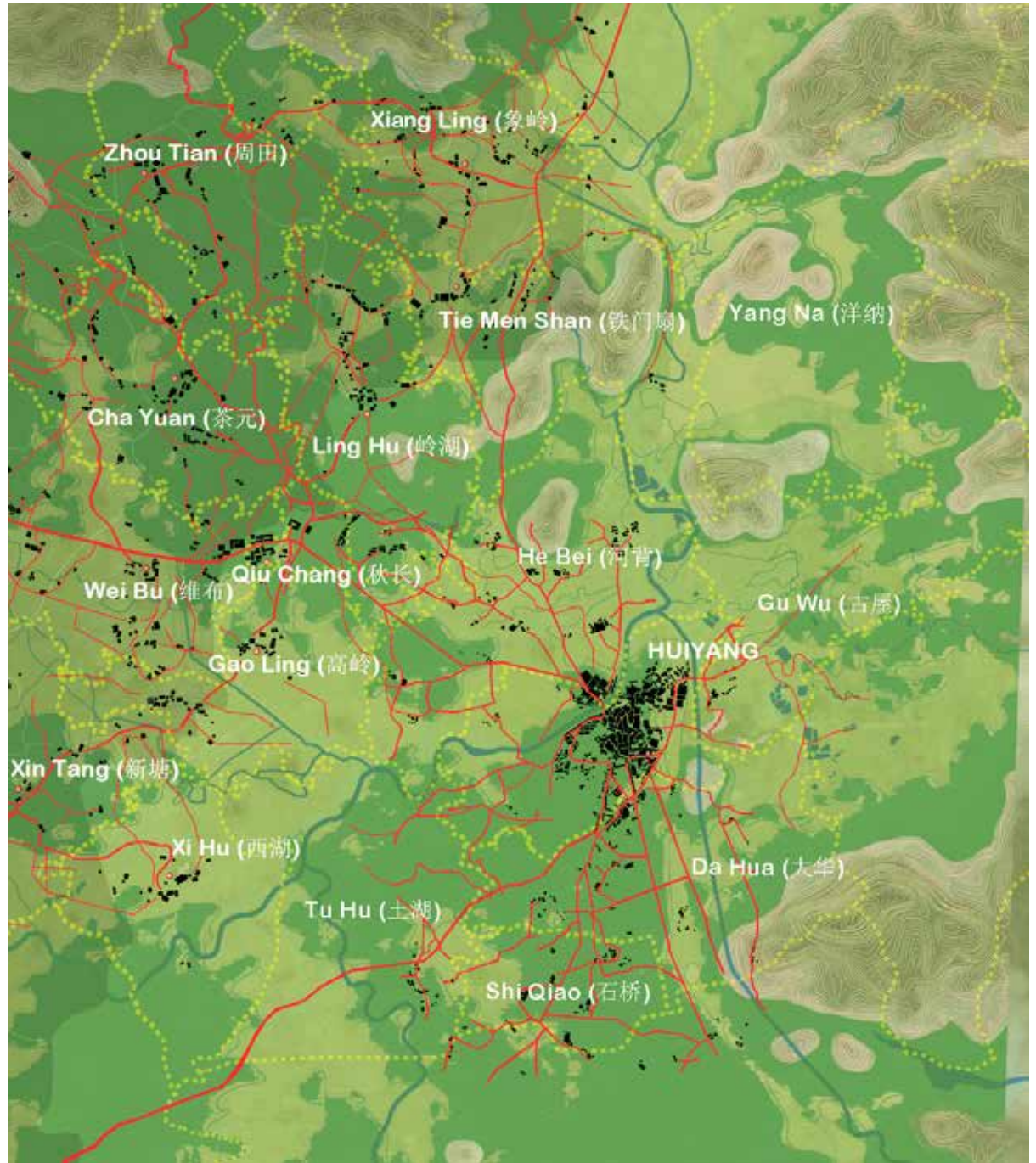
nature and return the green environment to the inhabitants. Urban construction should show high quality to let urbanities to “gaze at mountains in distance, see water within touch, and remember the nostalgia” (“望得见山、看得见水、记得住乡愁”, President Xi Jinping, 2013).”

The construction should include not only modern



**Figure 20**

The area of Huiyang City with the villages of Qiuchang Commune (left bank of Danshui River) and Huiyang Commune (right bank of Danshui River) in 1979. In red is the old road network and in black is the built-up area. The built-up area in the western villages roughly indicates the historical Hakka Heritage of residences and hamlets (elaboration by the author on the base map of Qiuchang town, 1979).



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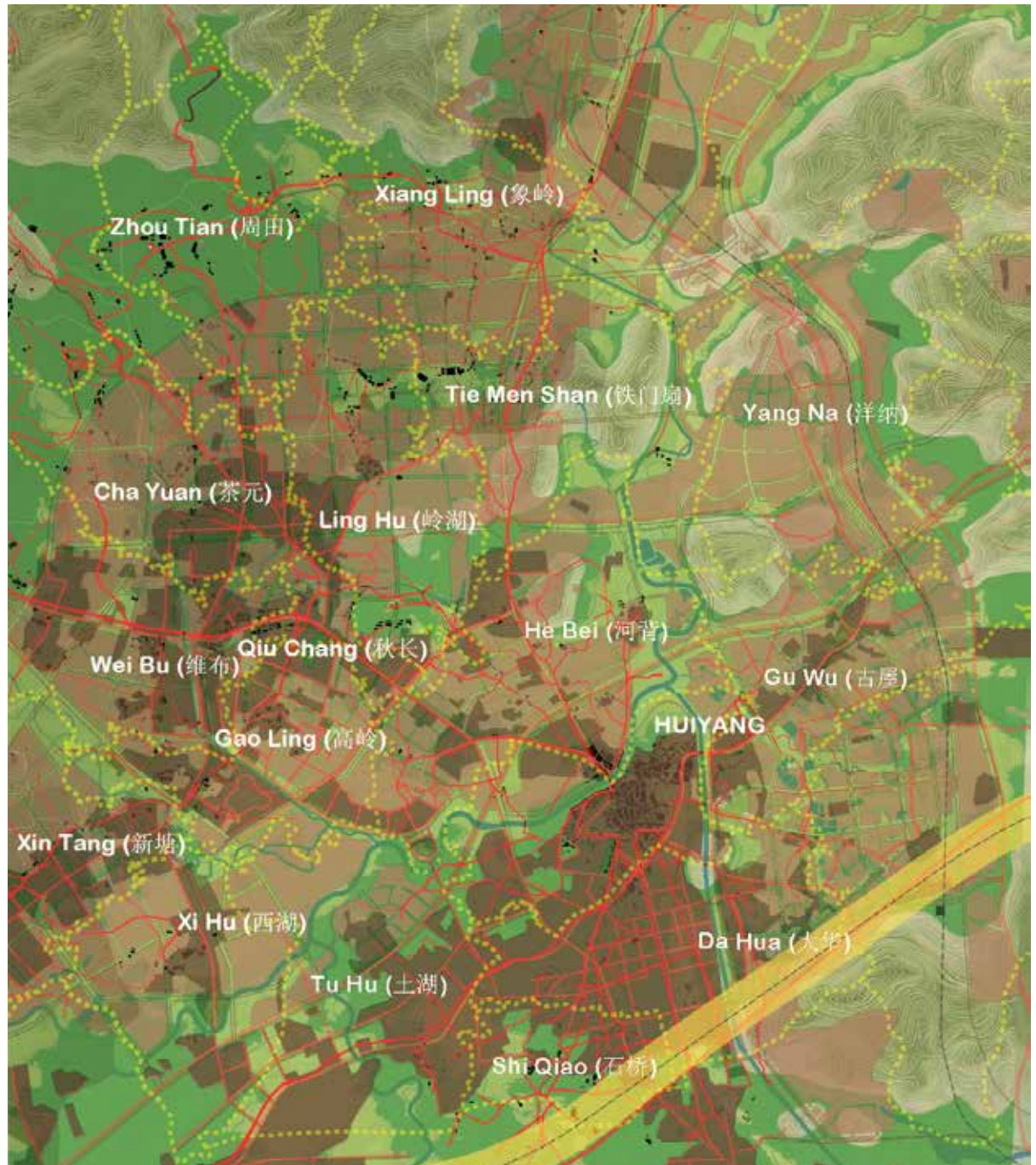
aspects, but also the traditional culture and context. The primary landscape of countryside should be maintained and the enhancement of rural development should be based on the original form of villages. With the plenty natural and traditional hakka architectural resources, Huiyang could attract gigantic numbers of tourists of nearby east Pearl River Delta Metropolitan Region represented by the megacities of Shenzhen and Hong Kong which have about 20 million urban inhabitants. We have to consider that the state of abandonment of Huiyang Hakka villages described in the former paragraph was caused by the exodus of the original hakka inhabitants to the booming cities of Pearl River Delta. Today, after the economic boom of the last decades these former country men desire to escape from the crowded cities and experience the rural natural life during weekend and vacations but also to have new enterprise in the countryside.

Concerning this last phenomena must be said that already since may 2009 Guangdong Provincial Government published the “Memo on the Program for Regional Healthy-Living Zone in the Bay Area of Pearl River Delta” (Guangdong Provincial Government, 2009) whose main points were: Regional Natural Environment protection; Low-Carbon economic system; Improvement on Function organization; The more convenient and compact Cities Development; Regional Humanistic and Relax area net system; Unified Regional Sustainable Transportation system; The Creative Industrial region. This document was followed in the October of the same year by the “Building Coordinated and Sustainable World-Class City-region. Planning Study on the Co-ordinated Development of the Greater Pearl River Delta townships” (Construction Department, Guangdong Province et others, 2006). Moreover the potentialities of this kind of development



Figure 21

The area of Huiyang city with the indication of built-up settlement in 2010 (in dark brown) and future development (in light brown), forecasted by 2007-2020 Huiyang Master Plan. In the background the historical villages and road network (elaboration by the author on the base map of Qiuchang town, 1979).



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for Huiyang could be guaranteed by the high level of accessibility from the cities of the Pearl River Delta thanks to the new infrastructures constructed in the last ten years as, high speed railway, highway, intercity metro.

#### 4. Contradictions in the current planning practice.

Following the forecast of the 2007-2020 Huiyang Official Master Plan (Figure 21), the destiny of Hakka architectural heritage in Tiemenshan area, illustrated at page 11 (Figures 10, 13), can be easily figured out. According to China's planning regulation and experience the current conservation method normally set up two or three buffer zones like 30m,30-60m, (rarely 60-100m) surrounding the heritage, where some construction limitations like certain activities and height of construction are indicated. In this way the connections between Hakka buildings by which form the clusters will be absolutely ignored and cut. In some extreme situations where the

attraction of construction is much powerful than the weak conservation rules, single heritages are often besieged by urban development (Figure 21).

Following the forecast of 2007-2020 Huiyang master Plan, what happened in the case of Jiang Tian Nan Yang Shi Ju - completely absorbed in the urban fabric as show in Figure 9 - is going to repeat in the still untouched territories of Ling Hu, Tie men Shan and Xiang Ling villages whose landscape risks to be totally cancelled. Given the points of "neo-townization", and the analysis of *Feng Shui* system which reflects the hakka ancestors' planning mechanism focusing on the natural factors and relations between nature and human settlement, might we have some different ideas to propose a more reasonable solution?

The following contributions illustrate the steps of a possible methodology for harmonizing urban development and preservation of historical heritage in Huiyang.

# A comprehensive inventory of the Hakka sites in Huiyang: a tool to know and to preserve an important cultural landscape Heritage.\*

Alberta Cazzani, Maria Cristina Palo

\*The Inventory of the Hakka sites in Huiyang was carried out by the Politecnico di Milano research group in March 2010.

The Hakka Inventory GIS was developed by Piero Favino (Department of Architecture and Urban Studies of Politecnico di Milano).

This paper was conceived and written jointly by the two authors. Specifically, Alberta Cazzani developed sections "1. Historic Heritage as a resource" and "2. The inventory of the Huiyang Hakka sites", Maria Cristina Palo sections "3. The Huiyang Hakka site inventory: the form" and "4. The Huiyang Hakka site Inventory GIS". The authors collaborated in the writing of section "5. The results and the goals of the Huiyang Hakka Site Inventory" and for the final revision of the manuscript.

References to the text are enlisted at p. 244, in the section: *Landscape Surveying and Preservation*.

*On the opposite page:*

Inventory of the Hakka sites in Huiyang: GIS map with the location of 55 registered sites, named and listed, referred to area A, area B and area C. A data sheet has been filled out for all these 55 Hakka sites. The form has been defined to document the Hakka sites in a comprehensive way (context, architectural and materials features, conservation level and potentialities). The data were organized in a database useful for the development of a GIS (Geographical Information System).

## 1. Historic Heritage as a resource.

The territory of the city of Huiyang is characterized by the presence of numerous Hakka sites which constitute an architectural, historical, and cultural heritage of undoubted significance. Unfortunately the level of awareness of the value of Hakka sites and landscape is low and there is the risk of losing this important system, due to the intense urban expansion of the area, linked more to economic development choices than to conservation and rehabilitation policies. The recent urban development often does not consider these historic sites of tangible and intangible value like important resources.

We must think that today - and probably more in future scenarios - the reuse of cultural heritage is an important opportunity to set new relationships between the community, the past and the economic system. These new relationships should address planning policies and rules about the historical and architectural heritage, with the aim of ensuring compatibility between the different needs of "conservation" and "modernization and reuse". Furthermore, it is now recognized that cultural heritage must be considered as a resource before starting to define urban and landscape plans, instead often cultural heritage is adapted to the already set planning choices, forgetting that an efficient preservation does not stop economic development.

The study and comparison between the needs of protection and those of new development of the built environment can preventively direct the localization of residential settlements, commercial and productive sites, services, and infrastructures, to define a management of land transformations capable of stopping the territory degradation, recovering the existing buildings and ensuring a better quality of life.

Knowledge of the past is the first step to define any planning and preservation action. Without an adequate knowledge of cultural heritage, considering also its territorial context, it is not possible to issue conservation and valorization goals for historic sites and to establish effective and aware policies and strategies to manage the territorial transformation. Furthermore, the knowledge phase carries out a didactic function of highlighting the importance of widespread heritage and not only of the most important monumental sites. Cultural heritage knowledge is also a fundamental reference to support territorial planning and to set protection criteria, including conservation and restoration

practices and also the valorization of historical sites with compatible uses, encouraging activities of social and cultural interest. Knowing and disseminating knowledge is a very important tool for a participatory governance of the territory. For this reason, it is a precise duty of the administrations - at local to national level - to analyze and to understand the past, considering knowledge as an indispensable component for every urban plan aimed at conserving and enhancing the historical, environmental, and landscape heritage and focused on future sustainable development.

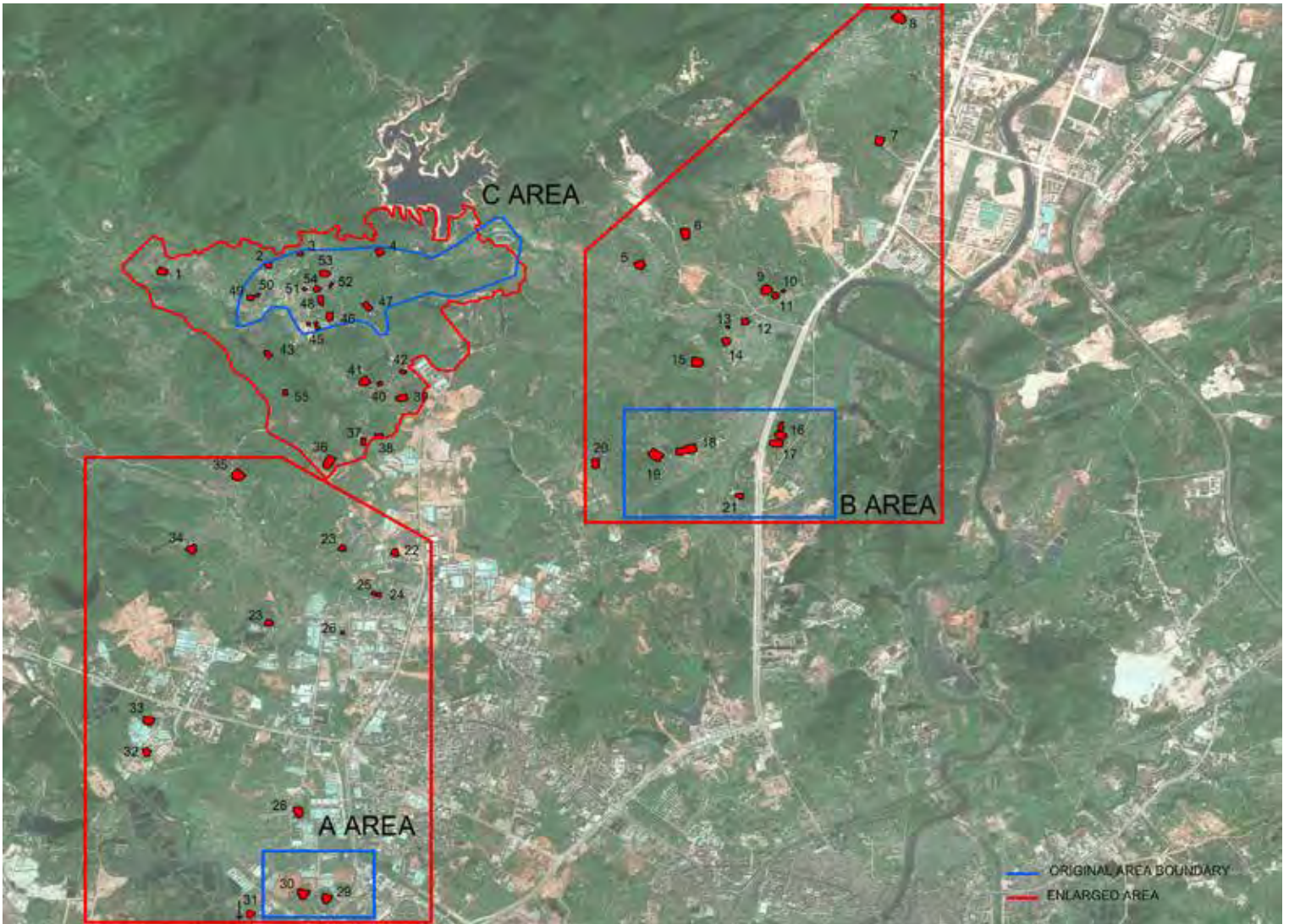
## 2. The inventory of the Huiyang Hakka sites.

The inventory of Hakka sites in the Huiyang region represents a fundamental step to learn about this heritage, as it provides the data to better understand these sites in order to issue conservation treatments, to define reuse and valorization goals and to increase awareness of the historic value, setting compatible uses, according to the current social needs (Council of Europe, 2009; Letellier, Eppich, 2011; Page, 1998). The inventory presented here is therefore directly aimed at safeguarding the Hakka sites of the Huiyang region: it is not limited to the identification and description of the sites, but also highlights the conservation and use problems that each site presented in 2010, when the data were collected. This investigation can therefore provide the administrations with useful suggestions and recommendations for the management of this heritage. Like any cultural heritage census also the Hakka site inventory is not a definitive and concluded process, but it requires continuous revising, considering new gathered documents and updating the state of conservation and use.

This Hakka site inventory provides an important cognitive reference of the quantity of sites that are present in the area and also of their historical, architectural, cultural and landscape interest - considering tangible and intangible aspects - as well as the conservation and management problems that they present.

In order to list the Hakka sites and to fill out a specific inventory form, it was fundamental a direct survey to recognize and check the Hakka settlements, but unfortunately it was not always possible, due to the inaccessibility of some sites or parts of the sites. A specific site visit also allows us to verify the current consistency of the architectural, material and landscape components and of the permanence of the historic





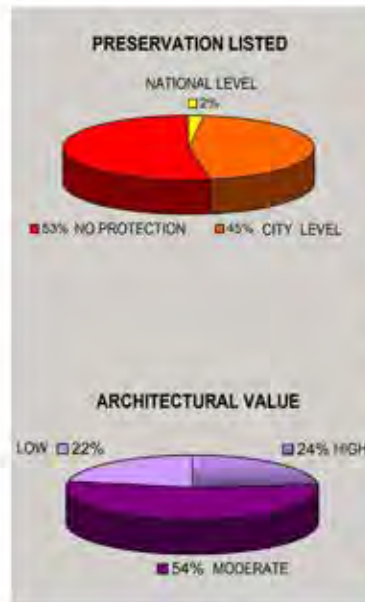
### INVENTORY HAKKA RESIDENCES

1 GONG XIU LOU	15 QIUSHUI LING	29 QIU BAO	43 LUO WU
2 HUI XIN LOU	16 HUAZHULI LAOWU	30 JIANGTIAN NANYANG SHIJU	44 YU YING LOU
3 HUI YUAN LOU	17 SHIGOU WU	31 XIHU LAOWEI	45 YE TING GU JU
4 RUI SHI WEI	18 TIEMENSHAN NANYANG SHUJ	32 LAOYASHAN HUANGWU	46 HUI SHUI LOU
5 YUQING LOU	19 GUILIN XINJU	33 MAOLIN XINJU	47 CHONG QUING LOU
6 TINGXIU SHUYUAN	20 ZHEGU LING	34 SIQUAN XINJU	48 TIAN RUI GONG CI
7 TANGZI LING	21 QINGGAO LOU	35 SONG QIAO LOU	49 BY YAN LOU
8 EWEI LOU	22 BISHUI LOU	36 HUI LONG LOU	50
9 NIULANG LOU	23 LIUZHAO LOU	37 CHONG FANG LOU	51 ER SHENG GONG
10 NIULANG LOU	24 XIULIN LOU	38 YAN DING LOU	52 FENG JI LOU
11 NIULANG LOU	25 XIULIN LOU	39 CHANG YI LOU	53 ZHOU TIAN LAO WU
12 YIYI LOU	26 RUILIN LOU	40 JU MU LOU	54
13 YIYI LOU	27 CHONGQING LOU	41 SHANG WU ZI	55
14 QIUSHUI LING	28 PUZAI LAOWEI	42 ZHAO XIANG XIN JU	



## INVENTORY OF HAKKA SITES

<b>SITE N°:</b>	
<b>DENOMINATION:</b>	
<b>LOCATION:</b>	
<b>GEOGRAPHICAL COORDINATES:</b>	
<b>INVENTORY NUMBER:</b>	<input type="checkbox"/> LOCATED IN AREA A <input type="checkbox"/> LOCATED IN AREA B <input type="checkbox"/> LOCATED IN AREA C <input type="checkbox"/> LOCATED OUT OF AREAS
<b>DATE:</b>	
<input type="checkbox"/> ANTE XIX CENTURY <input type="checkbox"/> XIX CENTURY <input type="checkbox"/> XX CENTURY	
<b>PRESERVATION LISTED SITE?</b>	
<input type="checkbox"/> YES - NATIONAL LEVEL <input type="checkbox"/> YES - CITY LEVEL <input type="checkbox"/> NO <input type="checkbox"/> UNKNOWN	
<b>SURFACE AREA (IN M<sup>2</sup>):</b>	
<input type="checkbox"/> < 1000 M <sup>2</sup> <input type="checkbox"/> 1000-5000 M <sup>2</sup> <input type="checkbox"/> > 5000 M <sup>2</sup>	
<b>KIND OF SURVEY:</b>	<b>DESCRIBE:</b>
<input type="checkbox"/> INTERIOR AND EXTERIOR SURVEY <input type="checkbox"/> EXTERIOR SURVEY	
<b>ARCHITECTURAL VALUE:</b>	<b>DESCRIBE:</b>
<input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> LOW	
<b>PRESENCE OF FURNITURE, TOOLS, TRADITIONAL OBJECTS:</b>	<b>DESCRIBE:</b>
<input type="checkbox"/> MANY <input type="checkbox"/> SOME <input type="checkbox"/> FEW	
<b>INTANGIBLE VALUE:</b>	<b>DESCRIBE:</b>
<input type="checkbox"/> IMPORTANT DOCUMENTARY PROOF <input type="checkbox"/> SOME PROOF <input type="checkbox"/> FEW PROOF	
<b>MAIN CONTEXT:</b>	<b>DESCRIBE:</b>
<input type="checkbox"/> URBAN <input type="checkbox"/> RURAL <input type="checkbox"/> NATURAL	
<b>VALUE OF URBAN CONTEXT:</b>	<b>DESCRIBE:</b>
<input type="checkbox"/> HISTORIC CENTER <input type="checkbox"/> OTHER HISTORIC BUILDINGS MIXED WITH MODERN BUILDINGS <input type="checkbox"/> ABSENT	
<b>VALUE OF RURAL CONTEXT:</b>	<b>DESCRIBE:</b>
<input type="checkbox"/> WIDESPREAD TRADITIONAL CULTIVATIONS <input type="checkbox"/> TRACES OF TRADITIONAL CULTIVATIONS <input type="checkbox"/> ABSENT OR DECAYED TRACES	
<b>VALUE OF NATURAL CONTEXT:</b>	<b>DESCRIBE:</b>
<input type="checkbox"/> NATIONAL PARKS - NATIONAL MONUMENTS <input type="checkbox"/> WELL CONSERVED NATURAL ENVIRONMENT <input type="checkbox"/> COMPROMISED NATURAL ENVIRONMENT <input type="checkbox"/> HIGH DECAY	
<b>VALUE OF SYSTEM:</b>	<b>DESCRIBE (INDICATE IF SIGNIFICANT CULTURAL BUILDINGS OR FUNCTIONS ARE PRESENT):</b>
<input type="checkbox"/> PART OF A SYSTEM INCLUDING SIGNIFICANT SITES <input type="checkbox"/> PARTIALLY RESPONSIBLE SYSTEM <input type="checkbox"/> ISOLATED SITE <input type="checkbox"/> ISOLATED SITE IN DECAYED CONTEXT	



## ARCHITECTURAL VALUE



## FURNITURE, TOOLS AND TRADITIONAL OBJECTS



structure, sometimes highly compromised by transformations and alterations that have occurred over the years or by a spread of decay as a result of the state of disuse and abandonment.

However, it seemed appropriate to also take into consideration the remains of Hakka sites, which are now difficult to read, because they often are in a poor state of conservation, or profoundly altered by recent transformations. In fact, it is important to take these traces into account, to avoid losing information on sites that document the existence of an architectural work of historic significance and demonstrate the level of fragility of these artefacts if not appropriately preserved and maintained.

The inventory is not only a technical tool necessary to underline the significance and to guarantee the protection of these cultural sites, but also it allows to highlight their historic meaning and current value. The inventory increases awareness, making clear the cultural and social importance of this traditional heritage, to transmit it to future generations.

The census of Hakka villages aims to organize homogeneous and systematic documentation related to these assets, both to define adequate protection and to provide important information for urban planners and architects preventing that new commercial, residential and industrial settlements or infrastructures will be developed altering or destroying the Hakka sites.

A tool, therefore, simultaneously set for preservation and territorial planning. For this reason it was important not only the identification and description of the

single sites, but it was necessary to study and to underline their complex relationships with the context surround them, considering spatial and visual links with the agricultural, natural and urban landscape, and analyzing them like a stratified system. Ultimately, this inventory aims to comprehend the Hakka heritage, in all its meanings, and not just the quantitative, descriptive data of the assets.

### 3. The Huiyang Hakka site inventory: the form.

The census activity was carried out through a systematic investigation of some areas of the Huiyang region defined by the municipal administration: area A in urban Huiyang, area B in the North East, and area C, in the North (see map at pag. 21). Detailed direct surveys provide the collection of fundamental data to identify the Hakka sites, such as their denomination, precise localization, analysis of the context, description of the architectural settlements, building techniques, materials, state of conservation, maintenance level, uses.

The direct survey - conducted through inspections in each Hakka site - allowed not only to verify the typological and architectural aspects, the material components, the level of permanence or of decay and transformation, but also helped to consider those overall values (architectural, urban and landscape) that are important to evaluate the historical and cultural interest and useful for understanding the specific unique detailed features of each individual asset. Furthermore, during the onsite visits, it was possible to enrich the

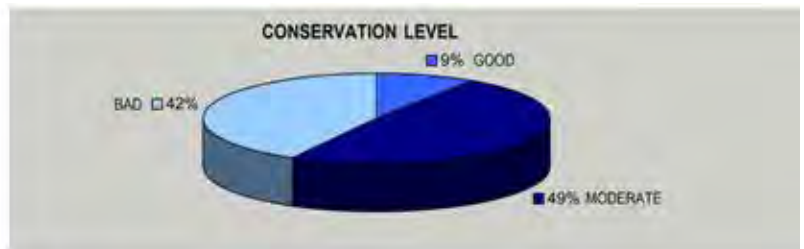
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Hakka Site Inventory Form, section 1 and 2, relating to site's identification and value identification (architectural value, presence of furniture, tools and traditional objects, intangible value, characteristics, and value of site's context) and connected evaluation (high, moderate, low).

The highlighted items on the form are explained in the graphs: the first graph is about the preservation level of the 55 Hakka sites, and it demonstrates that 55% of the Hakka sites are not protected, 45% are protected at a local level and only 2% are protected at a national level. The second graph displays the architectural value of the 55 Hakka sites: it is moderate for 54% of the sites, high for 24% and low for 22%.

Some pictures show examples of architectural values and furniture, tools and traditional objects of the 55 registered sites.

<b>CONSERVATION LEVEL:</b> <input type="checkbox"/> GOOD <input type="checkbox"/> MODERATE <input type="checkbox"/> BAD <b>ANCESTORS TEMPLE:</b> <input type="checkbox"/> NO MATERIAL AND NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY, NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY AND STRUCTURAL DECAY <input type="checkbox"/> PARTIAL COLLAPSES <input type="checkbox"/> RUIN <b>MAIN FRONT:</b> <input type="checkbox"/> NO MATERIAL AND NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY, NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY AND STRUCTURAL DECAY <input type="checkbox"/> PARTIAL COLLAPSES <input type="checkbox"/> RUIN <b>RURAL COURTYARD-CENTRAL = TEMPLE COURT:</b> <input type="checkbox"/> NO MATERIAL AND NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY, NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY AND STRUCTURAL DECAY <input type="checkbox"/> PARTIAL COLLAPSES <input type="checkbox"/> RUIN <b>RURAL COURTYARD- WEST LEFT SIDE:</b> <input type="checkbox"/> NO MATERIAL AND NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY, NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY AND STRUCTURAL DECAY <input type="checkbox"/> PARTIAL COLLAPSES <input type="checkbox"/> RUIN <b>RURAL COURTYARD- EAST-RIGHT SIDE:</b> <input type="checkbox"/> NO MATERIAL AND NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY, NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY AND STRUCTURAL DECAY <input type="checkbox"/> PARTIAL COLLAPSES <input type="checkbox"/> RUIN <b>BACK COURTYARD:</b> <input type="checkbox"/> NO MATERIAL AND NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY, NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY AND STRUCTURAL DECAY <input type="checkbox"/> PARTIAL COLLAPSES <input type="checkbox"/> RUIN <b>DISTINCTIVE HOUSES:</b> <input type="checkbox"/> NO MATERIAL AND NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY, NO STRUCTURAL DECAY <input type="checkbox"/> MATERIAL DECAY AND STRUCTURAL DECAY <input type="checkbox"/> PARTIAL COLLAPSES <input type="checkbox"/> RUIN <b>CONSERVATION LEVEL OF LANDSCAPE CONTEXT:</b> <input type="checkbox"/> GOOD <input type="checkbox"/> MODERATE DECAY <input type="checkbox"/> ALTERATIONS <input type="checkbox"/> ABANDONED STATUS, TRASH DUMPING GROUND, <input type="checkbox"/> RUIN <b>ROAD ACCESSIBILITY:</b> <input type="checkbox"/> FROM SUBURBAN ROADS <input type="checkbox"/> FROM URBAN ROADS <input type="checkbox"/> FROM RURAL ROADS <input type="checkbox"/> DIFFICULT <b>PUBLIC TRANSPORTATION ACCESSIBILITY:</b> <input type="checkbox"/> YES <input type="checkbox"/> NO	DESCRIBE:



#### MATERIAL DECAY



#### STRUCTURAL DECAY



#### PARTIAL COLLAPSE



#### RUIN



On this page:

Hakka Site Inventory Form, section 3, about site's conservation status of the site (good, moderate, bad) and its architectural parts (no material and no structural decay; material decay, no structural decay; material decay and structural decay; partial collapses; ruin); and conservation level of landscape context (good, moderate decay, alterations, abandoned status, trash dumping ground, ruin).

The graph reveals that only 9% of Hakka sites have a good conservation level, 49% moderate conservation level and 42% bad conservation level. Some pictures demonstrate the main surveyed decays: material decay, structural decay, partial collapses, ruin.

documentation with photographic material, geometric surveys, as well as to collect information through oral testimonies provided by the owners or inhabitants of the Hakka sites.

For the cataloging of the data, a specific "Inventory form of Hakka sites" has been prepared to collect and record of all the information and data deemed necessary for the investigation. The goal was to obtain the appropriate and as complete as possible knowledge of the property considered in its complexity and in relationship to the connected context.

The form is divided into different sections in order to sort the numerous information collected during the direct surveys of each Hakka site and it includes photographic documentation and attachments to better describe the property,

The first part of the form is dedicated to the collection of identification data of the Hakka site, to recognize the asset itself (name of the site and inventory number), the spatial conditions (geographical coordinates, location, address), temporal info (period of construction: ante 19th Century, 19th Century, 20th Century), dimensions and the level of protection of the property, specifying if the site is a preservation listed site at national or local level, or if it is not protected.

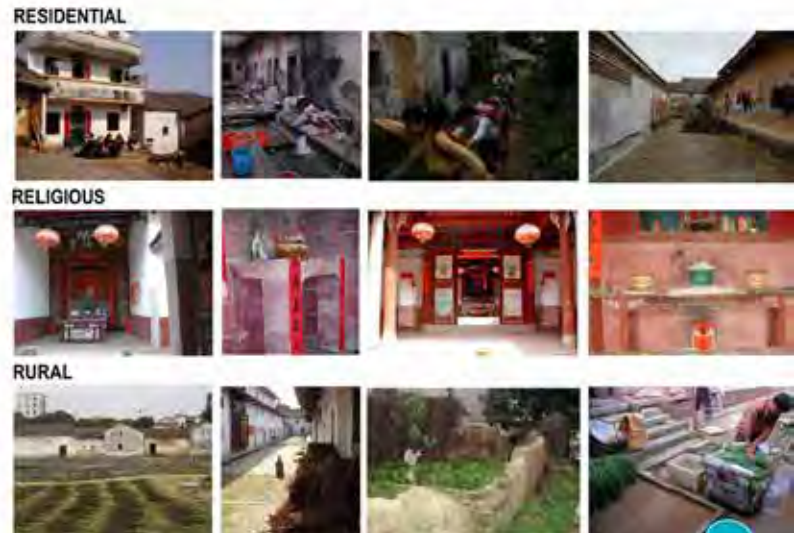
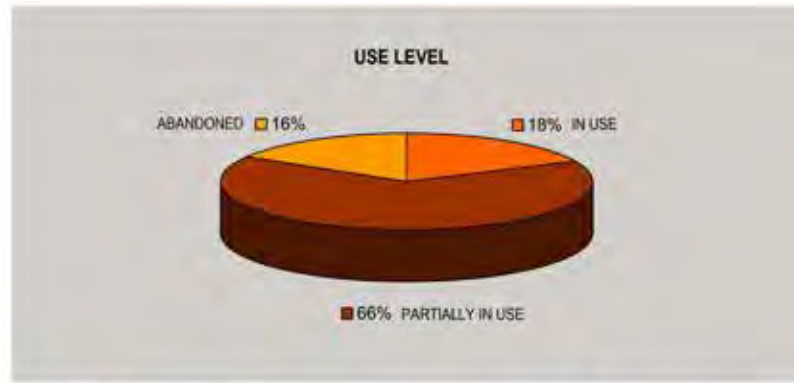
The second section is related to descriptive data of the Hakka site and its context, as it is important to identify the historical architecture linked to its surrounding, underlining the relationships and mutual interdependencies with the urban fabric, the agricultural and natural landscape, rather than reading Hakka architecture as

an isolated reality. The data collected during the direct observation of the property and its context, helped to better know the Hakka sites, evaluating and describing their architectural value (high, moderate, low), presence of furniture, tools, traditional objects (many, some, few), intangible value (important documentary proof, some proof, few proof), main context (urban, rural, natural), value of urban context (historic center, other historic buildings mixed with modern buildings, absent), value of rural context (widespread traditional cultivations, traces of traditional cultivations, absent or decayed traces), value of natural context (national parks/ national monuments, well conserved natural environment, compromised natural environment, high decay) and value of the system (part of a system including significant sites, partially recognizable system, isolated site, isolated site in decayed context). In this way it was possible to obtain a quality/critical analysis, related to the urban or landscape system in which the site is insert, also evaluating the site significance for a complete knowledge of all its meanings.

The third section of the form collects descriptive data about the state of conservation of each Hakka site and its context. The current conditions of the different parts of the architectural complex (the fronts, the courtyards, and the internal spaces) are described, reporting the main decay phenomena, specifying structural damage, superficial degradation (chemical-physical alterations of materials), or more serious decay conditions with partial collapses or in a state of ruin. It was also crucial to collect information about the sta-



<b>USE LEVEL OF THE SITE:</b> <input type="checkbox"/> IN USE <input type="checkbox"/> PARTIALLY IN USE <input type="checkbox"/> ABANDONED <input type="checkbox"/> UNKNOWN <b>RURAL COURT/YARD-CENTRAL = TEMPLE COURT:</b> <input type="checkbox"/> IN USE <input type="checkbox"/> PARTIALLY IN USE <input type="checkbox"/> ABANDONED <b>RURAL COURT/YARD - WEST-LEFT SIDE:</b> <input type="checkbox"/> IN USE <input type="checkbox"/> PARTIALLY IN USE <input type="checkbox"/> ABANDONED <b>RURAL COURT/YARD - EAST-RIGHT SIDE:</b> <input type="checkbox"/> IN USE <input type="checkbox"/> PARTIALLY IN USE <input type="checkbox"/> ABANDONED <b>BACK COURT/YARD:</b> <input type="checkbox"/> IN USE <input type="checkbox"/> PARTIALLY IN USE <input type="checkbox"/> ABANDONED <b>DISTINCTIVE HOUSES:</b> <input type="checkbox"/> IN USE <input type="checkbox"/> PARTIALLY IN USE <input type="checkbox"/> ABANDONED	DESCRIBE:
<b>USES OF THE SITE:</b> <b>RESIDENTIAL</b> <input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> ABSENT <input type="checkbox"/> UNKNOWN <b>RELIGIOUS</b> <input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> ABSENT <input type="checkbox"/> UNKNOWN <b>RURAL</b> <input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> ABSENT <input type="checkbox"/> UNKNOWN <b>CULTURAL</b> <input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> ABSENT <input type="checkbox"/> UNKNOWN <b>COMMERCIAL</b> <input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> ABSENT <input type="checkbox"/> UNKNOWN	DESCRIBE:
<b>PRESENCE OF RELIGIOUS, TRADITIONAL, CULTURAL ACTIVITIES:</b> <input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> ABSENT	DESCRIBE:
<b>PRESENCE OF RECREATIONAL, TOURISTIC ACTIVITIES, FOOD SERVICES, PUBLIC FACILITIES:</b> <input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> ABSENT	DESCRIBE:



On this page:  
 Hakka Site Inventory Form, section 4, about Site's uses (in use, partially in use, abandoned, unknown) for the different components of the Hakka sites, detailing the kind of use (residential, religious, rural, cultural, commercial), adding the presence of religious, traditional, cultural activities and the presence of recreational, touristic activities, food services, public facilities. The graph shows that 66% of the Hakka sites are partially in use, 18% in use and 16% are abandoned. Some pictures display different current functions of the Hakka sites: residential, religious, rural.

te of conservation of the site's surrounding area (well preserved landscape, moderate decay), reporting the potential and critical issues (impactful or incongruent elements, alterations, abandoned status).

The fourth part of the form assembles the description of the current use of the Hakka sites (in use, partially in use, abandoned, unknown), specifying the type of use (residential, rural, commercial, religious, or cultural) for the different parts of the settlement (rural courts/yards: central/temple court, West/left side, East/right side, back court and distinctive houses) and detailing the present situation, listing the presence of religious, traditional, cultural activities and the presence of recreational, touristic, activities, food services, public facilities.

A fifth part of the census form gathers analytical data relating to the main problems and potential of the Hakka site and its context. These are conclusive indications deduced from the collection of the previously described data, that provide an overall knowledge of the site, and support the comparison with the planning tools in force. Knowing the planned destinations related to the analyzed sites is essential before defining design hypothesis (maintenance, restoration, or reuse), and also to support planning changes to prevent irreversible transformation or disappearance of the Hakka sites. In this way, for each Hakka village, it was possible to highlight the different critical issues and opportunities to provide design proposals for the conservation and/or recovery of the site, defining new compatible uses with its historical and cultural value.

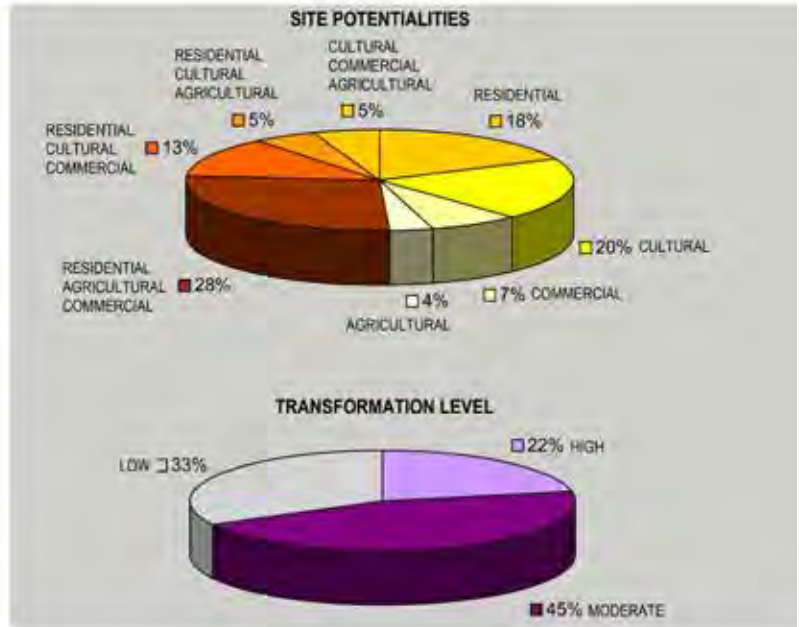
The last part of the form lists the attached iconographic and cartographic documents. In fact it is fundamental to include a map (municipal map or aerial photo), to identify the site layout and its relationship with its context. To better visualize each Hakka site, it is also important to enclose photos that can display the overall aspects of the site and all the most significant particularities present in it, as well as documenting the relationships with the surroundings and the connected landscape. Finally, specific detailed geometric surveys (plans, sections, elevations) were carried out and attached to the form to show architectural, constructive, and material characteristics, underlying decay problems, to better understand the layout and the current conditions of these complex sites.

Following this outline, the Hakka sites were surveyed not only in the areas A, B, C, indicated by the Huiyang municipal administration, but the inventory was also expanded to include and catalog a larger number of Hakka sites. In this way, 55 Hakka villages were registered (14 located in the enlarged area A, 17 in the enlarged area B, 24 in the enlarged area C): they represent a significant sample of this important heritage in the Huiyang region.

#### 4. The Huiyang Hakka site Inventory GIS.

A Geographic Information System (GIS) was developed to systematize the filed data, as GIS is a valid tool for recording, organizing, and communicating the information collected, associated with the cartographic locations of the various listed Hakka sites. GIS, in fact,

<b>SITE PROBLEMS:</b> <input type="checkbox"/> HIGH DECAY <input type="checkbox"/> ABANDONED / WITHOUT MAINTENANCE <input type="checkbox"/> POOR SANITARY/HYGIENIC CONDITIONS <input type="checkbox"/> INCOMPATIBLE FUNCTIONS <input type="checkbox"/> ALTERATIONS / TRANSFORMATIONS <input type="checkbox"/> DIFFICULT ACCESSIBILITY <input type="checkbox"/> POOR ENVIRONMENTAL CONDITIONS <input type="checkbox"/> OTHER	DESCRIBE:
<b>SITE POTENTIALITIES, ALTERNATIVE USES:</b> <input type="checkbox"/> RESIDENTIAL <input type="checkbox"/> CULTURAL / MUSEAL <input type="checkbox"/> COMMERCIAL <input type="checkbox"/> TOURISTIC <input type="checkbox"/> OTHER PUBLIC FACILITIES <input type="checkbox"/> AGRICULTURAL <input type="checkbox"/> OTHER	DESCRIBE (particularly site resources and weaknesses and project programs):
<b>TRANSFORMATION LEVEL EXPECTED BY CURRENT PLANNING</b> <input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> ABSENT	INDICATE CURRENT PLANNING ZONE AND FORECAST ROAD SYSTEM:
<b>ENCLOSED DIGITAL PHOTOS (MAX 12 - 150 DPI RESOLUTION)</b> <input type="checkbox"/> EXTERIORS - FILE NAMES: <input type="checkbox"/> INTERIORS - FILE NAMES: <input type="checkbox"/> CONTEXT - FILE NAMES:	
<b>OTHER ENCLOSED DOCUMENTATION:</b> <input type="checkbox"/> CURRENT SURVEYS (SPECIFY AUTHOR, DATE, SCALE, FILE NAME) <input type="checkbox"/> OTHER SURVEYS (SPECIFY AUTHOR, DATE, SCALE, FILE NAME) <input type="checkbox"/> HISTORIC DOCUMENTATION <input type="checkbox"/> ORAL SOURCES <input type="checkbox"/> OTHER (SPECIFY: _____)	DESCRIBE:
<b>BIBLIOGRAPHY:</b>	
<b>DATE OF COMPILATION (MONTH, YEAR):</b>	
<b>COMPILATOR/COMPILATORS:</b> <input type="checkbox"/> TEAM A <input type="checkbox"/> TEAM B <input type="checkbox"/> TEAM C	
<b>QUALIFICATION OF COMPILATOR:</b>	



**ANNEXES: CURRENT SURVEY**



offers integrated data management and in particular allows the possibility of associating different kind of information ordered in a relational archive with each graphic element; it also provides direct access to the database (the data of the assets displayed can be easily queried and processed), the possibility of viewing geographical sites based on selections made on the database, the availability of territorial analysis functions that can easily process data relating to planning tools, landscape management and future development.

These query possibilities offered by the Geographic Information System are useful above all to make automatic displays of thematic maps.

Specifically, the development of the GIS for the Hakka sites in Huiyang is a valid support for the knowledge process related to Hakka heritage and the territorial dynamics in progress, because it allowed to systematically catalog and evaluate the information related to the anthropic and natural significant elements of the historic landscape, as well as a comparison with current planning tools, highlighting critical points and threats. The record linked to the Hakka GIS is composed of a database where the geographical/cartographic elements - georeferencing the 55 Hakka sites surveyed - are integrated with the descriptive info in tabular, textual, and iconographic form. In this way Hakka GIS has database containing all the data and information collected from the inventory, precisely archived and organized, regarding the cataloged sites and connected features and the photographic and iconographic documentation (including the surveys).

There are several advantages of using this application, as:

- the possibility of managing a large amount of data, of different natures, appropriately correlated;
  - the ease of updating the forms and the documents linked to them using GIS features;
  - the fact that GIS agility and simplicity manages and proceeds the information from the territorial scale to the architectural and detailed scale and vice versa;
  - the possibility of entering different types of querying into GIS;
  - the opportunity to automatically develop thematic maps to better visualize values, potentialities and problems of this heritage, such as, for example, a map of Hakka sites linked with their architectural value, state of conservation, current use.
- GIS is, therefore, a valuable tool for the management and valorization of a site or a system of sites and its/ their context. The use of GIS, in fact, allows those responsible for the area to plan a protection regime, understanding all the components and dynamics in progress, as historical and natural resources, values and meaning, state of conservation, potentialities and threats, ongoing and planned development. Specifically this GIS is a good support to define maintenance programs, priorities of restoration and conservation interventions and also to analyze the possibility of adequate locations of the new buildings and infrastructures necessary for the area, evaluating their low impact on the Hakka heritage, as well as planning the development of the Huiyang territory.

On this page:

Hakka Site Inventory Form, section 5, the last section is about site overall problems, site potentialities and alternative uses. The graphs show different site potentialities and the transformation level: 45 % of Hakka sites have moderate transformation level, 22 % high, 33 % low.

Every inventory form of Hakka sites includes attachments (as photographs, historical documents, surveys). Here, for example: the geometric and architectural survey of site Hui Xin Lou (site 2, area C).

On pages 26 and 27:

Two examples of Hakka Site Inventory completed forms: Xiulin Lou site (in area A) and Hui Xin Lou site (in area C) and attached photos to better understand the complexity and the characteristic of each site.





# INVENTORY OF HAKKA SITES: XIULIN LOU (AREA A)

<b>SITE #:</b> 11 <b>DEMONSTRATION: XILIN LOU</b> <b>LOCATION:</b> HONGKONG <b>GEOGRAPHICAL COORDINATES:</b> 22°34'N, 114°15'E <b>UNIVERSITY NUMBER:</b> <ul style="list-style-type: none"> <li>1. LOCATED IN AREA A</li> <li>2. LOCATED IN AREA B</li> <li>3. LOCATED IN AREA C</li> <li>4. LOCATED OUT OF AREA</li> </ul>		<b>ROAD ACCESSIBILITY:</b> <ul style="list-style-type: none"> <li>1. FROM SUBURBAN ROAD</li> <li>2. FROM URBAN ROAD</li> <li>3. FROM RURAL ROAD</li> <li>4. OTHER</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. ACCESS TO THE BUILDING THROUGH AN URBAN ROAD</li> </ul>
<b>DATE:</b> <ul style="list-style-type: none"> <li>1. 1970s-1980s</li> <li>2. 1990s</li> <li>3. 2000s</li> <li>4. 2010s</li> </ul>		<b>PUBLIC TRANSPORTATION ACCESSIBILITY:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>PRESERVATION LISTED SITE?</b> <ul style="list-style-type: none"> <li>1. YES - HISTORIC LAND</li> <li>2. YES - CITY LAND</li> <li>3. NO</li> <li>4. UNKNOWN</li> </ul>		<b>SITE LEVEL OF THE SITE:</b> <ul style="list-style-type: none"> <li>1. IN USE</li> <li>2. PARTIALLY IN USE</li> <li>3. ABANDONED</li> <li>4. VAPORWARE</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>SURFACE AREA (SQ METERS):</b> <ul style="list-style-type: none"> <li>1. 1000-1500</li> <li>2. 1500-2000</li> <li>3. 2000-3000</li> <li>4. 3000+</li> </ul>		<b>FROM: (BUILDINGS + STRUCTURE):</b> <ul style="list-style-type: none"> <li>1. IN USE</li> <li>2. PARTIALLY IN USE</li> <li>3. ABANDONED</li> <li>4. UNKNOWN</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>KIND OF SURVEY:</b> <ul style="list-style-type: none"> <li>1. VISUAL AND EXTERIOR SURVEY</li> <li>2. EXTERIOR SURVEY</li> </ul>		<b>HOW: (METHODS):</b> <ul style="list-style-type: none"> <li>1. VISUAL</li> <li>2. PHOTOGRAPHY</li> <li>3. MEASUREMENT</li> <li>4. OTHER</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>ARCHITECTURAL VALUE:</b> <ul style="list-style-type: none"> <li>1. HIGH</li> <li>2. MODERATE</li> <li>3. LOW</li> </ul>		<b>FROM: (BUILDINGS + STRUCTURE):</b> <ul style="list-style-type: none"> <li>1. IN USE</li> <li>2. PARTIALLY IN USE</li> <li>3. ABANDONED</li> <li>4. UNKNOWN</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>NUMBER OF BUILDING BLOCKS:</b> <ul style="list-style-type: none"> <li>1. HIGH</li> <li>2. MODERATE</li> <li>3. LOW</li> </ul>		<b>HOW: (METHODS):</b> <ul style="list-style-type: none"> <li>1. VISUAL</li> <li>2. PHOTOGRAPHY</li> <li>3. MEASUREMENT</li> <li>4. OTHER</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>STANDABLE VALUE:</b> <ul style="list-style-type: none"> <li>1. HIGH</li> <li>2. MODERATE</li> <li>3. LOW</li> </ul>		<b>FROM: (BUILDINGS + STRUCTURE):</b> <ul style="list-style-type: none"> <li>1. IN USE</li> <li>2. PARTIALLY IN USE</li> <li>3. ABANDONED</li> <li>4. UNKNOWN</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>MAIN CONTEXT:</b> <ul style="list-style-type: none"> <li>1. URBAN</li> <li>2. RURAL</li> <li>3. NATURAL</li> </ul>		<b>HOW: (METHODS):</b> <ul style="list-style-type: none"> <li>1. VISUAL</li> <li>2. PHOTOGRAPHY</li> <li>3. MEASUREMENT</li> <li>4. OTHER</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>VALUE OF URBAN CONTEXT:</b> <ul style="list-style-type: none"> <li>1. HIGH</li> <li>2. MODERATE</li> <li>3. LOW</li> </ul>		<b>FROM: (BUILDINGS + STRUCTURE):</b> <ul style="list-style-type: none"> <li>1. IN USE</li> <li>2. PARTIALLY IN USE</li> <li>3. ABANDONED</li> <li>4. UNKNOWN</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>VALUE OF RURAL CONTEXT:</b> <ul style="list-style-type: none"> <li>1. HIGH</li> <li>2. MODERATE</li> <li>3. LOW</li> </ul>		<b>HOW: (METHODS):</b> <ul style="list-style-type: none"> <li>1. VISUAL</li> <li>2. PHOTOGRAPHY</li> <li>3. MEASUREMENT</li> <li>4. OTHER</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>VALUE OF NATURAL CONTEXT:</b> <ul style="list-style-type: none"> <li>1. HIGH</li> <li>2. MODERATE</li> <li>3. LOW</li> </ul>		<b>FROM: (BUILDINGS + STRUCTURE):</b> <ul style="list-style-type: none"> <li>1. IN USE</li> <li>2. PARTIALLY IN USE</li> <li>3. ABANDONED</li> <li>4. UNKNOWN</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>VALUE OF SYSTEM:</b> <ul style="list-style-type: none"> <li>1. HIGH</li> <li>2. MODERATE</li> <li>3. LOW</li> </ul>		<b>HOW: (METHODS):</b> <ul style="list-style-type: none"> <li>1. VISUAL</li> <li>2. PHOTOGRAPHY</li> <li>3. MEASUREMENT</li> <li>4. OTHER</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>CONSERVATION LEVEL:</b> <ul style="list-style-type: none"> <li>1. GOOD</li> <li>2. MODERATE</li> <li>3. POOR</li> </ul>		<b>FROM: (BUILDINGS + STRUCTURE):</b> <ul style="list-style-type: none"> <li>1. IN USE</li> <li>2. PARTIALLY IN USE</li> <li>3. ABANDONED</li> <li>4. UNKNOWN</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>CONSERVATION LEVEL EXPECTED BY URBAN PLANNING:</b> <ul style="list-style-type: none"> <li>1. HIGH</li> <li>2. MODERATE</li> <li>3. LOW</li> </ul>		<b>HOW: (METHODS):</b> <ul style="list-style-type: none"> <li>1. VISUAL</li> <li>2. PHOTOGRAPHY</li> <li>3. MEASUREMENT</li> <li>4. OTHER</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>ENCLOSED DIGITAL PHOTO (NO. 11-1 - 11-10 OR SEQUENTIAL):</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>		<b>FROM: (BUILDINGS + STRUCTURE):</b> <ul style="list-style-type: none"> <li>1. IN USE</li> <li>2. PARTIALLY IN USE</li> <li>3. ABANDONED</li> <li>4. UNKNOWN</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>OTHER ENCLOSED DOCUMENTATION:</b> <ul style="list-style-type: none"> <li>1. DRAWINGS (ARCHITECTURAL, STRUCTURAL, ETC.)</li> <li>2. OTHER (SURVEY, PHOTO, VIDEO, ETC.)</li> <li>3. HISTORICAL DOCUMENTATION</li> <li>4. OTHER (SOURCE)</li> </ul>		<b>HOW: (METHODS):</b> <ul style="list-style-type: none"> <li>1. VISUAL</li> <li>2. PHOTOGRAPHY</li> <li>3. MEASUREMENT</li> <li>4. OTHER</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>
<b>QUALIFICATION OF COMPILATION (INDICATES):</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>		<b>FROM: (BUILDINGS + STRUCTURE):</b> <ul style="list-style-type: none"> <li>1. IN USE</li> <li>2. PARTIALLY IN USE</li> <li>3. ABANDONED</li> <li>4. UNKNOWN</li> </ul>	<b>USAGE:</b> <ul style="list-style-type: none"> <li>1. YES</li> <li>2. NO</li> </ul>







## 5. The results and the goals of the Huiyang Hakka Site Inventory.

In summary, the data emerged from the census activity highlighted the characteristics and components of the 55 Hakka sites inventoried, demonstrating the richness and variety of this historical-cultural heritage of the city of Huiyang, but also underling critical issues and problems.

In fact, more than two-thirds of the Hakka villages surveyed were assessed as having significant architectural value (13 of notable value, 30 of medium value) and only 12 were judged to be of minor architectural quality.

The results that emerged regarding the state of conservation are not as positive, as just under half of the sites surveyed were in poor condition, while 27 villages show a current condition of mediocre level and only 5 showed a good state of conservation. It should be taken into consideration that the current state of the sites is not related to either their architectural value or their use. In fact, Hakka villages without particular architectural value and those judged to be of medium or high-value present medium or advanced degradation. Regarding the use, considering that approximately 85% of the sites are used, even if in most cases they are partially in use, specifically: 10 sites are in use, 36 are partially in use and only 9 are totally abandoned. It is interesting to underline that of the 5 sites that have a good state of conservation, only 3 sites are in use, while of the several Hakka villages in a poor state of conservation, only 5 are completely abandoned. It should be underlined that the sites are mainly used for residential purposes (even if they have a very low level of community services) and as support structures for agricultural activity, but the majority are still used for religious worship and for vacation purpose.

Considering the architectural and historical-cultural value of the Hakka villages, the mediocre state of conservation in which most of the sites are and their limited use, it is clear the need to underline a stronger protection policy and a better valorization practice for these artifacts. In fact, of the 55 Hakka sites surveyed, only one is protected at a national level (the Ye Ting Gu Ju site, the Memorial Museum of YeTing now), while 25 are subject only to a city level safeguard. The remaining 29 Hakka villages are not protected and approximately half, due to their architectural and historical-cultural value, should require a high level of preservation, but for all of them it is urgent to plan safeguard and valorization strategies to avoid their transformations and/or their loss. The comparison of the Hakka site inventory with the current planning tools has underlined how the plan forecasts - through the creation of infrastructures, industrial or commercial areas - could seriously endanger the survival of 12 sites and other 25 sites are seriously threatened. These 37 Hakka villages that are at risk of loss or undergoing significant alterations, referring to the planned territorial transformations, include all the sites located in areas A and B, while those in area C, almost entirely destined by the Masterplan to "Landscape tourism

greenspace" present a limited risk of transformation. All things considered, it is necessary to establish protection and valorization policies for Hakka sites by establishing plans for their recovery, giving priority to projects capable of integrating conservation and innovation in the architectural, social, cultural and economic reuse of the existing situation. Saving such a vast heritage from degradation means defining new uses, new functions capable at the same time of guaranteeing the integrity of the historical and artistic values of the Hakka sites, and of allowing a new compatible use of them, generating an economic return that supports the money and resource investment. Analyzing the data that emerged from the Hakka inventory and the comparison with the Huiyang urban plan forecasts, it was possible to identify different functions for a potential reuse of the different Hakka villages. The goal is to look for future functions that are able to respect the historical-cultural values, that are compatible with the architectural settlements, and also that are related to the opportunities linked to the different territorial contexts. The reuse and new design hypotheses should involve various parts of the city, considering the Hakka sites an integrated system of the Huiyang region. In particular, the new functions will also be an opportunity to enhance the potentialities of the sites, as they are important resources for the cultural, environment, recreational and social needs of the local people.

The Hakka site proposals are residential reuse for numerous sites, often associated with other possible functions such as agricultural or commercial use, but also hypotheses of interventions with cultural, tourism, educational, accommodation, purposes. A plurality of functions for the Hakka sites were issued during the development of the research illustrated in this book, to redevelop and regenerate the network of the urban public spaces, and to valorize the agricultural and natural periurban landscape, making these historical sites true cornerstones of the Huiyang territory.

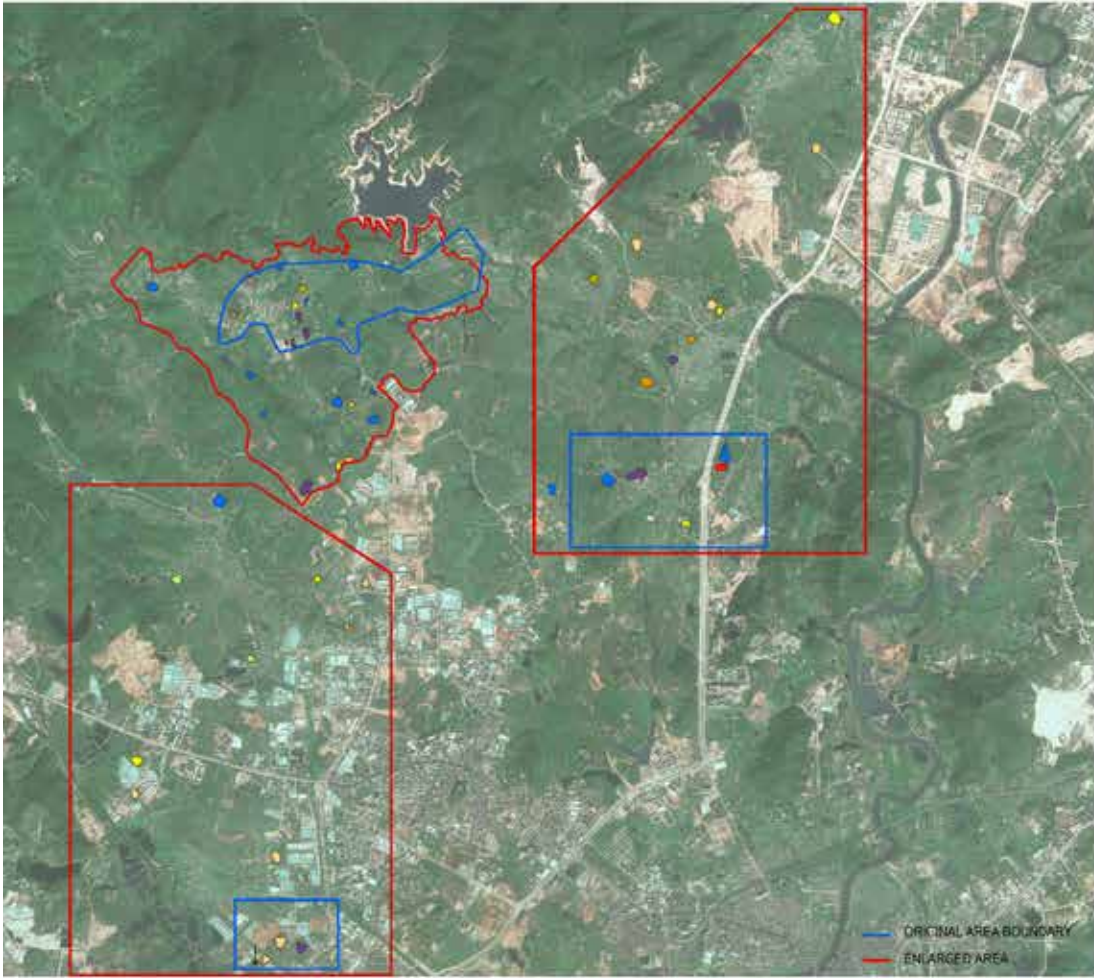
In conclusion, the aim of the inventory of Hakka sites is to provide a cognitive framework, as complete and detailed as possible, but at the same time to guarantee easy reading and consultation of all the gathered information. The Hakka inventory describes and evaluates each Hakka site, reading the current situation in order to get a valid reference to set more effective and targeted valorization and management policies of this historical heritage, providing local administrations and bodies with a dynamic tool (the GIS) of the Hakka heritage present in the area and a series of suggestions that can be translated into specific conservation and planning strategies.

This Hakka inventory is not just a container of data (dimensional, functional, etc.) aimed at mere cataloguing, but rather a suitable tool to share the information collected and to increase the awareness of this cultural resource. We are convinced that the conservation of Hakka villages will be more effective by highlighting the importance of this rich heritage and providing ways for the citizens and the authorities to learn and become involve in management and preservation initiatives.

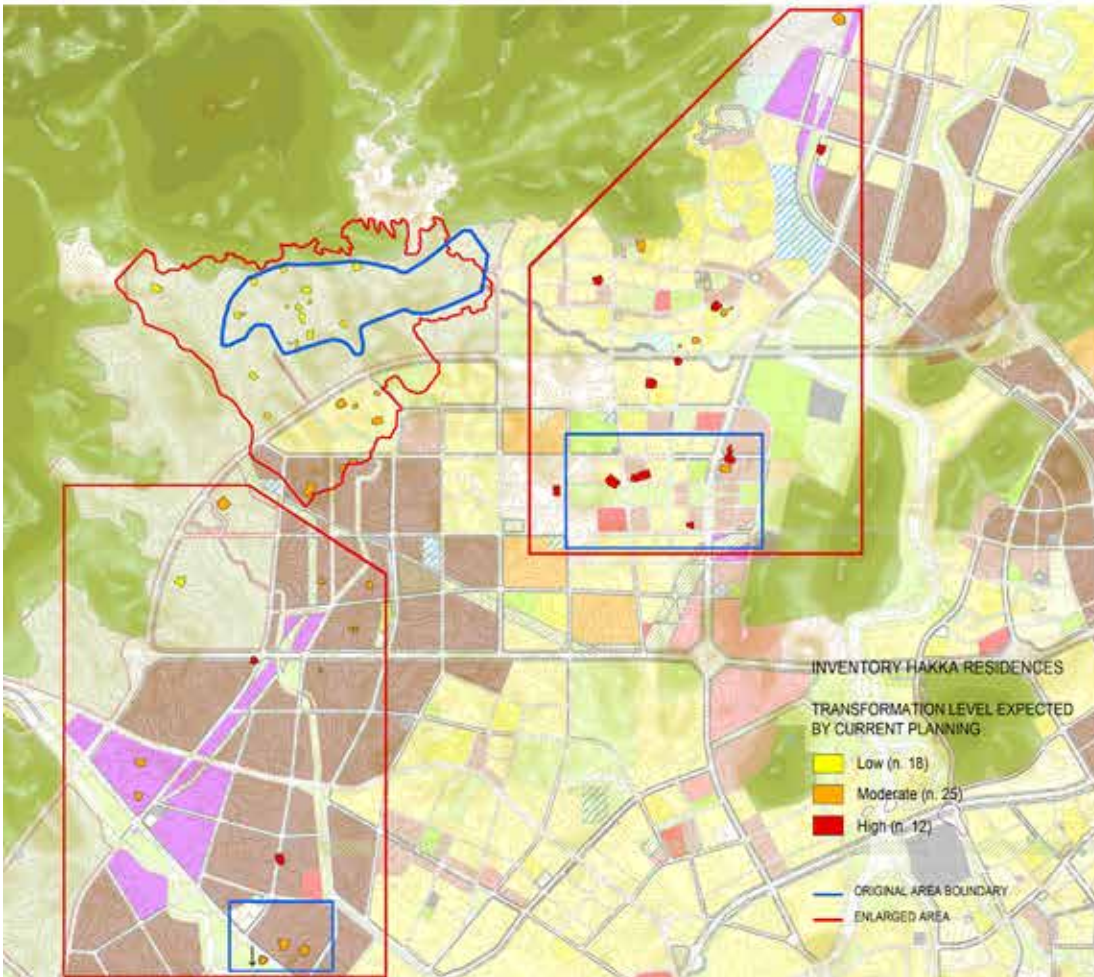
*On the opposite page, above: Inventory of the Hakka sites in Huiyang: GIS map referring to site potentialities, alternative uses. The map derives from the data collected in the 55 Hakka site census;*

*On the opposite page, below: GIS map comparing the registered sites with the Huiyang Masterplan 2007-2020. The planned land use reveals the level of expected transformation of the 55 sites: it is low for 18 Hakka sites (in yellow), moderate for 25 Hakka sites (in orange), high for 12 Hakka sites (in red).*





- INVENTORY HAKKA RESIDENCES**  
**SITE POTENTIALITIES, ALTERNATIVE USES**
- Residential (n. 11)
  - Cultural, other public facilities (n. 11)
  - Commercial (n. 5)
  - Agricultural (n. 2)
  - Residential, agricultural, commercial (n. 13)
  - Residential, cultural, commercial (n. 7)
  - Residential, cultural, agricultural (n. 3)
  - Cultural, commercial, agricultural (n. 2)
  - Cultural, commercial (n. 1)



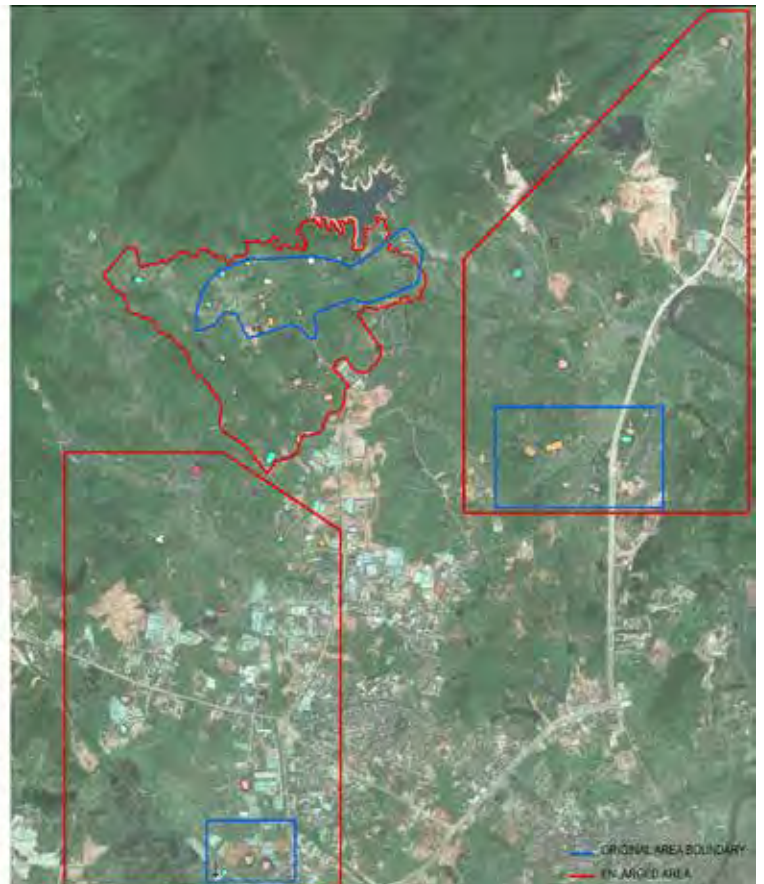
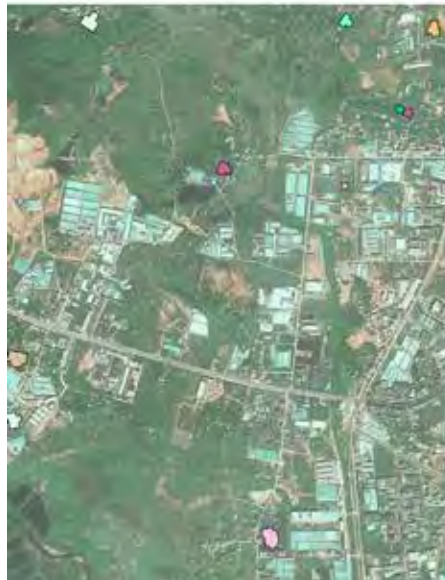
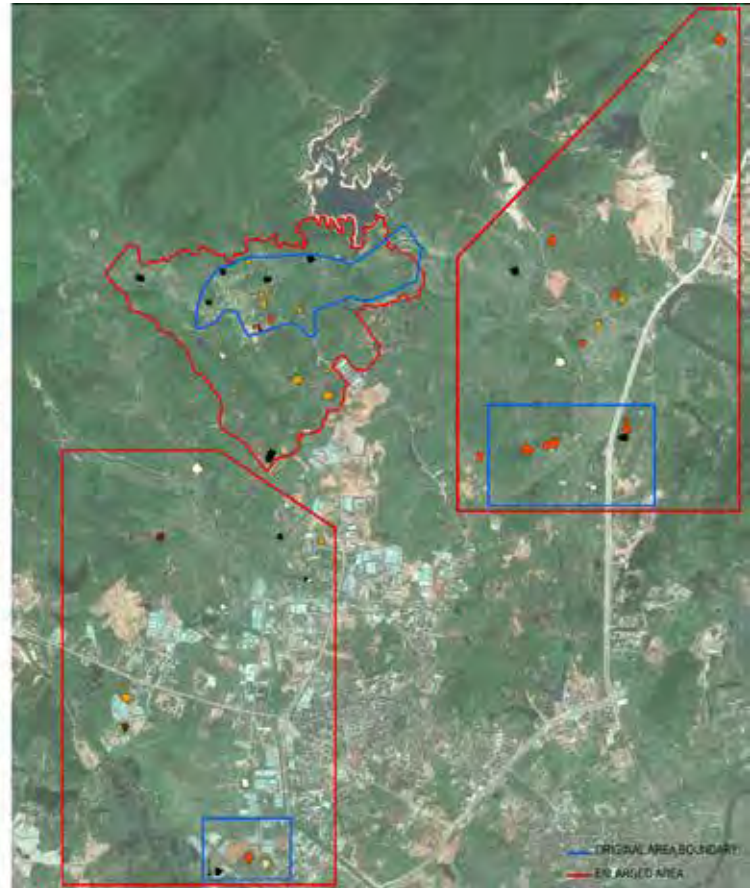
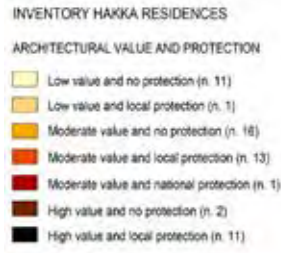
- MASTERPLAN LAND USE**
- Public service
  - Government administration
  - Commercial business
  - Cultural entertainment and sport
  - Medical health
  - Educational research
  - Other public facilities
  - Special land use
  - Water
  - Farmland
  - Forest
  - Village construction land
  - Reserved land
  - Public green space
  - Industry buffer greenspace
  - Industry
  - Residence
  - Residence
  - Road square lines
  - Road
  - Square
  - Square
  - Inter-city rail land
  - Civil facilities
  - Supply facilities
  - Electric supply
  - Heating gas supply
  - Urban transport facilities
  - Post/telecom
  - Environmental sanitation
  - Sewage
  - Utilities for construction
  - Funeral sites
  - Storage
  - Landscape tourism greenspace
- INVENTORY HAKKA RESIDENCES**  
**TRANSFORMATION LEVEL EXPECTED BY CURRENT PLANNING**
- Low (n. 18)
  - Moderate (n. 25)
  - High (n. 12)



On this page:  
Inventory of the Hakka sites  
in Huiyang: interpretative  
GIS map. Data from the  
55 surveyed sites were  
combined.

Above:  
The architectural value is  
linked to the conservation  
level.

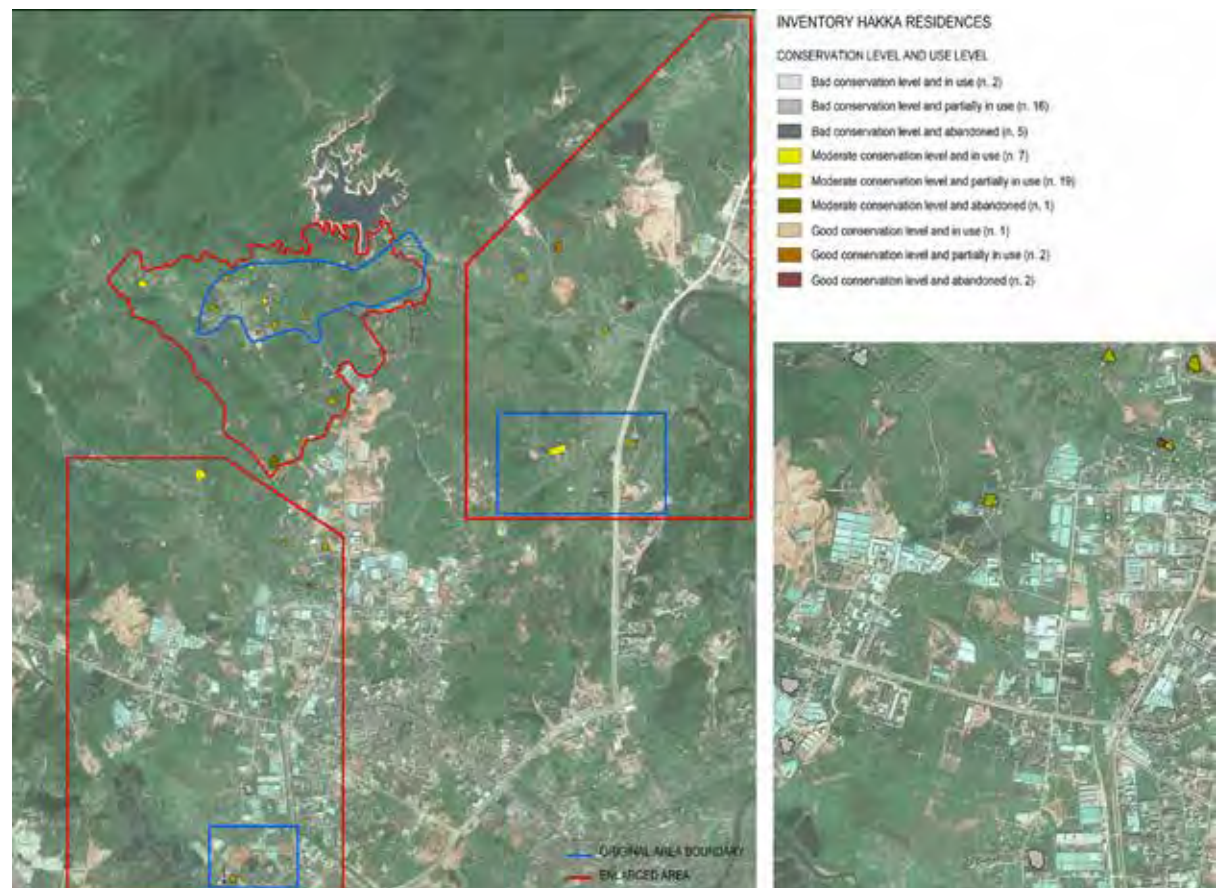
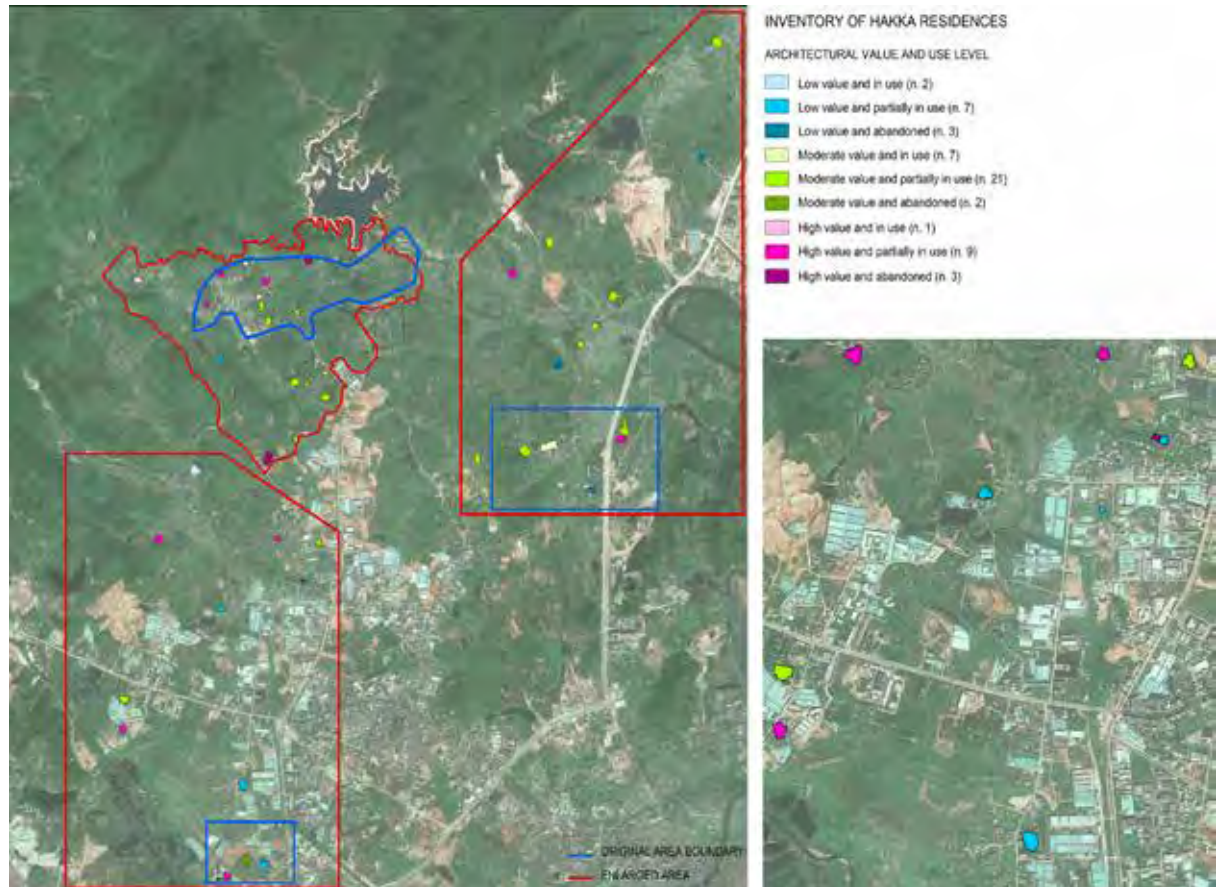
Below:  
Conservation level is linked to  
the use level.





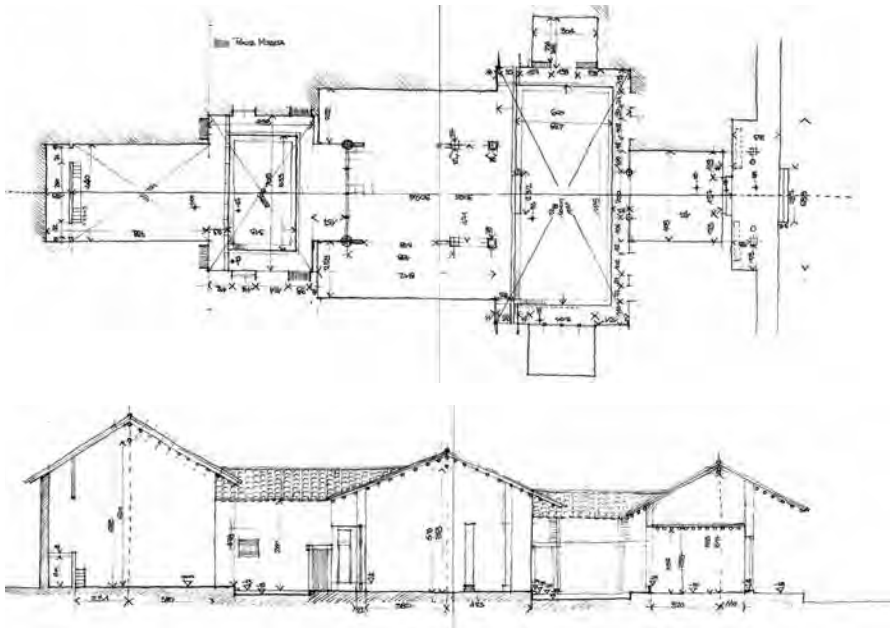
On this page:  
Inventory of the Hakka sites  
in Huiyang: interpretative  
GIS map. Data from the  
55 surveyed sites were  
combined.

Above:  
The architectural value is  
linked to the protection level.  
Below:  
The architectural value is  
linked to the use level (in use,  
abandoned, partially in use).



# Architectural survey of Hakka residences in Huiyang.\*

Domenico Chizzoniti



\*References to the text are enlisted at pp. 244-245, in the section: *Architectural Surveying and Heritage graphical representation*.

## 1. Introduction.

The analyzed survey method is used for a typological and figurative reconstruction of an architectural complex (Docci, 2006). In detail, three cases are taken as examples. These sites are located in the rural area of Huiyang, in the district of Huizhou City, and are considered relevant in relation to different conservation status of individual building structures.

These cases are analyzed with a certain level of detail and, despite some similarities between the architectural structures, each case is characterized by certain level of originality, both of the typological structure and the decorative device. On the first step, the survey has attempted to give back these original traits in order to offer a support for the design and to the compatibility of new functions and activities to be allocated in these buildings. For each of these cases a standard procedure has been followed in the direct and indirect survey of the buildings that has allowed the production of the three-dimensional model through Cad software (Cairoroli, 1986).

The first case concerns the building “Hui Shui Lou”. This is a large building with a rather compromised structure but of a great importance for its strategic position, located nearby the General Ye Tin House Museum, it represents an important tourist attraction. The architecture of this building, with a symmetrical and rectangular shape, is arranged around the temple

of the ancients that is composed by a sequence of covered patios and a central entrance that leads directly to the votive altar.

The second case concerns the building called “Hui Xin Lou”, unlike the first one it is well-structured on three heights. It’s characterized by an architectural system symmetrically developed respect to central axis on which you set the part of the temple dedicated to the ancestors.

The third case concerns the building “Bi Yan Lou” which is located in a complex set of Hakka settlements, with a considerable architectural quality. In this case the architectural system consists of a rectangular shape height on a single plane. The house is composed by the holy area, which is the sacred temple of ancestors, while the adjacent parties to the temple are separated from the residences by two stretched courtyards enclosed by four corner towers on two levels.

## 2. Cases of Study.

The methodology adopted and the phases of the survey are similar for all three analyzed cases. The architectural survey, in particular, includes different phases (Docci, Maestri, 2009).

The process involves two phases: in the first one all the data are collected; the second one, carried out later, allows the data capture and control of all the measurements taken.

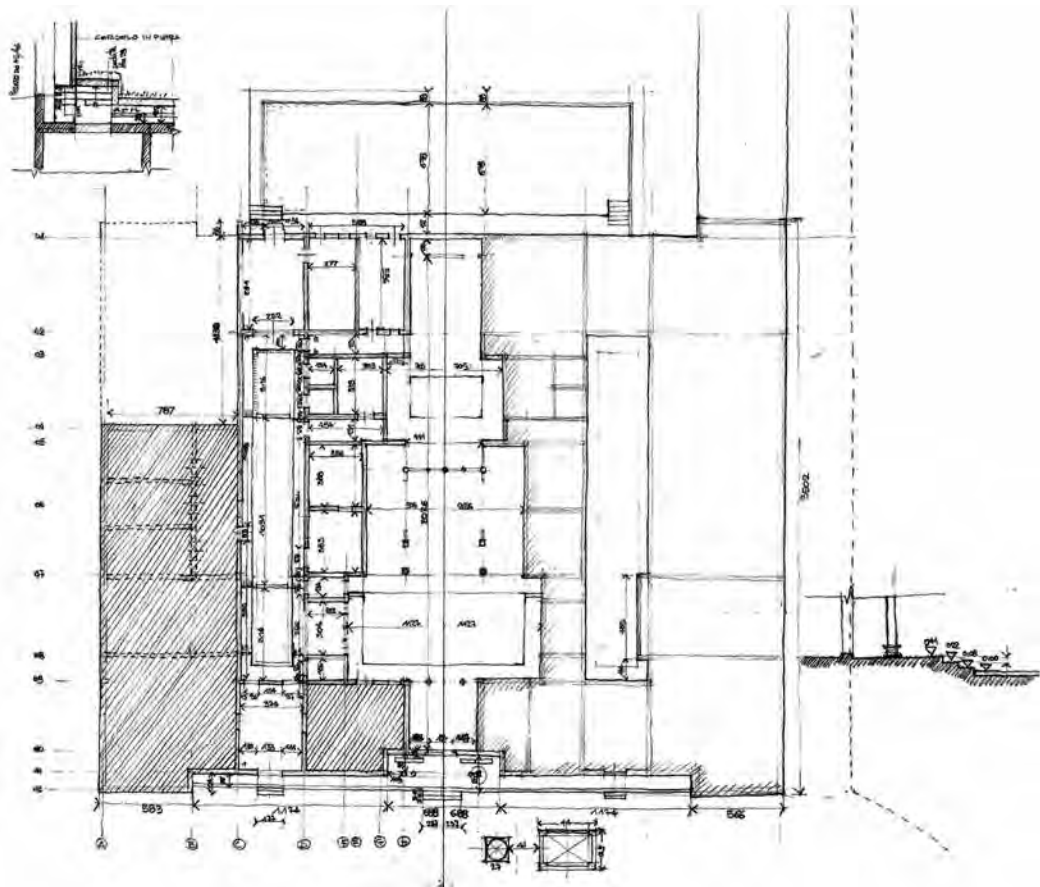
The first phase has defined several procedures that have allowed understanding the architectural complex, as well as appropriate reading of every single typological element. Preliminary it consists in the preparation of an eidotype (preparatory sketch) (Cento, 1979) that is able to represent the configuration of the plants, the elevations of the crosswise and longitudinal sections with portions of detail (such as decorations and ornaments or wooden structural system) and, if necessary, through three-dimensional sketches of important parts (such as the temple courts and patios). The scale of representation allowed adjusting this survey compared with the requirements of the project and the tools available in this work.

The first transaction involved the reconstruction of the reference planes, multiple in these settlements, which lie on an artificial platform. After that we proceeded to the plant survey through a horizontal section realized at one meter from reference height. Once detected the geometry of the main rooms, the geometry of the

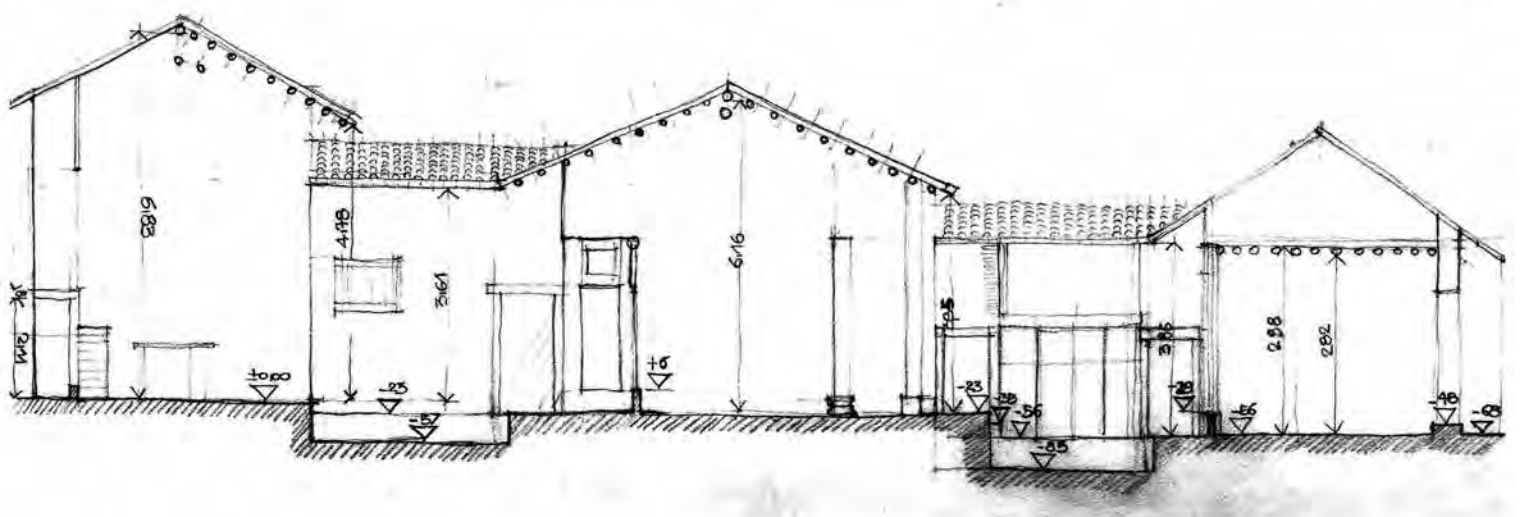
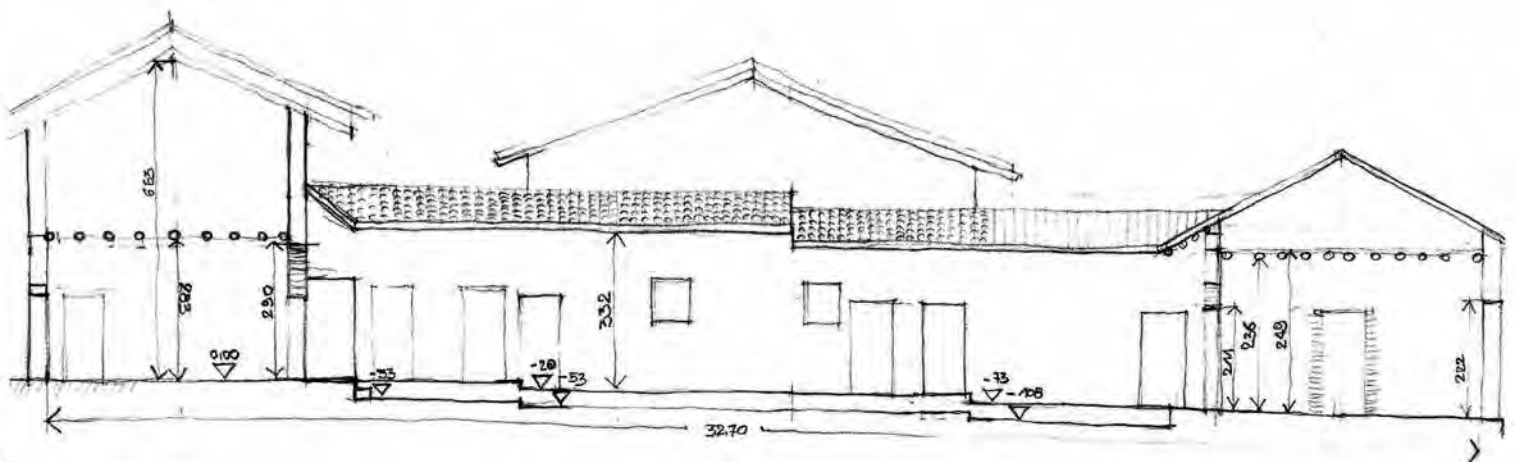
On this page:  
Architectural survey drawings of “ancestral hall” of Hui Shui Lou residence.

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Architectural survey drawings of Hui Shui Lou residence  
(© Domenico Chizzoniti, 2010).

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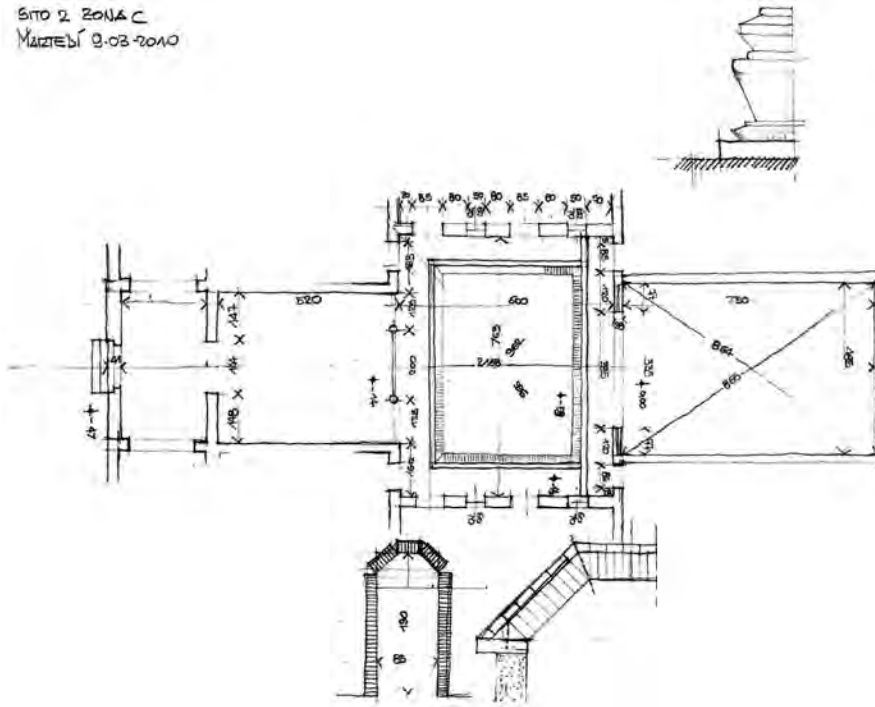


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entire architectural structure was represented through the choice of significant points that have defined the main rooms and interior spaces (Docci, Maestri, 1984).

After this task, the eidotype (Marconi, 1989) has been specified and prepared for a more accurate work that allows identifying the basic architectural elements of the plan with its dimensional and constructive information. Specifically, concerning the plant of the temple, the open and covered spaces have been reproduced at a larger scale than the other parties. So the sacred part of the building has been measured more accurately: the architectural features and structural elements of these spaces are of particular artistic quality.

In the eidotypes of the plants, we have reported the outlines of those rather complex elements that show the shape: moldings, details of some ornaments, wooden structures of substantial value (Marino, 1990).

### 3. Survey of the sections.

The survey of the sections is similar to that of plants but the building called "Bi Yan Lou" is developed on three levels. In this case it was necessary to connect properly the survey elevation of more spaces to build a vertically stacked reference outside the building, to which the references relate the horizontal setting planes of the individual spaces. The procedure adopted for this survey was achieved by dropping a plumb line from the accessible highest point of the building. In this way it was possible to derive all the dimensions of the window sills from the lintels of the windows opening on the vertical (Carbonara, 1990). These alignments were used for plan layout survey of the various levels. This procedure was performed for the buildings "Hui Shui Lou" and "Xin Hui Lou," while in the case of "Bi Yan Lou" the existence of concrete stairs at the perimeter of the towers has required special attention, in order to determinate its geometry and the related di-

mension references (Docci, Maestri, 1994). Generally the plants have been performed by the projection of the ramps as if they were viewed from above, possibly avoiding to dissect horizontally the ramp.

### 4. Survey of the facades.

The facades are surveyed through a traditional procedure identifying the main measures of the distances in height from the horizontal reference planes and the projections (the distances in horizontal by vertical reference planes). Once defined the geometry of the facades we proceeded with a summary redesign indicating the main dimensions and significant details (Rocchi, 1994). The longitudinal development of all three buildings was considerable, so a series of vertical stripes were drawn in order to divide them. These drawings have been carefully detailed in correspondence of the main elements of the facade. At a later stage, established the general outline and measures of the facade, the elements were placed in an unified detailed drawing, for significant fields (for example, around the main openings, doors and windows, or significant compositional elements of the facade, such as corner towers, etc.) (AA. VV., 1992).

This technique has been integrated through a photographic survey, to increase the number of available information.

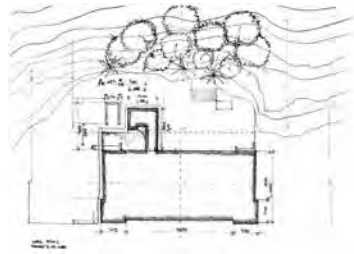
The procedure adopted is the Photogrammetry (Bini, 1982) with multiple frames taken from different positions and with normal cameras: the elimination of perspective distortion is obtained by some measures on the subject of the survey. Every shot has been the object of photographic rectifier. This type of elimination of perspective deformation has allowed the possibility of combining several images through the technique of mosaic, since it has not be possible to take a single image of the whole building facade. The images were assembled together in a single layout, through the overlay of different pictures in order to reproduce the facade. Afterwards more detailed images have been overlapped on the main photos to obtain as much information as possible, like materials, construction elements, technical details and ornaments. This technique has been tested in the construction of the building element of the section, especially in all the wood roof carpentry and in the details of the temple of the ancients (Cento, 1944).

### 5. Grafic output return.

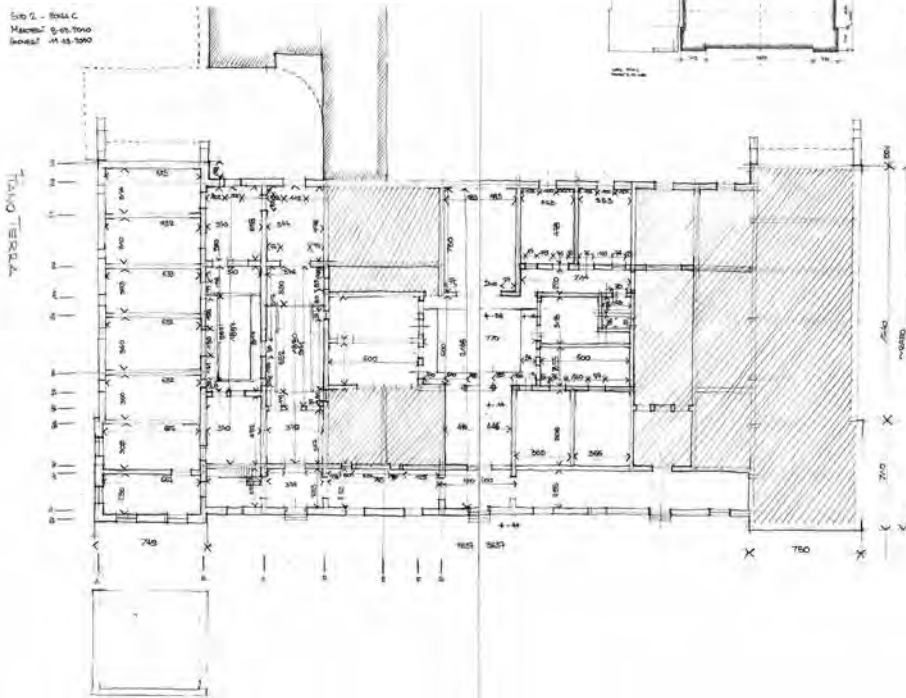
The direct output survey return took place in CAD software. Once you have determined the geometry and measurements of the plants, facades and longitudinal and transversal sections and acquired the photographic survey the redesign work has been set. The choice of this support has taken place for the facilitation of information organization. In addition, the internal logic of the CAD software allow to work with different layers, in order to give each layer a particular type of information overlapping and easily editable: construction lines, general information. The final design was structured in layers to have some of them

*On this page:*  
Architectural survey drawings  
of "ancestral hall" of Hui Xin  
Lou residence.

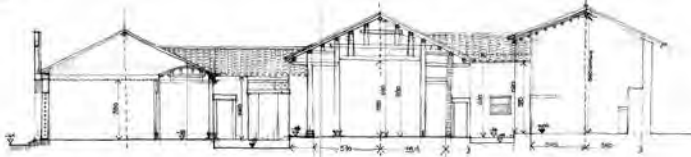
*On the opposite page:*  
Architectural survey drawings  
of Hui Xin Lou residence  
(© Domenico Chizzoniti,  
2010).



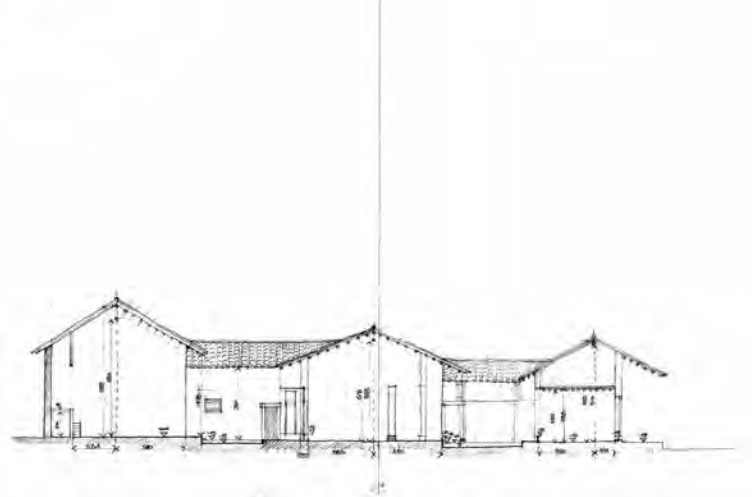
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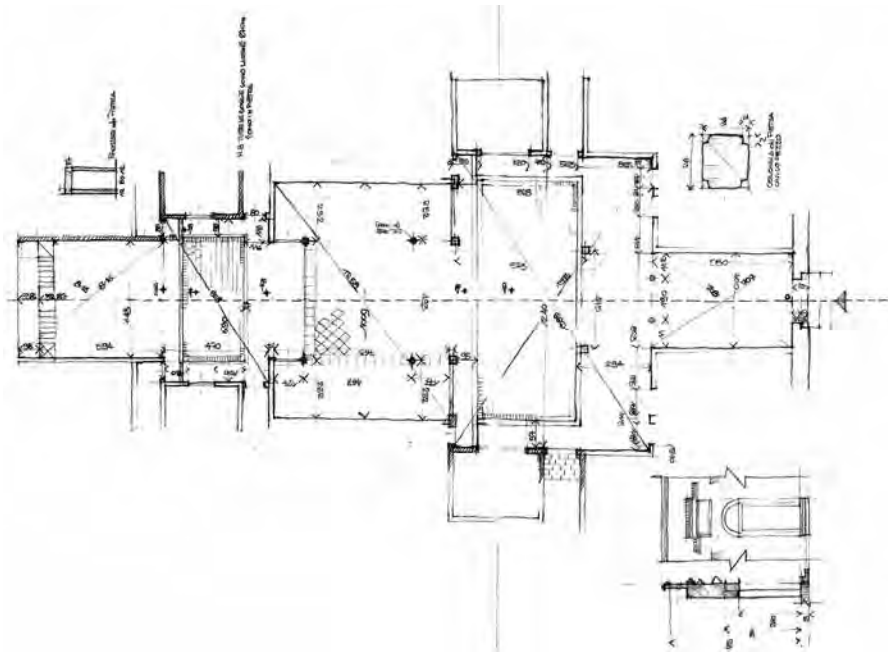
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related to the phase of output return, which will be contained in the notes for the trilaterations and other of them to the elements already obtained. The division into layers allows a quick comprehension of the design and a rather quick editing (Clini, 2008).

After having digitally reproduced plants through careful control and the measurements of the draft, we moved to the projections of the sections with the help of photographic information. This procedure was obtained through a real redesign with the definition of the points coordinates, which although more expensive allows a greater accuracy than the automatic scan. Beyond the photographic survey, this work allowed a geometric verification and a rather considerable implementation of the information about the architecture of the building and its details construction.

For the layouts of the facades, generated by the external profiles deduced from measurements, the reconstruction has taken place with the redesign of the general development of vertical structure.

Some details, drowned with the support of the photographic survey, allowed a general check of the different elevations profiles.

### 6. 3D Modelling.

Starting from the plants of all levels and from transverse and longitudinal sections of the three buildings survey, the first phase of the work has developed a schematic model of the whole complex, which is represented in the volumetric articulation of the different buildings.

For the 3D modeling construction has been adopted the solid modeling method that offers the advantage of a more accurate representation than the 3d modeling surfacing (mesh); moreover provides more information about the shape and volume of the individual elements (Fiorucci, 2005).

The modeling procedure of the three different buildings was mainly based on the extrusion of two-dimensional profiles of the elements represented in plants or

in sections along paths equal to their thickness, followed by editing of solid shape obtained (subtraction, intersection, cutting, etc.). Considering the irregular geometries of all environments and the large number of details, the reconstruction work was rather demanding. In particular, the reconstruction of the complex structure of pitched roofs required a considerable time, also given the limited information; each case was however compared with aerial photographs of the area, which facilitated the operation (Marino, 1990). On the basis of detailed current 3D modeling representation it was possible to develop different solutions and studies for the recovery of these buildings with a level of detail not less than 1:100. Finally we have reproduced a digital reconstruction of these buildings, including all the accessories and details (crescent shaped basin, the slope of the land, etc.).

### 7. Conclusions.

This work also allowed the overall control of the model, identifying the complexity of some spaces that will host new features in the subsequent step of the project.

All of this reconstruction was edited with the objectives of a design for feasibility studies for the conservation and restoration of this architectural heritage through new functions allocated to activities of the interventions for the rural area of Huiyang.

This is a method useful in the design phase to recognize the typological and spatial quality of architecture and its geometrical properties. In this way, the survey becomes an item that helps prefiguring and designing a clear idea of architectural space. This procedure makes it possible to trace the original structure of the space, underlying the architectural work, where the formation of building is translated into clear typological choices. Form and construction are summarized symbolically in a form of language closer to the formulation of the architectural idea (Polla, 1985).

Today representation is a discipline that implies potentially different types of abilities: from the description of architectural space up to the interpretation of composition and construction.

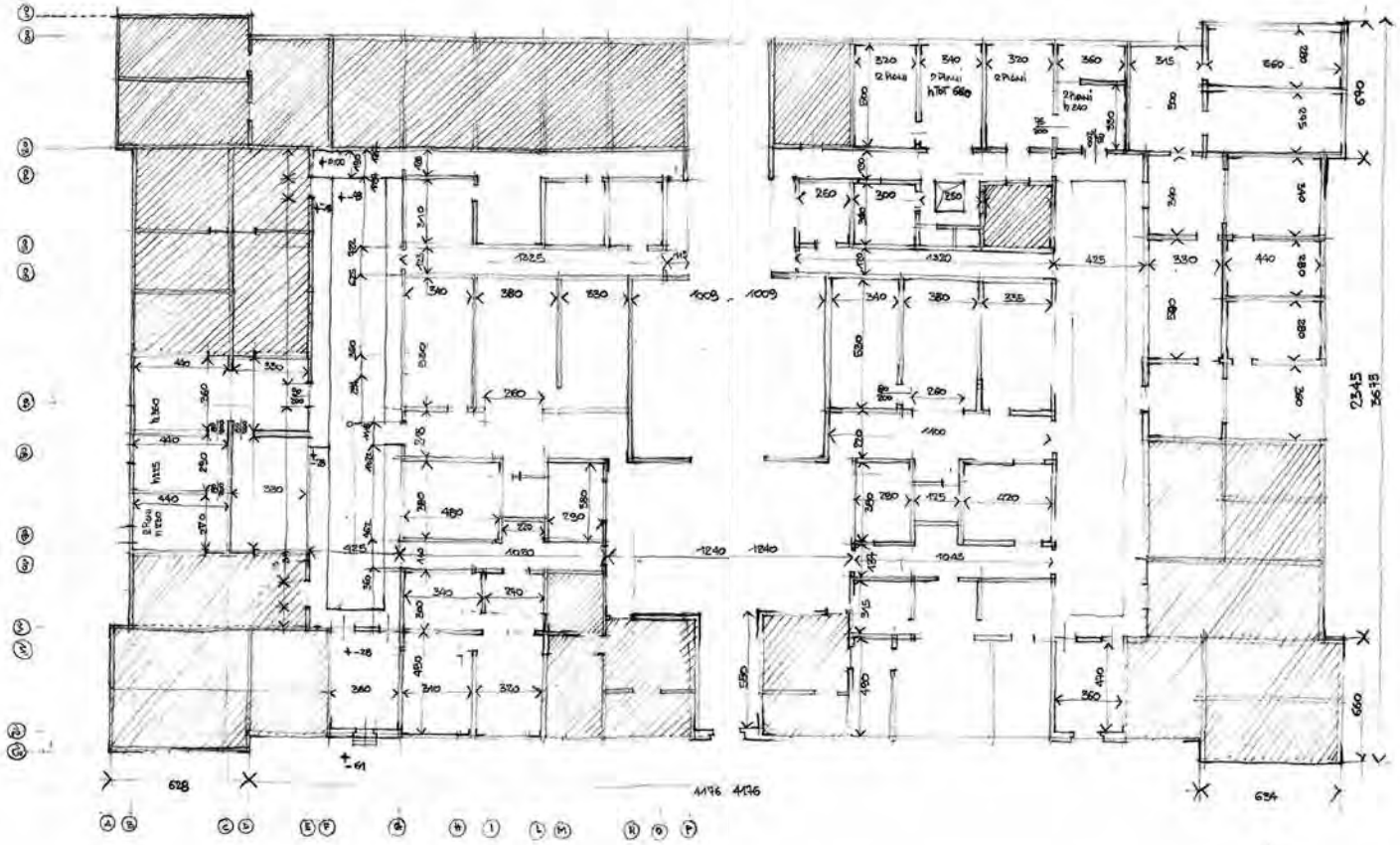
This concept of representation plays an instrumental role in this program of research, insofar it helps to bring together different areas of knowledge regarding specific architectural design, (such as art, philosophy, physical sciences, geometry, education and computing, etc.).

Multiple meanings of representation – visual, aesthetic, epistemological, and methodological – are implied in the conception of form and space, the study of creative processes, the analysis and classification of precedents and, in general, in any attempt to systematize knowledge.

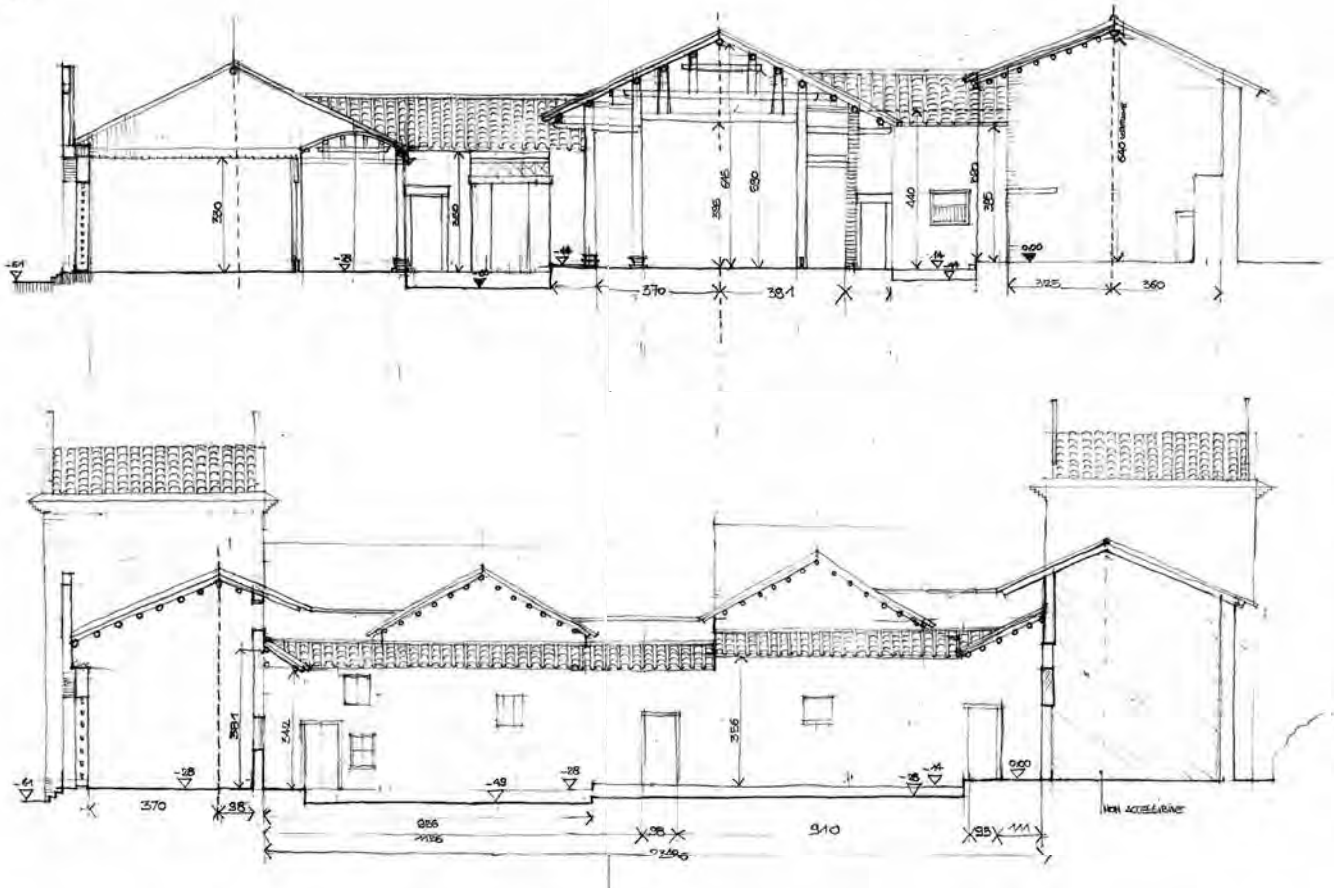
In fact, representation and architectural survey, are a transversal, ubiquitous categories which are not circumscribed to a particular field of study (Maestri, 2000). In many cases they are useful not only for recovering cultural heritage, but even to expand areas of knowledge of architectural space design.

*On this page:*  
Architectural survey drawings of "ancestral hall" of Bi Yan Lou residence.  
*On the opposite page:*  
Architectural survey drawings of Bi Yan Lou residence  
(© Domenico Chizzoniti, 2010).

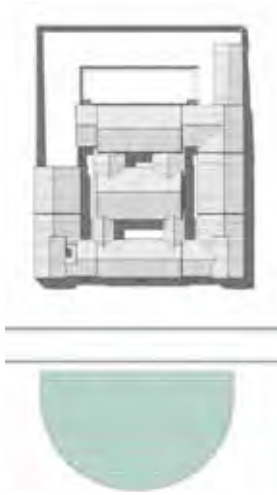
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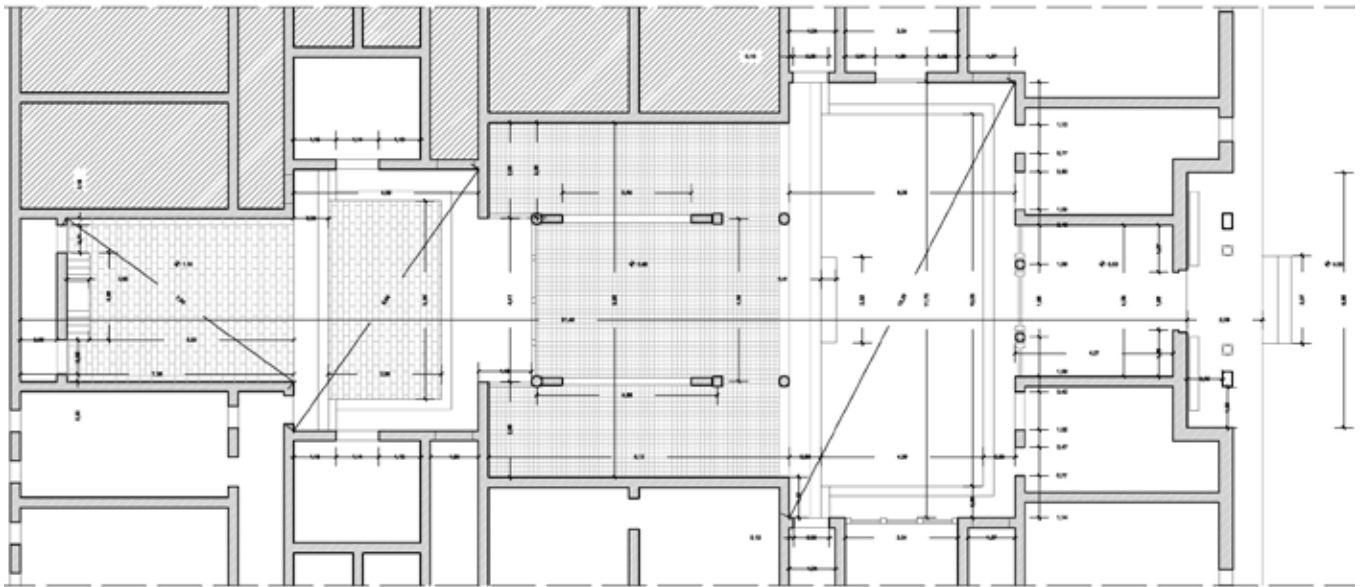
# Hui Shui Lou

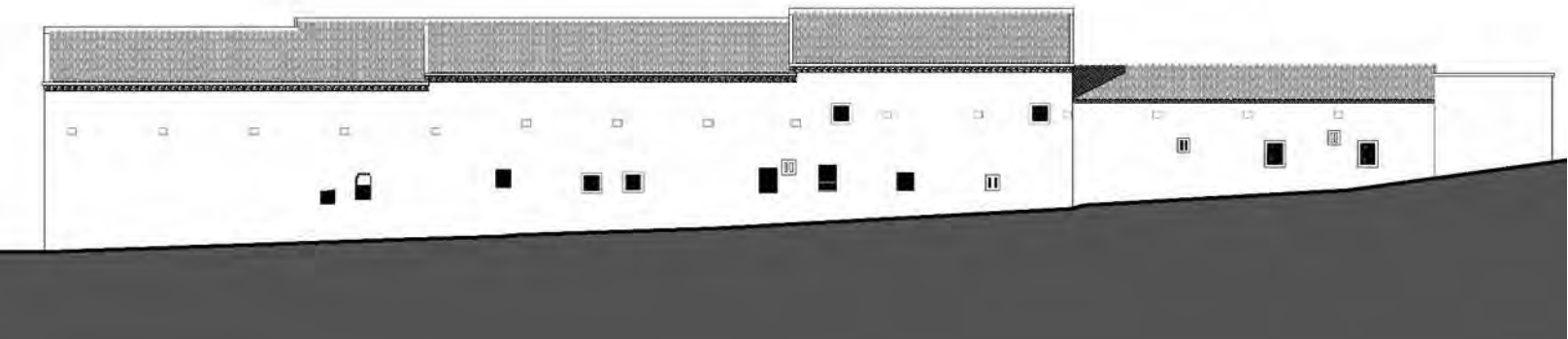


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Architectural survey of Hui Shui Lou, residence.  
(Domenico Chizzoniti, Giovanni Comi, Rossana Gabaglio, Mariacristina Giambruno, Stefano Perego, Zhu Tan with Cecilia Bischeri, Jiang Weiwei, Liu Xiaoxiao, Giacomo Menini, Fabio Zangheri, Lucilla Zanolari Bottelli, 2010).







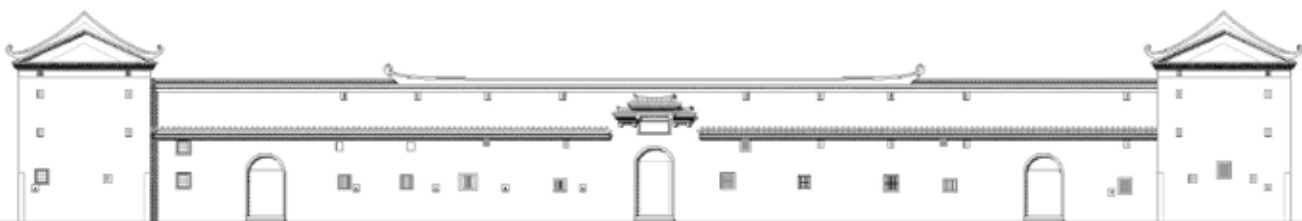
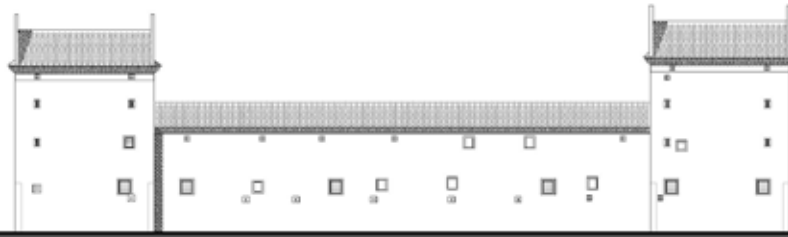


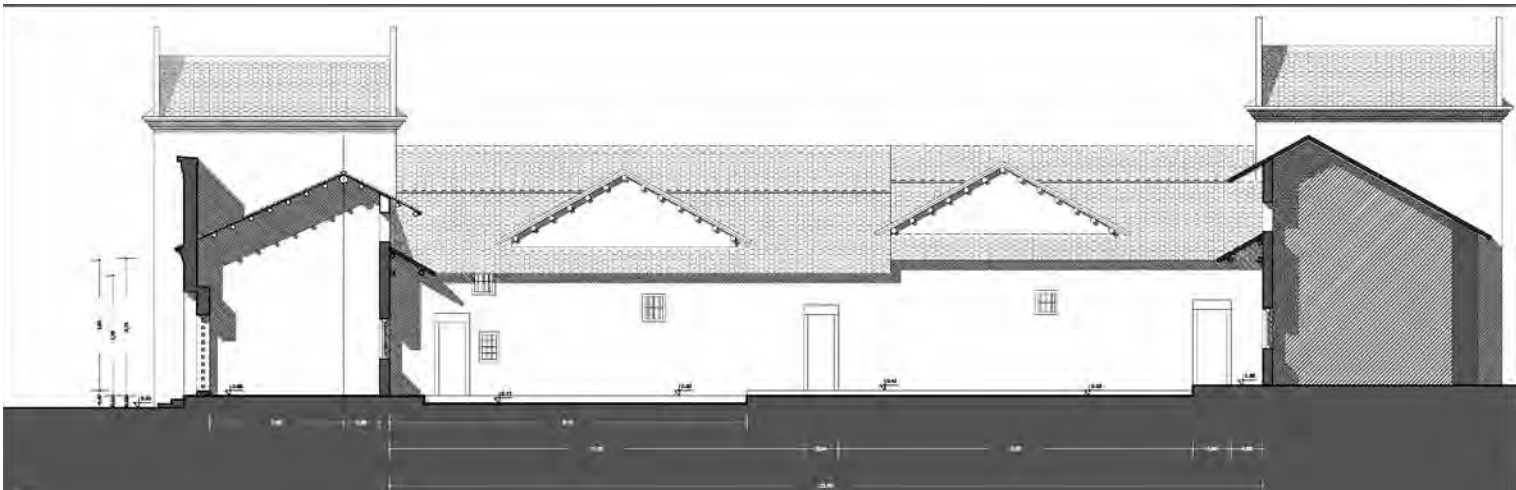
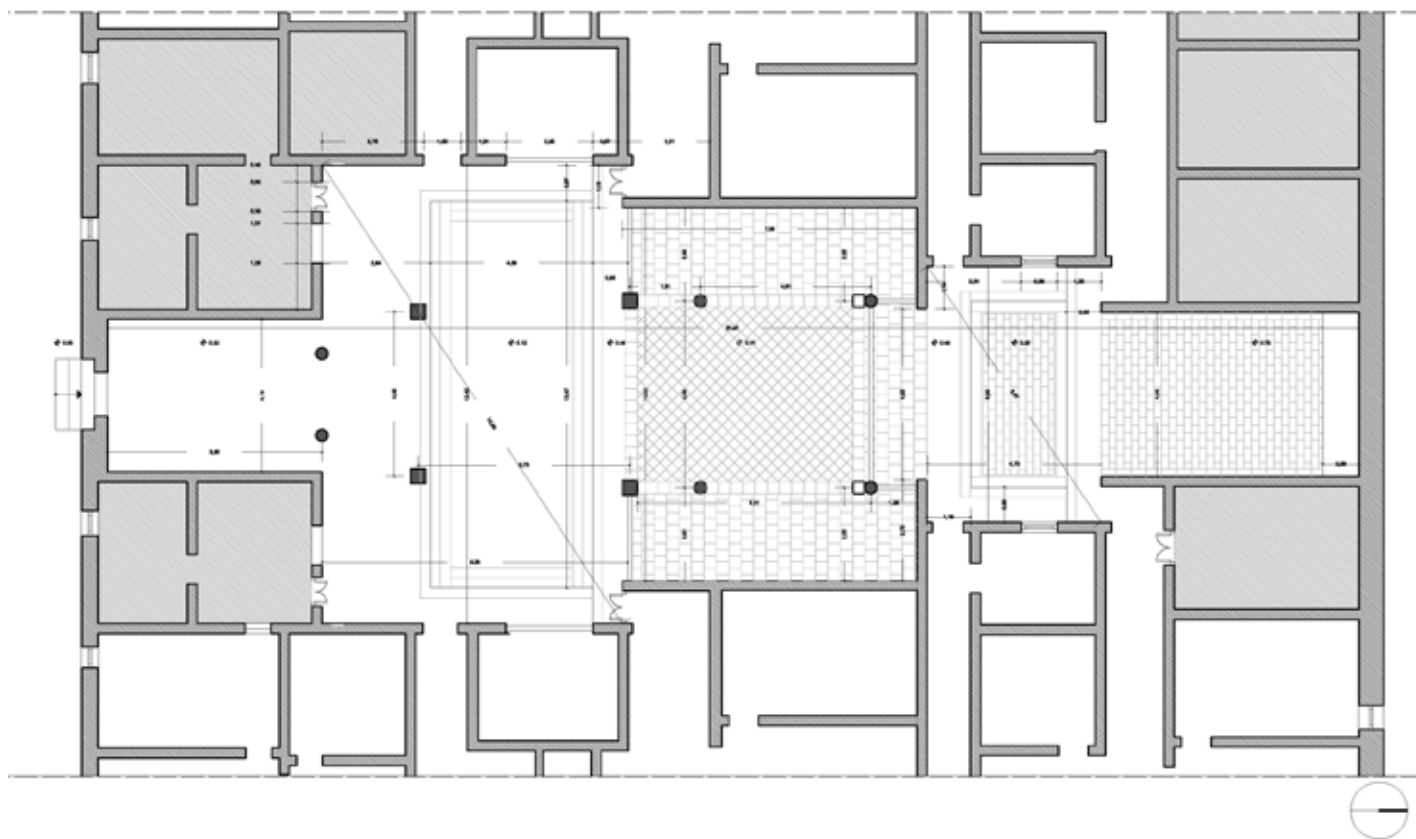
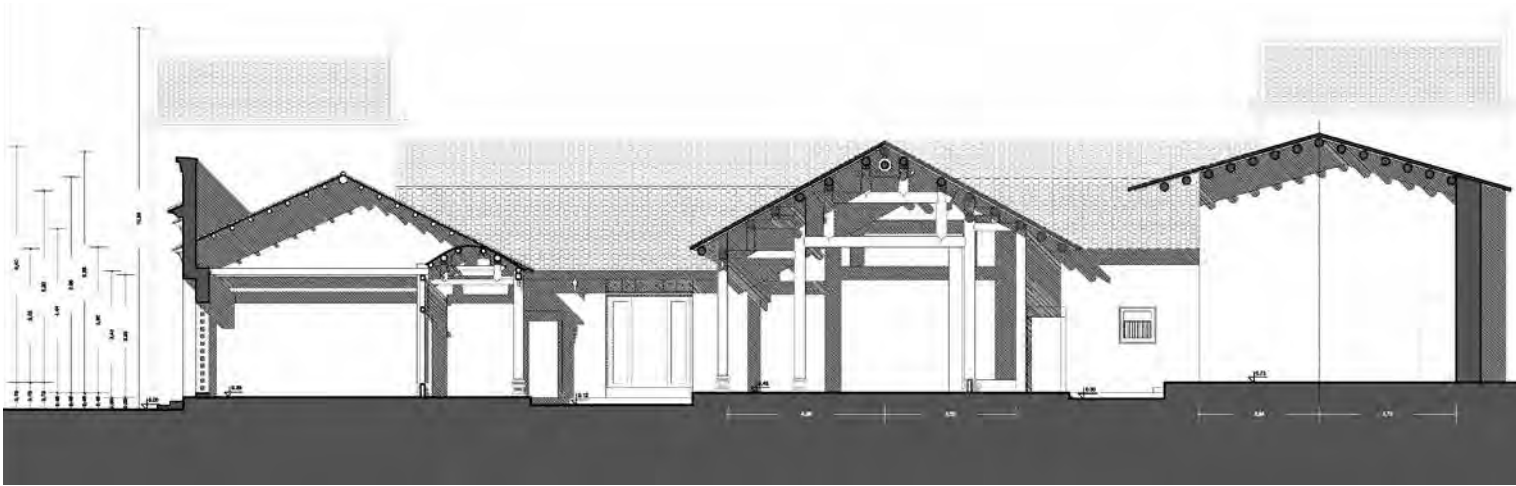
# Bi Yan Lou



On this page and at pages 43-44:  
Architectural survey of Bi Yan Lou, residence.  
(Domenico Chizzoniti, Giovanni Comi, Rossana Gabaglio, Mariacristina Giambruno, Stefano Perego, Zhu Tan with Cecilia Bischeri, Jiang Weiwei, Liu Xiaoxiao, Giacomo Menini, Fabio Zangheri, Lucilla Zanolari Bottelli, 2010).





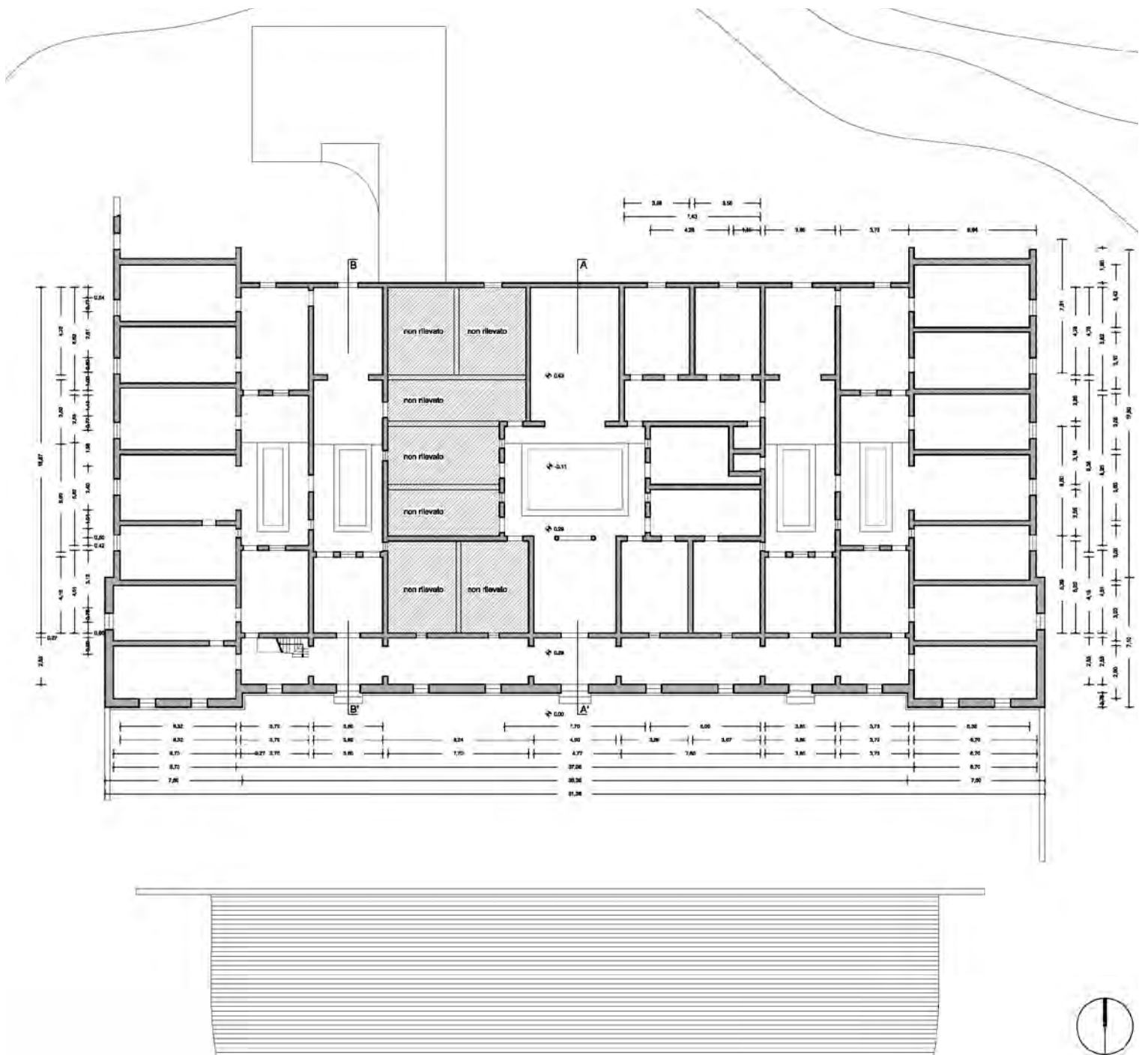
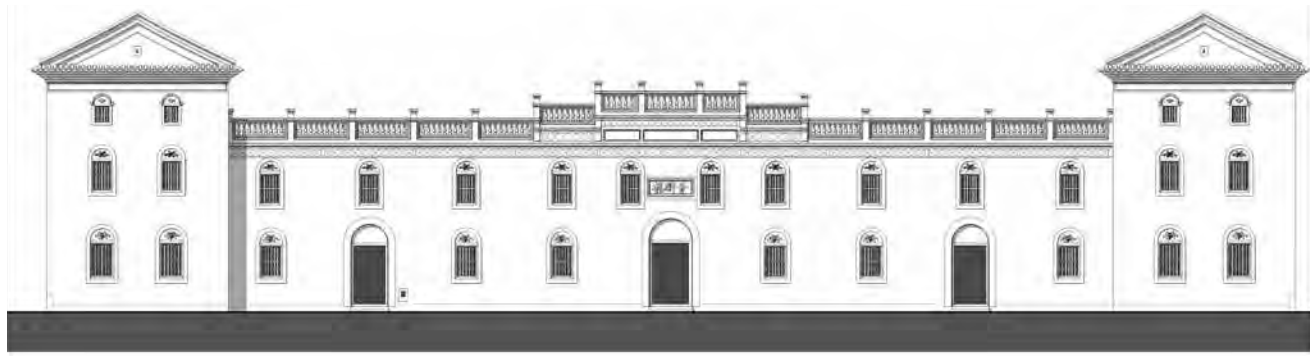


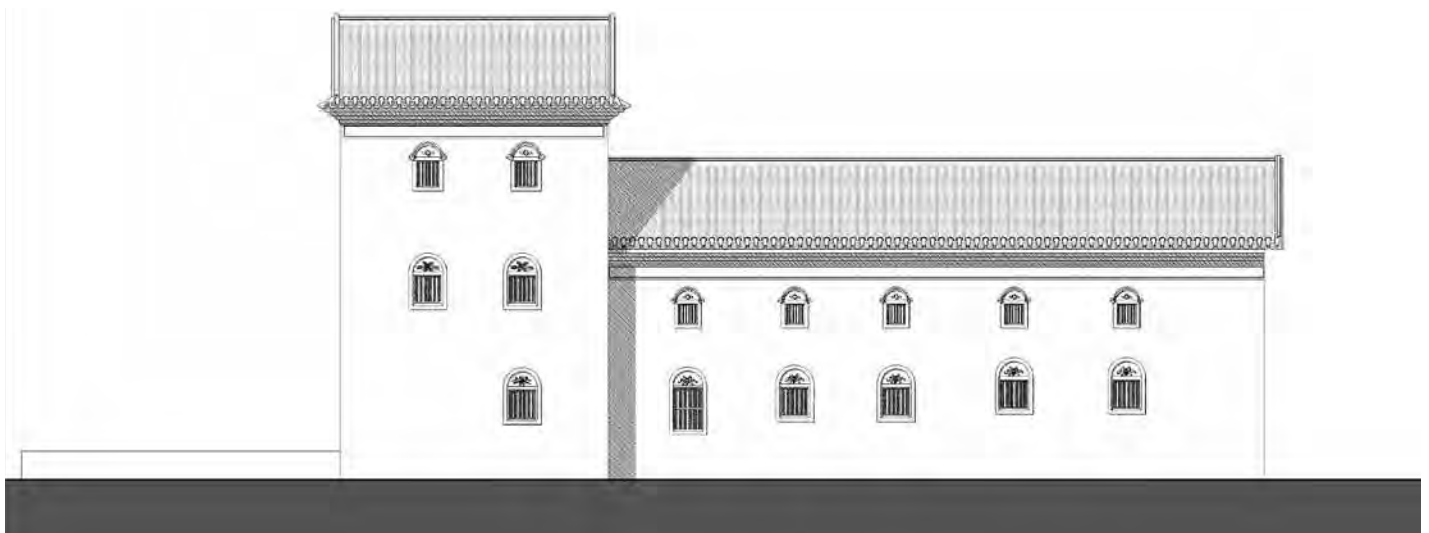
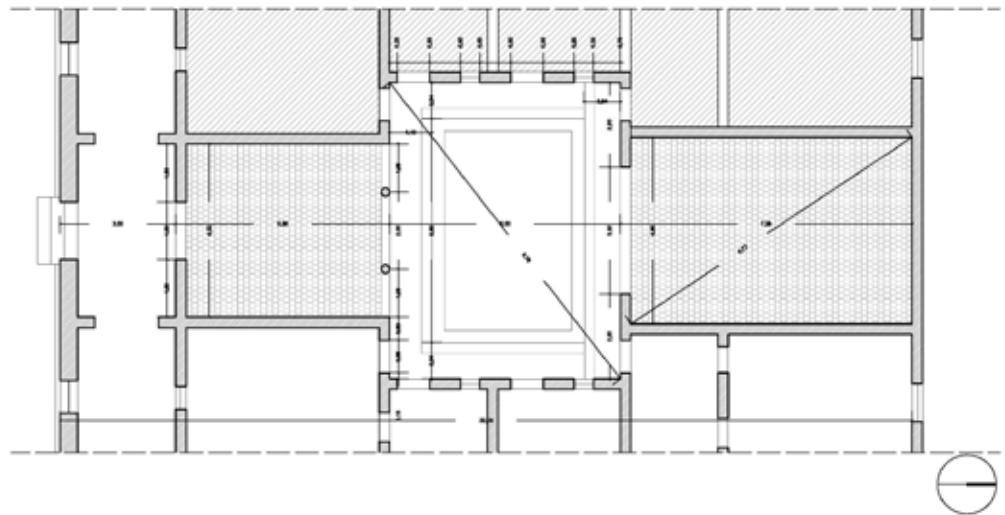
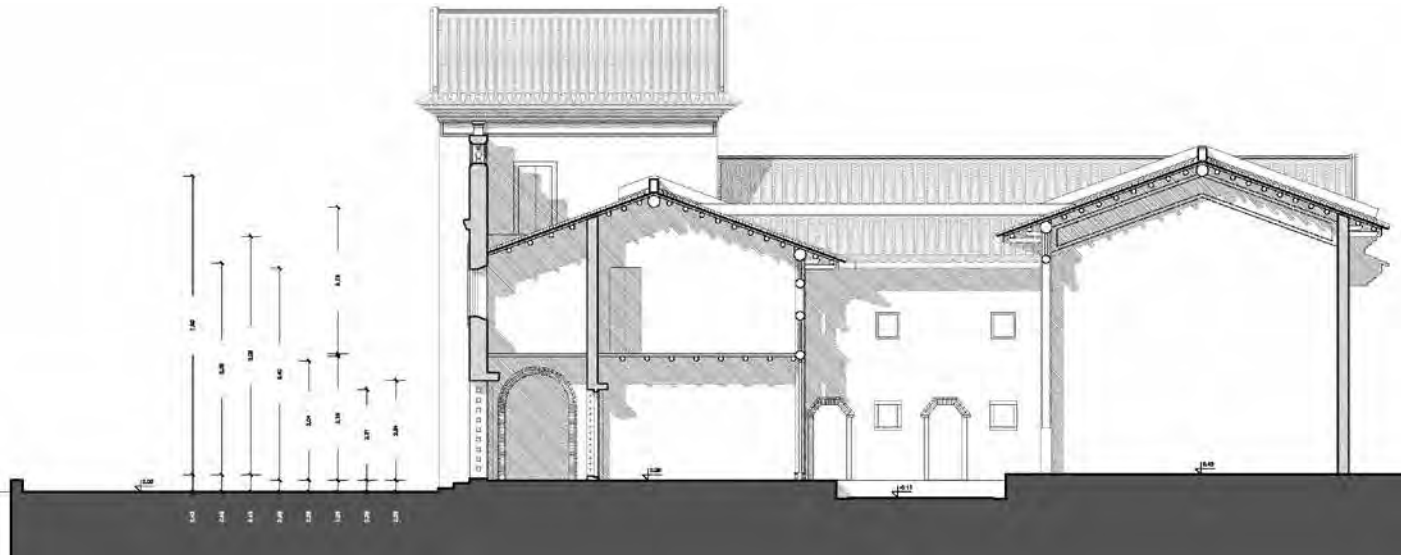
# Hui Xin Lou



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Architectural survey of Hui Xin Lou, residence.  
(Domenico Chizzoniti, Giovanni Comi, Rossana Gabaglio, Mariacristina Giambruno, Stefano Perego, Zhu Tan with Cecilia Bischeri, Jiang Weiwei, Liu Xiaoxiao, Giacomo Menini, Fabio Zangheri, Lucilla Zanolari Bottelli, 2010).





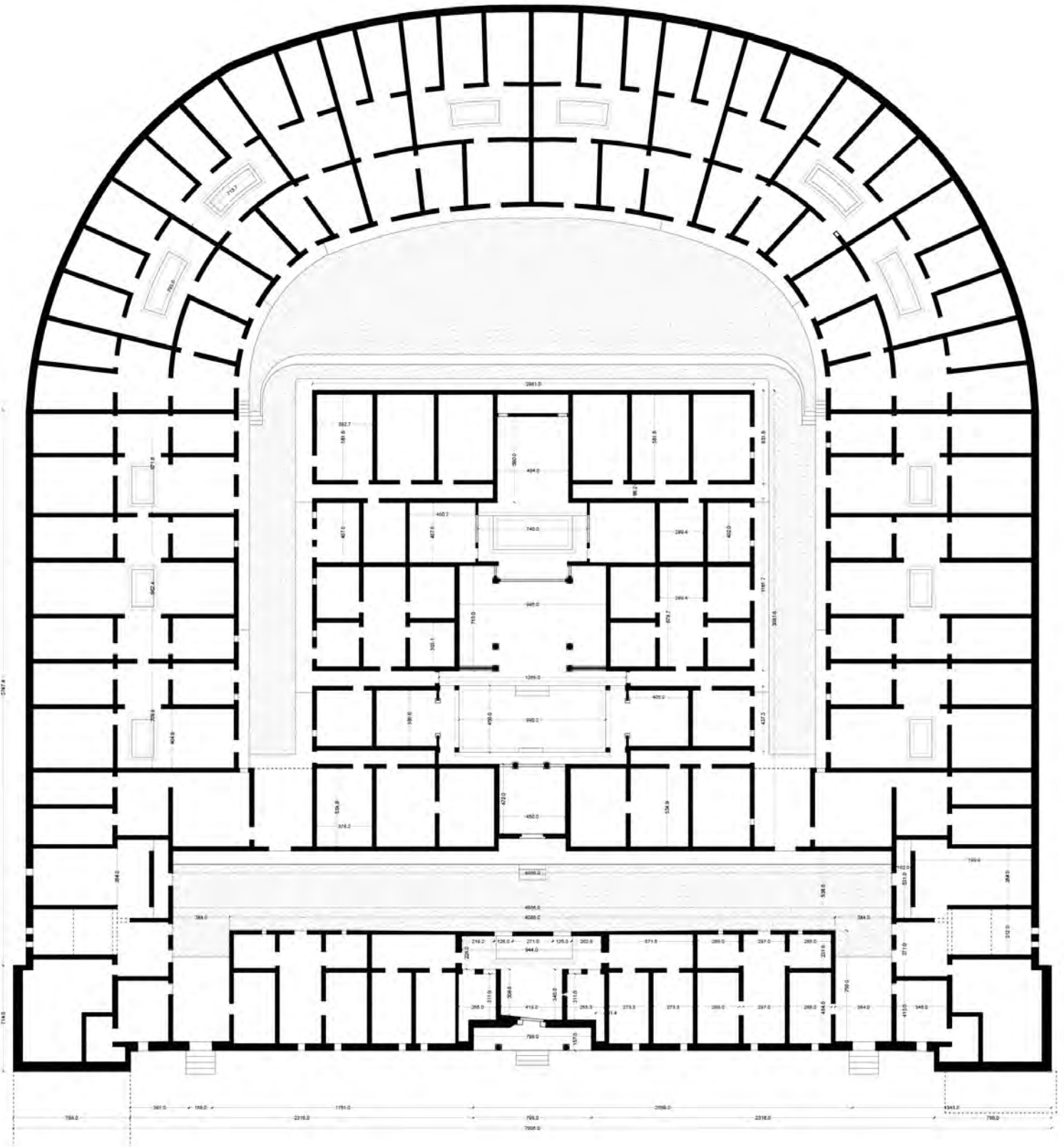


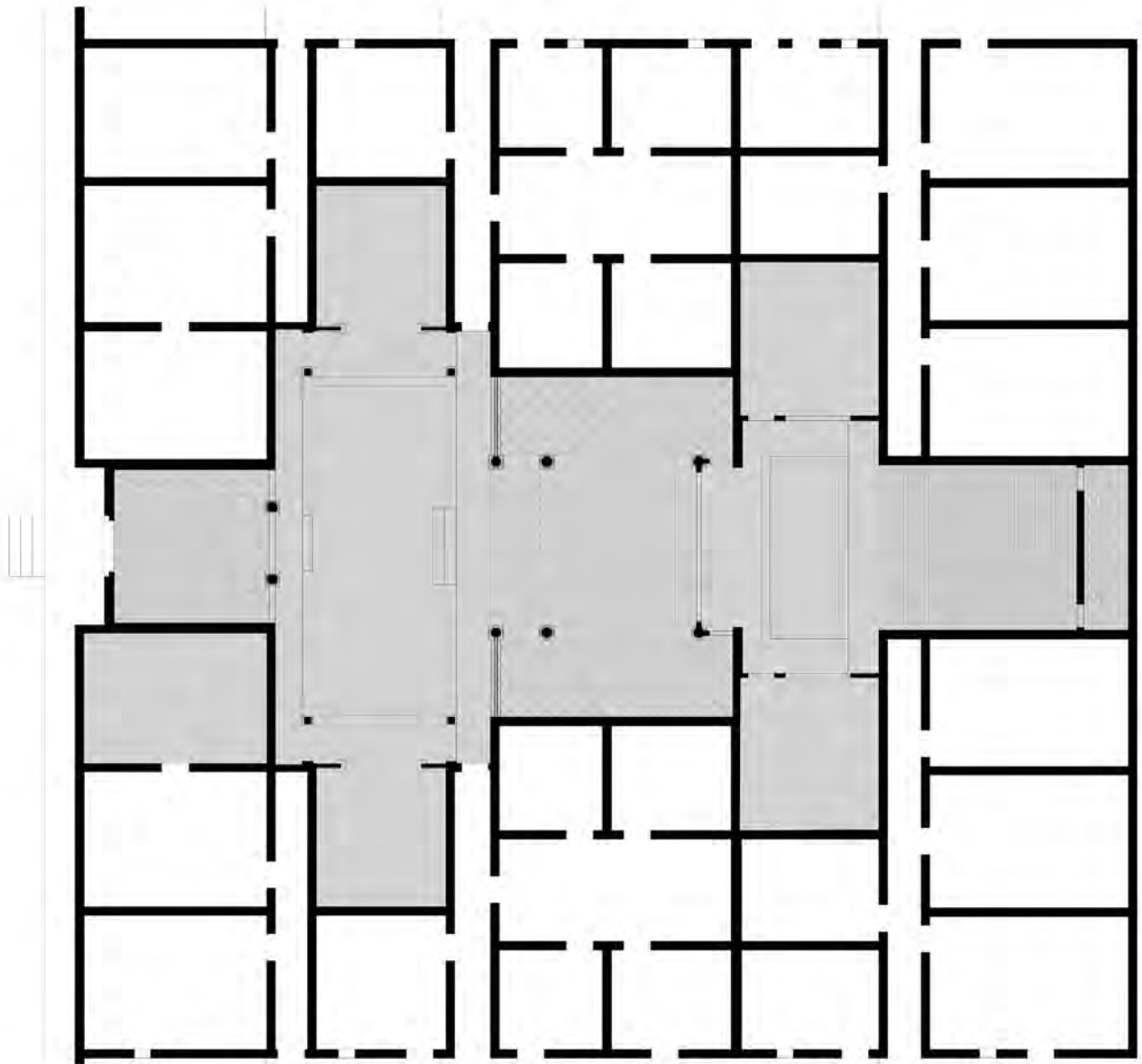
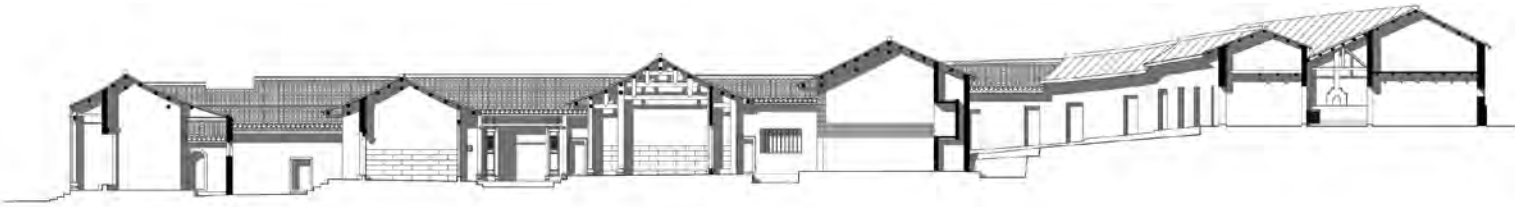
# Shi Go Wu

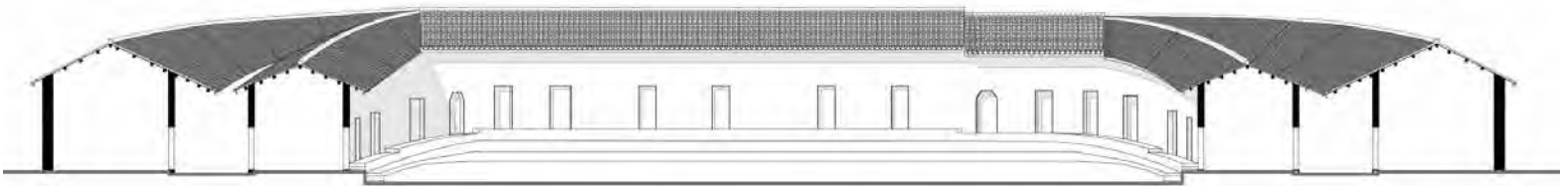
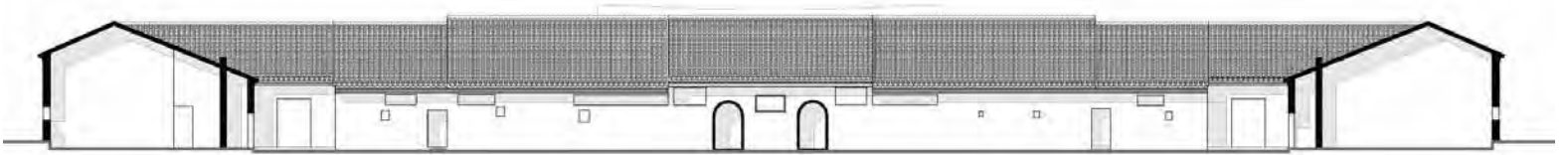
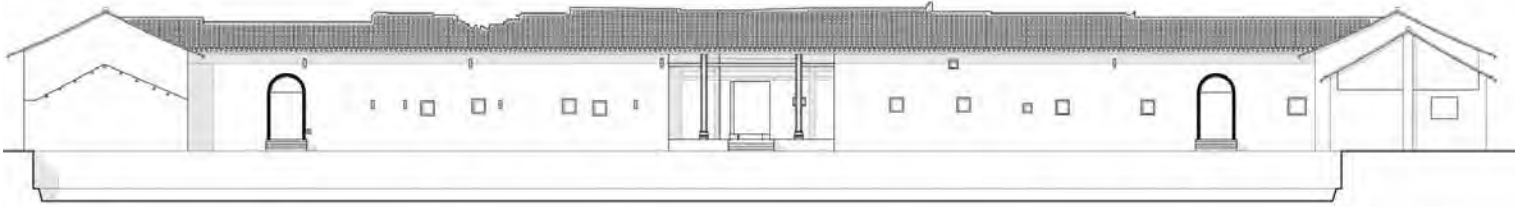


On this page and at pages 49 -51:  
Architectural survey of Shi Go Wu, residence.  
(Domenico Chizzoniti, Giovanni Comi, Rossana Gabaglio, Mariacristina Giambruno, Stefano Perego, Zhu Tan with Cecilia Bischeri, Jiang Weiwei, Liu Xiaoxiao, Giacomo Menini, Fabio Zangheri, Lucilla Zanolari Bottelli, 2010).







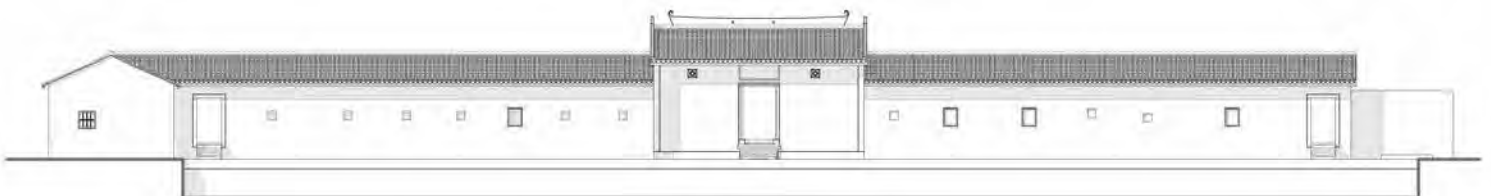
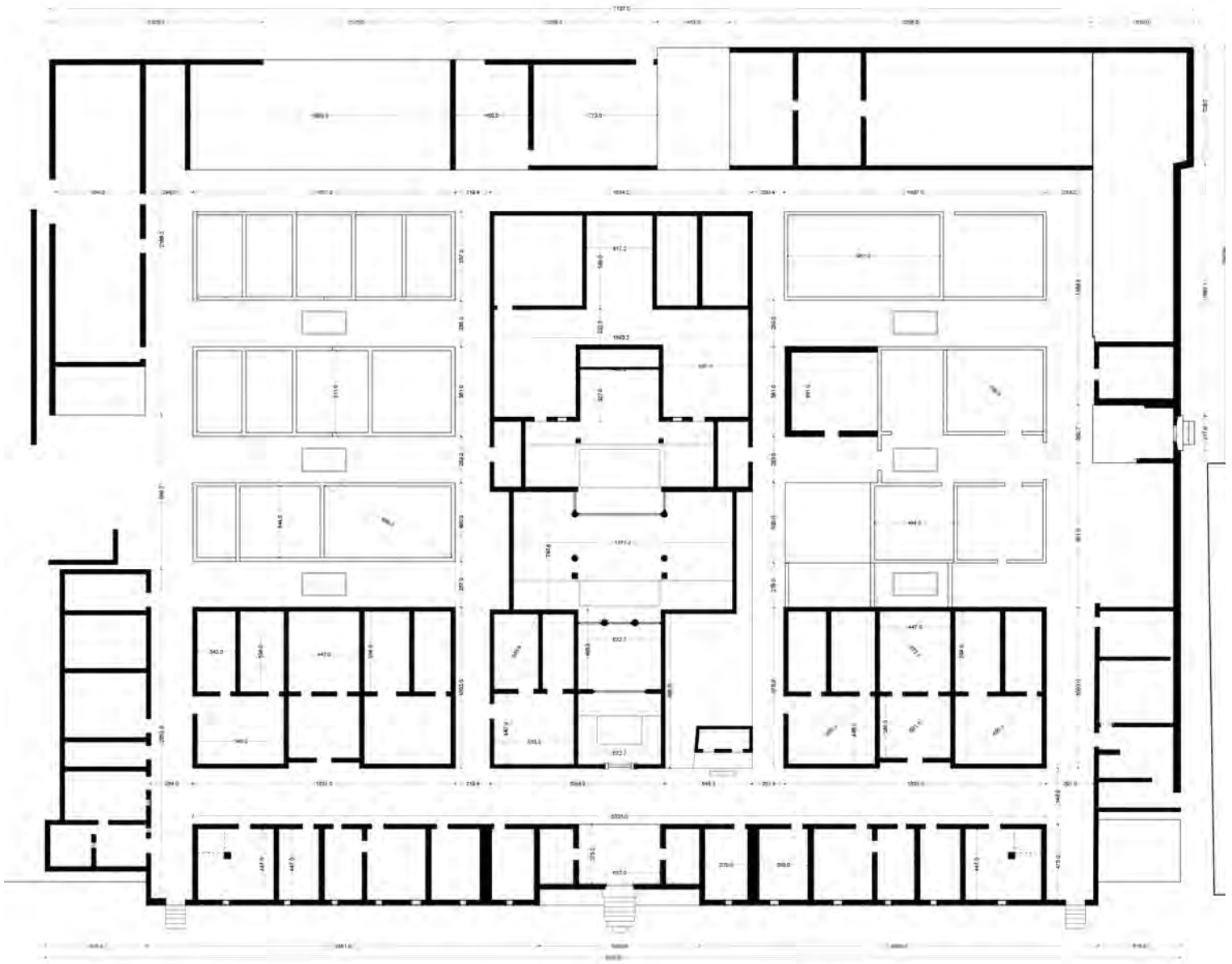
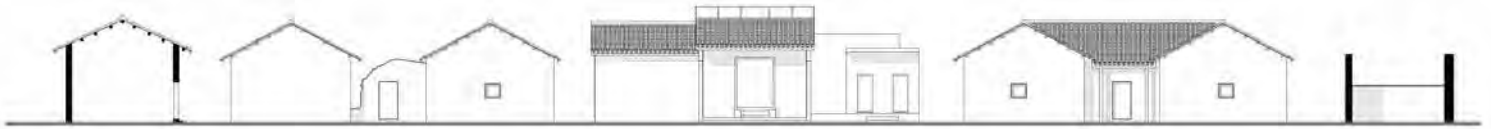




Jiang Tian Nan  
Yang Shi Ju



In this page and at page 53:  
Architectural survey of  
Jiang Tian Nan Yang Shi Ju  
residence.  
(Domenico Chizzoniti,  
Giovanni Comi, Rossana  
Gabaglio, Mariacristina  
Giambruno, Stefano Perego,  
Zhu Tan with Cecilia Bischeri,  
Jiang Weiwei, Liu Xiaoxiao,  
Giacomo Menini, Fabio  
Zangheri, Lucilla Zanolari  
Bottelli, 2010).



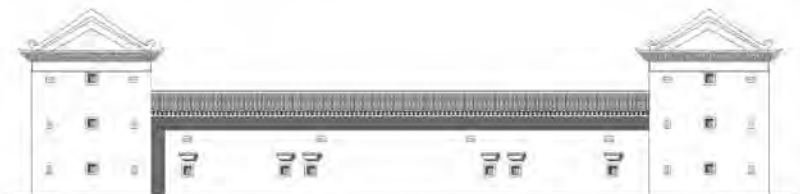
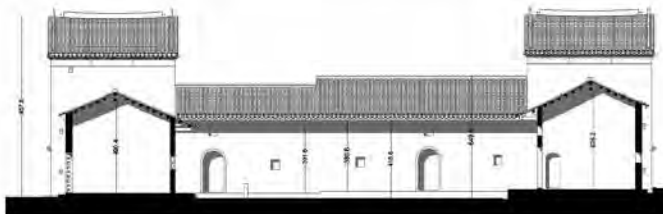
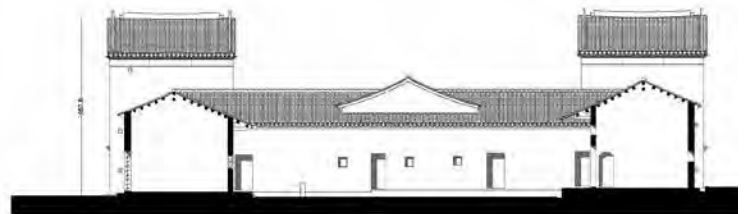
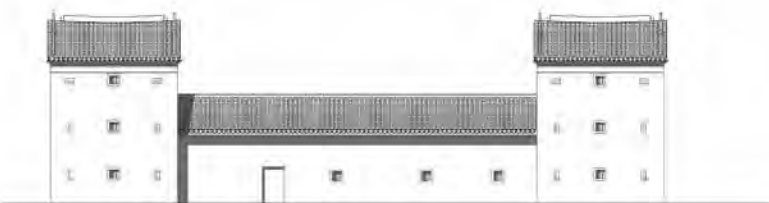
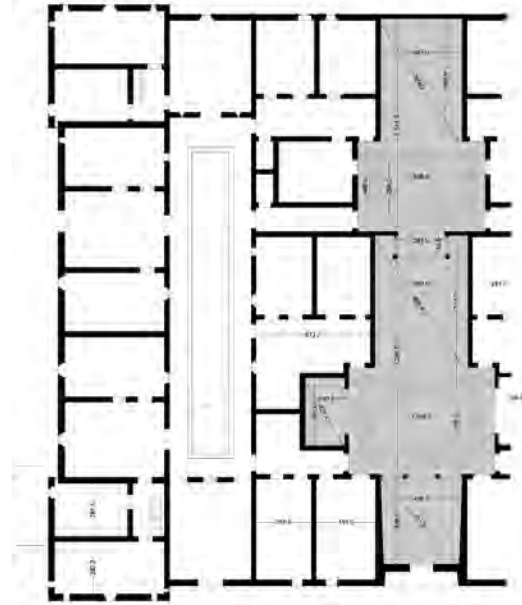
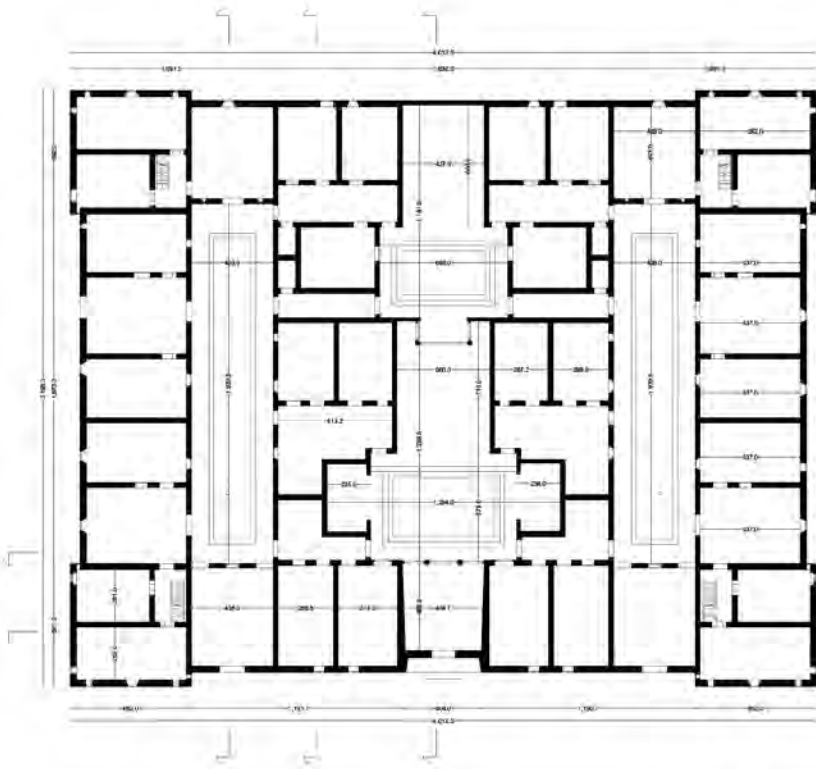
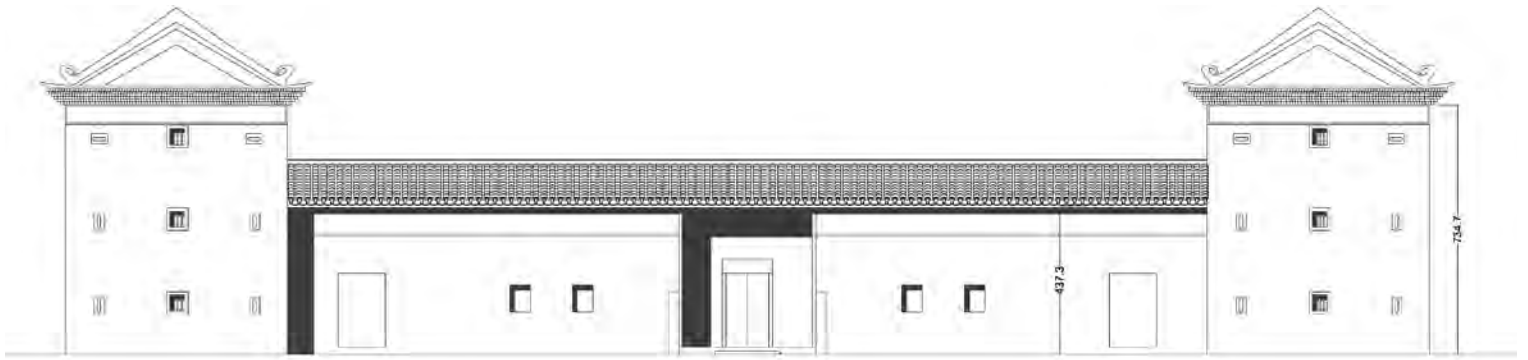


# Xiu Lin Lou



On this page and at page 55:  
Architectural survey of Xiu Lin Lou residence.  
(Domenico Chizzoniti, Giovanni Comi, Rossana Gabaglio, Mariacristina Giambruno, Stefano Perego, Zhu Tan with Cecilia Bischeri, Jiang Weiwei, Liu Xiaoxiao, Giacomo Menini, Fabio Zangheri, Lucilla Zanolari Bottelli, 2010).





# The Conservation of Hakka Earthen building. Conceptual tool and technical notes.\*

Rossana Gabaglio,  
Mariacristina Giambruno

\*The paper is the result of the joint discussion of all authors. The individual parts have been edited as follows: Rossana Gabaglio is responsible in particular of "Premise. Why to preserve Hakka sites", "1. The quick survey of the consistency of the sites in the study area", "2 Insights for the knowledge process. Building materials and the glossary for the recognition of degradation phenomena" and "2.1 Materials and building techniques of Hakka settlements"; Mariacristina Giambruno of "2.2 Glossary of phenomena decay", "3 Guidelines for preservation intervention", "3.1 The pilot project about Huang Zhou Li Shi Gou Wu residence", "3.2 Good practices for the maintenance", "3.3 Interventions not recommended"; Rossana Gabaglio and Mariacristina Giambruno of "4 Some advice for the promotion of the Hakka architectures". The working group, as well as the authors, was composed of: Maurizio Boriani (conservation team leader), Giovanni Comi, Giacomo Menini, Sonia Pistidda, Stefano Perego, Fabio Zangheri, Lucilla Zanolari Bottelli, Jiang Weiwei, Liu Xiaoxiao. References to the text are enlisted at p. 245, in the section: *Earthen Building Restoration*.

## Premise. Why to preserve Hakka sites?

The architecture of the Hakka people is a precious and irreplaceable cultural heritage, unique evidence of the traditional way of living.

The relationship with family community are expressed by an architecture in which the residential and religious worship spaces dialogue with each other. Hakka villages, gated within high walls, result from a clever interplay between architecture and landscape, following the Feng Shui principles.

The site's orientation, the hill behind, the slope on which established hierarchies organize buildings, water reservoirs before the entrance to the settlement, water tanks, and paved paths, create a kind of perfect continuity between architecture, although walled, and nature.

A relationship of continuity and contiguity exists, to some degree, also between the different settlements located in the area, next to each other, gemmated from the oldest, descending from a single family.

This relation should suggest an interpretation of the system of Hakka settlements: not "monuments" to understand, to select, and thus to conserve episodically, but sets of cultural heritage to be preserved along with the watermark of the territory that is so shaped.

But this heritage is so precious and fragile from many points of view.

The accelerated transformations of the territory will radically change places and buildings; new ways of housing and the necessary "modernization" of the historical complex will determine changes often at odds with their conservation.

Last but not least, you have to consider the question of the natural fragility of the materials of these buildings. Mainly in earthen and wood, they are likely to be damaged by fast deterioration processes due to the weather and the inhabitants' lack of careful and regular maintenance.

The state of the numerous complexes present in the study area, their abandonment or underuse and the transformations carried out by the inhabitants, have led to setting up a work process.

After a necessary survey and an inventory of characteristics and degradation phenomena that interested them, it was configured as a sort of methodological procedure for the intervention addressed to the technicians and the resident population.

This contribution, written years after the interdiscipli-

nary research conducted to which this volume bears witness in part, therefore moves between two levels. On the one hand, returning the work and the resulting guidelines, on the other hand trying to describe the consistency of these exceptional testimonies of life of an ethnic minority who knew how to forge the territory with its buildings.

## 1. The quick survey of the consistency of the sites in the study area.

Of the 55 complexes in the area where the research was concentrated, no cognitive material existed or was not available and consultable, except for a redesign of the plan of the roofs taken from satellite images and carried out before the site inspections by the group of work.

Having excluded the possibility of being able to carry out, as would have been necessary, an accurate geometric survey with the techniques available at the time of such a quantity of buildings which in many cases had more than a few thousand square meters of covered surface each, it was decided to proceed with a rapid inventory through specially prepared filing able to provide a general framework, but at the same time sufficiently specific of Hakka architectures studied and the actual phase of relief.

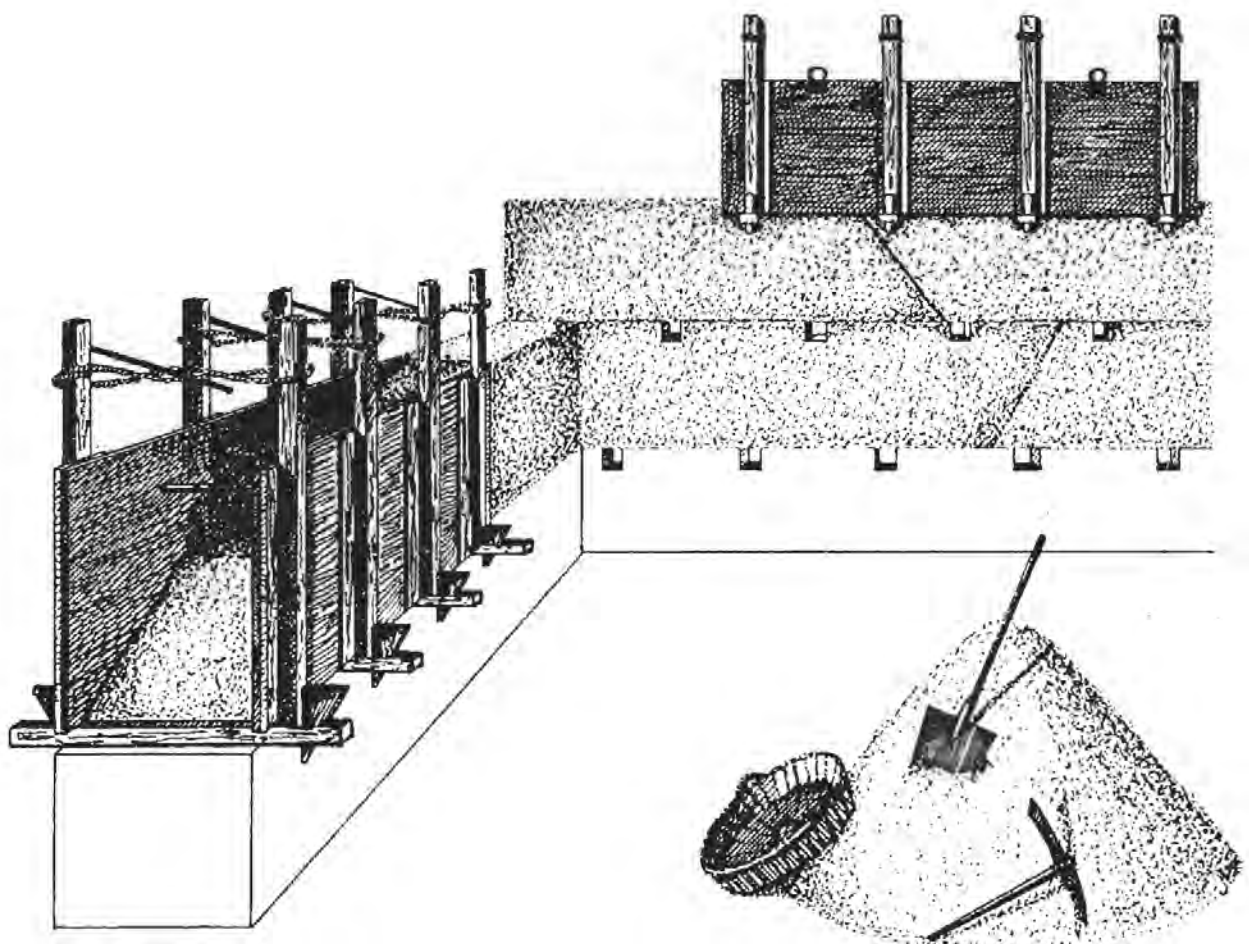
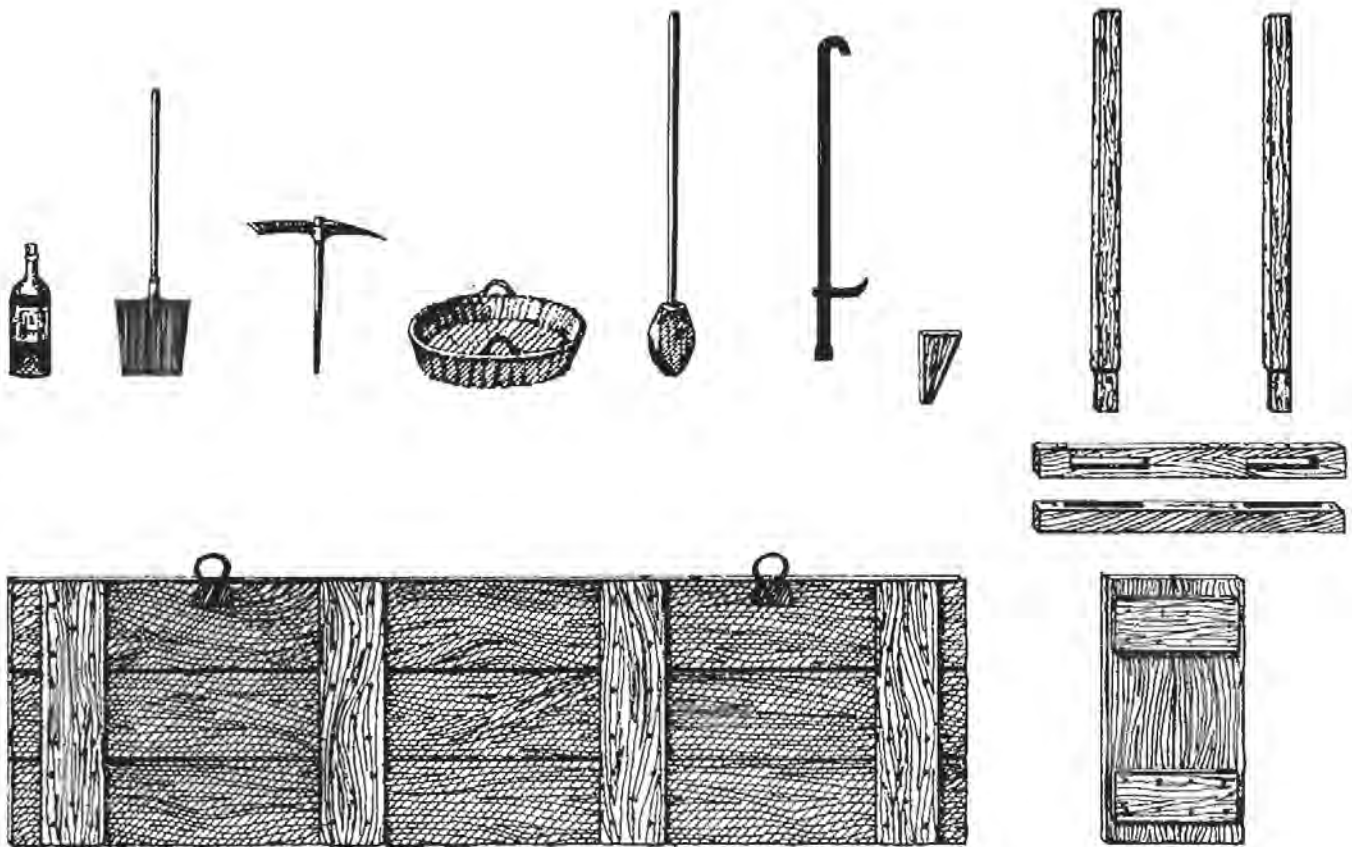
The "Inventory form", filled during the inspections in situ, has collected some information on the following issues:

- the territory: location, accessibility, context characters, landscape elements;
- the settlement: characters, uses and recent interventions;
- the protection regime;
- materials (about the building and open areas);
- the conservation state (walls, horizontal structures and roofs) and an estimate of the spread of damages;
- the level of maintenance;
- priorities for action;
- the architectural and landscape potentialities and alternative uses.

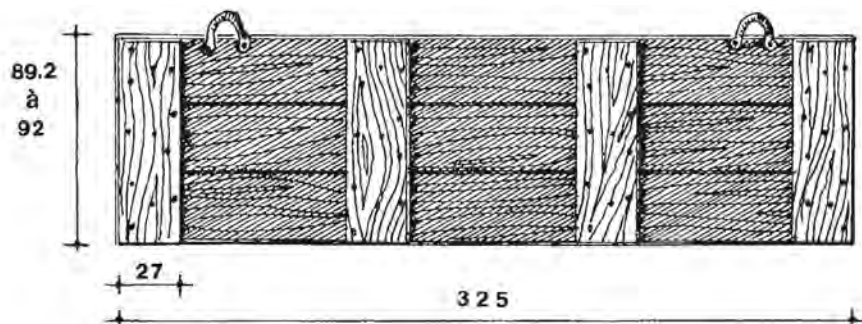
The form, whose layout was formulated "at the table" but modified several times after the first inspection in the field, made it possible to quickly collect a series of helpful information for restoring, albeit in a qualitative way, the state of the complexes and the main problems that interested them.

The resulting picture was not at all comforting.

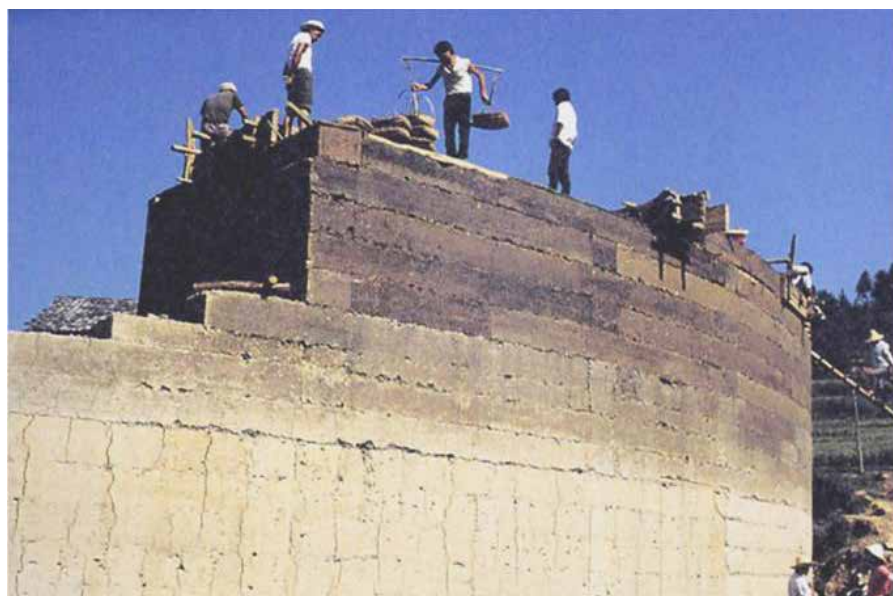
*On the opposite page:*  
Wooden instruments, formwork and construction phases of a pisè wall (P. Doat, A. Hays, H. Houben, S. Matuk, F. Vitoux, *Construire en terre, oeuvre collective réalisée par le CRAterre - Centre de Recherche et d'Application Terre - Editions Alternatives et Parallèles, collection AnArchitecture, Paris 1979, pp.14-15*).







1



2



3

**Figures 1-3**  
Construction phases of Hakka building.

On the opposite page:

**Table 1**

Sequences of the macrophotography and the microphotography at stereo microscope at magnifications growing of one earth sample. Note the vegetable fibers present in the samples used as aggregate of the earthy component (Laboratory of Materials and Methods for the cultural heritage, Politecnico di Milano).

Of 55, only one was protected by national protection legislation, 25 had some form of protection at the local level, and the remainder were not considered architectural and cultural heritage.

Eight complexes were abandoned entirely, with the consequent ruination of some of the buildings that compose them, ten of them were still in use and inhabited, even if only rarely by the extended Hakka family who had built them, and 36 were only partially in use. Consequently, many sites recorded numerous degradation problems, except for four complexes which showed no particular phenomena to the surfaces or structures.

Over time, transformations carried out by old and

new residents, antennas, canopies, and balconies, so much so that only nine complexes could be said to have been preserved over time both in the layout and in the materials or the internal and external spaces.

The data resulting from the filing made it possible to support, as a first result, the definition of new potential uses for the Hakka complexes.

At the time of the study, the master plan of the city was being revised, which envisaged a significant town expansion according to a checkerboard pattern that often overlapped without particular attention to the sites.

Proposing new uses for the Hakka complexes, from the maintenance of residences to the construction of cultural centers or commercial spaces, concerning their current state and relationship with the surrounding area, was intended to sensitize the competent authorities in understanding how they could play a role in the contemporary city and function, to some extent, as a polarity.

The second result obtained with the inventory was to understand which insights into the knowledge process would have been necessary to define the guidelines for their conservation.

**2. Insights for the knowledge process. Building materials and the glossary for the recognition of degradation phenomena.**

The knowledge process is, as it has been acquired for some time now in theory and professional practice, primarily in the European context, the first and fundamental step in drawing up the intervention project on the historical building.

In the cultural chinese context, the restoration is a reconstruction "as it was and where it was" of the testimonies of the past. It was thought it might be helpful to proceed with an in-depth knowledge of the materials and construction techniques of the Hakka complexes and to build a sort of glossary of the phenomena decay that interested them.

Both studies were aimed at sharing knowledge with local technicians and the resident population to start an awareness of the consistency of the artifacts that would promote their conservation.

*2.1. Materials and building techniques of Hakka settlements.*

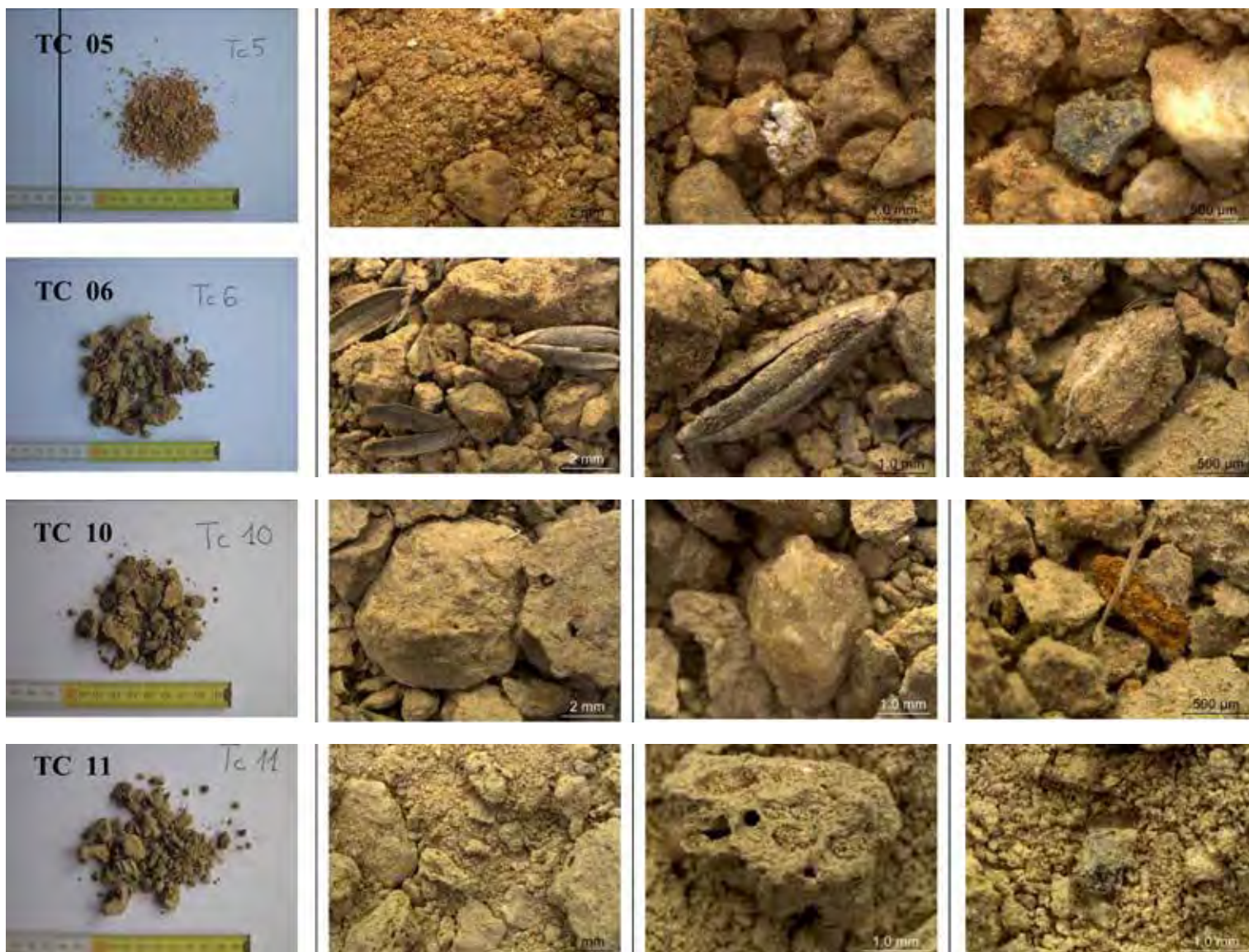
Raw earth is a building material used in most geographical areas, thanks to its easy availability and versatility of the different feasible methods: according to a recent estimate by UNESCO, half the world's population now lives in houses built with raw earth.

Raw earth as a building material<sup>1</sup> mainly consists of a solid component of inorganic nature (gravel, sand, silt and clay - classified according to the different granulometry) and a liquid (water), partially absorbed by the surface of the pores.

Aggregates (gravel, coarse sand and fine silt) are the structure of the raw earth, while the clay works as binder.

The sandy part reduces the shrinkage that deve-





1. For a brief basic references see p. 245.

2. The values of shrinkage are generally between 0.5% and 2%: in general, the greater the water used in the mixing phase and packaging the greater will be the porosity of the dry state.

3. In most cases the in situ tests provide general indications about the weaving of the earth its composition. They are divided into visual inspection, touch test, smell test, try washing, adhesion test, simplified sedimentation and withdrawal test. Laboratory tests (macrophotography and the microphotography at stereo microscope at magnifications growing, FTIR and XRD) were performed by Laboratory of Materials and Methods for the cultural heritage, Politecnico di Milano (responsible: prof. L. Toniolo; collaborator: arch. D. Gulotta).

lops during the drying process, giving the necessary dimensional stability; the clay (which should be present for at least 10% of the weight) ensures cohesion between the parties.

In the case of Hakka settlements, the addition of blades of grass, visible even from direct observation, and ligules of rice, identified through laboratory analysis, facilitates the process of drying, making the material more resistant to mechanical actions.

The drying step is decisive for the durability of the material: the level of the shrinkage depends substantially on the amount of water used for the dough, of gravel and sand present (skeleton) and can be strongly influenced by presence of "additives" (local oral sources relating Hakka sites tell about the addition to the raw earth of rice, sugar and lime, rarely eggs)<sup>2</sup>.

In particular, concerning the raw earth, it's necessary to understand their characteristics: by a few tests (in situ and in the laboratory), it is possible to define a correct classification<sup>3</sup>.

The characterization of earthen plasters of Hakka building, through laboratory tests, allowed us to verify the binding of matrix clayey; the aggregates based on quartz; the fragments of vegetable origin (branches, grass stems, and ligules of rice) used, probably, as ag-

gregates of the earth to increase its mechanical properties; an abundant presence, in all samples analyzed, of nitrates.

These compounds may be internal to the mixture and derived from the sampling point of the material - for example lands for forage animals - or result from earth contamination by rain. In any case these salts are very harmful because they cause a rapid disintegration of the mortar.

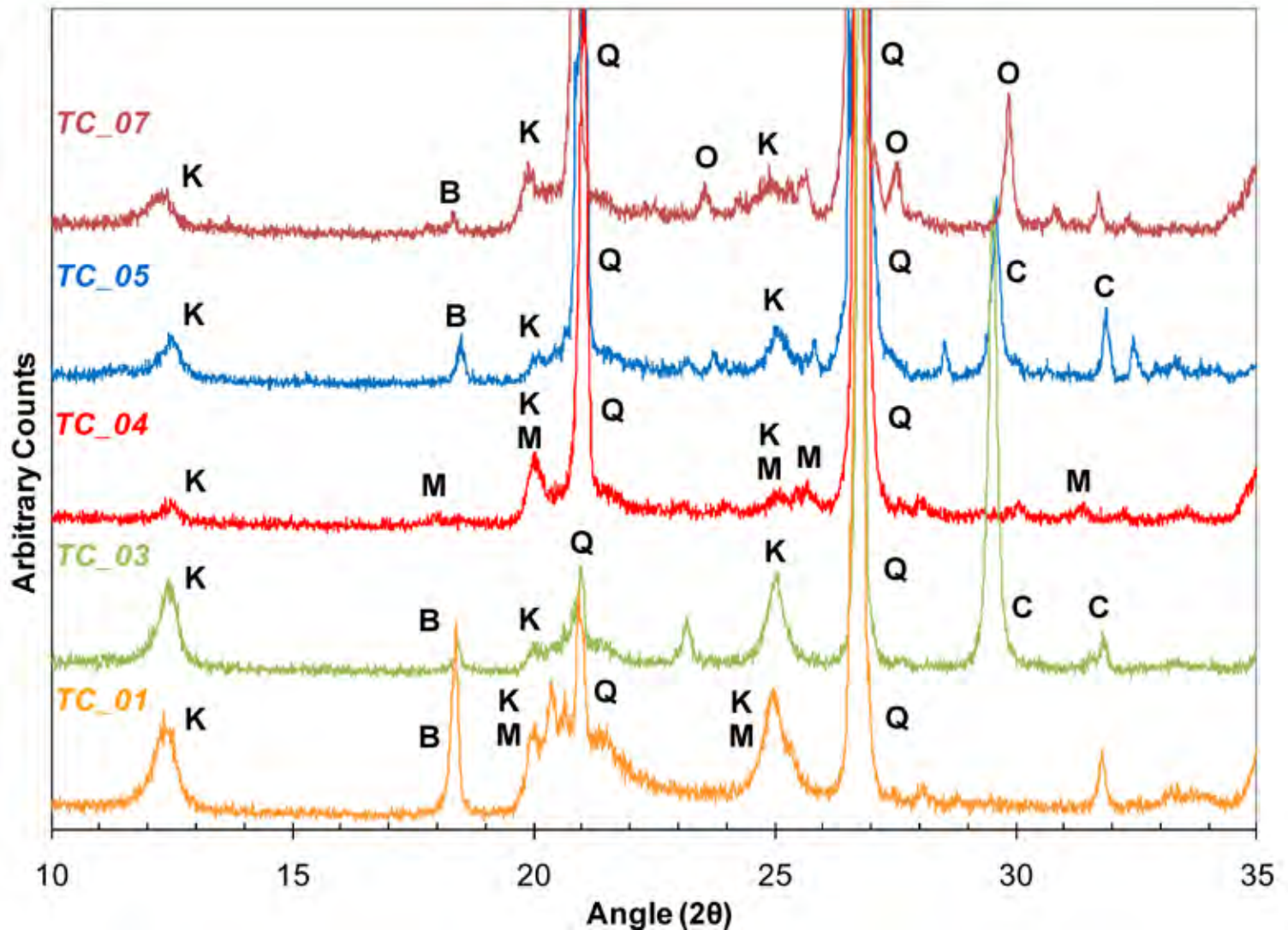
Among the different building techniques in earth the ones mainly used in Hakka architecture are adobe and pisè.

Generally, the primary material obtained from the excavations of the ground in the construction location, are added debris deriving from crushing rock and sand, along with a certain amount of vegetable fibers that increase the mechanical strength.

Constipation is made by hand using traditional wooden tools (pestles) inside formwork furniture made of two wooden bulkheads: the standard size of the formwork (1.5 x 0.40 m., head 0.40 x 0.40 m.) defines the building modular basic element, which is still visible on the walls.

After drying, the formwork is removed to move it forward along the perimeter and above the underlying

# ANALISI XRD



**Table 2**  
 Diffractogram of earth's sample powdered.  
 B= brucite; C= calcite; K= kaolinite; M= muscovite; O= orthoclase; Q=quartz.

layer already consolidated. Inside the mixture, on some horizontal earthen layers, are inserted branches with an irregular surface that reinforce "improved adherence". Earthen construction leans on a basement of stone that sinks into the ground and emerges from 70 to 200 cm., a solid foundation for the building. Once the basement is realized, a bed of bark is generally made, having the dual function of barrier to the rising of damp and of filter to prevent the dispersion of the earth above. Given to the nature of clay and the large size of the walls, earthen buildings have a high thermal inertia. The mostly used wood for floors and roofs is local fir tree, cut into generally round section beams. The roofing, laid directly on the wooden structure, is made of a type of tile, dark gray and slightly curved, made of clay and sand mixtures: the mixture, processed and pressed by feet in special forms, is cooked in rudimental ovens. The tiles thus obtained are then stacked and used

only after a long period of maturation. The finish of the walls in the interior is made of one or two layers of plaster on the floor, from different mixtures from different particle sizes, and a final by lime to allow the correct moisture exchange between inside and outside, proper drying of the wall after atmospheric events and a correct physical behavior between different coating layers. The lime is also helpful to easily maintain cleanliness and hygiene; it's often richly decorated (inscriptions, geometrical and ornamental motifs, bas-reliefs of painted wood, etc.).

**2.2. Glossary of phenomena decay**  
 At the time of the interdisciplinary research experience, there were still no translations into Chinese of international documents that could help spread a culture of conservation and enhancement of the architectural heritage: the official languages of ICOMOS (International Council of Monuments and Sites)<sup>4</sup> are in fact English and French and we have to wait until 2015



ADOBE				
	<i>Description of the phenomenon</i> Disaggregation and crumbling	<i>Description of the phenomenon</i> Cracking of elements	<i>Description of the phenomenon</i> Erosion of mortar joint	<i>Description of the phenomenon</i> Cracking
	<i>Priorities for action</i> High	<i>Priorities for action</i> Moderate	<i>Priorities for action</i> Moderate	<i>Priorities for action</i> High
PISE				
	<i>Description of the phenomenon</i> Biological crust	<i>Description of the phenomenon</i> Weed, infesting vegetation	<i>Description of the phenomenon</i> Deep erosion	<i>Description of the phenomenon</i> Moisture by capillary
	<i>Priorities for action</i> Moderate	<i>Priorities for action</i> Moderate	<i>Priorities for action</i> High	<i>Priorities for action</i> High

4. ICOMOS-ISCS (International Scientific Committee on Stone) published in 2008 "Illustrated glossary on stone deterioration patterns. Glossaire illustré sur les formes d'altération de la pierre". The need to define a common and shared lexicon is the essential premise of the document: operators of different nationalities, cultures and skills must necessarily move on a standard level to outline a cognitive process. The ICOMOS Glossary has a distinctly didactic character, proposing itself as a sort of path that guides the knowledge process: in fact, it is not limited to the recognition of the state of conservation in all its visual manifestations but, through the classification into homogeneous families, it also helps to understand its characteristics. An official Chinese translation would be very helpful in spreading a culture of conservation.

5. "Principles for the Conservation of Heritage Sites in China" (Revised 2015), Issued by ICOMOS China. Approved by the State of Administration of Cultural Heritage.

for the publication of a document entirely in Chinese which aims to define and disseminate the principles for conservation of heritage in China<sup>5</sup>.

In the same way there were still few Chinese studies, today decidedly more numerous, in this direction.

Starting from these premises, the reasons and purposes that led the writer to define a glossary, albeit necessarily referring only to the state of conservation of the investigated Hakka sites, are clear: detailed photographic images, entries in the international lexicon for the recognition degradation phenomena and synthetic definitions, all in the English and Chinese bilingual version, aspire, in the immediate research process, to guide the knowledge of the state of conservation of the materials of the Hakka sites and, in a broader perspective, to contribute to the construction of a culture of shared conservation (between institutions, professionals, workers and inhabitants).

The leading cause of the deterioration of the buildings in raw earth is water (physical action of rainwater and contained in the soil, transport mechanical action and chemical-physical action).

The presence of water inside the material, in materials so porous as the raw earth, is the greatest danger, because it causes a weakening of the bond between the components, reducing the compressive strength. The continuous contact may also cause the material's total deterioration: it quickly loses consistency crumbling under its own weight.

Lacking layer of plaster, the process of decay of raw earth masonry accelerates.

The continuing presence of water on surfaces can also lead to biological deterioration (patinas, colonization, weeds and roots).

The most frequent phenomena of decay identified in the Hakka architecture investigated are:

- cracking, disaggregation, detachments and partial

- loss of plaster due to incorrect achievement or poorly maintained;

- biological decay, salt formation and detachments due to reduction of transpiration;

- erosion (wall and mortar joint) due to the action of rainwater;

- biological degradation, cracking and lesions of the wooden elements for the presence of water;

- loss, crumbling and collapse of parts of structures (especially roofing systems) and subsequent outcrop of crown walls, no longer protected and therefore subject to dangerous and fast deterioration processes.

In addition to usual causes of deterioration, in this specific case, neglect is undoubtedly a dangerous factor that triggers and accelerates deterioration: it's helpful to remember that the earthen buildings were built with the awareness that the material is weak and, therefore, it requires regular care.

Maintenance, as a constant practice of care, therefore, plays a key role in the process of preservation and conservation of this material heritage.

### 3. Guidelines for preservation intervention.

The same double objective of the cognitive insights described above also characterizes the two 'design' tools developed in the research: the pilot project for one of the Hakka complexes and the good practices for their maintenance.

The first becomes a proposal for guidelines for the implementation of conservation interventions carried out by expert technicians and personnel; the latter, through a decalogue of good and bad practices, instead want to guide the inhabitants in carrying out those operations of simple maintenance which, if carried out without the awareness of intervening on an architectural heritage, can transfigure its historical substance.

**Table 3**  
Hakka sites: illustrated glossary of decay phenomena of adobe and pisé.

PLASTER				
	<i>Description of the phenomenon</i> Exfoliation, contour scaling, flaking	<i>Description of the phenomenon</i> Differential degradation	<i>Description of the phenomenon</i> Alveolization, cavernous decay	<i>Description of the phenomenon</i> Moisture by capillary
	<i>Priorities for action</i> Moderate	<i>Priorities for action</i> Moderate	<i>Priorities for action</i> Moderate	<i>Priorities for action</i> High
BRICK				
	<i>Description of the phenomenon</i> Crust, calcium sulfate skin	<i>Description of the phenomenon</i> Climbing plants	<i>Description of the phenomenon</i> Localized loss	<i>Description of the phenomenon</i> Loss
	<i>Priorities for action</i> Low	<i>Priorities for action</i> Low	<i>Priorities for action</i> Moderate	<i>Priorities for action</i> Moderate

6. The Huang Zhou Li Shi Gou Wu pilot project represents the head of a territorial-scale enhancement proposal: an archaeological visit walk that organizes the villages of the Xiangling region (referring to: A. Torricelli, G. Comi, Tie Men Shan Village. The "core" of the future Green City, at pp. 112-121).

### 3.1 The pilot project about Huang Zhou Li Shi Gou Wu residence

As a result of a complex and in-depth knowledge project, that starting from investigation of the geometrical characteristics of the building gets to the recognition of its component materials and their degradation, the research has defined a pilot project of conservation for Huang Zhou Li Shi Gou Wu site, one of the complexes in the study area<sup>6</sup>.

The conservation project has a double goal: to work on the causes that determine the state of degradation, to eliminate, or at least, reduce its harmful effects and to define all the operations (cleaning - for the removal of surface deposits -, consolidation - to give the consistency and the chemical-physical characteristics of the material - and protection) necessary for the care of all existing materials and allow their durability over time.

The suggested interventions, mapped in graphic tables and the observed degradation phenomena, follow the 'canonical' steps of the conservation project, using consolidated intervention techniques that are also well suited to the raw earth that makes up the buildings of the Hakka complexes.

Simple to implement, they can also be put into practice by non-specialist personnel in conservation work, assuming that this is not present, and with all low costs. In this case study, the recommended interventions for the conservation of this Hakka residence are:

- general cleaning by airless;
  - repointing of missing part of a mixture of earth;
  - brush application of biocides;
  - re-adhesion of plaster detached;
  - re-filling with hydraulic lime mortar;
  - brush consolidation with ethyl silicate;
  - repointing of missing parts with plaster of lime mortar.
- Specific interventions have also been defined such as

infill removal and processing of wood elements, roof elements, and stone elements (cleaning, re-filling of cracks, re-location in the wall).

The pilot project developed for the residence called Huang Zhou Li Shi Gou Wu has made it possible to develop general guidelines for the conservation of Hakka sites, defining intervention techniques and recommendations for maintenance of these buildings, their construction elements and materials.

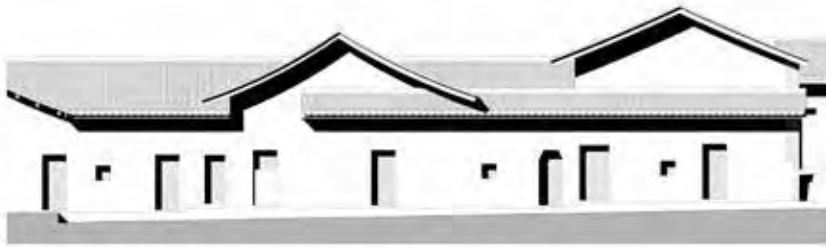
### 3.2. Good practices for the maintenance.

In addition to the specific procedures described previously, it's possible to define some good practices that help preserve existing materials, without replacing parts. The durability of earthen architecture, defined as the ability to ensure performance over time, results from a scrupulous and continuous maintenance process. The following instructions allow to act promptly on the materials before the damage is too widespread, thus reducing the size of operations, also from the economic point of view:

- prevent condensation or stagnancy of water in the wall;
- use for maintenance works plasters and paints made from natural clay or lime;
- periodically check the condition of the roof. The earthen walls not longer protected are subject to rapid deterioration, and could collapse;
- in the case of ruin devoid of coverage that you intend to maintain such as archaeological evidence, checking of the top of walls: it must always be protected to prevent rainwater afflux and consequent degradation processes;
- early interventions for the removal of vegetation, before the roots interfere on the stability of the building or the foliage favors the stagnation of water on the walls;
- periodic renewal of the layer of lime paint of the inte-

**Table 4**  
Hakka sites: illustrated glossary of decay phenomena of plaster and brick.





MATERIALS

- WHITE PLASTER (FINE DIAMMETER)
- PLASTER WITH TRACES OF DECORATIONS (DRAWING OF MAO TSE TUNG FACE)
- TRACES OF EARTHEN PLASTER PATCHES (SMOOTH FINISH)
- PISE WALL
- PISE AND STONE WALL
- BRICK
- ROOF TILE
- STONE ELEMENTS
- WOOD (STRUCTURES, DOORS, COVER, ELEMENTS OF ROOF)

PHENOMENA DECAY

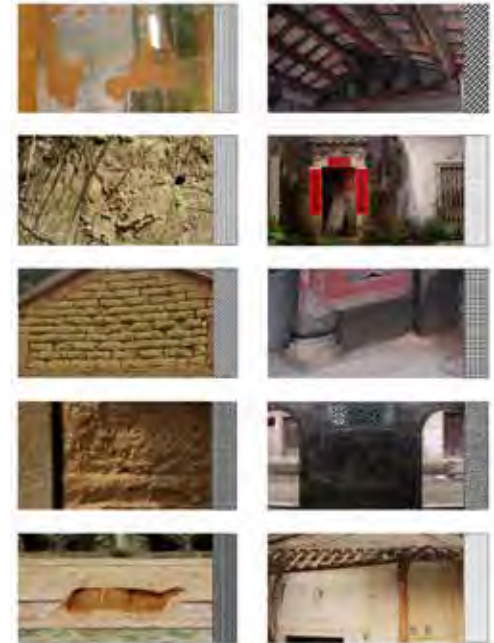
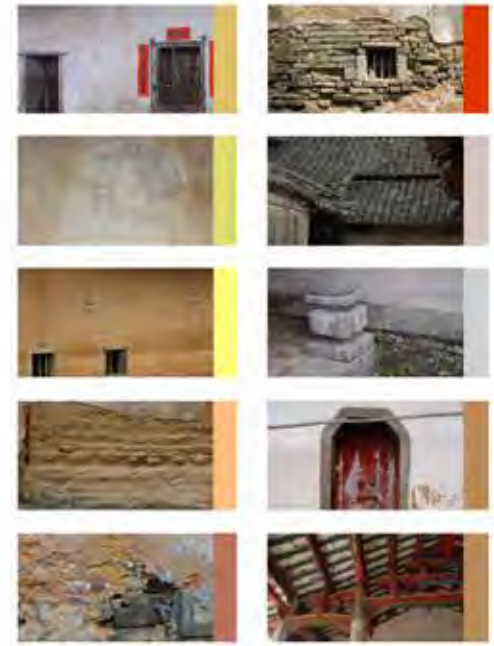
- PARTIAL LOSS OF PLASTER (DETACHMENTS, DISAGGREGATION)
- DISAGGREGATION CRUMBING
- EROSION OF MORTAR JOINT/ EROSION OF WALL
- DEEP EROSION OF MORTAR JOINT/ CRUMBING OF WALL
- LOSS
- GENERALIZED DECAY OF WOOD (ROT, CRACKING, BOLCATURE, PROTECTIVE LOSS)
- BIOLOGICAL CRUST
- GENERALIZED WEAR OF STONE ELEMENTS - LOCALIZED CRACKING
- SECONDARY CRUST
- BREAKS, SLIPPING AND LOSS OF ROOF TILE

材料

- 白石灰 (颗粒分布好)
- 有装饰的石灰 (毛泽东的画像)
- 带混合泥土石灰的填补材料 (表面光滑)
- 夯土墙
- 夯土石墙
- 砖
- 瓦片
- 石材
- 木材 (结构, 门, 屋顶, 及部分屋顶构件)

老化现象

- 部分抹灰脱落 (剥落, 解体)
- 解体, 塌落
- 次要腐蚀/酸腐蚀
- 次要深度腐蚀/深度深度腐蚀
- 缺失
- 一般木材老化 (腐朽, 裂开, 侵蚀)
- 生物壳
- 一般石材剥蚀
- 次级硬化
- 瓦片断裂, 掉落和丢失



rior walls with protective and antiseptic action;  
 - re-filling of cracks in the walls and plasters to prevent water afflux. The new materials used must be compatible by the point of view chemical, physical and mechanical, with the existing ones;  
 - if necessary, set up new plasters made of raw earth with the addition of polymeric substances to avoid water stagnation (adopting the traditional techniques for the setting up).

3.3. Interventions not recommended.

Spontaneous interventions, begun by people to improve the conditions of stability and housing of residential Hakka are, often, a potential limitation to the conservation of these architectures rather than a help. The photos show, in fact, some common practices that should be prevented: they accelerate in fact, in

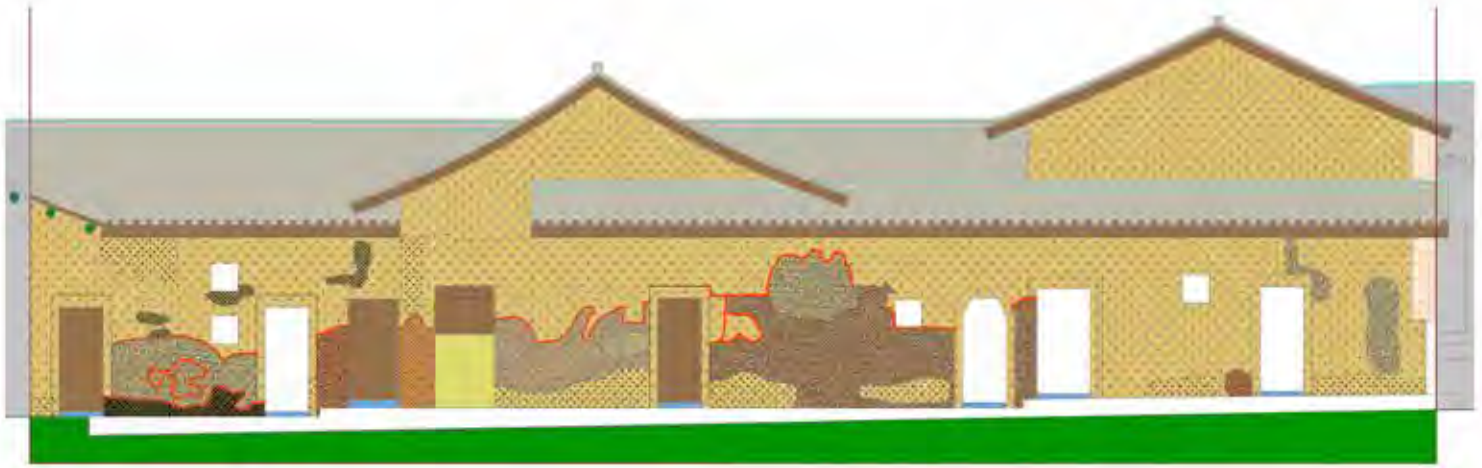
some cases even trigger, the processes of decay of materials.

You could consider as not recommended interventions the following:

- cement plaster is incompatible from the point of view chemical, physical and mechanical with the earth, on large portions of walls and for filling cracks and lesions. The strong presence of salts is combined with the porosity of the clay (thus leading to crypto-efflorescence, efflorescence, pulverization and separation of parts). If it's present on the wall is necessary to remove it;
- the use of synthetic paints or, in general, of coating materials isn't compatible with the raw earth (not only plasters but also plastic materials, ceramic, etc.): their use can cause the detachment of the entire layer, support and coating;
- the introduction of new concrete floors whose weight

**Table 5**  
 The survey of materials and phenomena deterioration to know conservation state of building.







## CONSERVATION PROJECT





### STEP 1

-  PI 01 GENERAL DRY CLEANING BY AIRLESS
-  Sc.01 REPOINTING OF MISSING PARTS WITH MIXTURE OF EARTHEN
-  PI 02 BRUSH APPLICATION OF BIOCIDES
-  Co.01 RE-ADHESION OF PLASTER DETACHED
-  Co.02 RE-FILLING WITH HYDRAULIC LIME MORTAR


### STEP 2

-  Co.03 BRUSH CONSOLIDATION WITH ETHYL SILICATE
-  Co.04 REPOINTING OF MISSING PARTS WITH PLASTER OF LIME MORTAR



### PUNCTUAL INTERVENTIONS

-  I.01 PROCESSING OF WOOD ELEMENTS
-  I.02 PROCESSING OF ROOF ELEMENTS
-  I.03 PROCESSING OF STONE ELEMENTS (cleaning, re-filling of cracks, re-location in the wall)
-  I.04 INFILL REMOVAL





### 保护修复工程 第一步

-  无空气清洗
-  混合泥土灰浆  
在缺失处重勾灰缝
-  涂刷生物杀灭剂
-  重新涂刷剥落的石灰
-  重新填补水硬石灰灰浆

### 第二步

-  涂刷硅酸乙酯以加固
-  用石灰灰浆对缺失部分重新勾缝

### 第二步 修复

-  木构修复
-  屋顶构件修复
-  石材构建修复 (清洗, 添补裂缝, 重置于原处)
-  移出填充物

**Table 6**

The conservation project: definition of necessary and useful action to care the matter and to transmit it to the future generation (cleaning, consolidation and protection surface treatments, structural intervention and so on).



4



5



6



7



8



9

**Figures 4-9**  
Intervention not recommended.  
The pictures show common practices of intervention on Hakka buildings that speed up, and in some cases, trigger the process of decay of materials: mortar and cement plaster and coating materials incompatible - for examples tiles.





10



11



12



13



14

**Figures 10-14**  
Intervention not recommended.  
*The pictures show common practices of intervention on Hakka buildings that speed up, and in some cases, trigger, the process of decay of materials: new technological systems and construction of new architectural elements.*



and rigidity could lead to instability of the structure;

- the creation of new large openings that modify the heat balance of the building;
- the changes and additions required to respond to the new demands of daily living (new volumes, technological systems, etc.) aren't designed with awareness of the technical characteristics of these buildings.

The spontaneous action of the inhabitants must be guided through a conscious architectural project to respect and preserve the identity of this architectural heritage and to allow a responsible transformation of this.

#### **4 Some advice for the promotion of the Hakka architectures**

The knowledge of the traditional Hakka architectures, architectural features, construction techniques, materials and their degradation is, as pointed out several times, necessary for everyone involved in their preservation. But it is not enough.

The degree of knowledge, although thorough and detailed, doesn't help to begin automatically the valorization process of this cultural heritage which today is in danger: to vanish, due to the inevitable acceleration of the degradation for the leaving of the residents and its demolition for encouraging the process of urban growth.

After the knowledge project, as a basic premise, it's necessary to adopt the reuse project that, from an architectural to the urban-territorial scale, makes it possible the new fruition of these architectures.

Constant maintenance is fundamental to every historical building and even more for those made of raw earth, but it's unthinkable to begin maintenance processes without a valorization of features and potentialities of the Hakka architectures.

It has not been possible for the writer to know the fate that Hakka architectures have lived in recent years. Only a comparison with the current aerial views (Google Earth 2022) allows, albeit with all the inevitable simplifications of the case, to make some considerations of a general nature which are limited, however, to reading the presence or absence of the architectures and water basins waterfall.

In general, demolition interventions are not highlighted, not even for the sites located in the urban areas of expansion of the city, but rather a logic of 'filling and saturation' of their surroundings is almost recognized, which inevitably leads to increasingly reducing the surrounding space by canceling the foundational and identity relationship that they have with the landscape. However, there is an exception. The Zhegu Ling site (subject to a local protection regime) had been recognized, during the 2010 survey phase, as having a high architectural value in a moderate state of conservation and partially in use. The aerial view of 2022 shows only the permanence of the water basin and the presence of the central architectural system that leads to the temple of the ancestors: the latter appears rebuilt, but it is impossible to understand how much and how and the complexity of the site (suc-

cession of covered and open spaces) nothing remains except the dirt perimeter of the area.

It is not possible to know the reasons for this intervention: we can only guess that, being the site protected at a local level, the local authority should have authorized the intervention.

Concerning more general questions, we could say that, to date, Hakka sites survive (but with what role and meaning? and until when?) the process of urbanization and transformation of the territory without, however, assuming the role of co-protagonists.

But the preservation of these sites is possible primarily through the identification of their potentialities - architectural, but also social, about their localization, etc.

Through coherent and conscious reuse, the Hakka architecture could become today, just as they were before, the driver for landscape construction.

They could once again host the residences through an architectural project which combines the richness of the existing with the new demands and needs of daily life in order to define a "new way of living" that to the richness of tradition, adds elements of contemporary life.

The characters of these sites also make them special places for creating public facilities (museums, libraries, etc..) so the Hakka settlements may become new central cores for urban development.

Only an attitude of attention to the traditional architecture and of awareness of its value could help to not consider these architectural presence as obstacles to the growth of the city, but a unique heritage of the past that could generate and drive the necessary transformation processes.

No one preservation technique, although the most correct and based on thorough knowledge, will be able to ensure the transmission to the future of Hakka heritage in the absence of a strategy for the use of these sites.

Therefore, conservation and project must work together to achieve this common and desirable goal.

# Surveying of the furniture and interior space of Hakka culture residences in Huiyang.\*

Lucilla Zanolari Bottelli

\* This research was part of the PhD thesis entitled *Influences of Chinese culture in Western interiors of the twentieth century* (2013), in Interior Design and Installation at Politecnico di Milano. It underlines the dialectic between East and West in the cultural identity that architecture implies. The following paper is a report based on the photographic surveying conducted by the author in Hakka Residences in Huiyang in march 2010. References to the text are enlisted at p. 247, in the section: *Hakka and Chinese Interior Architecture*.

The survey describes the role of furniture and interior spaces upon measurements and visits on site considering these places an important ring in the chain of Chinese traditional architecture.

The Hakka population identified in these territories left most of these residences for working, economical and migration reasons.

What will be the future of these domestic spaces and how they will integrate in further metropolitan development are questions arising while walking through them.

The suggestive light that models the shadows along the daytime, the countryside from one compound to the other, as well as any small detail of the interiors together history, traditional dresses and the feeling of roots.

The memory of all of this is fragile in the imminent future.

At the same time, it is impressively strong in the sense of belonging.

No matter the distance or the generation gap, each family gathers a few times a year to celebrate their ancestors.

These roots distinguish the Hakka culture and on them, the interiors of these ancient homes keep alive. Hakka interiors in Huiyang follow the principles of Chinese traditional architecture.

Each compound reunites a certain number of residential units: as many as the descendant's familiar nucleus.

Most of these houses are left in an abandoned state, while the ancestors' temple situated in the heart of the compound is often kept in use.

Therefore, the furniture considered in this analysis is the ones remaining from what seems a sort of escape: half-empty cupboards, dirty and ragged drapes, cap-sized vases, empty baskets, broken shutters, unstable chairs, unsteady stairs, half mirrors, photographic albums.

On most occasions, space is just ghostly empty. Low squared tables, stools, washing toilets, alcove beds, trunks, pots, cabinets, official's hat chairs, wife's and husband's seats lay there, waiting (Figures 1a-d).

As in Chinese traditional interiors, furniture provides the destination of domestic spaces.

Due to the size and the shape of the bed, for example, the bedroom doesn't provide any other activity if not the one to rest.

Only in some cases there is enough room to store cloths inside a cupboard, or set two seats (one for the wife and one for the husband).

The average bed size ranges from 210x150cm, with a height of 200cm, and consists of an almost squared platform, elevated from the floor (50cm ca), defined in height by the outline of the volumetric edges of the alcove (Figure 2a).

In the past, this frame was used to sustain drapes, which protected from insects and held the heat inside the alcove (Figures 2b, 2c).

Indeed, the empty space below the bed plane was needed for the heaters (warm embrace contained in a small metallic pierced box).

The origin of this furniture is the *chang*, a platform used to seat, eat and sleep, and provided by a series of smaller suppliers depending on the activity (Figure 2d).

Sometimes the entire family could sleep in the alcove bed, a custom common in Europe until the 20th century, due to the lack of space, or the cold temperature. It is impossible to move the location of the bed without dismantling it completely since it overcomes any openings' dimensions.

The furniture of the cooking areas is an integrated block with the building construction.

The kitchen is used by the family or shared between various family units (Figure 3a).

The fixed block is divided into working fire positions, with a central chimney.

A small niche is drawn inside the chimney hosts the divinity of the house, which protects the family and its activities (Figure 3b).

Baskets, hanging from the ceiling, where used to hold food and protect them from small animals (Figure 3c). Cabinets for housekeeping or kitchen supplies have transparent shutters (usually fenced by a netting texture) to see through their contents: pots, dishes, cups, and bowls usually in a light color and fine ceramic handcrafts, with an essential design. Cupboards for clothes or personal belongings have whole shutters, sometimes provided by a mirror inside.

When possible, like in domestic units inhabited by two families together, one corner hides by an L wall, space used as a restroom and continuously cleaned (Figure 3d).

The rest of the furniture is movable and adapted to the situation.

On the opposite page:  
Sequence of central inner courtyards in a Hakka Residence in Huiyang.  
Source: photo by M. Meriggi.







1a



1b



1c



1d



2a



2b



2c



2d



3a



3b



3c



3d

**Figures 1a-d**

State of abandoning of Hakka residences interiors in Huiyang. Source: photos by the author.

**Figures 2a-d**

Bedrooms in Hakka Residences in Huiyang. Source: photos by the author.

**Figures 3a-d**

Kitchens in Hakka Residences in Huiyang. Source: photos by the author.

Nothing is superfluous, and the finishing is usually vanished or painted for both aesthetical meaning and protection.

The furniture is dismantlable and transportable as the joints are clear and visible (Figures 4a-d). Tables are placed along the walls, waiting to be centred for dining.

The shape is usually square, and the size enables combining two or more tables together according to the number of family members invited together. Bigger tables were applied to the ancestors' temple to host various offerings and incense trays.

Chairs and armchairs stand along the walls as well. The remaining decoration provides to understand if

the user was a man - i.e., the symbol of the dragon, or a woman - i.e., a flower (Figure 5a).

Washing toilets supported a basin to be filled with water on the inferior part, while a mirror was hung on the superior straight part.

This furniture can be located everywhere, sometimes in the kitchen corners, other times in the bedroom (Figure 5b).

Hakka residences' walls are decorated with colorful tiles and paintings representing the landscape and the history of the family or propitious symbols, which will protect the inhabitants and future generations (Figures 6a-d).

The historical events of the past century have left



4a



4b



5a



4c



4d



5b

many political propaganda writings.

These characters mix with the red and gold worshipping rolls on top of the thresholds and on columns (Figures 7a-d).

As well as the windows, doors are outlined by a frame, and thresholds are underlined by a doorstep, as passages mark a spatial atmosphere change (Figures 8a-d).

The constructive system consists of thick adobe walls, painted in light colors, which contrasts with the dark gray roofs' tails.

The roof structure is in wood and follows the precepts of *Yingzao Fashi* (Figures 9a-d).

Interior walls are thinner (bricks) and the spatial distribution is regular and coherent with the compound. The few niches use the width of the external walls and are of wood.

The ground floors are usually in clay tails or hard court, while on the upper floors, the structure is in wood.

Usually, each family unity has a double pitch, which is continuous on the next units.

The openings are splayed toward the interior, increasing the natural light although the frame remains small. The shutters are in wood.

Sometimes natural ventilation is offered by the missing tails on the roof or a small skylight.

As well as the heating system, also the other domes-

tic systems are transportable.

The electric cables are not walled into the building, and the cables run free along the household units and on the roofs of the complexes, like a juxtaposed network.

Water is provided by common wells with a manual pump distributed along the courtyards while running water is integrated into domestic units if not recently transformed (Figures 10a-d).

The nature of the Hakka interiors is highly representative of the dual levels of interiority, which characterize Chinese traditional architecture.

Residential compounds are enclosed inside a perimeter with a front wall entrance, and an uneven number of accesses, whose central and main one usually structures the symmetrical axis of interior distribution (Figures 11a-d).

Along the axis, the direction brings to the ancestors' temple, located in the center or far end of the enclosure, and constituting the nucleus of the compound, its origin (Figures 12a-d).

Along both sides of the axis, the single-family units are mirrored.

Following a hierarchical familiar organization, the distance from the temple represents the rank of a direct relationship with the ancestors (Figures 13a-d).

If the number of family units increased, the residences

#### Figures 4a-d

Dismountable chairs in Hakka Residences in Huiyang.  
Source: photos by the author.

#### Figures 5a,b

Interiors with chairs in Hakka Residences in Huiyang.  
Source: photos by the author.





6a



6b



6c



6d



7a



7b



7c



7d



8a



8b



8c



8d

**Figures 6a-d**  
Decorated walls in Hakka Residences in Huiyang.  
*Source: photos by the author.*

**Figures 7a-d**  
Witnesses of the epochs in Hakka Residences in Huiyang: Ritual decorations and Political writings of Maoist age. *Source: photos by the author.*

**Figures 8a-d**  
Doors and windows in Hakka Residences in Huiyang.  
*Source: photos by the author.*

enlarged with new courtyards and rows of domestic units, reaching in some cases very high numbers and constituting a large village.

Some compounds are built on one floor; others consist of two to four floors.

When the height rises to three or four floors, the Hakka village structures as a condominium.

Often provided with towers at the compound corners, this typology of interiors best suited the military occupation during the last century, transforming the residences into clusters.

To each descendent family is conferred a unit inside the compound, and all of them contribute to the autonomy of the settlement.

To each descendent family is conferred a unit inside the compound, and all of them contribute to the autonomy of the settlement.

The units consist usually of a welcome hall, facing the courtyard and bedrooms in the back.

Some are provided with a kitchen if hosting more families, otherwise, the kitchen is shared within the community and settled near the temple.

Hence the first level of intimacy is provided by the access to the compound, while a second level of intimacy refers to the private domestic family space.

The common areas function as open interiors in which to meet, work, exchange daily life events, draw water from the pumps, wash and arrange supplies for the economy of the village or to be divided among the families (Figures 14a-d).

This implicates a strong relationship with the exterior, in which the inhabitant lives inside but in a more coral atmosphere.

The temple consists of a high roofed hall open to the axis and facing the entrance direction, and in so doing gaining the best influences from the fengshui principles of the settlement (Figures 12a-d).

An altar stands below the ancestor's icon or image,





9a



9b



10a



10b



10c



10d

**Figures 9a, b**  
Roofs interior in Hakka Residences in Huiyang.  
Source: photos by the author.

**Figures 10a-d**  
Wells in Hakka residences courtyards in Huiyang.  
Source: photos by the author.

and incense combined with offers is always in place. In most cases, the residential units are not inhabitable, while the temple is restored and maintained. Hence the visitors find accommodation in hotels and relatives' homes.

In conclusion, the survey on furniture and interiors of Hakka traditional residences in Huizhou County reveals a richness that goes beyond the construction and the actual situation.

They are the expression of a culture deeply rooted in the territory and in the Hakka people, no matter if resident or immigrated.

The sense of belonging is breathable in the active ancestors' temple and livable during the celebrations.

The respect of these roots builds unwritten memories, which strongly characterize the landscape. (Figures 15a-d).

On the other hand, leaving the interiors abandoned produces an inevitable transformation.

The lack of contingent comforts and an active service system in the area stop the young generation from considering a reintegration in these residences, and other users to rent the inhabitations.

Indeed, these places need an intervention to remain alive, as they deserve.

However, it is not obvious that the economic and political drives of the actual and future master plan will consider properly the situation.

Any future opportunity will have to deal with the dual aspect of the Hakka interiors: inhabiting and worshipping.

This goes beyond the daily routine and is projected into a temporal generational continuum.

The recognition of different cultures, the belonging of the place and the souls, and the will to listen and understand might be some of the features useful to challenge Hakka culture into a resource and find a suitable bargain for the actors in play.





11a



11b



11c



11d



12a



12b



12c



12d



13a



13b



13c



13d

**Figures 11a-d**

Wall entrance and main gate of the enclosed Hakka Residences in Huiyang.  
*Source: photos by the author.*

**Figures 12a-d**

Ritual axis elements of Hakka Residences in Huiyang from the central gate to the “ancestors temple”. *Source: photos by the author.*

**Figures 13a-d**

Lateral courtyards for dwellings on the two side of the “ancestral temple complex” in Hakka Residences in Huiyang.  
*Source: photos by the author.*



14a



14b



14c



14d



15a



15b



15c



15d

**Figures 14a-d**  
Surviving agricultural activity in  
Hakka Residences in Huiyang.  
*Source: photos by the author.*

**Figures 15a-d**  
Elements of the Ritual and  
agricultural landscape in  
Hakka Residences in Huiyang.  
*Source: photos by the author.*



# Fengshui in Huiyang northern Hakka villages.\*

Chen Zhen

\*References to the text are enlisted at pp. 245-247, in the section: *Hakka Settlement: Culture, Architecture and Landscape*.

Ancient Chinese philosophy considers heaven, earth, and man as a unified cosmic system, and regards the harmony between man and the universe as the highest ideal. Fengshui is a method used by ancient Chinese to comprehensively adapt to various architectural environmental factors such as climate, landform, ecology, landscape, etc., for the building site selection. It guides settlements and buildings to find the most ideal living environment, so that it can be in harmony with the surrounding natural landforms and humanistic environment.

The several huge wars happened in ancient China caused the Central Plains people to experience several large-scale migrations to the south. The Mongol invasion at the end of the Song Dynasty forced a lot of Hakka residents in southern Jiangxi and western Fujian to relocate to Guangdong, therefore brought here also the way of using Fengshui principles to guide the settlement site selection, which was prevailed in the Central Plains of China (Figure 1). In order to avoid disputes and conflicts with the local residents, the Hakka architecture

is represented by the unique enclosure forms. We have already been familiar with them in the previous articles of this book. Besides of this particular architectural type, the Hakka buildings adopted the Fengshui principals and formed very special settlement clusters in the geographical structure of north Huiyang.

## 1. Fengshui principles for settlement site selection.

If we should briefly summarize the Fengshui principles of settlement site selection, that is, the site should be between back mountain (hill) and front river (stream), oriented to far front mountains with wide open sight views.

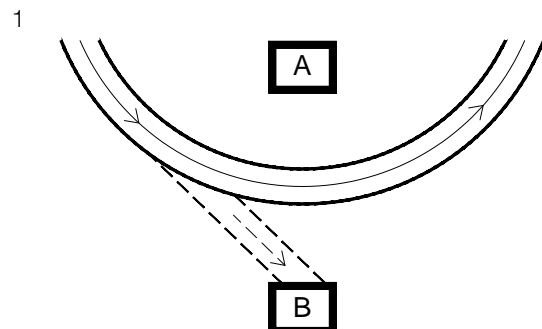
Specifically, the benefits of this layout are as follows:

1. The mountain area usually has few plains. Building set along the mountains can save precious arable land and leave more fertile fields for cultivation.
2. Having back hill and facing water is favorable for climate regulation. The wind blowing from the mountain is usually relatively strong, and the woods in the back mountain, called Fengshui woods, can slow down this mountain wind. In front of the settlement site, it needs to be as open as possible with front water (river or stream) passing. The wind come from the back mountains is called Yang Qi (Yang Force), and the wind from the front water is called Yin Qi (Yin Force). The so-called "the intersection of Yin and Yang forces" means the exchange of winds (cold and warm winds, dry and humid winds), forming a fresh air environment, beneficial to the health of human, animal and plant.
3. Of course, the front water is necessary for residents' daily life needs. The water from the back Fengshui woods could also gather into the pond in front of Hakka house and merge with the front stream to form running water, which is good for health and landscape.
4. In terms of safety: building a settlement along the back mountain can provide a safety barrier, that is why there is no back door in Hakka house. The house has different volumes and yards from higher back to lower front, conforming to the slope of the mountain, and the back Fengshui woods can also prevent soil erosion and landslides. The Hakka house are usually selected at the concave side facing to the stream (see Figure 2), which could provide more closed waterfront space and has the advantage of avoiding massive damage from floods.
5. In the Fengshui woods, residents plant big trees to create shadow for rest space, fruit trees for food diversity.

**Figure 1**

Best site selection.

1. Zushan - The ancestral mountains where the "dragon pulse" (mountain veins) originates.
2. ShaoZushan - The younger Zushan, which is succeed to Zushan through the "dragon pulse".
3. Zhushan - The master mountain at the back of the "dragon's place" (best site).
4. Qinglong - The Blue Dragon, means the east mountains.
5. Baihu - The White Tiger, means the west mountains.
6. Hushan - The outer side guard mountains.
7. Anshan - The table mountain, means near front lower mountain.
8. Chaoshan - The far front high mountain, to determines the site orientation.
9. Shuikoushan - The mountains where the front water passes through.
10. Longmai - the "dragon pulse" (mountain veins).
11. Longxue - the "dragon's place" (best site).



**Figure 2**

The house should be located in concave side to have more closed waterfront space and reduce the flood impact. The location of A is much safer than the location of B.

The woods can help to conserve the soil and introduce rainwater going downhill. It is also an ecological benefit. 6. The open sight corridor for front view is not only favorable for ventilation, “looking far” has always been an ideal living request for Chinese.

The layout of Hakka house are usually symmetrical, with the ancestral hall set on the central axis. If the entrance, or the courtyards along the central axis can face the front mountains (Fig.1, Anshan and Chao-shan), it means that the ancestors and residents can have a good view to the distant mountains and brings joy and satisfaction to people’s mentality everyday. In traditional Chinese architectural culture, this kind of space arrangement brings constant psychological implications: inner solemnity and peace, which can bring physical and mental comfort to residents.

**2. Settlement of Hakka houses in the northern area of Huiyang.**

We first restored the water system based on the historical map to present the relationship between the settlements and the water system. (Figure 3) The northern area of Huiyang is hilly and with lush vegetation.

The Hakka settlements are usually built along the foot of the hill. The hilly land composed of large and small

basins creates a natural environment for Hakka houses, with architectural forms extending from flat land to sloping land step by step.

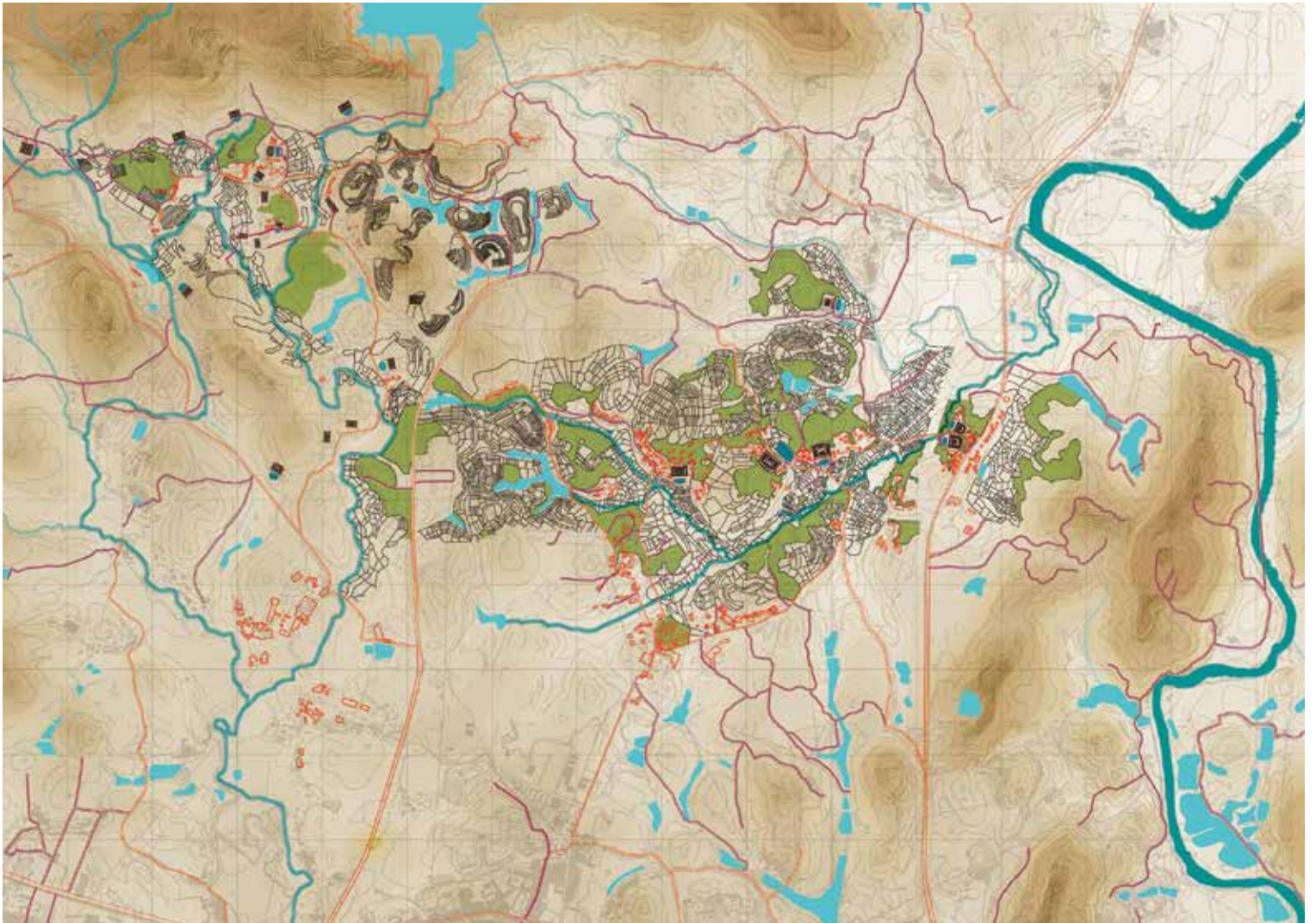
This kind of building that rises according to the terrain is generally low at the front and high at the back. At the back hill, people choose the types of big trees and fruit woods that are suitable for growing in barren land. Their luxuriant branches and leaves can reduce the cold wind from the back mountain, store water, and prevent soil erosion. The rainwater flows through the Fengshui woods, along the peripheral drainage system of the Hakka houses to the front pond, and merges with the stream in the valley.

In the map (Figure.4) are represented the clusters of villages in Huiyang: Zhoutian, the cluster on left-top; Teimenshan, the linear cluster on the middle. Both the two clusters lean on a valley area. According to the territory, all the Hakka houses follow the Fengshui principles: having a main hill on the back, facing the pond and the stream in the lower place, and watching far front mountain along the middle axis. The site is on a mountain slope which located the family temple on a higher position, and the ancestors could watch the landscape in front the house through the roof of halls’ sequence. It is good for drainage and ventilation to create the harmony between Yin & Yang forces. These could keep the hou-

**Figure 3**  
The historical settlements and original water system of Qiuchang town commune territory (elaboration by the author).







4



**Figure 4**  
 Historical map, highlighting topography, water systems, historical roads, Hakka houses, villages, farmland textures and fengshui woods (elaboration by the author).

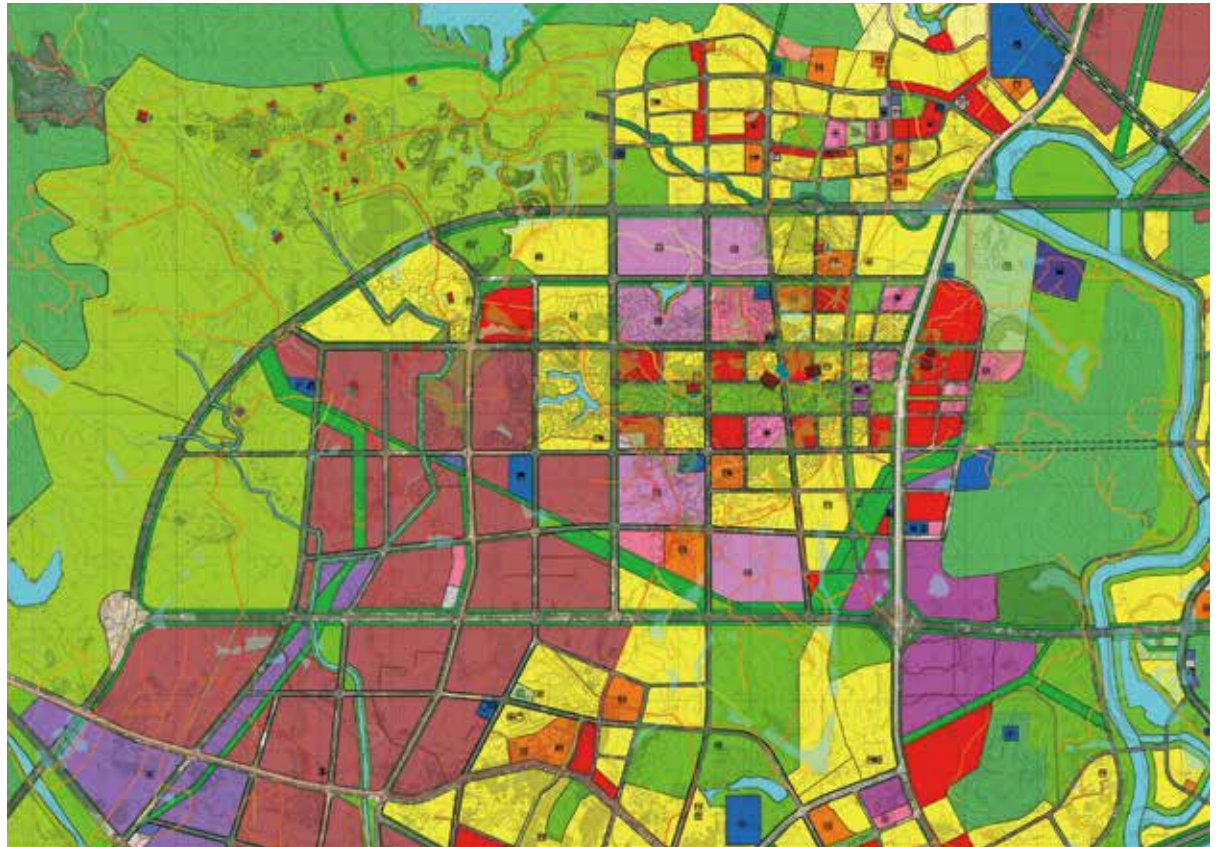
**Figure 5**  
 The Shigouwu & Huangzhuli Hakka houses and the surrounding environment (elaboration by the author).

5



**Figure 6**

The overlap of Hakka settlements with Huiyang master plan 2007. The Hakka houses here will be submerged by new urban blocks. No consideration is given to these valuable architectural heritages (elaboration by the author).



**Figure 7**

The situation of Hakka architectural heritage in Longgang, Shenzhen. The Hakka houses were separately submerged in the urban development without any attentions on their historical connections to the territory. The situation shows the result of current conservation method in Shenzhen (the nearby developed metropolis) and foreshadows the future of Huiyang if it still follows the current planning experience (Source: M. Meriggi, 2018).



**Figure 8**

Fengshui element analysis. Yang force - wind from the hill + woods protection (elaboration by the author).

**Figure 9**

Fengshui element analysis. Yin force - front water "the intersection of Yin and Yang forces" means the exchange of winds (cold and warm wind, dry and humid wind), forming a fresh air environment, beneficial to the health of human, animal and plant (elaboration by the author).

**Figure 10**

Fengshui element analysis. Baoshui - site selection should consider the concave water in front, to form more closed waterfront space and less flood impact. See details in Figure 2 (elaboration by the author).

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se moderate and comfortable: not so cold in the winter, not so hot in the summer. All the houses in the cluster rely on a common main structure and form a kind of big ensemble with the fields, the streams, the formlands in the center lower area and the hills on the boundary. Figure 5 shows the arrangement around the single Hakka houses, Shigouwu & Huangzhuli, the houses of the ancestors of Ye family when they first arrived in Huiyang. If we ignore the road recently built (after 2005) passing in front of the twin houses, we could realize that the buildings are inside a perfect embrace of the natural elements. The surrounding mountains are covered by fruits woods for food and fire materials, the front pond to collect water for fish and for fire protection. The houses are located on a hill slope in order to leave space for farmland in the front plain. There are roads passing in front and on the back linking the houses with the surroundings, canals along the road take water to the field for irrigation. This arrangement presents great benefits to form an ecological unit and ventilated microclimate.



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### 3. The Urgent problems facing the conservation of Hakka houses in the northern area of Huiyang.

#### *Current state of conservation.*

In general the state of conservation of the Hakka heritages in Huiyang can be resumed as follows: only few houses have an official status of protection (national, provincial, city level), but this does not mean that the building is in perfect condition; almost all the buildings are abandoned and lacking of roof maintenance, and many of them are falling down since they are made of rammed earth; few of them are restored for living with not always appropriate technologies; in some of them is restored only the family temple and the central halls where the clan members only come back to make sacrifices to the ancestor once a year during the spring festival.

#### *Townisation.*

When we came here in the early 2010s, it was a period of rapid urbanization in China. New towns and new industrial parks are under construction in various places. As we mentioned in the previous fast speed urbanization process in PRD and the destiny of Hakka Heritage, seeing the officially released 2007 master plan, the



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**Figure 11**

Fengshui element analysis. Front view corridors along central axis of Hakka houses towards far mountains (elaboration by the author).

**Figures 12-16**

Fengshui element analysis. Front view corridor: Facing the far mountains brings to residents the constant psychological implications: inner solemnity and peace. Some Hakka houses even have the Chaoshan (the far front high mountain, to determines the site orientation) dozens of kilometers away (elaboration by the author).





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**Figure 17**  
The overlap of Fengshui element analysis of Hakka settlements with Huiyang master plan 2007 (elaboration by the author).

**Figure 18**  
The Proposal of the variant city master plan, respecting the urban development request and conserving the Hakka heritages as one entirety based on the Fengshui principles (elaboration by the author).

**Figure 19**  
The protection boundary of the Hakka heritages valley, the Green Heart of future city (elaboration by the author).

**Figure 20**  
The detailed project on the basis of this variant city planning proposal. See pages: 166-177.



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Hakka houses here will be submerged by new urban blocks.

No consideration is given to these valuable architectural heritages (Figure 6).

Shigouwu and Huangzhuli twin Hakka house is a clear example of the most dangerous phenomenon represented by the townisation process.

A contemporary high way just passes in front of them, cutting the connection between the houses and the fields, disturbing the Fengshui system, breaking in this way the ensemble of architecture and agricultural landscape that is the main attraction and value of this heritage (Figure 5).

If we just take a look on what happened in Shenzhen, the closed metropolis of Huiyang, in the past 10 years, the Hakka houses were separately submerged in the urban development without any considerations on their historical connections to the territory (Figure 7).

Therefore, the current approaches of conservation which only focuses on the isolated buildings are obviously not sufficient while the current master plan practice do not demonstrate any attention to the ensemble of Hakka heritage and their surrounding environment.

So that, our research for a possible way to protect these heritages had to slide to city planning scale.

#### **4. Analysis of Fengshui layout of Hakka houses in the northern area of Huiyang.**

In order to provide a reference for the local planning department, we try to adjust the planning scheme on the premise of respecting the request amount of new urban land to adapt to the future urban development, but at the same time protect the Hakka architectural heritages.

How to protect them?

We must regard the Hakka heritages as one entire body, as well as the Hakka ancestors did for the site selection and development in the history, based totally on the Fengshui principles.

We believe this is the only basis for a planning proposal that respects history, geography and culture. We made a profound analysis for Fengshui elements and found the Fengshui principles were followed in almost all Hakka houses in the northern area of Huiyang. Yang force: The winds come from the back mountain (Figure 8).

Yin force: The winds come from front water (Figure 9).

Baoshui: Choose the site in the concave side of the stream (Figure 10).

Fengshui woods: Reduce the strong wind from the back mountain and provide big trees and fruit trees.

Intersection of yin and yang forces: The winds in two directions converge to form a best place with clean air and moderate micro climate.

Front view corridor: Facing the Chaoshan (the far front high mountain, to determines the site orientation) brings to residents the constant psychological implications: inner solemnity and peace.

Some Hakka house even have the Chaoshan dozens of kilometers away (Figures 11-16).

#### **5. Learning from Fengshui: New city Planning Proposal.**

In the official city master plan 2007, the Tiemenshan area is foreseen to be the new urban areas, consisting of residential, commercial and educational activities. The Hakka architectural heritages here and the surrounding Fengshui environmental elements form an unique urban identity and has a great value as above mentioned.

We hope to protect these dense and rich architectural heritages, maintain the original mechanism (the Fengshui principles) of the layout of the Hakka settlements clusters, and regard this valley as a green park and an entire architectural heritages landmark in the future city center: a Green Heart with rich historical context and unique cultural landscape environment.

The protection boundary of the valley is defined by the roads on the north and south sides and forms a linear park. The road on the north side is determined based on the terrain outside the Fengshui woods of each Hakka houses, and the road on the south side is basically determined along the stream passing through the valley.

On the premise of satisfying the request of the future land quantities by the official master plan, we rearranged the lands of diverse activities in different way: all the higher education campus (universities and vocational academies) were gathered surrounding the valley to share the culture green heart, and the rest requested activities by the official master plan were distributed to other urban blocks.

This case attempts to discuss, in the face of the conflict between urban development and the protection of the architectural heritages, how to find a proposal to meet not only the land request of the townisation, but also a high quality way of townisation.

We believe it would be a sustainable way to keep a harmony development for this area, and correspond with the famous saying "Clear waters and green mountains are equal to mountains of gold and silver" ("绿水青山就是金山银山", President Xi Jinping, 2005).

We have developed detailed project on this variant city master plan proposal - see pages 166-177 of this book, in the article "The network of facilities of the 'green city' in the hubs between the villages".