

# Residential building types as an evolutionary process: the Guangzhou area, China

**Kai Gu**

School of Architecture and Planning, University of Auckland, Private Bag 92019,  
Auckland, New Zealand. E-mail: k.gu@auckland.ac.nz

**Yinsheng Tian**

Department of Architecture, College of Architecture and Civil Engineering, South  
China University of Technology, Guangzhou 510640, P. R. China. E-mail:  
arystian@scut.edu.cn

**J. W. R. Whitehand and Susan M. Whitehand**

School of Geography, Earth and Environmental Sciences, University of Birmingham,  
Birmingham B15 2TT, UK. E-mail: J.W.R.Whitehand@bham.ac.uk

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**Abstract.** *The idea that an evolutionary process is inherent in the sequence of building types that characterizes an area has been pursued in Euro-America, especially by Italian architects. It has hitherto attracted comparatively little attention elsewhere in the world. Findings on the history of residential building types in the Chinese city of Guangzhou and its environs are examined in relation to this idea. Though the history of building types is very different in China from that in Euro-America, an evolutionary process is shown to have occurred in the Guangzhou area. The principal rural building type in the nineteenth century – the sanjian lianglang house – and an early urban building type – the zhutongwu – are steps in the development of a number of later building types.*

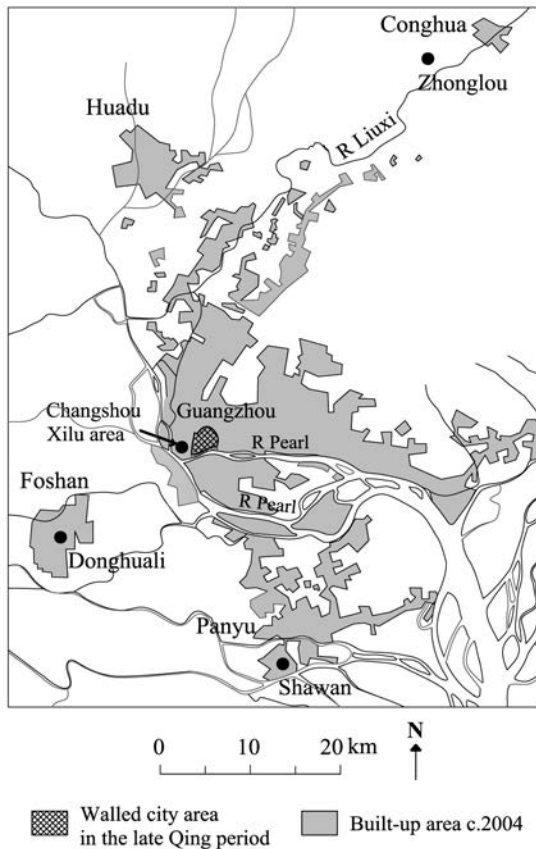
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Research on urban landscapes and architecture has been burgeoning in China in the past three decades (Whitehand and Gu, 2006). Associated with increasing communication between China and other parts of the world, a variety of Western architectural and planning concepts are being discussed by Chinese researchers. Typological thinking began to be discussed among Chinese architects in the late 1980s (Shen, 1988). It has been disseminated by Ma (1990), C. Wei (1990) and Shen (1991), and an interest has developed in its relevance to architectural design (Gu, 2005), urban conservation (Y. Zhu, 2002) and the analysis

of historical building forms (Pan, 1996; Zeng *et al.*, 1997).

Central to typological thinking is the notion that the city and its architecture are products of cultural consensus based on collective memory (Shen, 2006; P. Zhu, 1992). However, in China insufficient attention has been given to how the types of buildings constructed change over time – notably the concept of a typological *process* developed by the Caniggian school (Caniggia, 1997; Caniggia and Maffei, 2001). Fundamental to this concept is the sequence of developments whereby a new building type supersedes an existing one;



**Figure 1. The Guangzhou area.**

adaptations of the existing type providing the basis of a new one. The fact that the forms created in one period are different from those created in another, and that similar types are grouped over time, thereby giving rise to distinct morphological periods (Conzen, 1969, p. 127), is fundamental to understanding how urban areas change over time. However, such change is intimately related to periodicities in the wider development of societies and has received little attention in strictly hierarchical societies, such as those existing until well into the twentieth century in China. This aspect, among others, of the idea of a typological process merits wider consideration. In this paper evidence of change in the residential building types created in the Guangzhou area of southern China since 1840, when Western influence in China accelerated, is considered in relation to this idea, particularly in the period up to the Communist Revolution in 1949.

### Guangzhou: history and research sources

Guangzhou, with a population of some 7.5 million in 2005, is the largest city in southern China. It is in the heart of the Lingnan region (Figure 1; Tang, 2005, p. 3), a sub-tropical area in which high humidity and high temperatures are characteristic of most of the year. Remoteness from the political and cultural focus of China in the centre and north of the country has contributed to the Lingnan region's distinct cultural identity. It is characterized particularly by a mixture of local Nanyue culture, the influence of Confucian ideology from central China, and Western influence.

Guangzhou became a prosperous port in the Han dynasty (204 BC - 220 AD) (Qiu, 1998, p. 6). The archaeological evidence suggests that at this time single-room dwellings on piles were succeeded by symmetrical courtyard layouts (Y. Lu, 2004, p. 512). Between the seventh and thirteenth centuries, Guangzhou became the centre of Chinese international trade and especially important as the starting point of the ancient marine silk route linking it with south-east Asia and the Middle East (Xu and Yeh, 2003). China's 'closed-door policy', introduced in the Ming dynasty (1368-1644), resulted in the closure of key ports along its south-eastern seaboard. The exception was Guangzhou, which became the only significant port in China trading with the outside world. Commerce and handicrafts burgeoned in Guangzhou between the mid-eighteenth century and the Opium War of 1840-2, creating pressure on land within, and on the edge of, the city. Constrained by the Baiyun mountain to the north and the Pearl River to the south, the built-up area expanded largely to the west and, to a lesser extent, the east, and began to develop south of the Pearl River.

After the mid-nineteenth century, Guangzhou underwent unprecedented socio-economic and cultural change (Elvin and Skinner, 1974; Esherick, 2000; Tsin, 1999). Although traditional building methods and styles continued, Western influences began to play an important role in the city's transform-

ation (Yang and Cai, 2003). Western architects, engineers and surveyors, and Chinese experts trained in Western countries became major agents of change. Developments in Guangzhou, as in other treaty port cities, such as Shanghai, Tianjin and Wuhai, were precursors of change in other Chinese cities. Following China's transformation under communism, mainly during the third quarter of the twentieth century, Guangzhou underwent rapid development, particularly after 1984 when it was designated as one of fourteen 'coastal open cities' (*yanhai kaifang chengshi*) by the central government (Xu and Yeh, 2003). Thus Guangzhou has been at the forefront of China's economic reforms.

Compiling a record of detailed changes to the urban landscape of Guangzhou is far more difficult than in the large majority of Western cities. As in practically all Chinese cities, the lifespans of buildings are comparatively short. Surviving street and plot patterns, and, for the period since 1840, survivals of building fabric, are important sources for investigating the development of residential building types (Zeng, 1991; Zhou and Xiao, 2003). There is a lack of systematic historical building records and historical series of true ground plans (comprising streets, plots and the block plans of buildings), such as are available for most European cities. A collection of historical maps of Guangzhou, published in 2003 (Zhou and Xiao, 2003), contains maps of the city and its environs from 1685 to 1949. However, maps prepared before the early-twentieth century show little more than streets and built-up areas. The earliest complete survey of Guangzhou was prepared by Guangzhou Land Bureau (*Guangzhou Tudiju*) between 1926 and 1935. The resulting maps, comprising 383 sheets, were bound in two volumes, entitled *Guangzhou minguo jingjie tu (Map of land divisions and boundaries in Guangzhou in the period of the Republic)*. They show street systems and plot boundaries of much of the built-up area of Guangzhou at the scale of 1:600, or 1:500 in the case of maps prepared in 1933. A series of large-scale maps at the scale of 1:500, showing building block plans and street systems, was prepared in the post-1949

period. Large-scale maps of some towns and villages in the region have been prepared in the past two decades. *Guangzhou minguo jingjie tu* and the large-scale maps that were prepared in the late-twentieth and early-twenty-first centuries were sources of information for the present research, and provided base maps for the field surveys.

To establish a chronology of building types in Guangzhou, it is important to include in the investigation the rural settlements and towns in the surrounding area that have escaped the large-scale redevelopment that has taken place in the city itself since the early-twentieth century. Building survivals and limited documentary evidence in villages in Conghua and historical parts of towns such as Shawan and Foshan (Figure 1) allow traditional rural and urban building types to be explored.

Surveys of residential buildings in the Lingnan region were undertaken under the direction of Lu and Wei over several decades from the 1950s onward. A large number of architectural drawings of typical buildings and settlement plans were published in *Guangdong minju (Old dwellings of Guangdong)* (Lu and Wei, 1990). More architectural drawings of historical buildings have been prepared under the direction of Tang at Guangzhou University in recent years. These have been published in *Lingnan lishi jianzhu cehuitu xuanji (A collection of historico-architectural surveys in the Lingnan region)* (Tang, 2004a).

### Rural and small-town building types

Of the early dwelling types that are extant around Guangzhou, the most widely occurring is the *sanjian lianglang* house (Y. Lu, 2004, p. 518; Lu and Wei, 1990, p. 48; Tang, 2005, p. 123). Though now almost extinct in its basic form within central Guangzhou, it survives in sizeable numbers in numerous surrounding towns and villages. It is 3 *jians* in width, a *jian* (about 4 m) being a basic unit of house building (Lu and Wei, 1990, pp. 198-9), and has a symmetrical layout (Figure 2). There is a small courtyard, which is normally about 3 by 4 m (Pan and Peng, 2002, p. 63; Zhu and

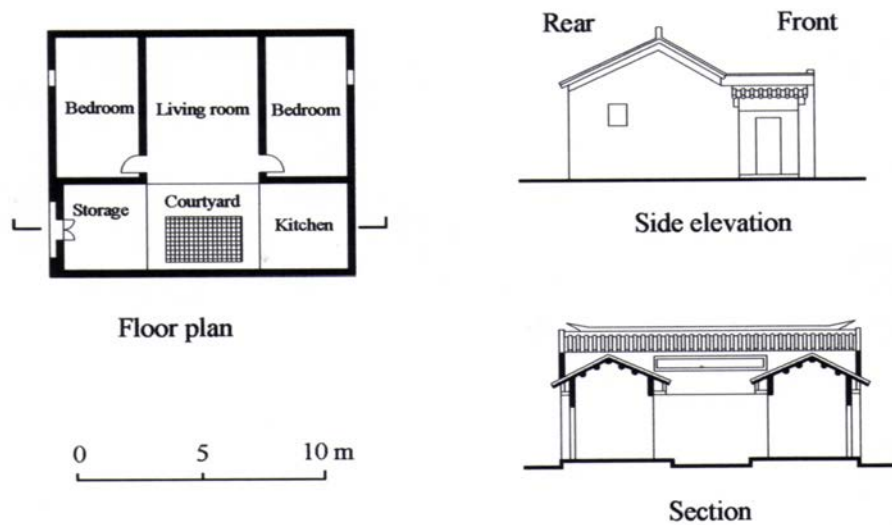


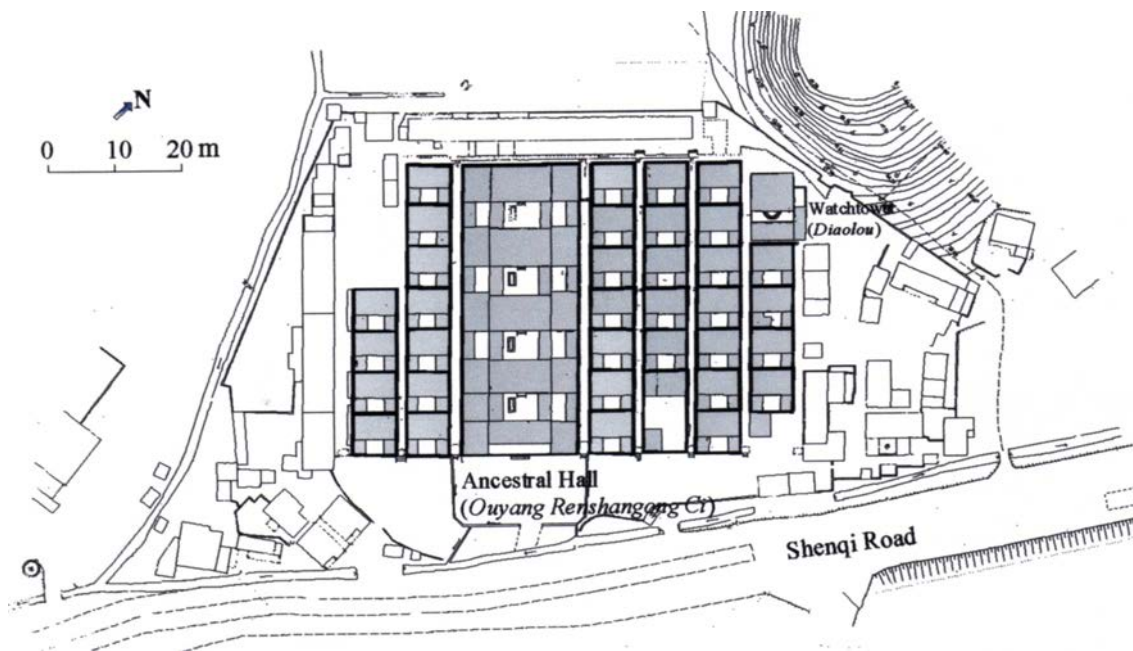
Figure 2. A *sanjian lianglang* house in Zhonglou, Conghua, based on authors' field survey.

Chan, 2006). Three adjacent rooms comprise the main part of the house, which is at the rear. The central one of these, the living room, is usually totally open to the courtyard. The other two are bedrooms. This part of the house has sometimes had a second storey added. Access to the house is most frequently through one of two smaller rooms (occasionally through both) on either side of the courtyard, one of these being the kitchen and the other used for storage. If the house is the first in a row and faces an open space, the entrance is frequently into the courtyard between the two small rooms. A space for ancestor worship is located prominently on an elevated deck in the middle of the central rear room. There is no window in the back wall of the house. This accords with *fengshui*, defined by Chatley (1917, p.175) as the 'art of adapting the residence of the living and the dead so as to co-operate and harmonize with the local currents of the cosmic breath'. The lower parts of the walls of some old houses are of stone, the upper parts frequently being of compacted earth. Grey brick walls are common. The most widely adopted load-bearing structure is a mixture of brick and timber frame (Pan and Peng, 2002, p. 62). Decorative brickwork on walls and wood carving on beams are quite common.

The *sanjian lianglang* house is frequently

one of numerous nearly identical units orientated south or south-east that together form what is known in the Lingnan region as a comb layout (*shushi buju*) (Lu and Wei, 1990, pp. 18-19; Tang, 2004a, pp. 127-44; Y. Wei, 1999, pp. 177-9). An example of such a plan is the village of Zhonglou (Figure 3), which dates from 1858 and is about 100 km north of the city centre of Guangzhou. The ancestral hall and defensive watchtower are characteristic structures within villages in the region. The dwelling houses in Zhonglou are arranged in rows separated by north-west to south-east orientated alleyways called *leng-xiang* (cool alleyways). Essentially for pedestrian use only, the alleyways are also aids to ventilation (Tang, 2005, pp. 98-100). The ratio of plot width to plot depth is about 1:1. In some cases there is a narrow space between houses but otherwise the only space within a plot that is not covered by buildings is the courtyard.

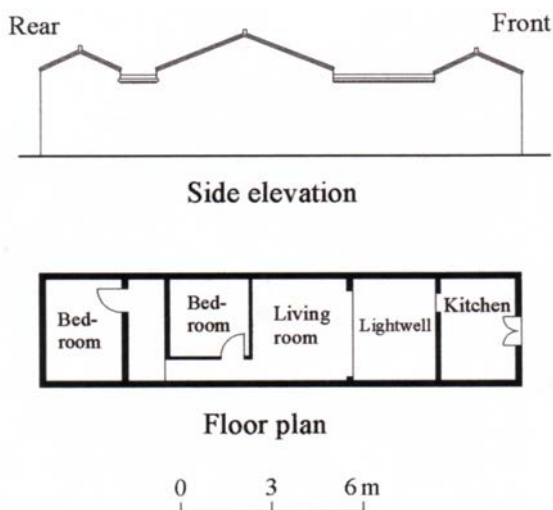
Many of these features of the *sanjian lianlang* house reflect local traditions and climate but, as is characteristic of peripheral regions of China (see, for example, Jiang, 1997), influences from central China are also evident. The central courtyard, its orientation, and the positioning of key rooms and worship space for ancestors reflect the influence of Confucian ideology emanating from central



**Figure 3. Comb-like layout of Zhonglou, Conghua, Guangzhou, based on an unpublished map of Zhonglou prepared by Guangzhou Research Institute of Mapping and Surveying, c. 2000.**

China. The smallness of the courtyard, creating shade and facilitating natural ventilation, has practical advantages in the subtropical climate (Tang, 2005).

Two essentially urban house types occurring in the Guangzhou area are the



**Figure 4. A single-storey zhutongwu in the central Lingnan region, based on Lu and Wei, 1990, p. 45.**

*zhutongwu* (the 'bamboo tube' house), which is about 1 *jian* in width (Figure 4), and the *mingziwu*, which is about 2 *jian*s in width (Figure 5). The origins of the *zhutongwu* and *mingziwu* are unknown. However, pressure on space, especially street frontage, would seem to have been a factor influencing the narrowness of the *zhutongwu*. The basic plan of a *zhutongwu* is just one room and a corridor in width, but it is up to five rooms deep (Figure 4; Lu and Wei, 1990, p. 51). The ratio of width to depth is between 1:3 and 1:5. Lightwells (*tianjings*) are the nearest equivalents of the courtyard in the *sanjian lianglang* house. In the *mingziwu* shown in Figure 5, a private unroofed passageway (labelled '*lengxiang*') provides access to rooms on one side. The *mingziwu* is sometimes regarded as a pair of *zhutongwus* (Lin and Sun, 2004, p. 18). However, the two 'halves' are often functionally distinct: the sequence of rooms leading directly from the entrance (lightwell – living room – lightwell – living room) tends to be regarded as the principal part of the house.

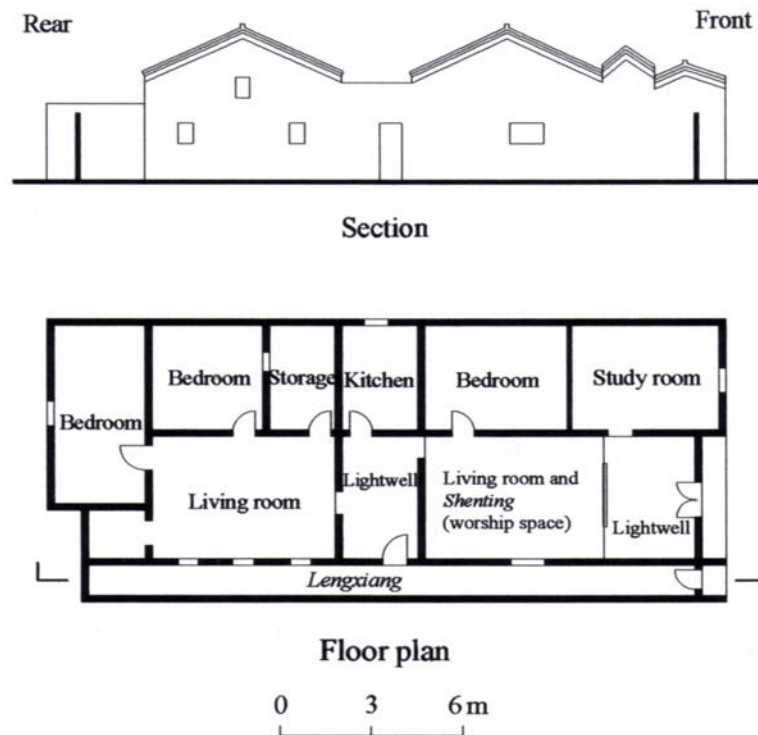


Figure 5. A *mingziwu* in Donghuali, Foshan, based on Li, 2007, p. 39.

### Residential building forms in Guangzhou

Within the city of Guangzhou itself, building orientation, arrangement of worship space, floor plans, room hierarchy, and the main constructional materials (Figures 6, 7 and 8) have considerable similarities to those in the surrounding area. The corridors and private passageways within buildings are reminiscent of the public alleyways in rural areas. In the case of the courtyard, however, it is either much smaller or its place has been taken by a lightwell.

In comparison with the characteristics of rural and small-town building types, those of the nineteenth-century building types that have survived in Guangzhou reflect greater pressure on land. The *sanjian lianglang* house (often referred to as the *dawu* in urban areas), *zhutongwu* and *mingziwu* frequently have a second storey, at least at the rear. Versions of the *zhutongwu* with two or more storeys were probably the major residential building type built in Guangzhou between the late-nineteenth and mid-twentieth centuries.

### Multi-storey *zhutongwu* and *zhutongwu* flats

In the apartment buildings constructed in Guangzhou between the late-nineteenth century and the Second World War, each apartment commonly had a floor plan resembling that of a *zhutongwu* (Figures 9 and 10). Many of these buildings, three or more storeys high, still exist. Apartments were built side by side and back-to-back. Because of the depth of the buildings, with up to eight rooms between street frontage and rear wall, natural light is negligible in many rooms, and the inhabitants are at major risk in the event of fire. The generally Western appearance of the façades of these buildings belies their internal structure. Some public buildings are also derived from the *zhutongwu*, for instance the Dongya Hotel in the Yuexiu district (Tang, 2004a, p. 231). In some cases, more economical use of land has been attained by constructing two multi-storey *zhutongwus* with a shared staircase and lightwell (Figure 9). This is a precursor of a common arrangement within post-1949 apartment buildings.

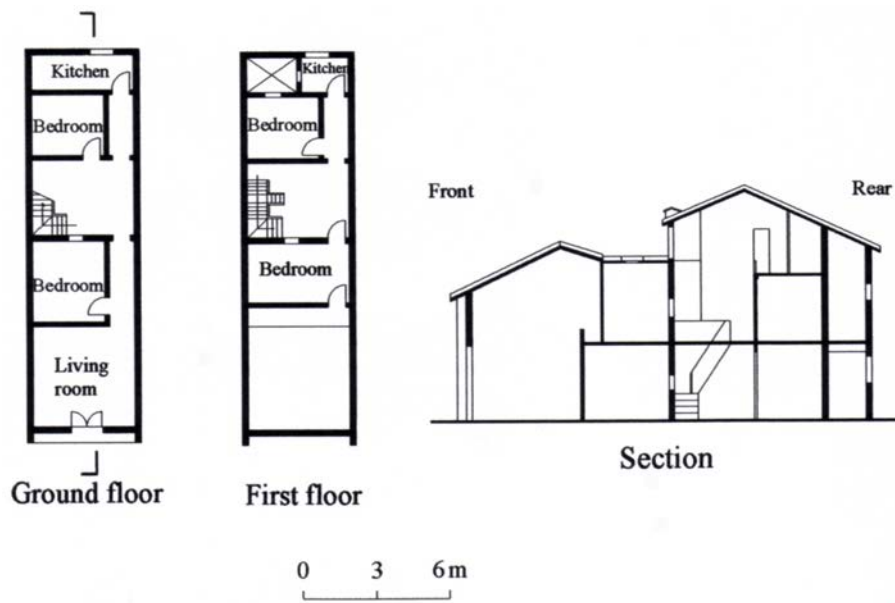


Figure 6. Two-storey *zhutongwu*, 5 Baoxian Dongjie, Guangzhou, based on Lu and Wei, 1990, pp. 54-5.



Figure 7. A *mingziwu*, 14 Baohuabei, Guangzhou (authors' photograph, 2007).

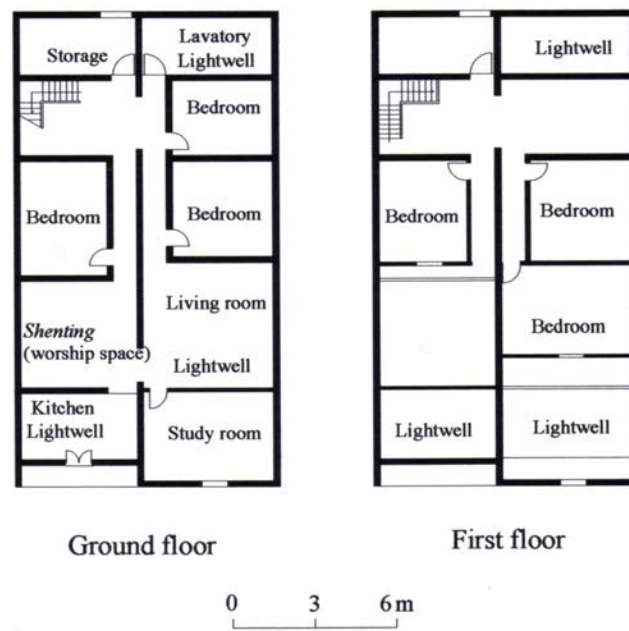


Figure 8. Floor plans of a two-storey *mingziwu*, 14 Baohuabei, Guangzhou, based on authors' field survey.



Figure 9. *Zhutongwu* apartment building, 29 Baoxiang Nanlu, Guangzhou (authors' photograph, 2007).

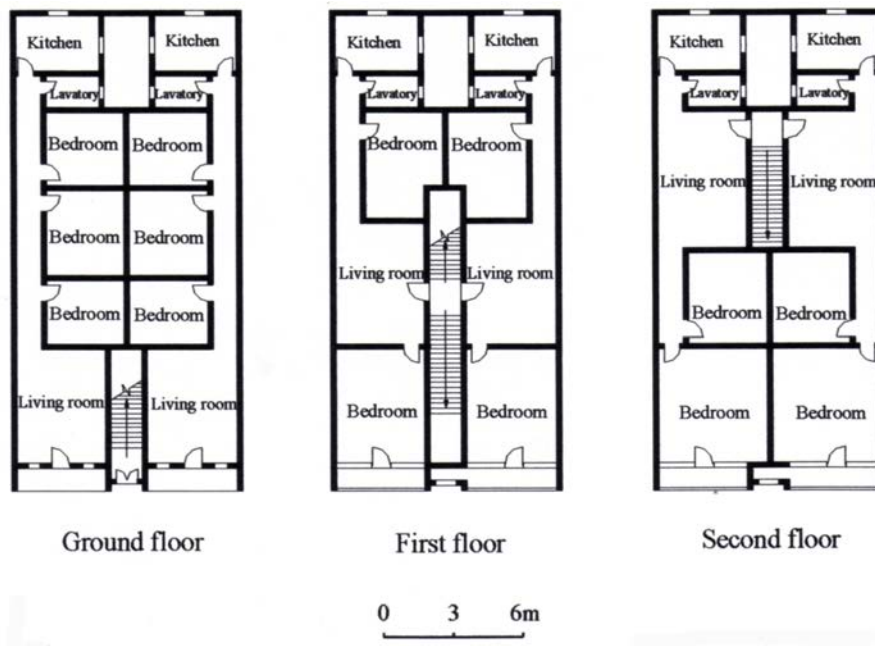


Figure 10. *Zhutongwu* flats, 29 Baoxiangnan Road, Guangzhou, based on Lu and Wei, 1990, p. 57.

#### *The Xiguan dawu*

Another essentially indigenous dwelling type in Guangzhou is the Xiguan *dawu* (Figures 11 and 12), named after the Xiguan area which is just west of the line of the most recent city wall (Figure 1). It contains features of the *sanjian lianglang* house, particularly in the disposition of rooms and lightwells (the latter being the counterparts of the courtyard). But it also has, on either side of the central block of rooms, a corridor, characteristic of the *zhutongwu*, which gives access to a series of flanking rooms. In the example shown in Figure 12, the space usually occupied by one of those flanking rooms is an outside garden. Because of its very large size, this house type is often referred to as the great Xiguan house. It was mainly constructed in the western part of the city between the 1820s and the beginning of the Republic (Zeng *et al.*, 1997, p. 6). Houses of this type were mostly owned by merchants and government officials. Western ornamentation became increasingly evident towards the end of the nineteenth century (Tang, 2004b, p. 38-9).

#### *The qilou*

Within Guangzhou, admixtures of indigenous and Western characteristics became widespread in the first half of the twentieth century. In shopping streets in towns and cities in the Lingnan region this was evident in the construction of *qilous* (colonnaded shop-houses) between 1918 and 1937 (C. Lin, 2001, 2005; L. Lin, 2006). Internally they had considerable similarities to one or more of the types already described, but their street façades were predominantly Western, frequently classical revival or art deco in style (Figure 13). Though concrete was frequently used in their construction, their floor plans were similar to those of traditional types (L. Lin, 2006, pp. 87-9). They were first proposed in 1912 as part of the implementation of the urban redevelopment policies of the newly established Republican government. Guangzhou adopted a policy whereby reconstruction on major commercial streets or on a frontage to a road along the riverside had to incorporate an arcade, about 8 *chi* (about 3.3 m) in width, so that pedestrians were separ-



**Figure 11. A Xiguan *dawu*, 22 Hongchang Dajie, Guangzhou (authors' photograph, 2007).**

ated from vehicular traffic. The arcade also provides pedestrians with shade. Over 40 km of streets in Guangzhou were redeveloped with *qilous*, mostly within the area bounded by the line of the most recent city wall or to the immediate west of that area.

#### *The Dongshan house*

Western-style villas in gardens (Figure 14) were mainly developed in the Dongshan district, just east of the walled city. Such houses became referred to as Dongshan

houses. Influenced by the garden-suburb idea, particularly its British manifestations, the city's government encouraged the development of new 'model villages' (*mofan xincun*) (Y. Liu, 1997, p. 118). In 1924 a document guiding the development of the Guanyinshan residential area for 'overseas Chinese' proposed that two-thirds of the plot of each household should be garden or open space. However, Dongshan houses were generally not replicas of Western detached houses. The gardens were relatively small, reflecting the shortage of land, and high garden walls only a few metres from the fronts of the houses,

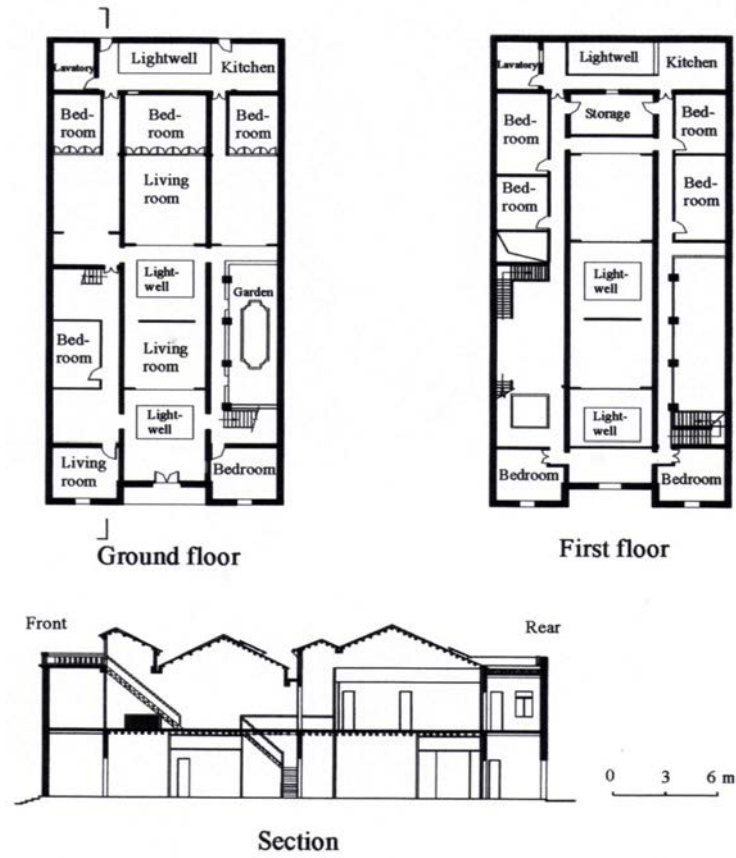


Figure 12. A Xiguan *dawu*, 22 Hongchang Dajie, Guangzhou, based on Tang, 2004a, pp. 122-4.



Figure 13. *Qilou* buildings, Wende Nanlu, Guangzhou (authors' photograph, 2007).



**Figure 14.** A Dongshan house, 26 Duobao Nanlu, Guangzhou (authors' photograph, 2007).

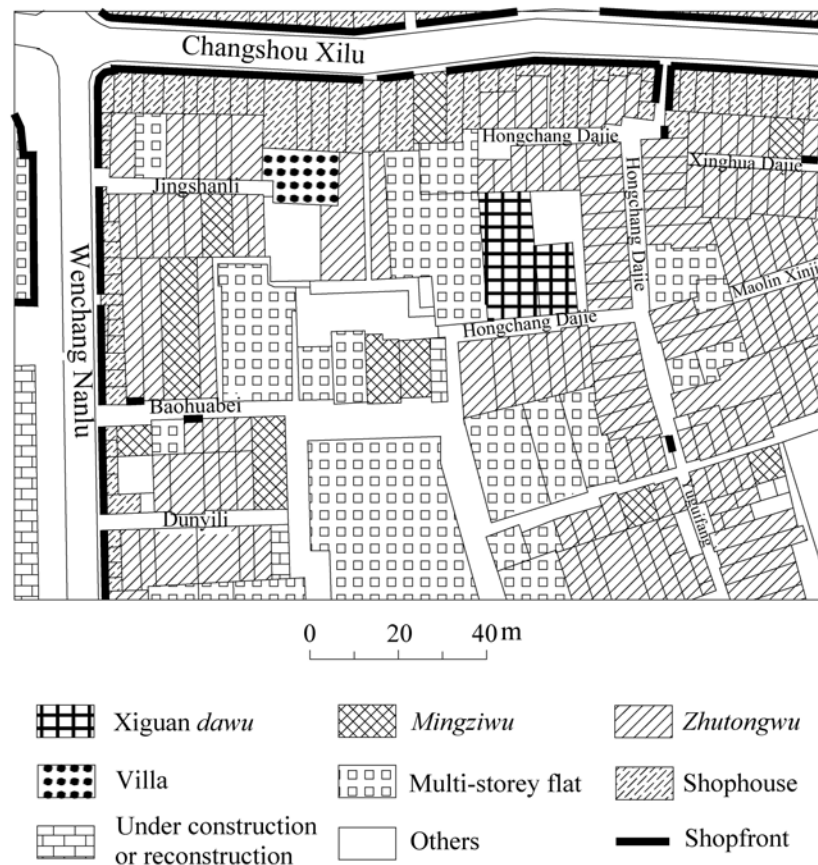
frequently having a Chinese-style gate, separated the gardens from the road. Chinese decorative features were common, both internally and externally, balconies were almost universal and occasionally the roof was Chinese in style (Lu *et al.*, 2003). Some early garden villas, built at the beginning of the twentieth century, are in the western part of the Xiguan district. The floor plans of Dongshan houses are markedly different from those of traditional buildings types in the region, but continuity with traditional houses is evident in decorative features and the arrangement of worship space.

#### **Adaptations and new types**

To map, for Guangzhou and its environs, survivals of the various traditional building types of which an outline has been provided here would be a major undertaking. Mapping by the authors has recently been completed of a small area in west-central Guangzhou, within the Xiguan area (Figure 15). The mapped area

is some 700-800 m west of the line of the most recent city wall, and a little less than half that distance north of a major commercial street, Xiajiulu. Except for commercial land use along the two main thoroughfares, Changshou Xilu and Wenchang Nanlu, the majority of the buildings within the mapped area are in residential use. It is not suggested that this area is representative of the survival of traditional residential buildings of different types. Furthermore, it should be borne in mind that the present distribution of building types in the Guangzhou area is as much a product of the patchwork of redevelopment as it is of the pattern that existed in 1949.

In the absence of building records, categorization of houses into pre-1949 and post-1949 (Figure 16) was necessarily based largely on circumstantial evidence. The identification in the field of changes of building use (predominantly conversions of houses into flats) was also subject to error (Figure 16), particularly where equivocal external evidence could not be supplemented by inspection of the building interior. There is no doubt, however, that



**Figure 15. Building types in the Changshou Xilu area, Guangzhou, November 2007, based on authors' field survey.**

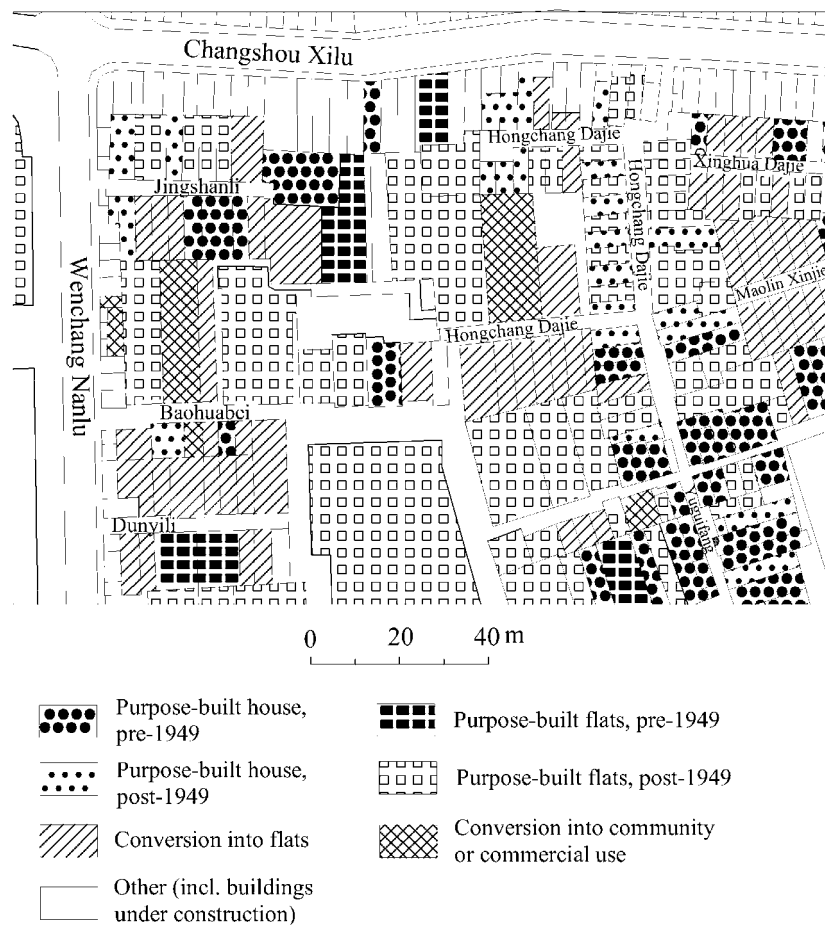
building conversions are widespread, as are other modifications of physical form, and this is borne out by less systematic field observation in several parts of east-central and west-central Guangzhou and in surrounding urban settlements. Internal alterations, especially subdivisions, and additions, mainly the adding of storeys, have occurred widely. Most of these changes have been piecemeal responses to shortage of space, many of the additions having occurred without the approval of the local authority. The subdivision of *zhutongwus* to form two or more flats is the single most common adaptation. Usually this has been achieved by the addition of an external door to give separate access to the upper floor or floors by means of a modification of the staircase that originally gave internal access from ground floor to first floor. It is likely that these subdivisions into flats are a precursor of, and a model for, purpose-built *zhutongwu*

apartment buildings, but evidence of the timing of changes to buildings is insufficient to confirm this.

In the case of other historical sequences, it is more difficult to specify adaptations of existing buildings that provided a model for builders of the new building type that was to follow. For example, evidence of conversions of courtyards into lightwells is rare but the suggestion that the lightwell in this part of China was an idea born out of a courtyard 'culture' under increasing pressure on space is very credible.

### Interpreting residential building forms in Guangzhou

Hitherto scholars researching the Chinese house have recognized several different building types, but they have stopped short of



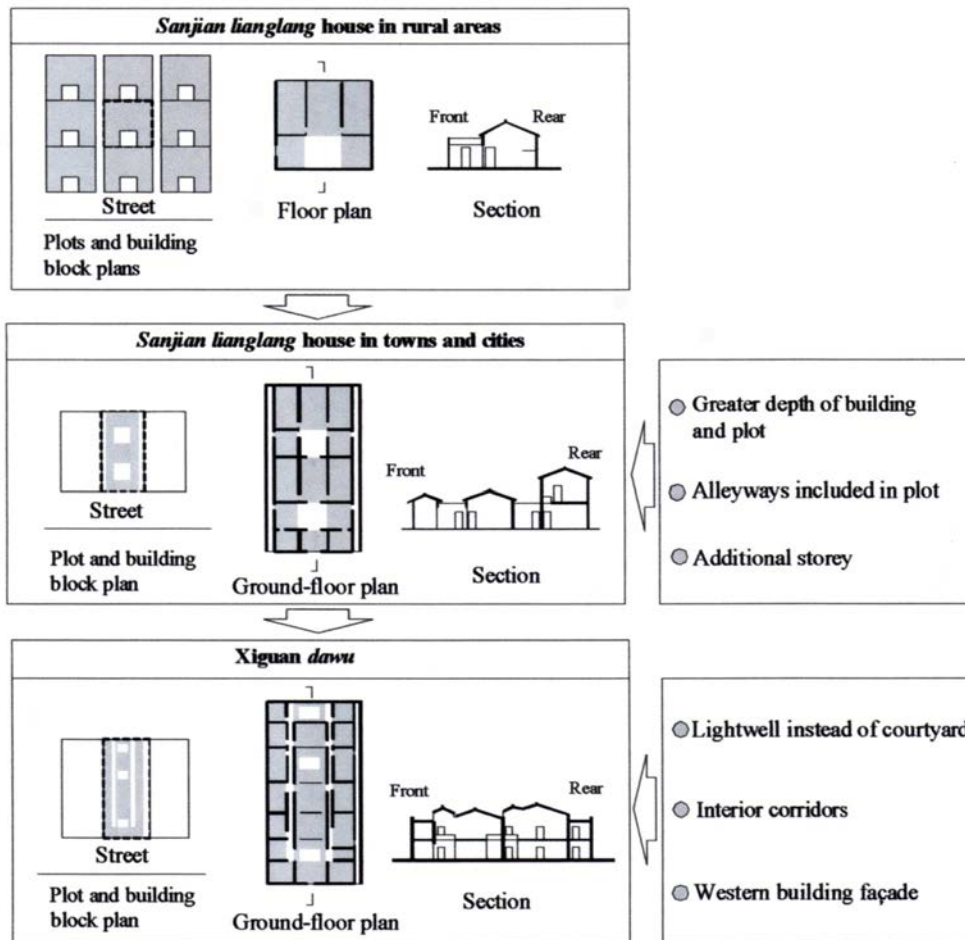
**Figure 16. Age of dwellings and types of conversion in the Changshou Xilu area, Guangzhou, November 2007, based on authors' field survey.**

integrating these within a developmental framework. The foregoing account, necessarily based on fragmentary information, from a number of sources of variable quality, provides a basis for speculating about the form that such a framework might take.

The process of historical development of the *sanjian lianglang* house and the *zhutongwu* may be schematized as shown in Figures 17 and 18. As pressure on land has increased, so new buildings have tended to be set in longer plots. The rural *sanjian lianglang* house is, by Chinese standards, a shallow building. Its urban counterpart and, we postulate, typologically its successor (Figure 17), is a deep building, created by a process that Caniggia and Maffei (2001, pp. 96-7) term 'doubling'.

As regards ground plan, alleyways, which tend to be external to the plot in rural areas, at least in the case of the *sanjian lianglang* house, are generally internal to the plot and, in most cases, internal to the building (i.e. they have become corridors) in twentieth-century urban layouts.

Though in Guangzhou itself much of the physical evidence of the development of the *sanjian lianglang* house into later types of dwelling has been lost, the development of the *zhutongwu* and *mingziwu* into their apartment and multi-storey forms is more accessible to field observation. Again, a major driving force was the increasing need for economical use of land, especially street frontages. In England a century earlier, the blind-back house, subse-

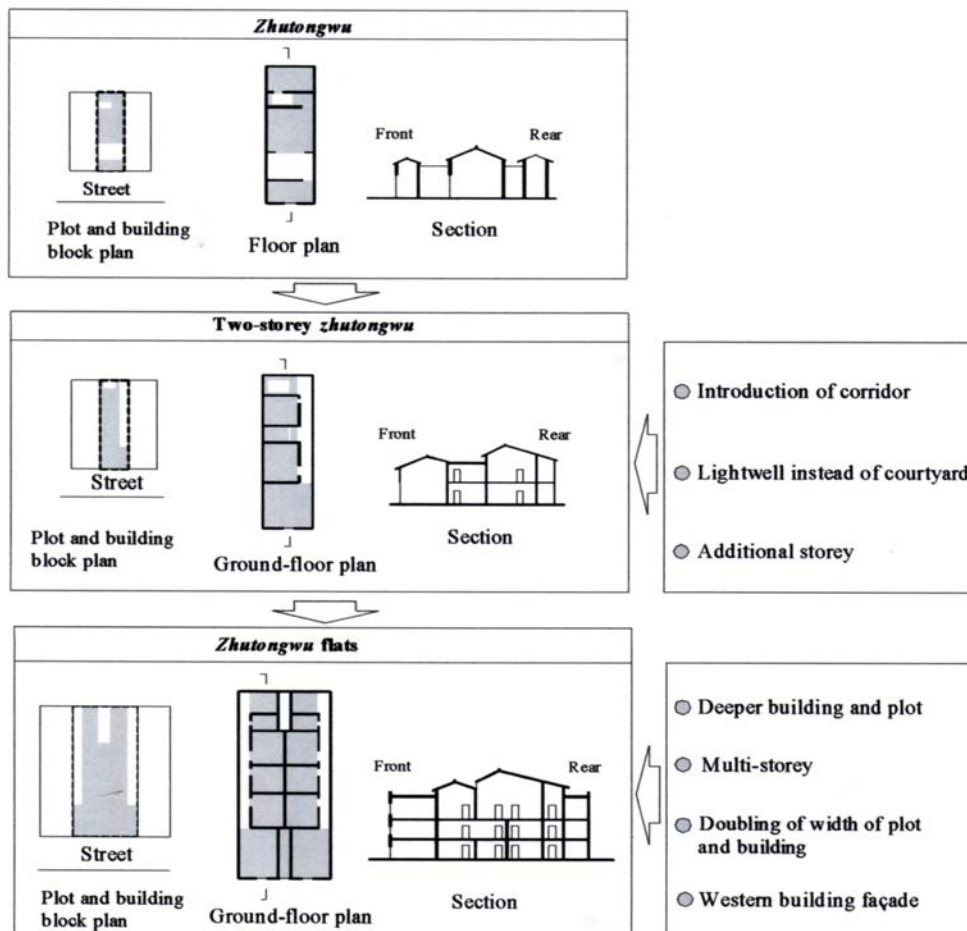


**Figure 17. Schematization of the historical development of the *sanjian lianglang* house in Guangzhou and the surrounding area.**

quently proliferating in the form of the back-to-back house in extensions to urban areas, had been a recurrent part of the solution to a similar problem (Whitehand, 2001, pp. 73-5). In the Lingnan region, the early plot type was very different: generally wider and shallower. The scope for increasing building coverage was limited to the substitution of the lightwell for the courtyard and the internal corridor for the alleyway. Emphasis was on accommodating more storeys rather than increasing building coverage. In Guangzhou, as the importance of centrality and, in commercial areas, street frontage increased, new development took the form of very narrow strip plots and, by the end of the nineteenth century, multi-storey development, largely adapting, at progressively greater heights, traditional

*zhutongwu* ground-floor plans. Such vertical packing was somewhat less evident in England and scarcely evident at all in northern China until after 1949.

Western style façades (often displaying classical or art deco features) became the norm for the more expensive residential buildings constructed in the 1920s and 1930s. Even some *zhutongwus*, which were largely for common people, had Western ornamentation. By this time, however, Westernization was having a wider effect, albeit on a small minority of houses, occasionally influencing internal plans and the positioning of houses within their plots and, in extreme cases, even influencing the layout of streets. Nevertheless, single-family houses of essentially *zhutongwu* type have been constructed in the post-1949



**Figure 18. Schematization of the historical development of the *zhutongwu* in Guangzhou and the surrounding area.**

period, especially in recent decades.

In emphasizing the historical lineage of residential building types in the Guangzhou area, it is necessary to stress the geographical distinctiveness of that area within the much wider Chinese culture area of which it is part. Features evident in the majority of urban residential buildings constructed in the Guangzhou area during the period studied were lengthy corridors, edges of buildings contiguous with plot boundaries, blind backs, small courtyards or lightwells, approximately north-south orientation, and prominent positioning of worship space.

While the Communist Revolution marked a major break in continuity, and the end of the period considered here, the lineage that we have begun to trace did not end completely at that time. The *jian*, for example, continued as

a module. This was partly the effect of the continuing influence of previous plot boundaries. However, this module is also evident in the dimensions of the bays and associated structural units that are characteristic of large multi-storey blocks that occupy sites that have been assembled by amalgamating numerous previous plots.

The fact that, during the period being studied, morphological periods such as are characteristic of Great Britain are not as evident in the Guangzhou area, and are even less evident in China generally, reflects to varying degree a number of factors. The rigidity of the social hierarchy in traditional Chinese society, until the establishment of the Republic, had a major impact on buildings. Ordinary dwelling houses were at the bottom of a building grading system in which many

types of construction were permitted for high-grade buildings only. Other factors that tended to create a degree of uniformity in the physical form of dwellings and settlements included *fengshui*, which had a particularly important effect on the orientation of dwellings, and the development of standard dimensions for bricks (the major walling material) and tiles (the main roof covering), and near standard dimensions of wooden pillars and roofing structures based on available timber. In combination with the more general effects of established custom, these forces were associated with the widespread construction not only of dwelling houses of similar scale, but also approximately the same plan – living room, bedrooms, kitchen and lavatory tending to have specific positions. Standardization was perhaps further engendered by the fact that architects as members of organized professions scarcely existed, even in a major city such as Guangzhou, until the twentieth century (Peng, 2005, pp.1-3). Much of the supply of labour for building was provided by agricultural workers (Z. Liu, 2000, p. 120), many of whom were hired for brick laying and other construction work during quieter periods in the farming year. These workers revered their ancestors and maintained traditions passed down through countless generations. This may have contributed to the fact that, until the twentieth century, morphological periods were less evident than in the West.

## Conclusion

The idea of a typological process in the development of the form of buildings has previously been limited in its application largely to a few areas in the West. In this paper it has been explored in relation to a synthesis of previous research on residential buildings in the Guangzhou area in China. The fact that systematic records of the construction of ordinary buildings, including their dates of construction, are rare in China, even for large parts of the twentieth century, is a major problem. Our schematizations of the historical development of the *sanjian liang-*

*lang* house and the *zhutongwu* are in large part conjectural. Nevertheless, the concept of the typological process has proved to be a useful means of extending the study of residential buildings beyond the recognition of individual types. At the very least it is a stimulus to hypothesis testing that can provide a basis for a more general developmental framework within which hitherto largely descriptive categories of buildings can be placed.

In the area studied, Westernization tended to affect larger houses first, but mainly took the form of Western-style façades until the middle of the twentieth century. Survivals of a recurrent residential building type in the towns and villages surrounding Guangzhou – the *sanjian lianglang* house – exhibit several characteristics that appear to have influenced recurrent features in urban building types surviving within inner areas of Guangzhou; especially in the *zhutongwu*, the *mingziwu* and the Xiguan *dawu*. Increasing pressure on land in the course of the twentieth century has led to increases in the density of dwellings both by conversion of single-family houses into flats and the construction of purpose-built flats where sites have been redeveloped. This has entailed only a small increase in building coverage (since this was already close to the maximum), but large increases in the number of storeys. However, features of traditional construction and layout, of which many examples still exist in surrounding towns and villages, are continuing to be used in new buildings in central Guangzhou, albeit adapted to the higher densities that now prevail: the courtyards and alleyways that have from time immemorial characterized surrounding settlements have higher-density counterparts in the lightwells and corridors of many twentieth-century urban buildings, including some built recently.

The investigation described here is a step in the cross-cultural exploration of urban morphological ideas. The focus has been on building types, but in due course it needs to be integrated with work on other urban morphological aspects, notably the ground plans of settlements (Whitehand and Gu, 2007) and urban land-utilization patterns. In this way

ideas can be developed that encompass the urban landscape as a totality and provide an important part of the groundwork for understanding wider aspects of urbanization processes that have taken on major importance practically worldwide – processes in which China has had a key role historically and in which it seems likely to play a major part in the twenty-first century.

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