Vertical Vernacular

by

Fan-ju Susan Tang

唐凡茹

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Author's Declaration for Electronic Submission of a Thesis

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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[Abstract] Vertical Vernacular

The rapid modernization and densification of Taipei has resulted in a culturally and socially unsustainable society. The North American paradigm of high-rise condominiums disrupts the social pattern of the vernacular family, cultural activities and communities, isolating the city dwellers within their own homes. The physical city no longer reflects or supports its social and cultural condition, thus has led to the disintegration of traditional customs and lifestyle without a sustainable replacement. The hypothesis of this thesis is that high-density residential architecture can be reinvented through the reinterpretation of vernacular dwelling to accommodate cultural sustainable activities and a sociable, identifiable community.

The first three chapters record and examine three branches of research: vernacular Taiwanese culture and architecture, high-density vernacular architecture, and the current condition of Taipei, Taiwan. The research deals with various disciplines, most importantly family and social structure, to provide a foundation for further discussion of dwelling condition versus culture. Chapter iv compares and analyzes the relationship between residential architecture and lifestyle of the vernacular and current dwelling. It argues for the importance of communities at different scales, bound together by a hierarchy of communal spaces. The condominium building is carefully reexamined under the categories of the unit, the floor, the building as a village, and the neighbourhood.

The design project, Vertical Vernacular [chapter v], presents a new typology of high-density residential architecture. It demonstrates the implantation of the theories and prototypes developed in the previous chapter, by consideration of current culture and family structure, including both traditional customs and modern lifestyle. A full range of unit plans are developed based on demographics, family structure, traditional custom, and adoption of tradition to modern imperatives. The co-operative living environment inspired by the vernacular dwelling creates friendly, strong and safe communities within the condominium. Furthermore, the project aims for the feasibility of the concept within the densest district of Taipei City from a developer's point-of-view.

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to my beloved homeland

Taiwan

Ilha Formosa

May there be freedom and peace for my beautiful island

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Preface

I grew up in the oldest city in Taiwan – Tainan [台南]. My childhood home was a reinforced concrete four-storey street house, similar to a townhouse, with a storefront facing a four-lane street. The six-metre wide back alley was our playground. I went to an elementary school with over 6000 students. I spent many of my weekends in parks, temples, and historic monuments. My neighbourhood was old, busy and diverse. There was a community temple across the street, a large church and small shrine in the back alley and a three-storey market place around the corner.

We used to visit my grandparents in Taipei [台北] every year. It was a much taller, denser, and noisier city than Tainan, and even more chaotic. My grandparents moved from a single house into a fourteen-storey condominium when I was eight. I was bedazzled by the manmade waterfall in the front lobby. At the time, tall condominium complexes were going up everywhere in Taipei. Very few people could afford an entire street house in Taipei. I did not like Taipei then. The experience of the traffic and smell of the modern city was unpleasant.

I moved to Toronto when I was thirteen, into the suburb of North York. When I went back to visit Taiwan, many of my relatives and friends in my hometown had also moved into condominiums. Here and there, I heard many complaints associated with condominiums. The lobby of my grandmother's condominium had lost all its grandeur. The waterfall had stopped flowing and the front garden had barely anything in it. People missed their old neighbourhoods, the courtyard houses or the street houses. They had been friendlier and safer, because their communities

0.01 major ethnic groups in China

There are 55 officially recognized ethnic groups, in addition to the dominant ethnic group, *Han* [漢]. In the 2000 census, the 55 ethnic groups only make up 8.9 % of total population. Nonetheless, most of the current *Han* population are likely mixed with another ethnic group through the long history of intermarriages and assimilations.

were like a bigger family. Kids had space to run around outside of home; seniors had a place to sit and watch while life goes on. In a condo they said everyone stays behind their own door. At my cousin's place, there was a paved open court surrounded by condominium complexes, but it was always empty.

I went back to Tainan again in 2000, and discovered that not much had changed. The city is chaotic and dense, yet it has the laid back atmosphere of a small town. Taipei, in my mind, has grown to become a real modern metropolis overnight. The Taipei Metro is cool and clean and on schedule. It only cost me a bit of change and thirty minutes to travel to places that used to take a taxi driver forever while weaving through the traffic. I came to love the new Taipei, where the modern skyscrapers coexist with the street vendors, street signs and the markets.

As of this month, July 2006, I have been in Canada for thirteen years, as many years as I had lived in Taiwan. My home in my dreams is still the old concrete house in Tainan, even if the dream is not set in Tainan. When I first came to Canada, I had often been confused by the question, " Are you Chinese?" In school, I was always taught Taiwan is the "Republic of China". In that case, I am Chinese. However, the majority of people around of world cannot differentiate the Republic of China from the People's Republic of China. We were also taught that we, the Republic of China would take back the Mainland [China] to liberate our countrymen from the torment of communism. Ironically, the communist Chinese were taught that they are going to 'free' Taiwan. Free her from what? Without really knowing the movement for national independence

in Taiwan, I began to tell people, “I am from Taiwan.”
I use the Chinese language, studied Chinese history and philosophies, but I am four generations Taiwanese. In the Chinese language, there are different terms to specify the details of different sub-races and emigrants. I have adopted these terms in my thesis to clarify and differentiate the concept of historic Chinese culture from the modern communist Chinese culture:

China, [中國, *Zhong-kuo*], literally means Middle Kingdom or Central Kingdom. The term dated back to the West Zhou dynasty [西周][appr. 1027 - 771 AD]. The people of the *Han* [漢] race, located on the plains of the Yellow River [黃河], referred to the other races from the four directions as barbarians [蠻, 夷, 戎, 狄]. They considered where they lived to be the centre of the world, the Central Plains [中原], therefore their country is the Middle Kingdom. The countries changed, split and united. While each country has its own name, the name Middle Kingdom is always used to decribe the central countries as a whole, the cultured and the dominant people of the world. The borders of the Middle Kingdom expanded through time. Each ‘barbaric’ race that invaded and took over the Central Plains adapted to the *Han* culture and the term Middle Kingdom (image 2.08). For example, under *Attila the Hun* [胡], the Mongolians occupied the Central Plains, expanded the country and adopted the *Han* governmental systems. During the Qing Dynasty [清朝], the Manchurians adopted Mandarin, a *Han* dialect, as the official government language. They refered to themselves as the Mongolian Empire or the Qing Empire, but they considered themselves the Middle Kingdom, which was never an official name of the country until the establishment of the Republic of China [中華民國] in 1912. Though China includes many ethnicity, the common concept of ‘Chinese culture’ generally refers to *Han* culture. Therefore, to be more specific, I use terms such as *Han* and the Mainland [大陸] (now PRC). The thesis also mentions the sub-races of *Han*, such as *Hakka* and *Hoklo*, who immigrated to Taiwan.

As my life became involved with architecture, I occasionally would think about the historic buildings I spent my childhood in, and the condominiums in Taiwan. Both Taiwanese and Chinese have a hard time finding their own modern identity. Due to globalization, the current arts, music and architecture resemble Western

influences. Many architects take the route of postmodernism in such a way using the icons of vernacular *Han* architecture in decorating or presenting their version of contemporary architecture. For example, the *Taipei 101* uses the vernacular auspicious symbol as the focus of exterior elevation to of the skyscraper. The entire building presented by stacking and repetition of the symbol conveys the *Han* idiom, “stepping up to greater heights” [步步高昇]. I think there is more innate value in the vernacular culture and architecture than decorand symbols.

The concrete street-house I grew up in, built in 1980, has sofas, televisions, Western bathtubs and flushable toilets, is not environmentally sustainable, and has no consideration in passive energy design. Nonetheless, it is vernacular in many ways, in its reference to the cultural and social structure of the residents and the neighbourhood. Our lives were intertwined with the storefront and the street. Within the house, the location of the living room, the ancestral hall and little things such as the bathroom layout reflected the Taiwanese lifestyle. The condominiums forcibly change the vernacular way of living.

This thesis started on two wandering paths: one an inner search for identity, to find "Taiwanese" architecture, the other the search for a better urban living condition, to improve the current condominiums in Taipei. The paths intersect at the central question of the thesis: what is a condominium dwelling which encompasses Taiwanese social and cultural values. The thesis is a compilation of the research, progress, discussions and my vision of the new urban dwelling typology, the courtyard condominium. It is a vertical modern village which will accommodates

Vernacular Taiwan: culture & dwelling

1.01 [cover] the courtyard of a street house
[cover: right] reconstruction of the Kangxi map of Taiwan [康熙台灣輿圖] drawn around 1700 AD.

1.02 map of Taiwan 1896

i introduction: [vernacular Taiwan]

What is considered the vernacular culture of Taiwan? Without understanding its political and historical background, it would be impossible to identify Taiwanese culture. It is also necessary to define the term vernacular, since the word has been used in different contexts.

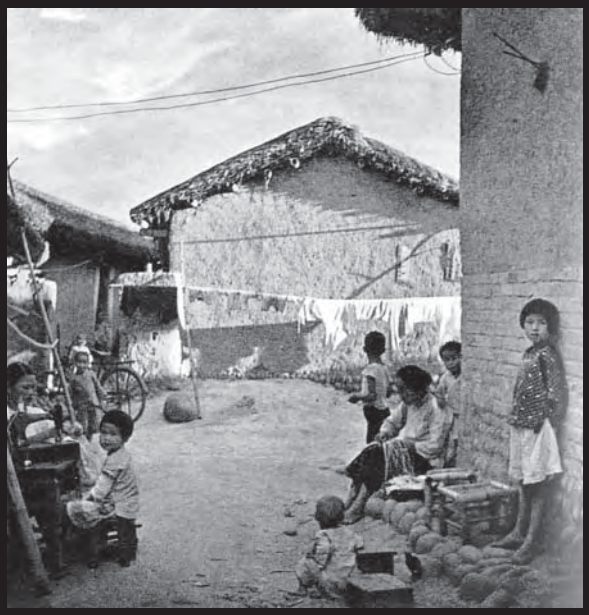
Much as in the case with Canadians, the search for a sense of nationality and identity is a recent phenomenom among the Taiwanese people. Taiwanese history similarly started with aboriginal people, followed by colonization and immigration. As of now, the small island named Taiwan functions as a democratic country with all the necessary internal and external governmental structures, including a constitution, a parliament and military forces. However, Taiwan does not have true international recognition as a country due to her political conflict with China. Is Taiwan the name of a democratic country, a province of the Republic of China [ROC], or the property of the People's Republic of China [PRC], also known as communist China? While the PRC claims ownership over Taiwan, its government has never set foot or had any control of Taiwan in its short history.

Although I have a definite stance regarding the independence of Taiwan, my purpose in this introduction and brief historic overview is not to discuss politics, but to convey the foundation for the development of a national identity. I believe it is necessary for a people to identify with each other, before their behaviour can be defined as a distinct culture. The development of Taiwanese culture can be divided into three phases[1]: the inter-marriage and assimilation of the *Han* and Aboriginal cultures; the importation of Japanese and Modern Western culture; and

the period after the Second World War, with the introduction of Western political structures and democracy. 1945 marked the end of the Second World War and the end of Japanese Colonization, followed by the establishment of the Republic of China[2] in Taiwan. The retreat of the ROC to Taiwan actually served to further remove Taiwan from the modern cultural development of the communist China. The PRC government went through several movements to relinquish traditions and culture[3] in Mainland China, whereas the ROC government strategically promoted *Han* values to suppress local identity in Taiwan.

Vernacular Taiwan could be defined as "derived from local traditions and conditions of Taiwan." These factors include cultural, social, and economic values, architectural styles, as well as the local climate and available materials. The convention for "vernacular" in terms of architecture generally refers to architecture before the industrial revolution. Much of current architecture is still locally derived with strong Western influences, and the dwellings are mainly driven by technology, such as reinforced concrete construction[4], elevators, television and air conditioning. Vernacular architecture is often confused with sustainable architecture or green architecture. Though much more reflective of its environment, vernacular dwelling was not purposely designed to be environmentally sustainable, but to best accommodate the cultural rituals, social events and health of the residents.

Taiwanese culture has been created through a process of adaptation, adoption and assimilation of the many peoples that have occupied the island. The multicultural residents adapt to the new environment, adopt foreign values and assimilate each other. In short, Taiwanese culture is the direct product of the complex history caused by its geographical location. This chapter briefly describes the history and origins of the political, cultural, social and architectural influences that constitute Taiwanese heritage, providing background for further examination and discussion of the current residential conditions.



1.03 [top] old dwelling 1930

1.04 street houses 1966

[1] Huang Wenxong, 61.

[2] Hooker, Richard. Dr. Sun Yat-sen is the father of Republic of China [ROC], and the Nationalist party. ROC was founded on the Three People's Principle [三民主義] written by Dr. Sun: nationalism, democracy, and equalization. He had hoped to unify China with his ideology when he was elected as the first president in 1912. However, he died in 1924, whilst China was under the division of several generals, or warlords. Soon after the Second World War, Chiang Kai-shek lost the civil war to the Communist party and retreated to Taiwan. Chiang Kai-shek's government idolized Dr. Sun, and used the Three People's Principle as a slogan and base for the Constitution of ROC. However, he ran the country as a dictator until his death.

[3] The Cultural Revolution [文化大革命] made a substantial change in the culture and lifestyle within mainland China [PRC].

[4] Since the 1950s, almost all residential buildings in Taiwan are constructed with reinforced concrete.

1.05 historical timeline comparison between mainland China and Taiwan

Mainland China People's Republic of China		Taiwan [Republic of China]	
approx. 2000 BC. Xia Dynasty [夏] *Han*		approx. 4000 BC.	earliest evidence of Polynesians in Taiwan
Yuan Dynasty [元] Mongolian			
	1368		
Ming Dynasty [明] *Han*			tribal society mainly occupied by Aboriginals with few Chinese immigrants
		1557	discovery of Formosa by Portugese
		1624	Dutch colonization
	1644		
		1661	Ming Cheng Dynasty [明鄭]
		1683	
Qing Dynasty [清] Manchu			Qing Dynasty [清]
		1886	Taiwan established as a province
Sino-Japanese War	1894		
		1895 05.23	Democratic Nation of Taiwan [台灣共合國]
Republic of China [中華民國] culturally *Han*	1911	06.06	Japanese colonization
		1945	Republic of China [中華民國]
People's Republic of China [中華人民共合國] culturally *Han*	1949	1971	Republic of China expelled from United Nations
	2006		

i-i history & architecture

Taiwanese architecture has gone through many major shifts in the past 400 years. The changes are not just aesthetic and stylistic, they represent completely different cultures and values. Each shift is accompanied by waves of immigrants, bringing their own traditions. Gradually, the immigrants become native to the island and recognize themselves as Taiwanese.[5] Therefore, at any given time, "Taiwanese" is the combination of previous waves of immigrants, new immigrants and indigenous inhabitants. Taiwanese people have constantly fought against incoming authorities[6], who in most instances, were from different cultural backgrounds and intended to profit off of the local people.[7] Thus, architectural styles have often been implemented through political agenda and/ or colonization tactics. The customs and practices enforced upon the Taiwanese were assimilated into the local culture and became part of the Taiwanese heritage.

Apart from importation, there are also many traditions and values that are native and unique to Taiwan. This is due to the fringe political position, pioneering immigrant culture[8], and the particular climate and geography of the island. Shi Ming [史明], describes Taiwan from a local perspective[9], as an island under constant invasion of foreign colonization, which could be divided into the following four periods: 1) the Dutch Pre-Capitalist Empire - colonial tyranny, 2) Ming-Cheng & Qing Dynasty - feudalism and tyranny, 3) Japanese Modern Empire - systematic colonization, and 4) Republic of China Nationalist Chiang family government - military colonization and presidential dictatorship.[10]

Before the era of Western invasion, Taiwan was a free land mainly occupied by aboriginal peoples[11]. There were several prosperous ports along the Taiwan Strait and on the north tip of the island where Chinese, Japanese and Western pirates and merchants traded with each other and the natives. Taiwanese aboriginals were categorized into Mountain tribes [高山族] and Plains tribes [平埔族][12]. The Mountain natives were considered less civilized;

1.06 postcard of a tattooed *Ataya*l women, 1920

[5] Wang, Shijie, 71.

[6] Lee Teng-hui, a Cornell University graduate was elected as the first native-born president in 1988.

[7] Chen, Qinan, 78. Huang, Wenxong, 59. Lu, Xiaolian, 83. Hsieh, Jih-Chang, 33. Much literature refers to the quote, "三年一小反, 五年一大亂", meaning Taiwan has "three years a small riot, five years a wide spread revolt." However, it is used in two different contexts. Chen and Hsieh use it to describe the armed fight between villages of different origins; Huang and Lu on the other hand, use it to emphasis the local revolts against outside authorities.

[8] Shi, Ming, 22. Huang, Wenxong, 61, 142.

[9] Feom a Chinese colonist perspective, as all documentations of the Nationalist Chiang government are, both Ming Cheng and the Nationalists "rescued" Taiwan from the foreign invader.

[10] Shi, Ming, 23.

[11] Davison et al., 4,5. The earliest evidence of Neolithic Austronesian people in Taiwan is around 4000 BC. They are the ancestors of the Taiwanese aboriginals.

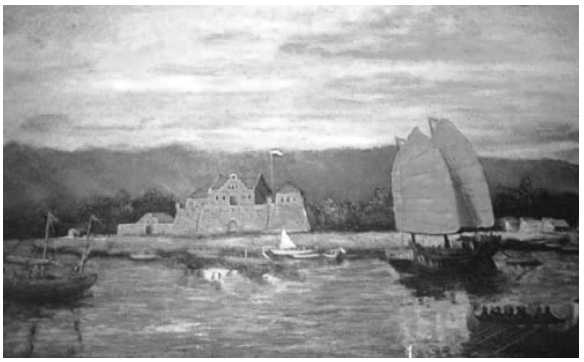
[12] Davison et al., 8. The 6 ethno-linguistic groups are further divided into the 20 sub-groups of Mountain and Plain Aboriginals. Though all languages are part of Malayo-Polynesian family, the sub-groups are mutually incomprehensible.

1.07 Taiwanese aboriginal distribution and dwelling

and they practiced a combination of nomadic agriculture[13], hunting, gathering and fishing. In contrast, the Plains aboriginals were consistently influenced by the *Han* culture, and thus became agrarian and practiced succession and trading of land[14]. Each native tribe had a different style of dwelling and public architecture, responding to its unique social structure and customs (image 1.07). For example, *Rukai* tribesmen of the Mountain aboriginals lived together in large groups and practiced a class system. Their dwellings consisted of a large central space surrounded by ten to twenty raised bedrooms. The leader of the *Rukai* tribe lived in an elaborate chief-house. Conversely, the *Puyuma* villages of the Mountain tribes acted as independent political units without a common leader. *Puyuma* boys started their military training in the youth centre "*kuba*" (image 1.07) at the age of eight.

There were occasional conflicts between different tribes and traders. The *Atayal* tribe of the Mountain natives was especially aggressive; their warriors would raid enemies and take heads as trophies. The lack of government, the dangerous voyage to the island, and the reputation of the ferocious barbarians kept Taiwan relatively free from occupation for hundreds of years. Still, the fertile land of Taiwan attracted a constant flow of pioneers who, for the most part, lived harmoniously with the Plains aboriginals[15].

The late 15th century is the beginning of European colonization. The Indian Ocean, the South West Pacific and the Oriental coasts were under the pressure of European trading companies, and combinations of military officials and pirates. By this time, the Ming government had disbanded its naval force for internal political reasons. Chinese and Japanese pirates dominated the Chinese coast. China isolated itself, and forbade the western trading companies from landing or trading on her coast. In 1557 A.D., a Portuguese sailor impulsively called out "*Ilha Formosa*" [Beautiful Island] at the sight of the Taiwanese coastline[16], and thus began the colonial competition for Taiwan. After the Japanese fleet was defeated by a storm, the Dutch overtook southwestern Taiwan in 1624 and the Spanish landed on the northern tip in 1626.



1.08 [top] original Fort Provintia built by the Dutch in 1653 AD.

1.09 *Chikanlou* [赤嵌樓]
built in 1875, over the ruin of Fort Provintia.

[13] Hsieh, 31. They farmed on a piece of land for a few years. When the land became less fertile, they slashed and burned their fields and moved to other land.

[14] Davison et al., 6. Chinese explorers had landed in Taiwan as early as 239 AD. However, it is unclear as to when Plain Aboriginals started to own and trade land.

[15] Hsieh, Jih-Chang, 39.

[16] Shi, Ming, 26.

1.10 Confucius temple in Tainan [台南孔廟]

The Dutch built Fort Zeelandia and started a feudal, commercial colony centered around Tainan, Taiwan. They preached to the natives, but at the same time persecuted them in great numbers, robbing them of their land, while importing Chinese mainland coastal farmers[17] to cultivate rice and sugar cane patties. The land was cleared and farmed by the mainland immigrants, yet they were not allowed to own land. Furthermore, they had to pay a great portion of their crops as rent and taxes[18]. The immigrants were hardworking pioneers looking for a new home, yet, they were regarded as outlaws by the Ming government of mainland China and treated as slaves by the Dutch. There was minimum attention given to the residential environment and cultural facilities; all construction, such as irrigation systems and roads, was for the sole purpose of increasing and transporting goods. The Dutch derived enormous profit from the colony by importing and exporting goods between Japan, Taiwan, South Asia and Europe. The increasing oppression, class segregation, and head taxes finally triggered the first large-scale rebellion. Thousands of Taiwanese were killed during the "Kuo Huaiyi Incident" [郭懷一事變] in 1652 AD. This is the beginning of Taiwan's long history of fighting for equality and self-government. Taiwan's first contact with western culture and architecture did not leave a huge impact. A few traces of its influence remain, though, from the ruins of forts, and the decorations on vernacular houses, to the names of townships and cities.

At the same time, the Ming Empire in Mainland China was defeated by the Manchus from the Northeast [1644 AD]. Many *Han* people rose against the new empire simply because it was a "barbarian" government. The idea of loyalty to "China" (by this time no longer pure *Han*) was deeply rooted in Confucian teaching. General Cheng [鄭成功], the half-Japanese son of a powerful pirate, led his ships and refugees to Taiwan[19]. Cheng conquered the Dutch forts in 1661 AD and established a Ming-style government in Taiwan, implementing a Ming legislature, *Han* culture and Confucian teachings. The Cheng family adapted the Dutch forts and castles for governmental and military facilities. For example, Fort Provintia was converted into the Courthouse [承天府], later rebuilt as *Chikanlou* [赤嵌樓]. The waves of political and literary refugees brought architecture from Fujian and Canton to Taiwan. Residential clusters were built or renovated in the Southern Chinese courtyard style, some with gardens. Many cultural and religious buildings were constructed, such as the temple to Confucius in Tainan [台南孔廟]. General building science improved. Processed materials, such as bricks and clay tiles, became common residential building materials[20].

After the death of General Cheng, internal power struggles within the Cheng family led to their defeat by the Qing Empire of the Manchus [1683 AD]. For more than a century, the Qing government feared Taiwan to be a land of refuge for outlaws. As a result, no emigration was allowed to Taiwan and there was minimal development by the government. The appointed officials made profit from the settlers; sometimes even in cooperation with the bandits. Villages and commercial streets formed groups for the purpose of self-defense, which were expressed both in social and architectural term (image 1.11).

In 1886, Taiwan was made a province, from a county of Fujian, when China finally realized the economic value of Taiwan. The provincial governor, Liu Mingchuan [劉銘傳], believed modern technology would aid the rejuvenation of China[21]. He brought considerable development to Taiwan in terms of agriculture, trade, technology and industry, through the development of the island's infrastructure , including electricity. Davison et al. stated that, "By 1895 Taiwan was among the most highly developed areas of China and far more connected to the international economy than most."[22] The prosperity of international trade also brought in western architecture, such as shops for foreign traders and expensive cottages. The increasing number of *Han* immigrants unavoidably brought about the Sinicization[23] of Taiwan. The natives were slowly assimilated or pushed further into the mountains[24] and *Han* culture was becoming native to the land.

Japan finally got her hands on Taiwan with her victory over China in the Sino-Japanese War [甲午戰爭] [1894 AD]. China was forced to sign the Treaty of *Shimonoseki* [馬關條約][25], which ceded Taiwan to Japan. Unable to gain help from China or other countries, Taiwan declared independence from China, in hopes to forfeit the treaty. The Democratic Nation of Taiwan [台灣民主國] was established May 23rd, 1895 with consent from China, but it quickly withered under the overwhelming force of Japan's military. Ironically, the first president of Taiwan was a leader assigned by China, who escaped from Taiwan at the first sight of danger. In contrast, most of the citizens consciously chose to stay in Taiwan, despite the choice of returning to China according to the treaty[26].

Japanese colonization in Taiwan can be divided into three phases: 1) Military execution of the opposition, and the pacification of Taiwanese residents [1895-1901]; 2) Implementation of Japanese farming colonies, modernization, and assimilation of the Taiwanese [1901-1936]; 3) Utilization of Taiwan and the Taiwanese for military resources co-incidental with Japanization [皇民化] [1937-1945][27]. Japanese colonization made a substantial difference in Taiwanese culture, not only because Japanese culture was introduced, but

1.11 defense mechanism for dwellings, streets, and villages
[top left] gun hole, [bottom] community gate

[17] Shi, Ming, 35. During late Ming Dynasty, the unstable society, frequent wars and riots resulted in many homeless farmers. They were willing to jump into the trap of slavery for a new chance of stable life.

[18] Kuo, Henry, 統治者加強分化政策. The *Han* farmers and hunters frequently had conflicts with the natives. The Dutch controlled both people by setting them against each other. All cultivated fields were owned by the Dutch King, and managed by the Dutch East India Trading Company.

[19] The *Han* rebellions lasted more than a hundred years. The Legislature discriminated and oppressed the non-Manchus until Emperor Kungxi, who was well educated in all "Chinese" arts started to rely on *Han* councilors.

[20] Chen, Zhouying, 21. Chen, Jiawen, 台灣建築導覽, 明鄭時期, 住宅與庭園. [Guide to Taiwanese architecture, Ming Cheng period, Dwellings and gardens].

[21] Qing Dynasty had its territorial and economical peak during the reign of Emperor Qianlong. By 1842, the Qing government was already weak, partially due to its enclosed and conservative policies, and China lost the Opium War to the British.

[22] Davison et al., 17. Liu brought increased road and railroad mileage, electrification, the telephone, the telegraph, shipbuilding and industry to Taiwan.
Lu, Xiaolian, 85. Liu Mingchuan was the only external authority that ever put the benefit of Taiwan as his first priority. The proof is evident in the amount of construction within his four year of appointment and with much opposition and many obstacles from mainland China.

[23] Oxford English Dictionary. Sinicize, v. trans. To invest with a Chinese Character.

[24] In many places, the Plains aboriginals pushed the Mountain aboriginals further into the mountain, much like the way the Chinese-Taiwanese had treated the Plains aboriginals. The raiding of the Mountain natives lasted until the 1930s, while the tribes of Plaina aboriginals can hardly be found.

[25] The city of Shimonoseki [下關], was named Akamagaseki at the time, and commonly called Bakan [馬關]. Therefore, in both Chinese and Japanese, the treaty was refered to as "Treaty of Bakan" [馬關條約].

[26] Zhou, Wanyao, 39, 40. Approximately 6,400 residents returned to China, leaving Taiwan with a population around 2.8 millions at the time. Those who returned to China were mostly aristocrats and officials.

[27] Wong, Shijie, 75.

1.12 architecture during Japanese colonization
[left] Taipei Yuanshan Cottage[台北圓山別莊], Beitou public bath [北投公浴], Jiangong Shinto shrine [建功神社], Taiwan Rails Dormitory [台鐵宿社], Taoyuan Shinto shrine [桃園神社]; [right] University of Taiwan Hospital [台大醫院], Taipei Jinan Catholic Church [台北濟南教會], Taipei Radio Communications Centre [台北放送局], Taipei Telecommunications [台北電信]

because the oppression and westernization gave rise to a national identity for Taiwan.

Japanese colonization began with massacres and the Japanese army marched on for six years to gain complete control over Taiwan, at which point the strategy changed from destruction to construction. Taiwan was an experimental colony where Japan could off-load poor Japanese peasants, and extract resources and taxes. Japan was very successful in modernizing Taiwan, including the areas of administration (especially the tax bureau), farming technology[28], industry, transportation, electrification, telecommunications, hospitals, and schools. Japan also indirectly transformed the traditional society into a capitalistic economy. Under the oppressive and discriminative legal system, many modernization tactics overlapped with policies used to break down traditional forces, such as large families and widespread attachment towards *Han* culture. Though Japan practiced a dictatorship in Taiwan, students learned about individualism, nationalism and democracy from the western education that was implemented to lessen the predominance of *Han* culture. In 1919, Taiwanese students studying in Japan led movements for the fair treatment of Taiwanese citizens. Many attempts were made for political, economic and social independence[29], but they mostly ended in denial or arrests. July 1937, as the Japanese began their full invasion in China, all Taiwanese political activities were forcibly disbanded.

The war in China also triggered the systematic assimilation program called Japanization [皇民化][30]. The Japanese had started to assimilate the Taiwanese people from the beginning with the establishment of Japanese language education. In the first two phases of colonization, the purpose of assimilation was only to break down loyalty to *Han* values. Japanization [皇民化] systematically inserted Japanese culture, including philosophy, religion, and family rituals and customs. Most importantly, it instilled and promoted sacrificial patriotism under the Japanese Emperor, in preparation for Japan's aggressive expansion. The

1.13 exterior and interior of Taipei rail public bath [北鐵機廠公浴]

[28] Shi, Ming, 91. Taiwan was the base for rice and sugar supply to Japan. Lu, Xiaolian, 91. A Japanese wrote, "The poverty of Taiwanese Sugarcane farmers created the prosperity of Japanese Sugar Company.

[29] Most significantly, "Taiwanese Region Self-Governance Association" had proposed to the governor a new Taiwan Region policy, and got together a province wide vote for self-governance leaders in 1935.

[30] Japanization, [皇民化] literally translates to " becoming the citizen or people of the Emperor". Though transforming Taiwanese to Japanese, all policies still indicated Taiwanese as second class citizens.

1.14 Daoist temple with western dormers

major items of the Japanization program were: 1) implementing Japanese religions and customs, 2) enforcing the "national language" (Japanese)[31], 3) imposing Japanese names, and 4) promoting a voluntary military recruiting policy. The success of Japanization, especially in Youth groups, was reflected in the large number of voluntary soldiers and frontier nurses[32]. The influences of Japanization remain deeply rooted in the daily lives and the values of present day Taiwanese.

Japanese colonization also had an immense impact on architecture in Taiwan. In fact, there were more public building projects in the 50 years of Japanese occupation than during the previous centuries of colonization. The influences were notable in residential, commercial, institutional, and religious buildings and in urban planning. The architectural language and concepts were both Japanese and European, corresponding with the Meiji modernization movement [明治維新] in Japan. The major cities were reinterpreted. For instance, in the new capital, Taipei, streets were widened into boulevards in the Hausmann style. Three large roundabouts were forcibly inserted in Tainan's traditional grid layout. Japanese-style colonies and buildings were implemented throughout Taiwan. The representatives of Japanese architecture were *Shinto* shrines [神社], martial arts facilities [武德殿] and residential buildings. 68 Japanese shrines were built during the colonization as a part of the cultural assimilation program[33]. Japanese farming villages, and dormitories for schools and government workers were constructed in traditional Japanese layouts. Governmental and public buildings were mostly designed by appointed state architects[34]; occasionally, designs were selected from competitions open only to Japanese architects. The architectural language ranged from Renaissance, Baroque to Gothic styles, sometimes with a Japanese twist. Train stations were dominated by either Northern European half-timber or traditional Japanese styles. Other public buildings such as schools, hospitals, churches, and bathhouses were modernized with a variety of expressionism, industrialism, and functionalism. Private construction was heavily influenced by western aesthetics. Street houses with Baroque facades and elaborate parapets became extremely popular. Some traditional courtyard houses were also clad with full western elevations and dome towers. Even Daoist temples were constructed with Romanesque pediments and dormers. Taiwan was the land of opportunity and experimentation for Japanese architects; thus architecture in Taiwan followed and responded to European modernism very closely during 1920 to 1945 (image 1.12 to 1.15).
In 1945, the Japanese surrendered to the Americans and the Americans handed Taiwan to the Republic of China.

The change of government was at first welcomed by Taiwanese, yet the transition did not take place smoothly. The Jiang Kai-shek [蔣介石] government[35] and military immigrants abused their power and treated locals as second-class

citizens. The "2-28"[36] incident triggered island-wide revolt. The peace council set up by the locals were met by Nationalist troops. More than 20,000 Taiwanese were slaughtered in the confrontation while many more were arrested in their homes and persecuted. In 1949, the KMT [Nationalist][37] party, defeated by the communist regime, fully retreated to Taiwan. In the UN, there were two Chinas. The period of tension and fear that followed in Taiwan is described as the "white terror" [白色恐怖][38], which did not ease off until the 1980s. During the last phase of Japanese colonization, Taiwan was both prosperous and orderly. Despite a certain degree of oppression and discrimination, Japanese and Taiwanese lived together harmoniously. In contrast the ROC government brought corruption and bribery from the old imperial government to the new political system. Many older generation Taiwanese preferred Japanese rule over the "Chinese" government. Some still do not consider the first generation of post-war immigrants from China to be "Taiwanese",[39] while many first generation immigrants longed for prosperity of the "one China".

To establish authority, the Nationalist government ordered the demolition of many Japanese temples and monuments. The intentional reinforcement of *Han* values and the continuous conflict between the new immigrants and the local Taiwanese resulted in a pause in cultural development before the rapid transformation of the physical landscape in Taiwan. Taiwanese history was manipulated by propaganda, as was Taiwanese architecture. Architecture with significant cultural value was intentionally destroyed every time the government changed hands. With the rise of Taiwanese identity, Taiwanese citizens today are finally taking an interest in their own heritage. The complexity of Taiwanese heritage can be illustrated with the most mundane object – the vernacular dwelling.

1.15 [top] street houses with Baroque pediments in Tainan; [bottom] *Gu House* in Lugang [鹿港辜宅], a vernacular courtyard house with Baroque facade

[31] Zhou, Wanyao, 36-40. The "national language" movement was as vigorous as closing all Chinese schools, classes, and banning newspaper and columns printed in Chinese.

[32] Zhou, Wanyao, 70. There were 16,500 Taiwanese voluntary soldiers in Army and Naval forces. Japanese propaganda depicts being a soldier as the highest honour (in service to the Emperor). There was also the factor of Taiwanese identity - proving Taiwanese to be as brave and capable as Japanese.

[33] Zhou, Wanyao, 41.

[34] Li, Qianlang. 20世紀台灣建築. State architects during Japanese colonization. 1st phase [1900-1910]: 野村一郎, 近藤十郎; 2nd phase [1910s]: 小野木孝治, 森山松之助; 3rd phase [1920-1945]: 井手薰, 栗山俊一.

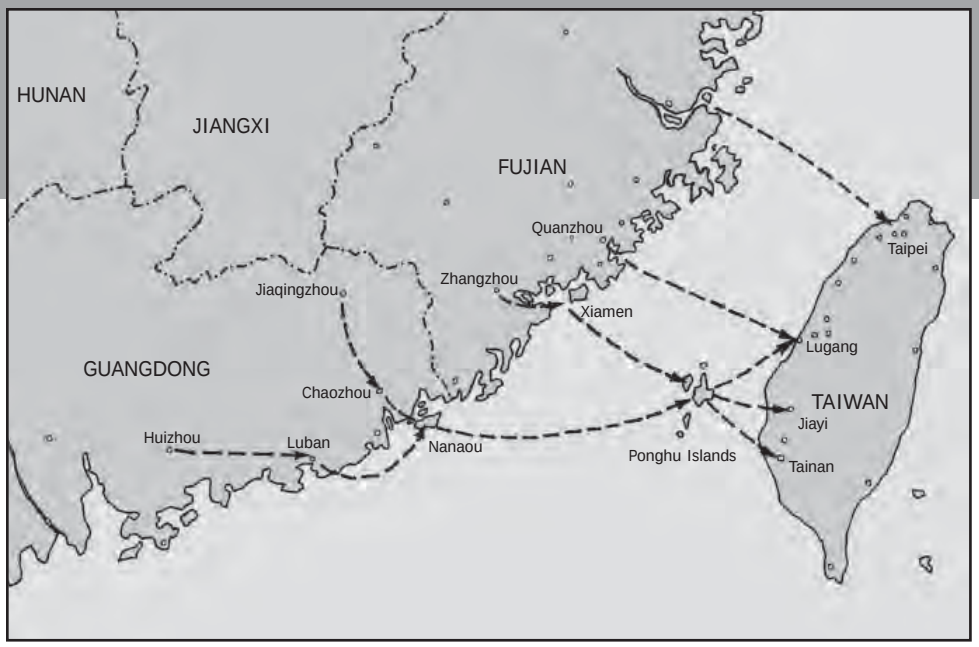
[35] Jiang Kai-shek was the high general of ROC. He overtook the Nationalist party after the death of Dr Sun.

[36] Getting. Timeline: Taiwan. Monopoly bureau officials in Taiwan beat a woman they suspected of selling cigarettes on the black market and shot a passerby who tried to intervene. The incident, which happened on February 28th 1947, is known as the "2–28 Incident".

[37] Nationalist party, [國民黨] pronounced Kuomingtung, is abbreviated as KMT.

[38] The government further oppressed the locals by mass execution of Taiwanese political representatives, elites (scholars, doctors, writers...etc.) and rioters. Political discussion or defaming the government in public could result in disappearance.

[39] Chou. Interview.



1.16 major migration routes to Taiwan

i-ii social structures:

evolution of Taiwanese community & identity

Taiwanese social structures vary within the small island due to the vastly different cultural groups that occupied the land.

Before the rooting of *Han* culture in Taiwan, aboriginal peoples dominated the island. Each tribe was unique in its familial and social order. This strictly monogamous society consisted of matriarchal, patriarchal, ambilineal[40], and non-lineage based[41] tribes. The households ranged from small nuclear families to large extended families of over fifty members. Social structures from different tibes included age class, aristocratic class, elected clan leader, and small non-political villages. These influences contribute to the variety of localized customs regarding family and marriage throughout contemporary Taiwan.

Plains natives and other large mountain tribes were matriarchal. Contrary to *Han* tradition, they considered the birth of boys a “loss”, and girls a “gain”, since women would potentially bring home free labour, husbands. When mainland immigrants first arrived in Taiwan, they married into native families with service marriage contracts[42]. The groom worked for the father-in-law for three to six years, at the end of which he would receive a parcel of land and some gifts. He and his wife and children would move out to form an independent economic unit; nevertheless they still lived close to the father-in-law to form a “composite kin group”, instead of a patriarchal kin group living under Chinese family communism[43]. At the time, *Han* immigrants were considered popular sons-in-law because they were hard workers. During the Dutch occupation [1625-1650], groups of imported Chinese labourers set up their own villages, thus *Han* people and natives began to segregate. After the Dutch were evacuated, the immigrants took over most of the developed lands. With the increasing number of immigrants, *Han* culture and customs gradually became the predominant social structure, especially in the upper class. Government officials and rich *Han* families practiced polygamy as in China. Service marriages between ethnic Chinese and natives were still in practice until the 1920s or later.[44] As of now, very few Plains aboriginal villages are identifiable due to assimilation; only a few local customs and shrines are still traceable to their native roots. Composite kin

groups are common in Taiwan, even though the residents consider themselves Chinese-desent.

Taiwan did not have a united political structure until late in the Qing Dynasty [1800s]. During the first wave of immigration from mainland, villages and communities held alliances and constantly fought with one another, similar to ancient Greek city-states. Most of these villages and alliances were based on the origins of the immigrants, mainly *Hoklos* [福佬] from Zhangzhou [漳州] and Quanzhou [泉州] of Fujian province [福建], as well as *Hakka* [客家], and Cantonese from Guangdong province [廣東] (image 1.16).[45] Occasionally, there would be cross alliances between different origins against a third or even a partnership with the aboriginals. Each village was still on its own when it came to defending the lives, properties and civil rights of its residents, from officials, bandits, and aboriginal raids. Therefore, each village had its own leader and guards.[46] Since most villages were non lineage-based, as they commonly were in rural China, the community bond became much stronger, sometimes more so than the *Han* lineage bond.[47] Furthermore, local wealthy residents, and scholars [鄉紳] were the central forces in both stability and development of the society, due to poor government administration.[48] Many public utilities and services were maintained through local donations. Consequently, the government gave them recognition[49], honorary titles, and even actual government positions. Immigrants adhered to a group identity through attachment to the land, and the integration of culture. They became native to Taiwan.

The merging of folk religions brought together different cultures in Taiwan. As such, villages made peace during the celebration for the Goddess of the Sea [媽祖], who protects all immigrants and travellers. When a local guardian god showed his power [顯靈], he also became popular among other communities, including the natives. The bonds between and within communities were strengthened through the festivities for folk gods. A street would worship a common earth spirit, a neighbourhood would enshrine mythic characters, a village would have its guardian god; while

1.17 a neighbourhood shrine

[40] Chen, Qinan, 15. For *Rukai* and *Paiwan* clan, the oldest descendant is the heir, male or female. The family structure is nuclear or stem family. The married couples mostly live with the extended family group of the groom, but many also live with the family of the bride.

[41] Chen, Qinan, 16. *Puyuma* is extremely particular in its social structure. In their "family" group, the members are not bonded by blood relations. They are selected by the members from fortune readings, and the members can potentially switch groups many times. The "family" group functions as a common family.

[42] Hsieh Jih-Chang, 42.

[43] Laurence G. Liu, 164. Chinese family communism describes an extended family sharing all properties and profits.

[44] Hsieh Jih-Chang, 45. In Lancheng, Puli, located in Central Taiwan, 15 % of the marriages consummated after 1911 were service contract marriage.

[45] The *Hakka* Taiwanese came from both Guangdong and Fujian, but they maintained their own villages and rarely mixed with other Chinese culture.

[46] The village leader was elected by consensus and the defense guards were voluntary farmers that guard the village perimeter in shifts.

[47] Hsieh, 53-57. In Lan-ch'eng, many families are of the same Lin lineage of Puli. However, the ancestor hall is fairly deserted. With native social influences and hostility of Mountain aboriginals, the people unite on other grounds than kinship solidarity.

[48] Wu, 166.

[49] Government recognitions were presented in forms of plaques and monuments.

the entire island would celebrate the birth of the Goddess of Sea. The unique social structure of worship, ritual and festival committees [神佛會] became the basis of social stability. A group of people with a common interest would share the cost for the veneration of a shrine or a figurine of a god [神像]. Examples of such committees were Buddha Committees [神明會], Ancestor Committees [祖公會], Filial Committees [父母會], and Veneration Committees [共祭會].[50] Buddha Committees [神明會] considered theology their priority; extra money was set up for community improvements and scholarships. Ancestor Committees [祖公會] consisted of people with the same lineage or last name; money was set aside for retirement funds and scholarships. The main goal of Filial Committees [父母會] was to assist each other with parental funeral finances and proceedings. Finally, Veneration Committees [共祭會] were defined by proximity, such as streets, neighbourhoods and villages. There was no requirement of background, common interest or payment to join a veneration committee. Members took turns hosting the rituals and festivities to fortify the community bond (image 1.18). The committees often came together to help each other through external attacks or natural disasters. At the end of the 19th century, more than half of the population in Taiwan participated in one or more of these committees. These committees, especially Veneration Committees, are still in practice throughout Taiwan.

During the Japanese reign, *Han* lineage and corporate associations were targeted as potentially subversive and thus were intentionally broken down. Regional cooperation was diminished in exchange for a national identity. Many uprisings and resistances, against the Japanese authorities or oppression by the GMT government, were still community based. The Japanese government surveyed and divided Taiwan into precise administrative regions. At the time, posts with any political significance were assigned to Japanese administrators. Eventually, the defence mechanisms, such as the guards and watchtowers of the villages, became unnecessary. Community defence groups were transformed into municipal administrative councils. After the Japanese left, the opportunity for political participation and higher education created significant changes in the social structure of the villages.[51] Instead of the family as a political unit, many villages and communities were divided into older and younger factional parties with different political views. People were less isolated in their communities and grew to be part of a national culture and society.



i-iii culture & values:
ideologies, religions, traditions & superstitions

There are two inherent difficulties in describing Taiwanese culture. First, it is difficult to differentiate Taiwanese culture from traditional *Han* culture, especially with the marketed historic *Han* imagery of the ROC government. *Han* culture is very influential, which is evident even in Japan and Korea. It is important to stress the mosaic culture in Taiwan due to its complicated history and variety of occupants. Though *Han* culture again prevails as the dominant culture, the isolation of the island created a culture of its own, from as early as the time of the Ming government occupation. Taiwanese culture is the assimilation of the aboriginals, *Han*, and Japanese cultures with the unique oceanic island mentality. Its fluid nature contributes to the difficulty in describing vernacular Taiwanese culture as one single cohesive entity. The common wish for safety and prosperity binds the immigrants and pioneers together on the isolated island, resulting in the merging between cultures and traditions. The vernacular culture discussed herein was initially established after the settling of the first wave of *Han* immigrants, and it is still the foundation for contemporary Taiwanese culture.

Without a formal establishment of philosophical teachings or religious practices, the Taiwanese adhere to folk religions or folk beliefs. To be more exact, it is a way of life which encompasses philosophies, religions, traditions and superstitions into a living ritual that is engrained in the daily lives of Taiwanese people,


1.18 ghost festival in Keelung hosted by a Veneration Commitee [基隆中元祭] 08 2005

1.19 a priest of the Taiwanese folk religion [道士] performing a ritual to ease ghosts into their next lives [超渡]

These are major ancient ideologies of *Han* culture that have had profound influences on the Taiwanese lifestyle:

Ancestor worshipping [祖先崇拜]

The earliest evidence of ancestor worship dates back to Ying Shang Dynasty [殷商]. Ancestor worship is also a belief of soul and spirit. In the primary agrarian society, the elderly with their experience and wisdom, were greatly respected. When they died, their spirits were believed to have power over the living world. Therefore, the descendents worshipped their spirits for protection and prosperity, but also in fear of their anger and punishment. Later, the ancestor shrine or hall became standardized with plaques representing the ancestors and deceased parents. The spirits of the dead were believed to dwell on the plaques. There were fables in which the ancestor tablet actually bled.

Sky worshipping [敬天]

Since ancient China, sky was equated with Heaven, the mystic power that created and governed over all things. The personified "Jade Emperor" [玉皇大帝], the ruler of Heaven, was the all mighty judge who would punish the bad and evil. During Confucius time [500 BC], the term sky was reasoned into the balance and rules of the universe (nature) and the basis of ethics. Later, the sky was also referred to as fate. Currently, the sky is personified as the power of ultimate justice, as in the saying "sky has eyes" [老天有眼]. There are many proverbs referring to sky in different contexts, such as: "life and death is up to fate; wealthy and prosperity are up to the sky." [生死有命,富貴在天], or "sky determines the outcome." [成事在天]

[50] Chen Lingrong, 76.
[51] Hsieh, 61-65.

1.20 large statue of the earth spirit

1.21 little stone shrine for the earth spirit

including working, eating, family life, and the social network of the communities. The nature of Taiwanese folk beliefs is based on ancient animism, consisted of necrolatry, spirit worshipping, and naturism.[52] Necrolatry, worshipping of the dead, in combination with Confucian ideal of family order and lineage, prevails in the form of ancestor worshipping. Spirit worshipping manifests itself in the popular practices of witchcraft, divination and taboo. Naturism is represented by the anthropomorphized figures of nature, including the sky, earth, sun, moon, stars, mountains, river, wind, rain, thunder, lightening, water, fire, rocks, plants, and animals. Animism, Confucianism, Buddhism, and Taoism together construct the basis of vernacular Taiwanese culture.

Folk beliefs, religions and philosophies of Taiwan had been adopted from *Han* culture in such a way that their values are reinterpreted to relate to the concerns of daily life. The early *Han* immigrants faced a harsh existence in which they had very little power over nature or their own fate. In response to this, pioneer culture emphasized the most compelling aspects of folk beliefs: augmenting the auspicious[53] [吉祥] and repelling evil forces. For example, the focus of ancestral worship had shifted from the foremost importance of patriarchal lineage back to the worshipping of the ghosts of the dead. This shift is founded on a firm belief in the power of ghosts over the health and well-being of the living. Divination, including astrology [紫薇斗數], nameology [姓名學], and *feng shui* [風水], is an inseparable part of daily life; it is printed on the farmer's Almanac (lunar calendar) [黃曆]. The folk Daoism draws upon Buddhist and Daoist morals and mythologies, such as incarnation of good and bad deeds, and the stories of hell and of *Yama*, the ruler of hell, who was depicted as a righteous courthouse judge. In accordance with this shift, religious ceremonies transformed into rituals for the auspicious. Daoist monks would perform magic rites to ward off evil spirits. The especially figurative mythology of naturism is one of the key characteristics of Taiwanese folk beliefs. The two main influences on naturism are the aboriginal mythologies and the power of nature over the immigrants. The prosperity and safety of farmers and travelers depended solely on mother nature.

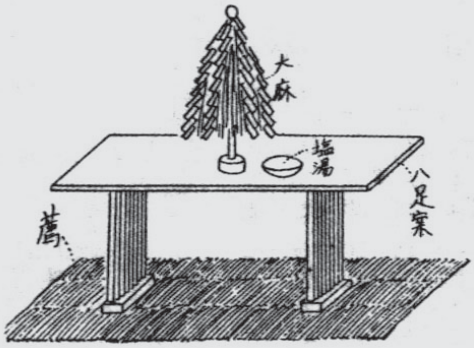
Within the numerous gods of the folk beliefs in Taiwan, there are four dominant gods, or categories of gods: 1) Jade Emperor [玉皇大帝], 2) Earth spirits [土地公], 3) Goddess of the Sea [媽祖], 4) Gods of Pestilence [瘟神].[54] The Jade Emperor, who governs the Heaven, is the personified figure of sky worshipping. He represents the idea of fate, the balance of the universe, and of the good and the just. Conversely, Earth spirits are local gods of the land who protect both the earth and the villagers. Earth spirits are depicted as kind village elders. They represent the farmer's respect, gratitude, and closeness to earth and land. The aboriginals also have similar idols. Their earth spirits are in female form due mainly to their matrilineal society. A 1993 government survey recorded 1323 earth spirit temples and shrines in Taiwan.[55] There are countless more in forms of model houses and tablets worshipped (image 1.20, 1.21). The Goddess of the Sea is a witch girl named Lin [林默娘], born in 980 AD.

Since her death, it is believed that she often rescues ships that are lost or in danger. The emperor sanctified her as Divine Empress, while the people nicknamed her the Mother god [媽祖]. She is the one single most powerful goddess in Taiwan, with over 380 temples devoted to her. In the early days, she was the guardian of travellers and immigrants; they worshipped her and trusted her guidance and protection. Later, she was regarded as the mother figure who, like Athena, is a goddess with many powers. Finally, Gods of Pestilence [瘟神] are portrayed as noblemen [王爺], who are individual characters with specific names. The concept of Gods of Pestilence is based on the fear of plague and sickness that is common in humid and uncultivated environments. With time and the improvement of living conditions in Taiwan, immigrants transformed the meaning of gods of Pestilence; the noblemen came to be regarded as gods of well-being and luck [福神].

Characteristics of Taiwanese folk culture are seen not only in particular deities, but also in the variety of gods worshipped. Mainland immigrants from different origins brought their own guardian gods to Taiwan, such as Sanshan Emperor [三山聖王] and Qingshui Founder [清水祖師]. Immigrants from different origins were able to put aside their differences through the merging of folk religions, and the worshipping of cross-cultural gods. This multiculturalism led to the open-minded attitude and freedom of religious practices in Taiwan. But the freedom was interrupted during the Japanese colonization, when the governor pushed for religious assimilation by forcibly implementing Japanese national *Shinto* [國家神道]. Citizens were required to worship *Dama*, the representation of *Amaterasu* [天照大神], the Japanese Goddess of the Sun. *Dama* have to be placed in the centre of the family altar (image 1.22). Many folk religions were considered evil cults and were therefore banned. The Japanese did not dare destroy popular idols and temples such as those of the Goddess of the Sea [媽祖]. Instead, they sanctified the historic hero General Coxinga [鄭成功] as a Taiwanese *Shinto* icon because he was half-Japanese. After the Japanese colonization period, Taiwanese *Shinto* disappeared entirely as it was far more political than cultural based. Folk

Confucius & other philosophers [儒學&老莊各家]:

Confucius [孔丘] was born in the Spring and Autumn Period [春秋] [551 BC], at which time there were many other great philosophers preaching to the warlords. Confucian philosophy centered around "*ren*" [仁], humanity; versus Xuenzi's [荀子] "*fa*"[法], law, and Laozi's [老子] *dao* [道], which was the base for Taoism. Confucius believed in order to have a well structured society the family must be well structured. He promoted order and hierarchy where everyone acts within their role. Of the five relationships, he defined father & son as the most important. His teaching emphasizes loyalty to the emperor, filial piety and lineage. He preaches balance [圓] in both material life and personality, corresponding to the *Han* sense of importance of the central position and balance in nature. Confucianism is a philosophy for governance, not a religion. Confucius did not define god, spirit, soul or after life, nor did he emphasis ancestor worshipping. He painted a picture of peace and unity in the world [大同世界]. In fact, his philosophy was perfect for the agnatic pyramid of Chinese society to maintain order and stability. Confucianism was adopted as the governing philosophy by Han Wu Emperor [漢武帝][140 BC] and it remained as the mainstream philosophy for two thousand years. Confucian concept of family structure and lineage in combination with ancient practice of ancestor worshipping created strong Chinese family ties both in life and in death. Confucianism is rooted in many Asian cultures, from Japan, Korea to Singapore and Vietnam, and deeply influenced the family, the school, and the social structure.



1.22 The proper setup for Japanese *Dama*

[52] Dong, 13.
[53] The Oxford English Reference Dictionary. Auspicious, *adj.* of good omen; favourable.
[54] Dong, 40.
[55] Wang Jianwong. 26.

religions revived swiftly. The iconography of different religions and cultures became even more confused. Even now, the average citizen could not tell Buddhism from Taoism. In fact, the resulting confusion in Taiwanese culture gave way to a particular taste for fusion, and a degree of carelessness about origin. The influences of Japanese colonization are hard to quantify. Japanese language and imagery are infused into the daily lives of the Taiwanese, though they did not adopt *Shinto* or *Zen* [禪]. The most notable cultural impact that the Japanese had on Taiwan was in the areas of food, hygiene and mannerisms.

Folk religions were able to revive after 50 years of oppression because they were an integral part of Taiwanese lifestyle, dwelling and social structure; and they still are an inseparable part of the modern Taiwanese. Beyond the religious ritual and praying, the subcultures of festivities and food unite people within and across the Taiwanese communities. The festivals are the median between the dead, the living and the gods. Bonds between villages and villagers are fortified by religious festivals with great feasts, and are much more elaborate than the extended family gatherings at Chinese New Year. These festivals are hosted by temples, committees [神佛會], or communities. Food and entertainment is offered to the gods and the dead, while also being enjoyed by the residents. To illustrate the scale of these festivals, the following was my personal experience from the time when I was ten years old:

Our large neighbourhood festival takes place every twelve years. The neighbourhood is defined by the village in the old days and our village guardian god resides across the street from my house, in *Shengangong* temple [聖安宮]. We call the festival “making veneration” [做祭], which is a celebration of the god’s birthday. The neighbourhood of over ten thousand residents at the time was in an uproar. I saw the preparation at home and on the street, yet I could not understand what was about to happen since it was the first veneration festival I had encountered.

At nightfall, the whole neighbourhood was swamped with people as far as I could see. Every street was closed; a few cars and motorcycles slowly pushed through the crowds to get home; garage doors were rolled up and circular tables spilled out onto the streets. Every household invited their families and friends for dinner. Throughout the neighbourhood, stages and events were set up in front of every temple and shrine, large and small. Over at the vacant land of the old American Army camp, large tables were set up filled with large metal buckets of food from every household in the neighbourhood. The food was for veneration. There were stages featuring Taiwanese opera, Taiwanese puppet shows, and lanterns with riddles. Vendors came with their carts of food, firecrackers, and little toys. We walked until we were almost too tired to walk home, greeting every neighbour we bumped into. At home, the tables were occupied by beer, snacks, and people playing drinking games. As we got upstairs for a bit of quiet and rest, the fireworks started at the temple across the street. We sat in front of the window, watching the fireworks with our share of snacks and goodies. I cannot remember how the night ended - maybe I couldn't stay awake late enough.

1.23 view across the street, taken from my rooftop, with the temple [聖安宮] hidden on the right, and a dormitory during the Japanese colonization on the left.
05 2005

Yin yang [陰陽] & *Bagua* [八卦]:

Bagua [八卦], the eight signs, is first recorded in the book of *Yi* [易經] around 11th century BC. "*Yi* has *Taichi*, in which bears two poles, two poles bear four directions, four directions bear eight signs"[易有太極,是生兩儀,兩儀生四象,四象生八卦]. The two poles of *Taichi* is *yin* [陰] and *yang* [陽], the basic digit of all signs. The eight signs are further multiplied into 64 signs, which became the geomancer compass that is still commonly used today. The origin of the concept of *bagua* is difficult to trace, theories including observation of nature, arithmetic, physics, reproduction worshipping, and different methods of divination. In the book of *Yi*, *bagua* is the formation of universe, and it is used to comprehend many subjects such as philosophy, arithmetic, medicine, physics, biology and fate.

1.24 ideal site for dwelling according to *feng shui*

Feng shui [風水]

Feng [風] is wind; *shui* [水] is water. *Feng shui* is the practice of observing the balance of *chi* [氣] or energy in the universe; and the study to situate humans in harmony with nature to avoid danger and ensure prosperity. Wind and water bring and contain *chi*, described as *yin* [陰] or *yang* [陽]. The practice of *feng shui* is divided into two disciplines: *Luantao* [巒頭] & *Lichi* [理氣]. The former deals with the observation of the geological environment and orientation; the latter associates divination with time, astrology, and complicated arithmetic. *Feng shui* can be dated back as early as the West Zhou Dynasty [西周], and *Luantao* is considered to be an earliest form of *feng shui*.

1.25 the tool of feng shui practice - geomancer compass which is mapped the *Bagua* [八卦]

Since the establishment of ROC in Taiwan, the celebration of lineage is reinforced through national holidays. Folk religions continue to be the essence of vernacular culture. A preliminary survey conducted in the 1960s found 243 gods enshrined in Taiwan[56]. With the concept of religious freedom, Taiwanese also welcomed foreign religions such as Christianity, Muslim and Tibetan Buddhism. In the last two decades, rapid westernization, globalization, and the success of Christianity has undoubtedly weakened many traditions. Fortunately, the Taiwanese people have begun to understand the importance of heritage. Local traditions and festivals are being revived as a focus in municipal events, to both strengthen the community and attract tourism.

i-iv vernacular dwelling as the embodiment of culture & values

Residential dwellings generally reflect the lifestyle of the occupants. The vernacular dwellings of Taiwan are the physical representation of traditional Taiwanese culture and values which are merged with mundane daily life. The aboriginal dwellings are also very telling of their lifestyles. The architecture is diverse in typologies and very fitting for its environment (image 1.07). Since the aboriginals are a small part of the current population, Taiwanese vernacular dwelling generally refers to a sub-type of Chinese courtyard housing. It is a variation on the model imported from Southern Fujian, where the majority of Taiwanese citizens families originated.

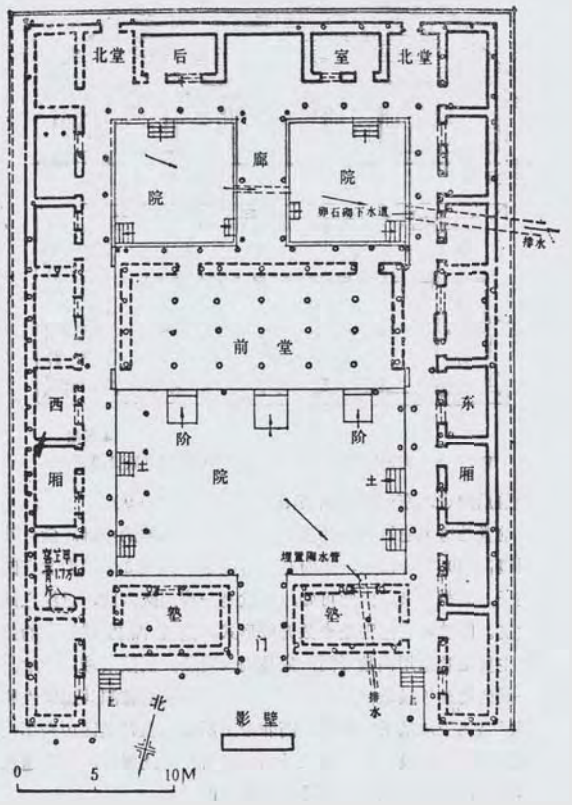
The Chinese courtyard typology was established as early as the West Zhou Dynasty [西周] [11th century][57] (image 1.26), around which time *feng shui* [風水] was also in its formative state. The early courtyard house illustrated the ancient ideal of the central axis, exterior enclosure, symmetry and a central opening (courtyard). The concept of *feng shui* demonstrates how the ancient *Han* people believed that dwellings and tombs are a part of the balance of nature. The siting of these structures was considered an integral part of the well-being of the residents. As *feng shui* developed, it encompassed nature not only in its physical form, but nature as a trinity of the universe, energy and time. Dwellings became a tool for humans to reconcile with nature in harmony, in both the physical and abstract realm.

The theories and methodologies of *feng shui* are diverse and complex. In short, one consults a geomancer to observe the physical site, in consideration with the time of birth of the owner, to determine the exact dimensions, orientation, and date of construction of the dwelling. Since water contains and controls the flow of *chi*, even water drainage under the floor boards is carefully configured in a zigzag pattern corresponding to astrology. There are also many taboos associated with every aspect of *feng shui*. Some are logical, clever, popular, or customary; others

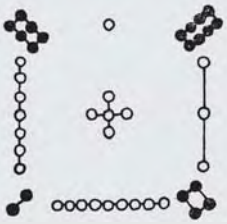
are stated by the geomancer, and a few verge on the ridiculous. Aside from *bagua*, later theologies such as the five elements of *yin yang* [陰陽五行說] and the nine-square graph [九宮圖] are also incorporated into the design of dwellings (image 1.27, 1.28).

Ancestral worship and Confucianism had an immense impact on the formulation of Chinese courtyard housing. However, contrary to common belief, the courtyard house predates Confucius; therefore, the courtyard typology was not created based on Confucian philosophy. Confucianism did formalize the typology by defining the order and priorities of the family within the house. The stability of Confucianism throughout Chinese history is the cause of the unchanging residential architecture in China.[58] On one hand, the courtyard is fully paved and represents the Confucian ideal of the human world. On the other hand, the garden was conceived by Daoist [道] philosophy, in which one imitates and admires the greatness of physical nature, with less attachment to worldly desires. Ironically, gardens were almost exclusively enjoyed by the upper class - the rich and the literati. For the average citizens, the idea of nature is shrunken into miniature planters in courtyards. Bamboo is not planted as the poetic representation of 'just' in the garden, but as a defence mechanism around the back of rural dwellings against both wind and bandits.

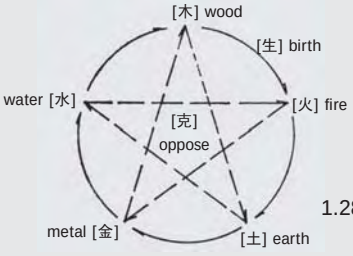
The hierarchy in the Chinese courtyard house is as follows: the ancestor spirits have priority over the living; the family name and lineage over the individual; and the order and structure of the family over love or pleasure. This has thus developed the architectonics of geometry and order with priority and seniority dictated by proximity to the most prominent space. There are three measures of prominence: the first is the central axis; the second, the inner versus the outer; and the third is left over right. The central axis is the most prominent; it is therefore occupied by the shared spaces, representing the family. The distance from a room to the central axis determines the status of the resident. For example, an unimportant relative would live in the outer wing. Since the inner is regarded as the end of one's progression, the



1.26 a courtyard house during the Zhou dynasty [周]

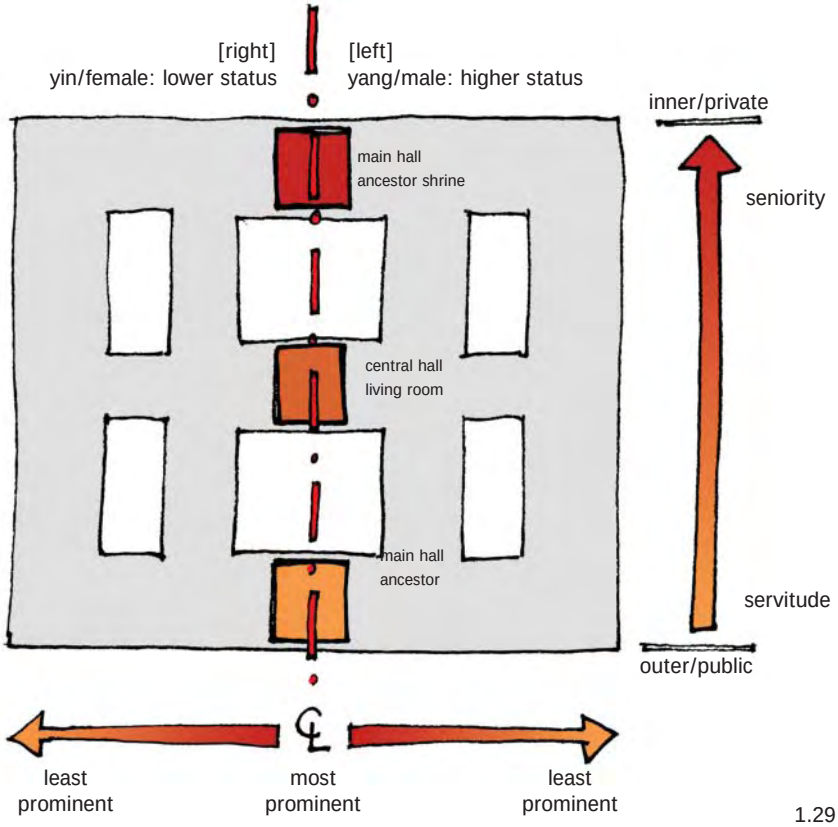


1.27 the nine-square graph [九宮圖]

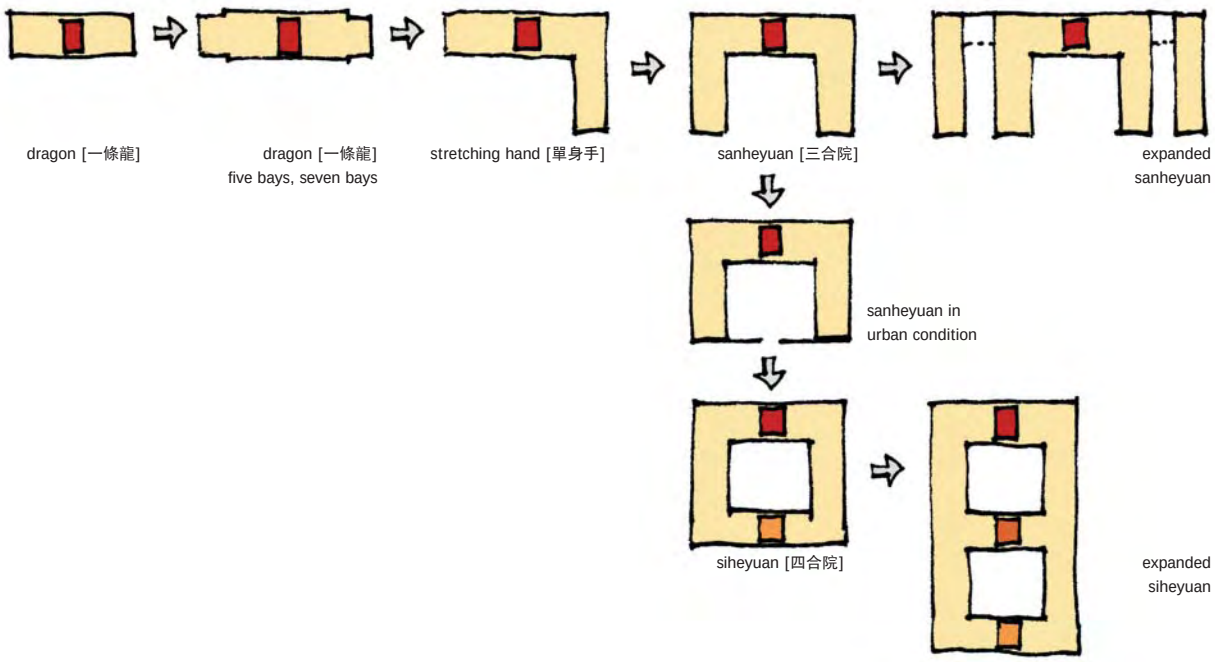


1.28 the cycle of the five elements [五行]

[56] Dong, 36.
[57] Cheng, Jianjun. [Chinese ancient architecture and Zhou Yi philosophy], 168.
[58] More accurately, the stagnant Chinese architecture refers to the area dominated by *Han* culture, because China at different times included different cultures with different forms of architectures.



1.29 the rules of Chinese courtyard houses

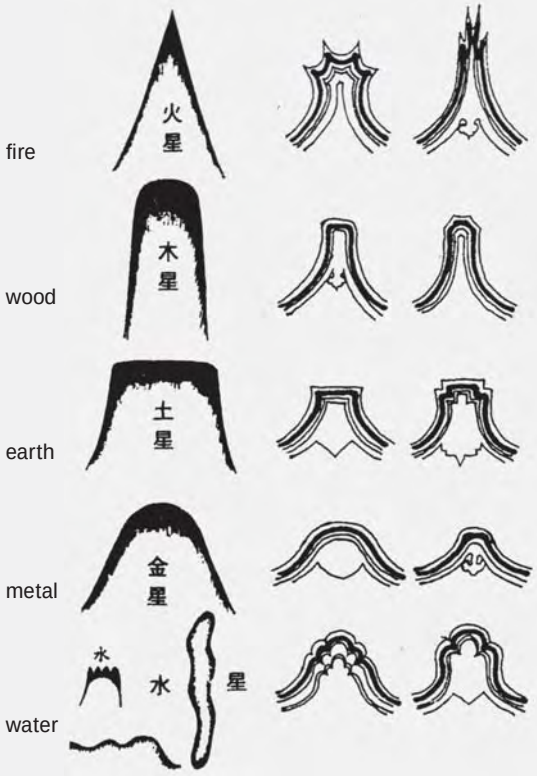


1.30 expansion of Chinese courtyard house

back of a dwelling is considered the inner space. The movement from the outer to the inner zones define the public and private realms. Moreover, it describes the sequence of seniority. The inner space on the central axis is the most prestigious, and is therefore offered to house the ancestors and deities (image 1.31). The central hall is the living room for important guests. The front hall is the 'face' of the dwelling and the family. Consequently, the front rooms are occupied by those of servitude, such as the doorman and tailor; whereas the rooms beside the ancestral hall are for the head of the family, and the rooms beside the central hall are for those second in status. Under these two measures, there is also a minor hierarchy from left to right. Left is considered primary, and it is associated with *yang* [陽] and male lineage. Right is secondary and *yin* [陰], where daughters, widows, and concubines reside. These rules also apply to the expansion of the courtyard house, controlling the addition and form of the complex (image 1.29, 1.30).

The Taiwanese vernacular dwelling style follows the three major rules of the Chinese courtyard house, with variations on minor rules, customs and taboos for its form, dimensions and construction. An adult standing in the centre of the main hall should be able to see the sky above the roof of the central hall. Traditionally, this rule regards the positive *chi* of the dwelling; in practicality, it constrains the proportion of the courtyard to the height of the building, and ensures pleasant lighting and ventilation. The house is considered the vessel of protection from nature, humans, and most importantly, evil spirits. Therefore, Taiwanese vernacular dwellings are often imprinted with rich imagery and symbolism of folk beliefs. Also, the roof gables are shaped according to *feng shui* (image 1.32). A particularly interesting concept of Taiwanese vernacular dwelling is its anthropomorphized nature. The local architectural language corresponds to the human body. For example, the residential wings are 'reaching arms'. The metaphors are both strong and fitting. The ancestral hall is the head and mind where humans, ancestral spirits and gods come together. The courtyard is embraced by the dwelling to protect inner *chi*

1.31 the ancestral hall of Lin's Mansion in Shekou [社口林宅]



1.32 roof forms corresponding to the five elements

1.33 [left to right]: a side court of *siheyuan*; a *sanheyuan*; an old *jiewu*

(image 1.34).[59]

The social structure in Taiwan created three major typologies of vernacular dwelling: *siheyuan* [四合院], *sanheyuan* [三合院], and *jiewu* [街屋] (image 1.33). *Siheyuan* [四合院], the courtyard house enclosed on all four sides, is the typical Northern Chinese courtyard house. *Sanheyuan* [三合院], enclosed on three sides omitting the front hall, is common in Southern China. *Jiewu* [街屋], the street house, is a mixed-use commercial and residential townhouse, often constructed with two or more stories. The most common vernacular dwelling typology in Taiwan was *sanheyuan* [三合院]. Before the Second World War, most of Taiwanese dwellings were farm houses. Since the farm houses had little necessity for privacy and formality, the complex was often left without a front hall. The dwelling complex expanded away from the central axis through additional wings, creating a horizontal layout. Conversely, many urban residents preferred both privacy and formality - therefore the residences were enclosed on all sides with two or more halls on the central axis. The courts of large urban dwellings were often constructed at once, since their expansion was confined by land availability. Street houses were defined by the narrow and long plot with commercial frontage. This narrow width made it difficulty to maintain central axis and symmetry, thus the street houses presented a squashed and stacked variation of the traditional courtyard houses. The typology expanded vertically.

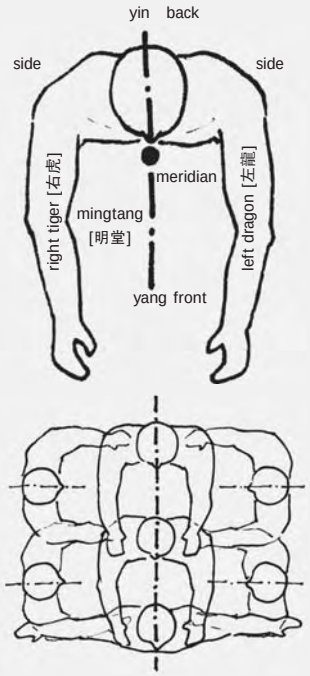
The residential layout and housing typologies in Taiwan were heavily influenced by both Japanese and Western culture during Japanese colonization. The Japanese style dwelling is completely different in both the concept of the courtyard and the perception of space. It was developed based on a different cultural background characterized by *Shinto* and column worshipping[60]. Different customs and functions were either accepted or rejected by locals. Many houses are built as a hybrid of both Japanese and Taiwanese style, where the central axis is somewhat altered, but the diagonal movement of the Japanese house is not adopted. Dining tables and chairs are definitely preferred over the low Japanese table, but *tatami* rooms are also popular as multi-purpose spaces. The degree of Japanese influence varies from location to location, and from household to household. With Japan as a leader of modern architecture, technology and pop culture in Asia, it continues to influence culture and housing in Taiwan.

i-v families & lives in the vernacular dwelling

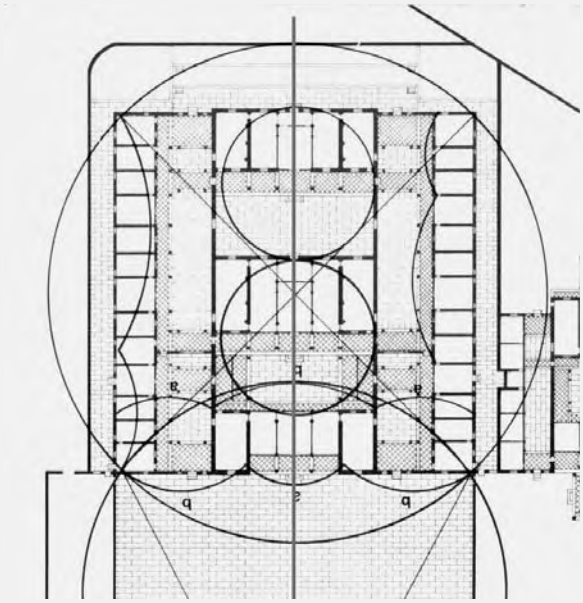
The family is considered to be the smallest political and economic unit within *Han* society. The internal mechanisms of a family are extremely complex, involving filial piety, kinship obligation and obsession with lineage. A family could be describe as a family clan [宗族] and household family [家族].[61] A family clan is a group of families recognized under one common ancestor. They often share a large scale ancestral shrine [祠堂]. A household family lives together and owns common assets. A large household family could consist of four generations, and numerous nuclear families. They share the housing complex, land, stores, and profits. Allowances or living expenses are distributed by the head of the household, in accordance to the person's importance and contribution to the family. This phenomenon is commonly referred to as Chinese family communism. It is well illustrated in the renowned classic novel, *The Dream of the Red Chamber* [紅樓夢].

However, there were very few large household families in Taiwan. The average household during late Qing dynasty [19th century] had four to six persons.[62] The common family type in Taiwan fell under none of the typical Chinese categories. Hsieh referred to the family as a compound family or a residential family. The extended family lived together in a courtyard house, but each nuclear or stem family was financially independent. This is the result of the expansion and division of a household. The dwelling expanded as the family expanded. When one or more sons were married, the household assets were usually divided amongst both sons and daughters. In many circumstances, the parents were left with no property but an expectation that their children would provide for them until their deaths. When the parents retired, sometimes they traded their most prominent quarter with their eldest son.

The three vernacular dwelling typologies in Taiwan also reflected the family status. The *siheyuan* [四合院] was oriented to large and powerful families, which were more likely to operate under family communism. The *sanheyuan* [三合院] varied in scale and



1.34 body vs vernacular dwelling



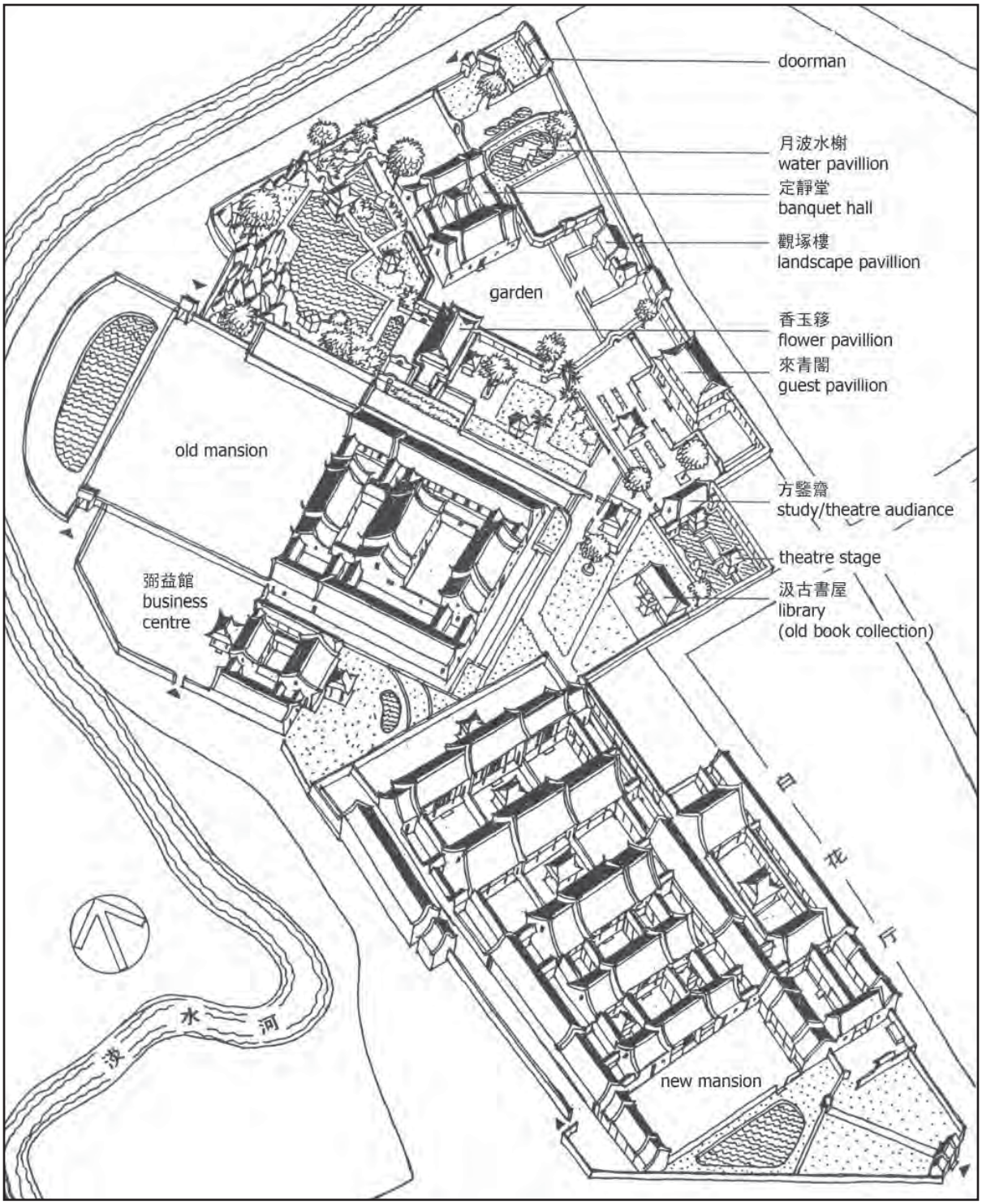
1.35 rules of geometry in Lin's old mansion

[59] Chiou and Fang, A Study on the Ideas of Body upon the Taiwanese Vernacular Dwellings.

[60] The central column in the Japanese vernacular farm house is the representation of their god.

[61] Dai, 52. Both family type could be further divided into inherent family [繼承式], attached family [依附式] and joint family [合同式].

[62] Kuan, 68.



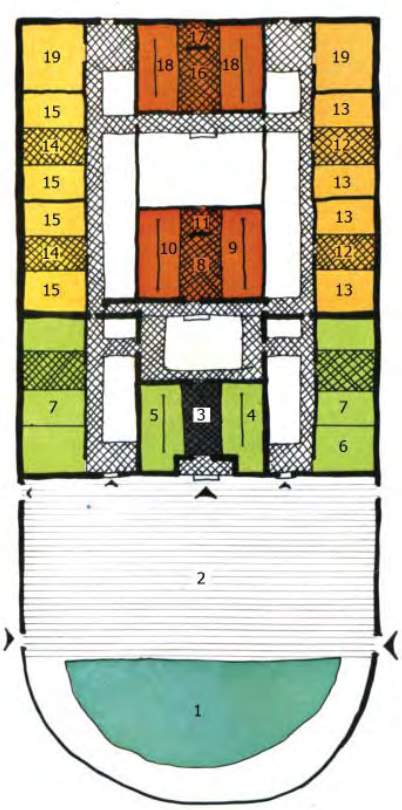
1.36 Lin's mansion complex

location - in the remote countryside, within a village, or in a town. They were mostly occupied by compound families. Street houses were occupied by one household operating the store within and sharing the profits. The households were generally nuclear or stem families. There were also larger households with two or three connected storefront units. In Taiwan, immigration culture meant smaller families and a variety of families within a neighbourhood. In many instances, the community bond is as important as the kinship ties in Taiwan, thus the saying, 'faraway relatives are no comparison to close neighbours' [遠親不如近鄰].

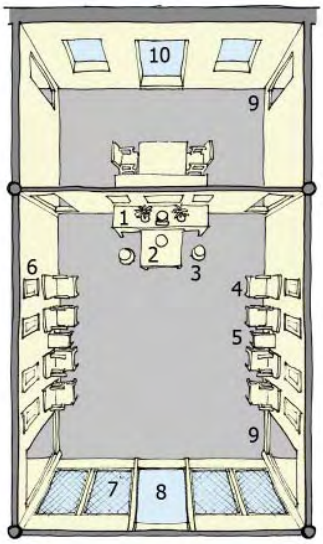
The representative of the *siheyuan* [四合院] in Taiwan is the Lin residence in Banchiao [板橋林家]. The old mansion was built in 1853 by the first-generation immigrant Lin Pinghou [林平侯]. He immigrated to Taiwan with his father, working as an apprentice to a rice merchant. He became one of the richest Taiwanese in his time with his own rice and salt businesses. His sons continued to expand the family business and the Lin household family grew much larger than the three-hall mansion could accommodate. The new mansion was constructed in 1888, with the addition of the most elaborate southern Chinese garden in Taiwan (image 1.36). Lin's mansion perfectly demonstrates the ideals of *feng shui*, geometry and family order of the Taiwanese dwelling. It was typical to place a half-moon shape pond in front of the house to retain positive *chi*. The skewed angle of the new mansion was intentional and calculated according to the birth time of the Lins and the time of construction. The mansions had clear thresholds and hierarchies of status (image 1.37).

The daily rules within an extended family household such as in the Lin family were also very different from a farmer's family. For example, the family did not actually dine together daily. The seniors would eat first in their dining room, then the second generations, then the boys in their common room, and last, the girls and concubines in their common rooms. If a larger group of the family were to eat together, the table in front of the ancestor alter could also be used as the dining table. In fact, in most

1. pond
2. front yard
3. front hall/foyer
4. doorman
5. tailor
6. kitchen
7. servant quarter
8. centre hall/ guest hall
9. Lin Kuohua's quarter
10. Lin Kuofang's quarter
11. dining room
12. boys' common room
13. boys' bedrooms
14. concubines'/ girls' common room
15. girls' bedrooms
16. ancestor hall
17. dining room for seniors
18. bedrooms for seniors
19. study for seniors



1.37 layout of Lin's old mansion, with first three to four generation of Lin's family in Taiwan

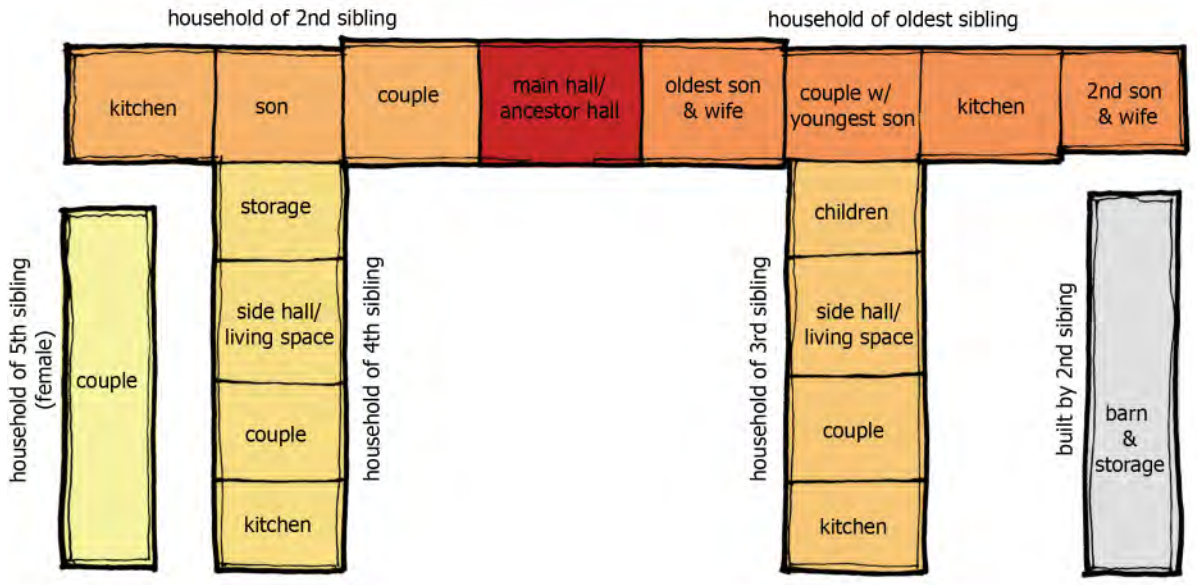


1. family alter
2. eight person table
3. drum stool
4. formal chair
5. tea table
6. scrolls or calligraphy or painting
7. decorated window
8. to courtyard
9. to seniors' bedrooms
10. to back alley

1.38 interior layout of ancestor hall and dining room of Lin's old mansion

sanheyuan and smaller complexes, the ancestral hall was used as both living room and dining room. The separate dining room was considered a luxury and a private space. In some dwellings, the guest hall and the dining room were divided by a screen. Since the Lins built a separate courtyard house, *Biyiguan* [弼益館], for their business dealings, only family guests came into the mansions. The guests were greeted in the central hall. If they were invited to dine with the family, they would be invited behind the wall into the dining room. Only the closest family guests would be invited through the next threshold, into the ancestral hall. In Lin's mansion, the ancestral hall layout was very formal and typical, with an alter at the centre against the back wall and a eight-person table in front where venerations are placed. Chairs and tea tables were placed against two side walls (image 1.38).

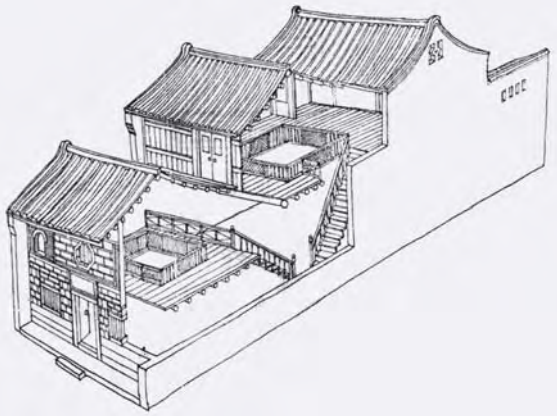
A compound residence differed from the Lin's mansion. It functioned as a condominium with a shared entrance, courtyard and main hall. Each household occupied a unit with several rooms, usually complete with its own stove and living space. Most families shared the central ancestral shrine. Some compounds have very weak agnatic[63] ties so that each household set up their own ancestor shrine, and they rarely had any common activities. Since the common dwelling was always under expansion and changes, these compounds were less formal and formulated. For example, an expanded *sanheyuan* in southern Taiwan (image 1.39) was divided into five sections, occupied by five siblings with separate households. Although the layout was not perfectly symmetrical, the allocation of the rooms followed the three principles of hierarchy. Each household had its own kitchen. The two oldest siblings shared the ancestral hall as their living space. There were two variations from the traditional Chinese courtyard house that are worth noting: first, the oldest couple gave the most prominent room to their oldest son once he was married.[64] And second, the sister, the youngest of the five siblings, also lived in the compound with her husband.[65]



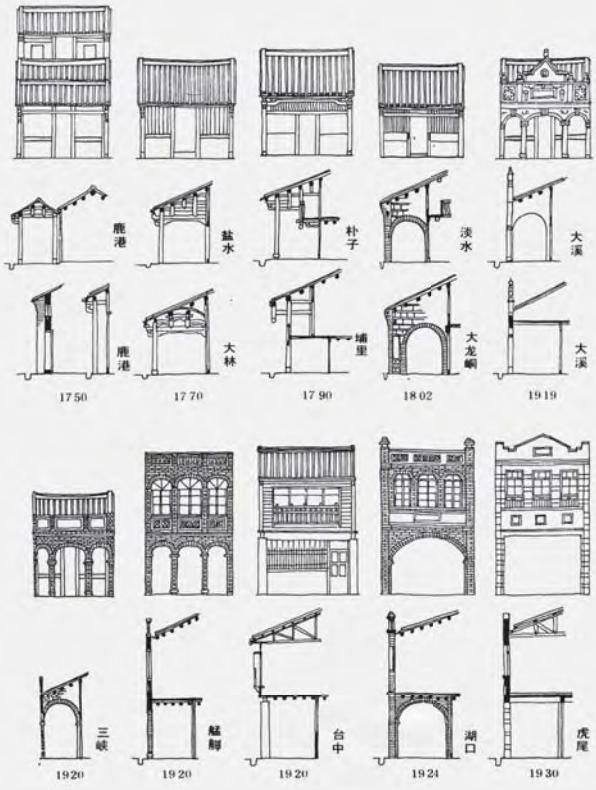
1.39 layout of a compound dwelling in Zhanghua [彰化]

Street houses were generally occupied by household families. They differed from the courtyard household families in that a single unit of street house was usually occupied by one stem family. Street houses in Taiwan can be dated as far back as the 1700s. Varieties of street house layouts depended on the depth and width of the plots. Playful height variations and skylights were employed to improve lighting and ventilation. For example, the *Su House* [蘇宅] used different floor heights and openings in the upper floors to bring in natural light to their store on the ground floor (image 1.40). Street houses have been the most versatile and adoptable vernacular dwelling in terms of design and aesthetic. The variety and evolution of their facades and arcades reflect the cultural progression of Taiwan (image 1.41). In contrast to the traditional courtyard house, the ancestor shrine is often placed in the highest room in the dwelling. Also, as a common practice in Taiwan, the deity tablet is situated in the centre or on the left, and the ancestor tablet on the right, the opposite of the traditional *Han* placement. Thus, the gods are more elevated than the ancestral spirits.[66]

Jiewu, or street houses, demonstrated a different progression from the courtyard houses. In a courtyard house, the halls divided the courtyard and the complex, whereas in a street house, the courtyard divided the dwelling. In a typical street house built before the 1950s, two or three courtyards or sky-wells divided the dwelling into separate buildings (image 1.43). The first building was the public realm. Clients, guests and even family members entered from the arcade into the store. At the back of the store, there might be storage rooms and an office. Open to the first courtyard, the guest hall was part of the public realm. It was the semi-public space in transition to the private spaces of the rest of the dwelling. Across from the courtyard was the dining room, the semi-private space of the dwelling. To the side of the courtyard, the kitchen connected the two buildings. The courtyard provided the threshold between public and private space; brought natural light to the living room and dining room; and provided ventilation for the kitchen. The residential compartments were beyond the dining room. Similar to *siheyuan*, the bedroom attached to the



1.40 the *Su House* storefront



1.41 variation and evolution of facade and arcade of Taiwanese street houses

[63] The Oxford English Reference Dictionary. agnatic, *adj.* descended esp. by male line from the same male ancestor.

[64] In the traditional Chinese family, sometimes the parent would give up their prominent room after retirement, but not as early as the marriage of the son, because the change of room signify a change in the head of the family.

[65] Kuan, 44.

[66] Kuan, 45.

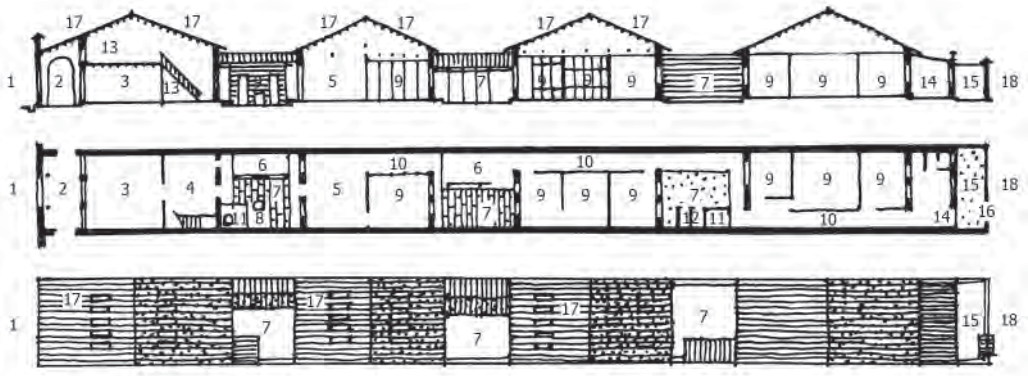
1.42 interior of a street house in Lugang [鹿港]

main hall belonged to the owner of the store. In a smaller family, outhouses were in the second courtyard. The third building was occupied by children's rooms connected with a side corridor. In a larger family, each building was an independent apartment with its own courtyard and kitchen. Outhouses [茅廁] were located in the last courtyard or in the backyard. A small backyard was typical to the composition of a street house. It was a utilitarian space, which became the garage in the modern day street house.

The three typologies of the Taiwanese vernacular dwelling illustrates three different lifestyles. In a *siheyuan*, the family lives behind large doors, courts and halls. The residents live a delicate and orderly life. Their daily paths intersect and pause in the courtyards, which are beautifully paved, decorated and clean. In contrast, the open courtyard of a *sanheyuan* is constantly occupied by storage and activities, including work, chores, and leisure. In the courtyard, children run around playing games; women sit in bamboo chairs mending clothes and doing chores; chickens peck at the loose grains on the ground. Finally, the family in a street house is dedicated to the store. The children help with the family business after school by watching the store or packaging goods. The street is like a public courtyard where everyone in the neighbourhood socializes. Family life also surrounds the first courtyard, where they might put the dining table on hot summer nights.

Modernization and technology have greatly changed the society. Yet for those still living in courtyard houses or street houses, their lifestyles have not changed as much. On a nice summer night, residents in a courtyard house will gather together to watch movies and eat watermelon in the courtyard. In the neighbourhood of street houses, everyone still knows one another. These vernacular dwellings accommodate a lifestyle that is reflective of culture and community, but unfortunately, they do not accommodate the density of today's urban condition.

1. road
2. arcade
3. storefront
4. guest hall/living room
5. main hall/dining room
6. kitchen
7. courtyard
8. well
9. room
10. corridor
11. bathroom
12. outhouses
13. storage
14. back door
15. backyard
16. back gate
17. glass tile/sky light
18. back alley



1.43 a street house in Daxi [大溪]

i-vi conclusion

Much historic architecture in Taiwan has been lost during periods of modernization or due to natural disasters. Yet most cultural values and folk beliefs endure. The daily application of traditions, such as *feng shui* and the lunar calendar, are still very much a part of the lives of Taiwanese. Although half of the population does not understand the significance of neighbourhood festivals, the people continue host the events with their proper cycles, be it annually, or every twelve years. The Goddess of the Sea [媽祖] was able to cross the political barrier between China and Taiwan. On her birthday in 2005, the veneration ship of the Goddess of the Sea was the first legal ship to sail from Taiwan straight to her birthplace in Fujian since 1955.

While many customs and cultures are still alive, family structures and dwellings have changed a great deal. Large household families are on the verge of extinction. Traditional *sanheyuan* and *siheyuan* are either historic artifacts, countryside villas, or farmhouses. Although many farmhouses are still occupied by compound families, families living in the city are now smaller nuclear or stem families. Close families may live in close proximity, or even in the same building, but they no longer share a common space. The definition of family household has become less clear. While the family lives together, sharing a kitchen and meals, each generation holds their own financial agenda. There could be a common grocery account, but most of the time, the shared costs are never clearly defined. The change in family structure and residential situation has led to new customs of family obligations and transference.

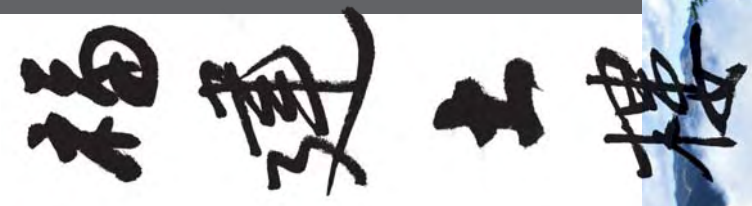
The important question is: How does the modern family and lifestyle relate to the vernacular culture? And, does the change in residential architecture have a direct effect on the communities [社區] and neighborhoods [鄰里]?

Fujian earth dwellings［福建土樓］

Tulou ［土樓], literally translated as “earth building”, traditionally describes large dwellings in which the raw earth wall is an integral part of the architecture and load bearing structure. Fujian earth dwelling describes the unique multi-storey earth building in western and Southern Fujian.

Han-ming Huang, *Fujian tu lou*, 86

[case study]: Fujian Earth Dwelling
vernacular high density architecture



2.01 [cover] *Tianluokeng village* [田螺坑村]

2.02 approximate spread of the Fujian earth dwellings

ii introduction

In the mountain ranges at the border of Fujian and Guangdong Province, the unique Fujian earth dwellings are scattered at every bend of river and foothill. From a distance, clusters of three or more earth dwellings sit intricately and harmoniously with the stream, the terraced rice paddies, and the surrounding mountains. Upon closer observation, one realizes the monumental scale of each earth dwelling. The largest circular earth dwelling, *Chengqi Lou* [承啟樓], is 229 m in circumference and 12.4 metres in height; occupies 5,376 m^2 of land; and contains over 400 rooms and houses over 600 people at its peak.[1]

There is no other vernacular residential architecture comparable in style and in size to the circular Fujian earth dwelling. There are over three thousand of these 'enlarged' courtyard houses isolated within Southern Fujian.[2] The evolution of these buildings is particular to the culture and history of its people, and the social, economic and environmental climate of this mountainous region. The earth dwelling is an environmentally and socially sustainable model in its context, because of the construction method, the density of housing units and its proximity to employment. Many of the larger complexes also include public facilities and services such as schools. Though the sense of earth dwelling is not an urban dwelling due to its agrarian setting, its intriguing circular structure embraces a community and density that is parallel to the modern condominium, or co-housing development.

ii-i the people: *Hakka* & *Hoklo*

The *Hakka* [客家] is a sub-clan of *Han* race who collectively migrated south from the Central Plains[3] of China during times of war.[4] The term "*Hakka*", which literally means visitor or guest, was originally used to differentiate the immigrants from the local settlers and aboriginals. These immigrants adopted this name for themselves. The earliest waves of *Hakka* immigrants reached the Yongding area in the late Tang Dynasty [9th century]. *Fuxing Lou* [馥馨樓][5], the oldest surviving earth dwelling stands as witness to this history. After the hardship of migration, the *Hakka* immigrants faced hostility from the locals on the fertile prairies. The *Hakka* scattered into the mountains and cultivated the limited land[6], thus the old saying: "there are visitors [*Hakka*] in every mountain approached" [逢山必有客]. They re-invented the earth dwelling technique from the north to suit their new environment. The single houses became grouped, and then fortified, not only to protect the *Hakka* against nature and beasts, but also against locals, bandits, and eventually the later *Hakka* immigrants.

The popular tale of *Hakka* migration portrayed the *Hakka* as the creator of the Fujian earth dwelling, thus the architecture has been referred to as the *Hakka* earth dwelling, or more specifically, the Yongding earth dwelling, to indicate its location[7] and to differentiate it from other *Hakka* earth residences. However, a recent publication by Hanmin Huang reveals that there are many earth dwellings, including circular earth dwellings, built or occupied by the *Hoklo* in Southern Fujian. While there are *Hakka* earth buildings throughout Southern China, the Yongding earth dwellings are more similar to the *Hoklo* earth dwellings nearby. In fact, it is impossible to differentiate them from the exterior.

The *Hoklo* [福佬] is also a sub-clan of *Han* race. History has documented the massive migration of 58 extended kin groups from the Central Plains to Southern Fujian, alongside the establishment of the Zhangzhou state government by the Tang Empire around 686 AD. As such, the *Hoklo* arrived in Southern Fujian more than

2.05 *Shunyu Lou* [順裕樓]

[1] Huang Hanmin, 105-109. *Chengqi Lou* [承啟樓] is commonly known as the largest circular earth dwelling. However, a recent field study shows that *Fusheng Lou* [馥馨樓], 77.42 m in diameter, is the largest *Hakka* circular earth dwelling. The largest *Hoklo* circular dwelling, Yunxiang Lou, is 147 m in diameter, however it is only 2 storeys high.

[2] Huang Hanmin, 86. City of Longyan Economic Information Centre, 2003. Zhu, 2005. The city of Longyan reported over 4000 earth dwellings, while Zhi cited more than 6000 rectancular earth dwellings alone. I have taken Hanmin Huang's statistics as the more accurate, scientific and reliable source.

[3] The Central Plains [中原], along the Yellow River, is believed to be the birth place of the *Han* [漢] People, who constitute the central beliefs and culture of the Chinese.

[4] There are five major waves of *Hakka* migration: the Wuhu Dynasty (4th century), the Late Tang Dynasty (late 9th century), the South Song Dynasty (13th century), the Late Qing Dynasty and the Second World War (1900s). The *Hakka* people could be found throughout China, especially south of the Yangtze River. In the last waves of migration, many *Hakka* families left China and found new homes in Taiwan or around the world.

[5] City of Longyan Economic Information Centre. *Fuxing Lou* [馥馨樓] was built in 791 AD. Huang Hanmin, 118. There is no actual record of the construction date of *Fuxing Lou* [馥馨樓]. This assumption is made based on genealogy records which could be inaccurate in that the actual building might not be the original structure.

[6] Wang Shushi, 7, 14.

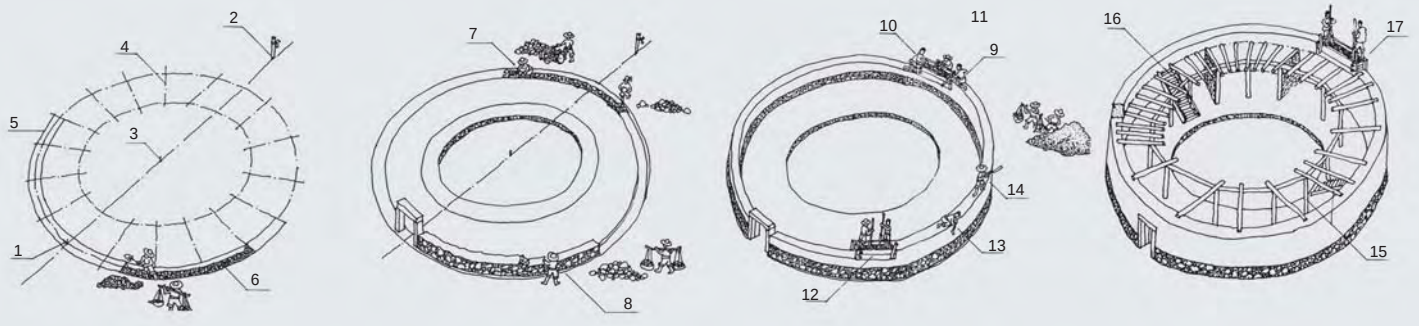
[7] Yongding county is located in Southwestern Fujian.

2.04 stone foundation

a century before the *Hakka*. Since both *Hoklo* and *Hakka* cultures were familiar with earth construction, Hanmin Huang argues that the Fujian earth dwelling originated from *Hoklo* hilltop fortifications and it is the product of the specific historic and geographic environment of Southern Fujian.

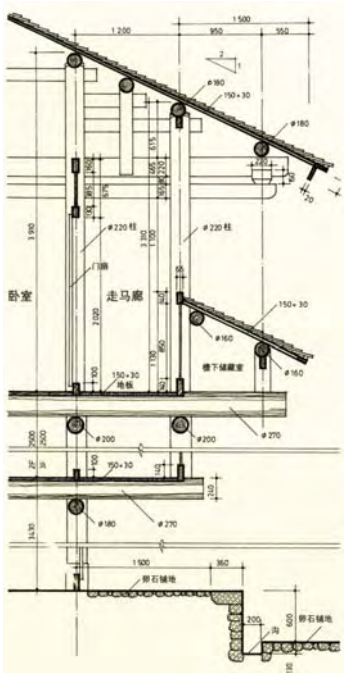
ii-ii the constructrion: raw earth construction

The Construction of a Fujian earth dwelling is essentially a thick earth fortification in combination with Chinese *tailiang* [抬梁] post and beam construction. The greatest challenge with raw earth[8] constructions are water and moisture. The stone foundation[9] prevents moisture damage to the earth wall. The three-meter wide foundation sits on undisturbed soil, thus stabilizes the structure. The ground inside the enclosure is raised with stone paving and trenches to direct rainwater into wells or to the outside. Materials vary between the use of local clay and sand, which is sometimes mixed with soil from other old earth walls. Near the coastal area, plaster and in some cases diluted brown sugar or rice mixture are added for extra strength. Also, bamboo laths, pine or bruce branches are placed in the walls for lateral reinforcements. The earth walls average 1.5 m thick at the base and shrink 10 to 15 cm for each storey. Wood posts are erected and beams are integrated into the earth wall after each storey of exterior wall is constructed. Lintels are inserted during the construction of solid earth walls, and window openings are carved out after the earth is fully dried. Setting the ridge rafter is the most sacred event of the building process. The date is picked according to feng shui; a ceremony and festivity with food and firecrackers on the date of ground breaking are traditional customs for good fortune. The pitched roof is constructed with large exterior eaves of up to three meters. It protects the earth wall from corrosion by storms. The finishing touches include floor decking, framing and installing windows and doors, constructing railings, and most importantly, decorating the ancestral hall[10] and the front gate (image 2.05). The construction of a large Fujian earth dwelling could take from 3 years to over 10 years.

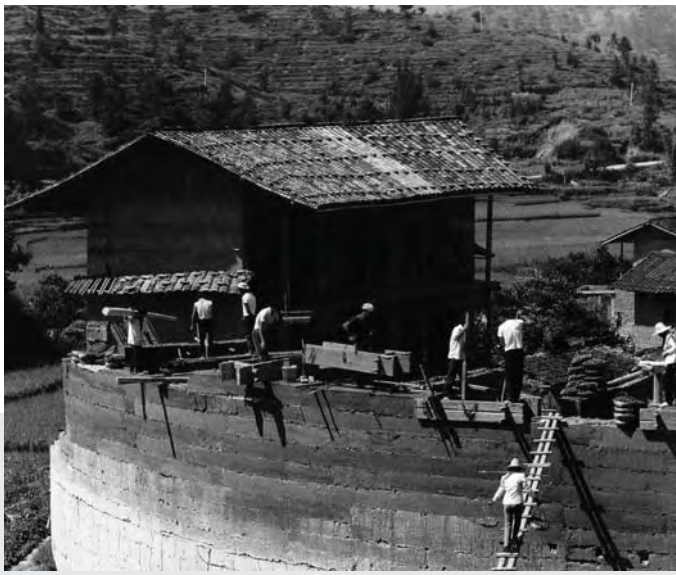


2.05 Fujian circular earth dwelling construction: 1) locate entrance, 2) set axis, 3) locate centre, 4) locate divisions, 5) draw foundation line, 6) dig foundation, 7) lay foundation stone, 8) lay stone wall, 9) formwork, 10) lay reinforcement, 11) earth fill, 12) compact earth, 13) fix up, 14) smooth, 15) erect post and beam, 16) build wood stairs, 17) build second storey and so on.

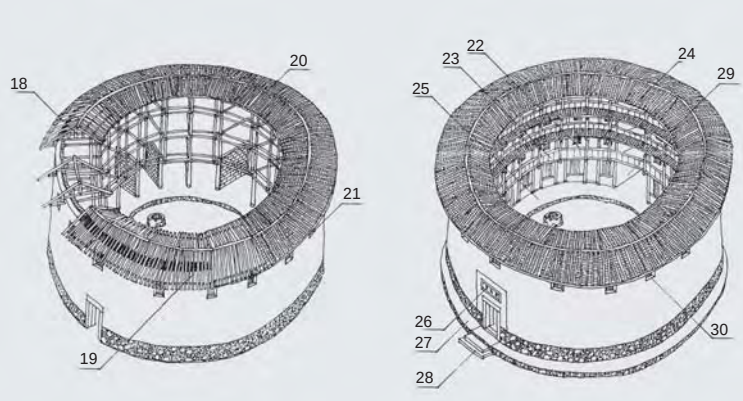
The Fujian earth dwelling has many advantages. First, the structure is both economical and sustainable as the construction and materials are local and little processing is required. For instance, old walls can be recycled for new construction and farming. Another advantage of an earth building is permanence, as most earth dwellings last centuries, surviving earthquakes, storms and wars. Next, the architecture is extremely inward-looking. Within the thick earth walls, where there are minimal openings on the lower floors and larger openings on the upper floors, the residents are protected from both nature and intruders. The openings are also designed for optimum defense tactics, from the inverted windows, the double-bolted front door to the watering devices against fire attack. Lastly, earth dwellings allow for a controlled microclimate; the thick earth wall enclosure acts as a shield and thermal mass, keeping the interior warm in the winter and cool in the summer. Raw earth walls absorb and release moisture, keeping the earth dwelling at a pleasant humidity.



2.06 section thru *Huaiyuan Lou* [懷遠樓] corridor



2.07 earth dwelling construction



18) build ridge and roof frame, 19) set rafter and sub-roofing, 20) tile roofing, 21) carve window opening, 22) wood decking, 23) install wood railing, 24) build non-structural interior walls, doors and windows, 25) stone paving, 26) dwelling name plaque, 27) stone curb, 28) stone step, 29) decorate ancestral hall, 30) framing and decorating exterior windows.

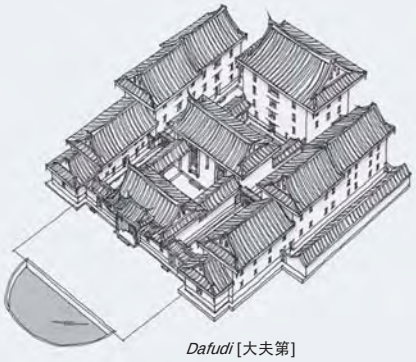
[8] Wang Shuzhi, 6, 11. Raw earth building technology [生土建築] utilizes unfired mixture of sand and clay. A wall is constructed by carving earth away from a compacted lump or using formwork.

[9] Huang Hanmin, 172. Before the early Ming Dynasty, the stone foundation was only underground. It evolved through time and become much taller. The common rule is to build above the flood line.

[10] Chen Qinan. Ancestor worshipping and lineage are very prominent concepts in Han culture. For immigrants, many would group together with families of the same last name but different lineage, and together they would build a common ancestral hall.

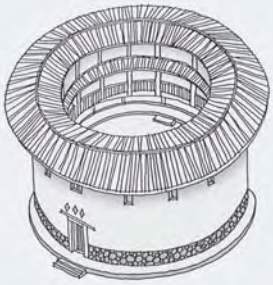
2.08 earth dwelling typologies in Southern China

Composition style

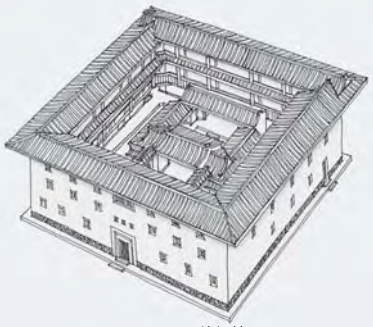


Dafudi [大夫第]
Yongding County, Fujian

Perimeter style



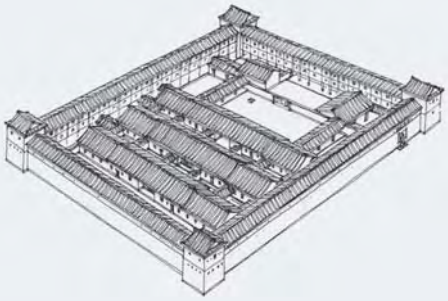
Rushengi Lou [如升樓]
Yongding County, Fujian



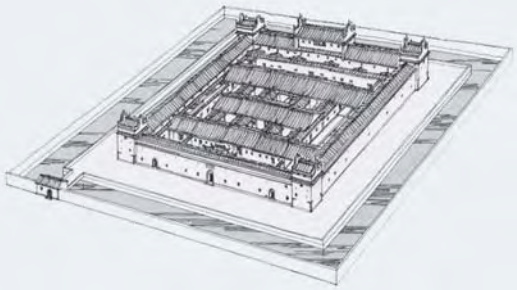
Dehui Lou [德輝樓]
Yongding County, Fujian

Shunyuan Lou [順源樓]
Yongding County, Fujian

Enclosure style

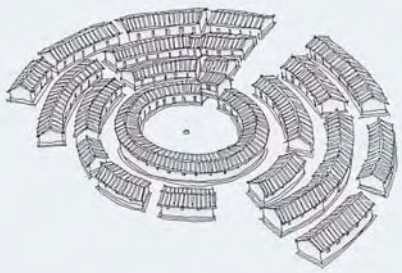


Xin Wei [新圍]
Longnan County, Jiangxi

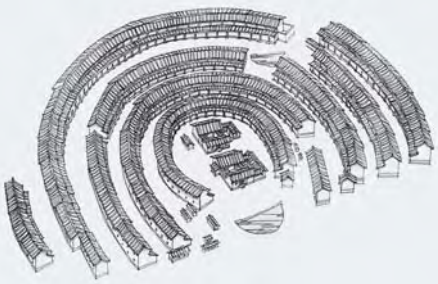


Longtian Shiju [龍田世居]
Shenzheng City, Guangdong

Village style



Bagua Castle [八卦堡]
Zhangpu County, Fujian



Half Moon Lou [半月樓]
Shao-an County, Fujian

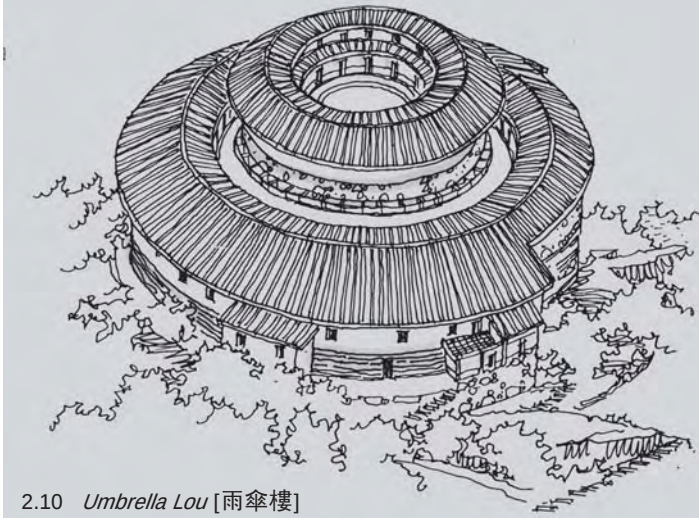
ii-iii the typologies

The residential earthen architecture of Southern China can generally be categorized into Composition style, Perimeter style, Enclosure style and Village style. The Composition style refers to the formal layout that evolved from the Chinese courtyard house, *siheyuan* [四合院]. The Perimeter style is defined by its holistic perimeter wall, which is the main residential structure. In most cases, the perimeter is the tallest building in the structure. Similarly, the Enclosure style also has a residential perimeter structure; the entire complex is comparatively lower and more spread out with a residential grid occupying the interior. In essence, the Enclosure style is an enclosed village and it is common in the *Hakka* neighbourhoods in the province of Guangdong and Jiangxi. The local name for the Enclosure style earth dwellings literally translates to "earth enclosure" [土圍子] or "earth castle" [土堡]. The Village style is composed of individual buildings that are intricately laid out without an actual enclosure (image 2.08).

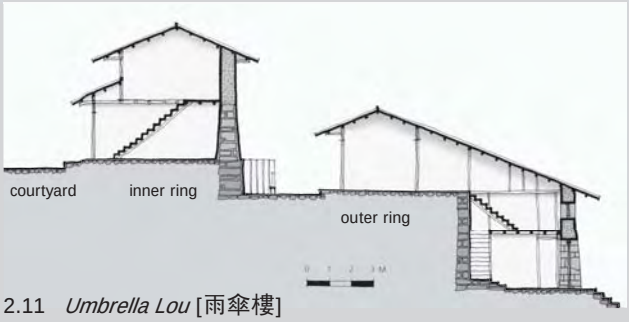
The popular image of the Fujian earth dwelling is the circular earth dwelling of the Perimeter style. The Perimeter style dwelling is located only around Southern Fujian and it is the only style with a holistic circular structure. However, many Fujian earth dwellings show strong influences of other styles. Traditionally, Fujian earth dwellings are described by their shapes, such as Rectangular, Circular, and Polygonal dwelling [方樓, 圓樓, 多邊樓]. There are exceptions such as the Five-phoenix dwelling [五鳳樓]. Although the Five-phoenix dwelling [五鳳樓], is dictated by the Composition style, it is also strongly influenced by the Perimeter style principles, such as its verticality and its large exterior residential wings with load bearing earth walls. Since it is sited specifically around Yongding, it has always been considered a part of Fujian earth dwellings. Other miscellaneous earth dwellings, such as *Umbrella Lou* [雨傘樓], are generally playful variations of Perimeter style (image 2.10).

The Five-phoenix dwelling [五鳳樓] is highly representative of

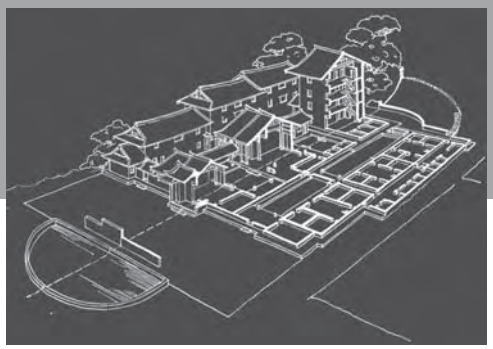
2.09 *Shunyuan Lou* [順源樓] courtyard perspective



2.10 *Umbrella Lou* [雨傘樓]

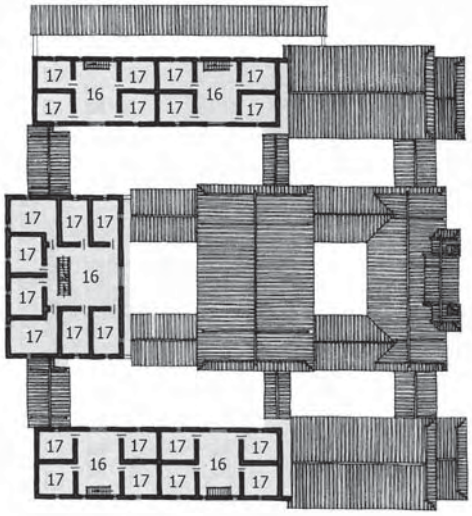


2.11 *Umbrella Lou* [雨傘樓] section



2.12 *Dafudi* [大夫第]
sectional perspective

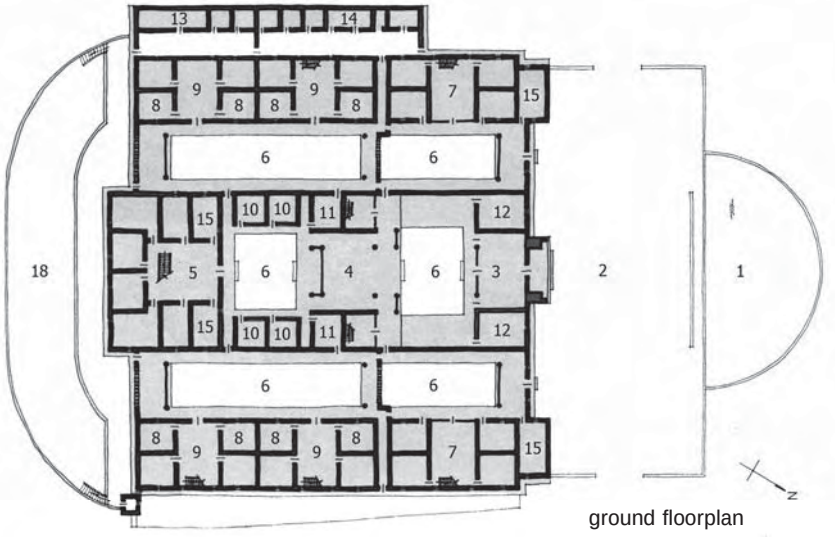
section thru centre



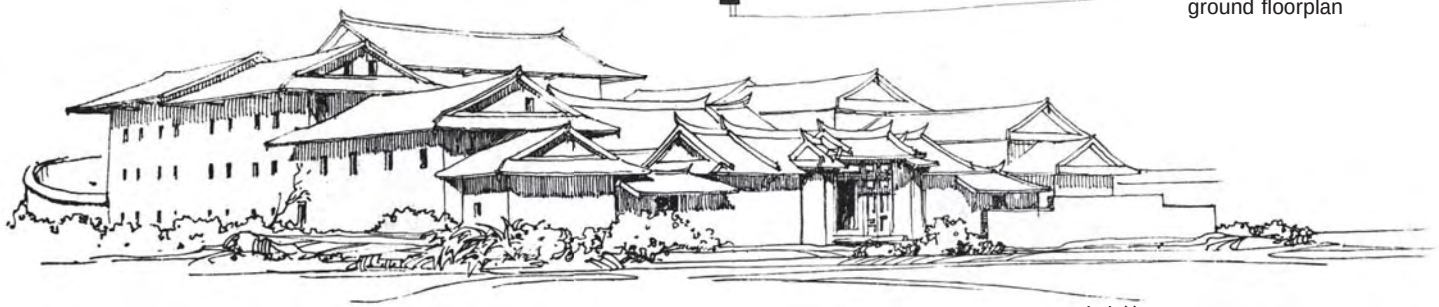
3rd floorplan

2.13 *Dafudi* [大夫第]
plans & section

1. fish pond
2. front court
3. entrance hall
4. centre hall/ ancestral hall
5. back hall
6. courtyard
7. school
8. kitchen
9. dining room
10. meeting room
11. guest room
12. front room/doorman
13. pig barn
14. outhouse
15. storage
16. common room
17. bedroom
18. garden



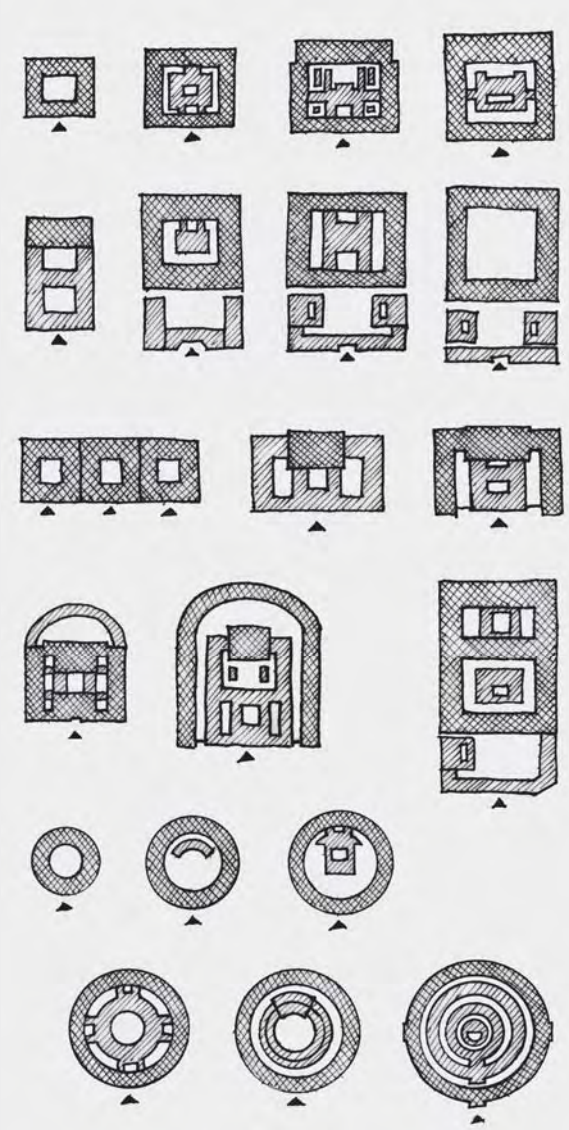
ground floorplan



2.14 *Dafudi* [大夫第] exterior perspective

Chinese residential architecture in that its layout is axial and extremely hierarchical. The public halls lie on the central axis, each one taller than the previous. The Five-phoenix dwelling commonly consists of three halls and two wings.[11] The halls are connected by side rooms, such as drawing rooms, guest rooms and meeting rooms, to create the "日" shape with two courtyards. The sides are flanked by residential wings, which are connected to the central complex with covered galleries. The status of the resident is addressed by the location of his quarter, as in the same Confucian concept as the *siheyuan*, only larger in scale. The essence of *Han* immigration culture is accentuated by the large ancestral hall, which, in many cases, has evolved so as to occupy the centre of the complex, similar to other Fujian earth dwelling. In feudal Chinese society, there were strict rules which all architecture had to conform to regarding the status of residents. Therefore these formal and elaborately decorated houses with staggering heights were only built by high-ranking officials. The *Dafudi* [大夫第][12], built in 1828, is considered the paradigm of this official residence style (image 2.12, 2.13, 2.14). "The architecture complex constitutes a multitude of courtyard clusters, staggered layers of roof forms, clarity of hierarchy, harmony and unity, a formal and tidy layout, with clear logic throughout, a dignified atmosphere, and grand presence." [13] This statement describes the criteria of the building aesthetic and the values of the *Han* people.

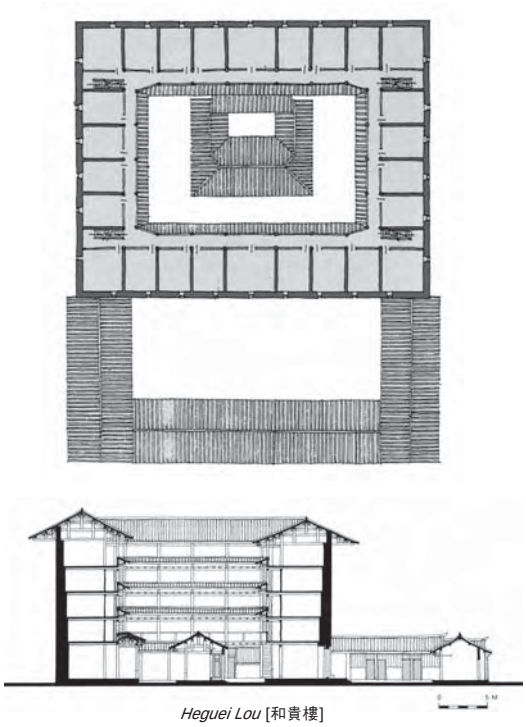
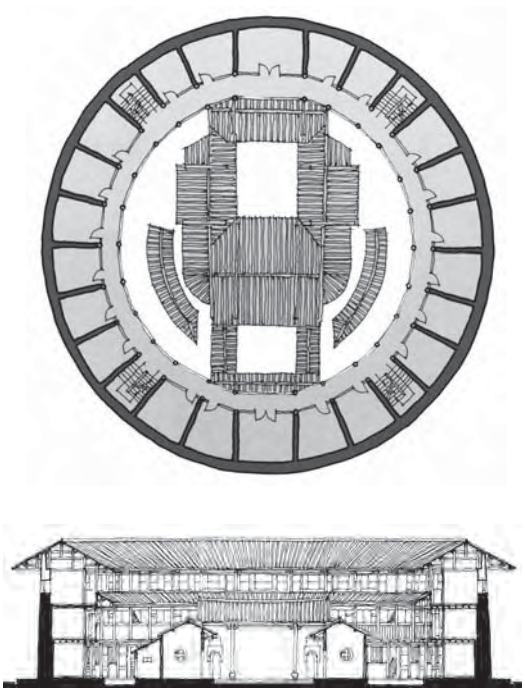
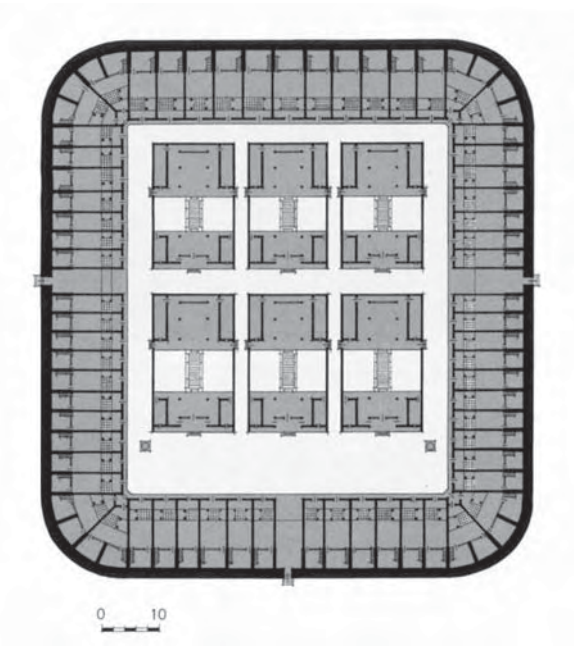
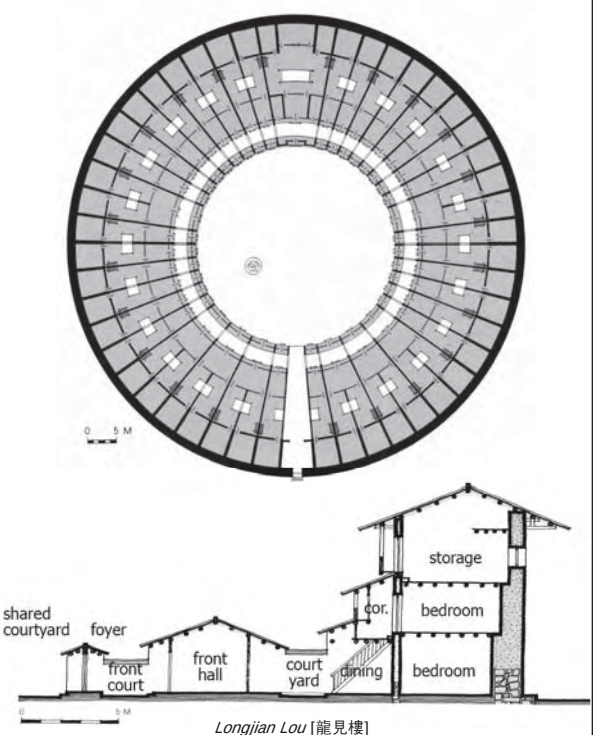
In contrast, the Perimeter style Fujian earth dwelling is particularly intriguing precisely because it is able to break free from many of the stagnant rules of Chinese courtyard housing.[14] The central axis occupied by various halls is still the focus of the dwelling, which is where all communal events are hosted. The ancestral hall sits at the end of the central courtyard, which is often surrounded by side rooms with public program, such as guest rooms and meeting rooms. Interestingly, the architecture expresses no hierarchy in its residences, especially within the circular dwelling. The aesthetic articulated by its simplicity and uniformity is completely opposite to the typical Chinese rules of beauty - intricacy and complexity. The circular Fujian earth dwelling is the only Chinese architectural



2.15 various layouts of Fujian earth dwelling

[11] Wang Shuzhi, 19. Huang, Hanmin, 57.
[12] Wang Shuzhi, 20. *Dafudi* [大夫第] was named "Wing of Scholar Hall" [文翼堂]. The name *Dafudi* was adopted from the name plaque hanging in front of its central hall, meaning the Residence of High Consular.
[13] Wang Shuzhi, 14. [整個建築群院落重疊, 屋宇參差, 主次分明, 和諧統一, 佈局規整, 條理井然, 氣勢軒昂, 宏偉壯觀。]
[14] The Chinese courtyard house developed into several varieties, taking into account a wide geographical differences. However, in essence the different styles are still the same as the first courtyard house dated over 2500 years ago.

2.16 Corridor vs. unit style

	rectangular dwelling [方樓]	circular dwelling [圓樓]
Corridor style	 *Heguei Lou* [和貴樓] Nanjing County, Fujian	 *Yongkang Lou* [永康樓] Yongding County, Fujian
Unit style	 *Xishuang Lou* [西爽樓] Nanjing County, Fujian	 *Longjian Lou* [龍見樓] Pinghe County, Fujian

style with a circular residential structure.[15] As the Perimeter earth dwelling is defined by its outer walls, it cannot expand outward by wings as in the courtyard house typology. In fact, there are no rules for the proportion or division of a Fujian earth dwelling. Most complexes are different in the layering of buildings and arrangement of courtyards. The courtyards, if no longer in the centre, become compartmentalized into semi-private areas for the closer families.

Rectangular dwellings are generally in the shape of "口", "回", "日", and "目" , or some combination of these (image 2.15). The largest rectangular earth dwelling, *Yijing Lou* [遺經樓], has a "回" layout for its residential quarters with the ancestral hall at the centre, and a two-storey "凹" shaped public building attached to the front that is used for a school and social functions (image 2.20). Circular dwellings can be described by the number of rings. For example, *Chengqi Lou* [承啟樓] is a four ring complex with the ancestral hall as the innermost ring.

In his recent publication, *Fujian Earth Dwelling* [福建土樓], Huang Hanmin further categorizes rectangular and circular dwellings into Corridor style and Unit style. The latter has been overlooked by scholars until the last decade, because the Unit style has been mainly occupied by the *Hoklo*. Rectangular and circular earth dwellings have always been categorized separately as Circular dwellings, Rectangular dwellings and Five-phoenix dwellings.[16] Huang pointed out that circular and rectangular layouts function very similarly, whereas the Corridor and Unit styles actually describe a different concept of lifestyles.

Rectangular dwelling [方樓]

Rectangular dwellings are the most common typology of the Fujian earth dwellings. From a preliminary survey, there are over 2100 rectangular Fujian earth dwellings. The floor plans can be generally divided into Corridor and Unit styles (image 2.16), but there is a wide range of playful combinations of both. Many also

2.17 [top] *Hegui Lou* [和貴樓]
2.18 *Heigui Lou* [和貴樓] interior

2.19 *Xishuang Lou* [西爽樓]
interior of ancestor complex

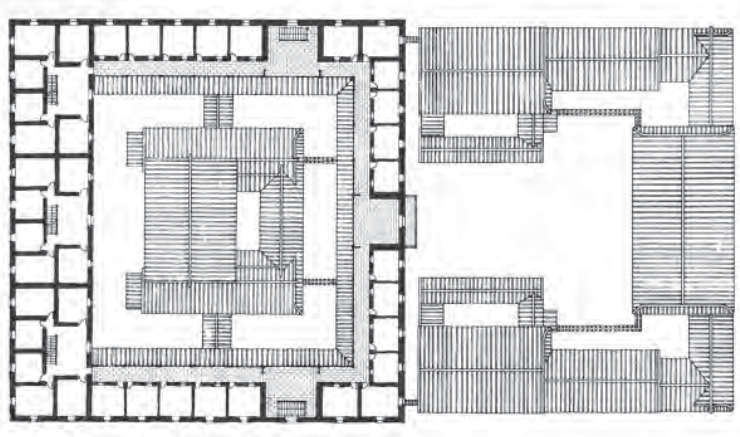
[15] The common Chinese circular structures are gazebos and view towers. There are also a few temples and political monuments in circular layout.

[16] Huang Hanmin, 27.
Wang Shuzi, 13. In *Yongding Earth Dwelling*, Wang Shuzi put the Five-phoenix dwelling as a sub-category of rectangular dwelling.

reflect the influences from the Five-phoenix dwelling style or other *Hakka* dwelling styles. In a Corridor style dwelling, all rooms open onto a continuous corridor which overlooks the interior courtyard. *Heguei Lou* [和貴樓] is a typical Corridor style dwelling with a four-storey residential enclosure (image 2.16, 2.17). The centre of the courtyard is occupied by a smaller courtyard complex, consisting of a central hall and an ancestral hall. Each floor is occupied by 24 rooms of the same size with the exception of the corner rooms. Larger rooms on the central axis serve as common rooms and there are four stairwells located at the end of the corridors to serve all the residents. There is no underlying division of smaller family units or a clear hierarchy between residential units.

In contrast, the Unit style dwelling is divided by partition walls which completely block out one residence from the next. The only communal spaces are the central courtyard and the ancestral hall. Each long and narrow unit has its own foyer, kitchen and private courtyard. This typology is very similar to a street house [街屋][17]. In these earth dwellings, units turn their back on the exterior world and face the internal, communal and spiritual space. In many cases, each division is identical. *Xishuang Lou* [西爽樓] is the paradigm of a large Unit style rectangular earth dwelling. There are 65 independent units surrounding the central communal space, which is occupied by six large ancestral hall complexes (image 2.16, 2.19).

There are also many rectangular dwellings that are heavily influenced by the Five-phoenix dwelling layout, such as *Yonglongchang Lou* [永隆昌樓] and *Yijing Lou* [遺經樓]. Since a Five-phoenix dwelling is the extrusion of the traditional courtyard house, the layout does not have a continuous corridor, and the principle guiding its division is very different from a Unit style dwelling. In a traditional Chinese courtyard house, one enters from the courtyard into a semi-private space, then into the private realm. Each cluster of two to six rooms surrounding the shared space is considered an apartment. In the Five-phoenix dwelling, the apartment is extruded with stairs vertically connecting the shared spaces (image 2.13). In *Yijing Lou* [遺經樓], the main wing is laid out in this configuration, while the rest of the enclosure is in Corridor style (image 2.20). There are both advantages and disadvantages to the cluster design: the compartmentalization creates privacy for smaller family units with their own semi-private spaces, but large clusters create rooms with unpleasant conditions, without cross ventilation or sufficient light.



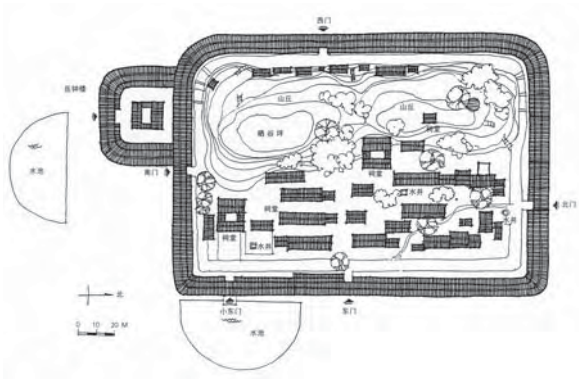
2.20 *Yijing Lou* [遺經樓]
4th floor plan

There are many other interesting variations of Corridor style rectangular earth dwelling. For example, the *Changyuan Lou* [長源樓] is built against a riverbank, therefore its layout is altered for the best view (image 2.21). In another instance, the enormous Unit style *Zhuangshang Cheng* [庄上城] encloses a landscape with an ancestral hall on the hilltop (image 2.22). Similar to *Zhuangshang Cheng* [庄上城] and *Xishuang Lou* [西爽樓], many rectangular earth dwellings have rounded corners. Some *feng shui* practitioners believe edges would trap negative energy, therefore either the upwind corners or all corners have to be rounded. Some argue that the rounded corners are the evidence of evolution from a rectangular to a circular earth dwelling.[18]

Circular earth dwelling [圓樓]

Similarly, circular earth dwellings are also divided into Corridor and Unit styles. Though the typologies are the same as the rectangular dwelling, the circular shape creates a different type of architecture. The major differences are the atmosphere of the courtyard and the physical characteristics of the structure. Most importantly, the circle further implies equality[19], which is in contradiction with the Confucian ideal of hierarchy and seniority. In the case of a large-scale collective dwelling, equality of room status avoids quarrels between different families or within extended families. The circle also symbolizes unity in the *Han* language. Structurally, a circular earth dwelling has many advantages in the traditional environment. With the same perimeter wall, a circular dwelling can encompass a larger area. Both its construction and materials are modular, therefore it is easier to construct. The circular structure has better resistance against wind with no corner, higher resilience to earthquake with its continuous lateral support; and it is easier to defend having no blind spots. Lastly, there are no interior corner rooms with problematic ventilation and lighting conditions. Under these circumstances, the circular earth dwelling became increasingly popular especially in the remote mountainous regions of Southern Fujian. In Nanjing county, 78 percent of circular earth dwellings were built in 20th century and half of those were built

2.21 *Changyuan Lou* [長源樓]



2.22 *Zhuanshang Cheng* [庄上城]

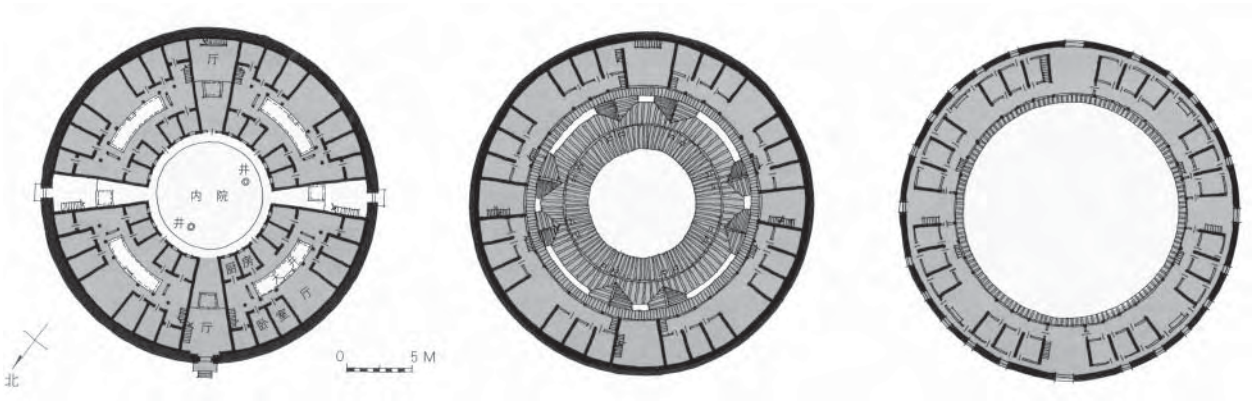
2.23 *Zhuanshang Cheng* [庄上城]
interior street

[17] Refer to chapter ii.
[18] Huang Hanmin, 70.
[19] Distance to the central axis and ancestral hall is a measure of prominence. Since a circle is centralized instead of axial, the equal distance from the perimeter to the centre symbolizes equality.

in the 50s and 60s.[20] Under communism, rooms are distributed by random draw, thus the inhabitants prefer the circular dwelling with equal residences.

The Corridor style circular dwelling has always represented the *Hakka* culture. Their communal lifestyle is enhanced by the astonishing interior courtyard. The continuous circular corridor defines the atmosphere of the enclosure. All rooms face the centre of the dwelling, which is the courtyard, the ancestral hall and the spirit of the dwelling. While the residential layout is simple and modular, the number of rings and the placement and design of the ancestral hall vary in every earth dwelling. In a single ring dwelling, the ancestral hall sits at its traditional location, at the end of the central axis. In many cases, the ancestral hall evolves into its own courtyard complex in the centre of the earth dwelling (image 2.25). The ancestral hall is not only highly decorated, it is the most playful element of the earth dwelling. The design diverges with shape, enclosure, and height. The most luxurious *Zhencheng Lou* [振成樓], built in 1912, features a seven meter tall ancestral hall, influenced by classical European architecture (image 2.26). It is the centre ring of the four-ring complex, which is divided into eight sectors by *bagua* [八卦], the eight signs of *feng shui*. Occasionally, the vertical connection also becomes a design element. For example, *Wufu Lou* [五福樓] is divided into five sectors by the five halls representing the five sons.

The discovery of Unit style circular dwelling surprised many scholars. While its exterior looks exactly the same as the Corridor style, the interior looks much more uniform. The dwelling is usually composed of two or more rings to create a proper entrance and private courtyard for each unit. The centre courtyard is also less likely to be occupied by uneven or scattered additions for kitchen or storage. Every unit, including the ancestral hall and entrance, is in a pie shape. The experience of entering the dwelling is enhanced by the long compressed journey into the vast expansion of the courtyard. The ancestral hall, occupying two or three divisions, becomes a unit on its own, with a foyer, halls and courtyards. The concept of Unit style circular dwelling is extremely simple yet there are endless possibilities in the arrangement and size of a unit. Each unit could include only

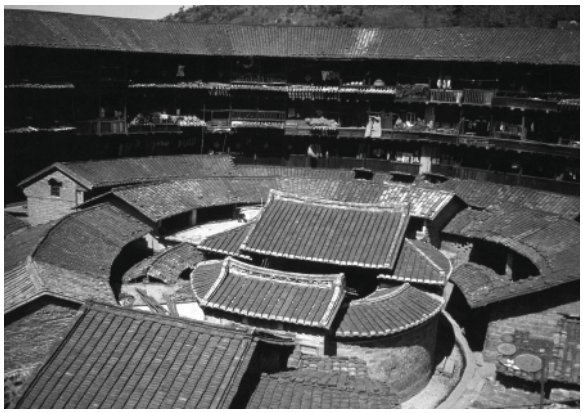


ground floor plan　　2nd floor plan　　3rd floor plan

2.24 *Nanyang Lou* [南陽樓]

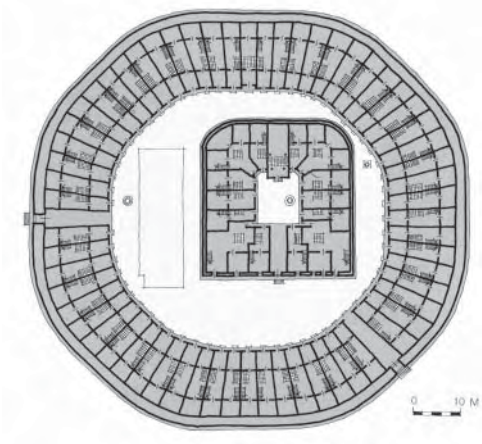
one division [room] or many divisions. In *Longjian Lou* [龍見樓], each division is a unit with its own small courtyard and kitchen, however, in some cases, two units merge to share a foyer, a front court and a large hall (image 2.16). In *Eryi Lou* [二宜樓], each unit consists of four divisions in the outer ring. Within each unit, there are corridors overlooking the courtyard. Moreover, there is a continuous corridor on the exterior side on the top floor [4th]. Thus the residents could easily visit their neighbors, or get to the common rooms above the ancestral hall without going outdoor. *Nanyang Lou* [南陽樓] is also a hybrid of Corridor and Unit style. The entire dwelling is divided into only four units by the common spaces: the front entrance, the side entrances, and the ancestral hall. Each unit functions very similarly to those in a Corridor style building, and the top floor [3rd] also has a continuous corridor on the exterior (image 2.24).

There are over eleven hundred circular earth dwellings in Southern Fujian. In which, only about three hundred are considered Unit style dwellings. However, there are many interesting variations to the Unit style. For instance, the Umbrella dwelling [雨傘樓] consists of two rings of residential units at different grade levels (image 2.11). *Zaitian Lou* [在田樓] has a rounded octagon as the outer ring, while the inner is rectangular and off-centered. More oddly, the main entrance and the ancestral hall is on a perpendicular axis, and the secondary entrance is on a diagonal axis (image 2.27). This abnormal layout may be related to the *bagua* [八卦] and the specific direction provided by a *feng shui* practitioner.



2.25 [top] C*hengqi Lou* [承啟樓] ancestral hall

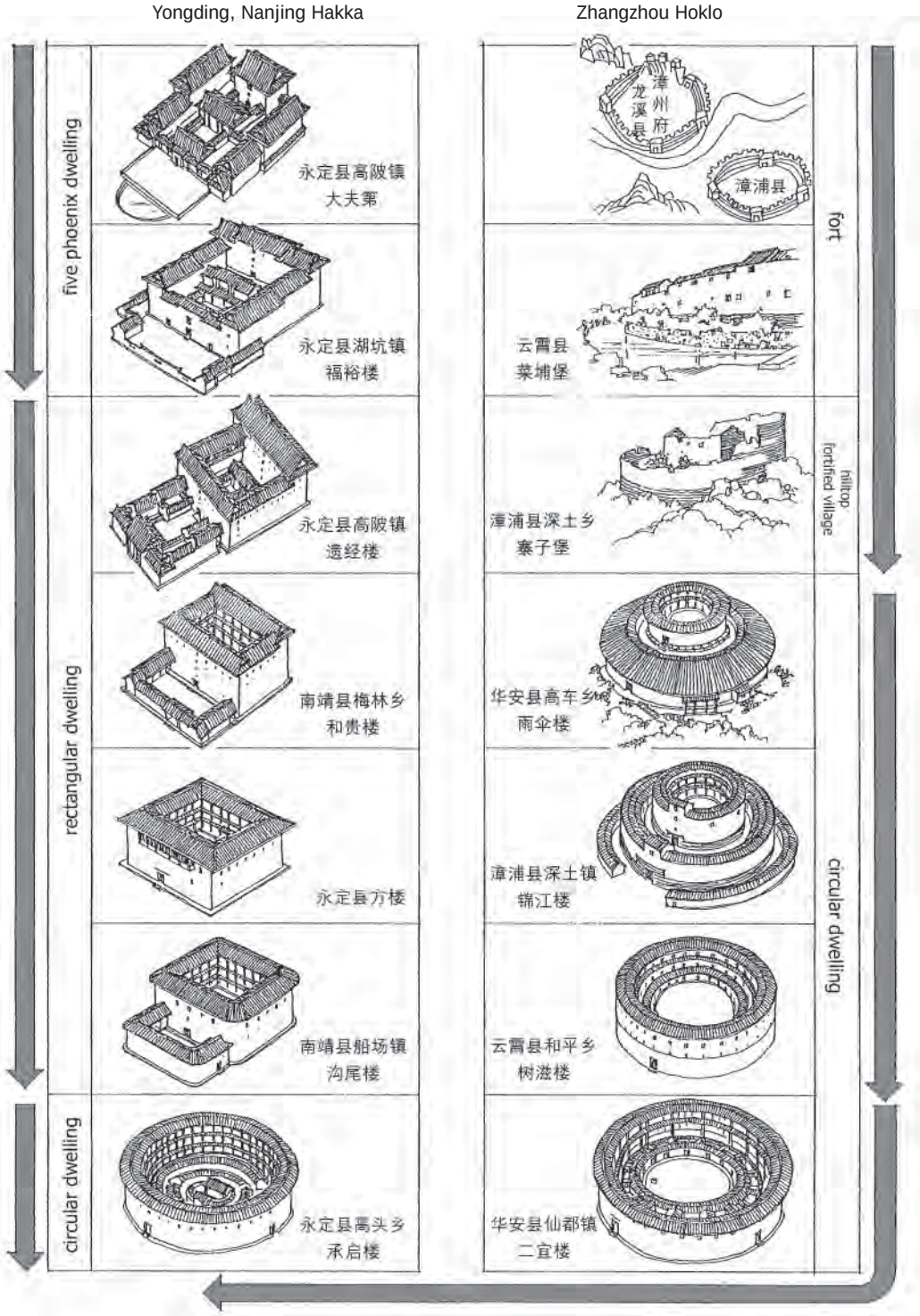
2.26 Zhencheng Lou [振成樓] ancestral hall



2.27 *Zhaitian Lou* [在田樓]

[20] Huang Hanmin, 233.

2.28 evolution of Fujian earth dwelling
by Huang Hanmin

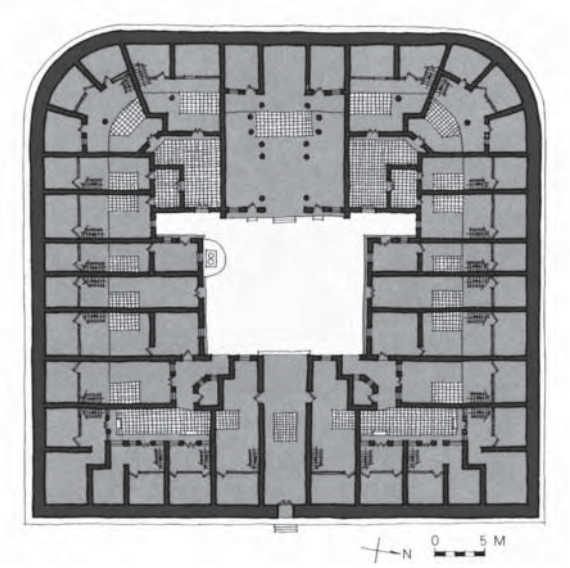


ii-iv the evolution of Fujian earth dwelling

The *Hakka* earth dwelling in Fujian evolved from the Five-phoenix dwelling to the rectangular dwelling, and then to the circular dwelling. This statement is generally agreed upon by scholars, with partial archeological evidence supporting it as a logical assumption. Since the Five-phoenix dwelling is most true to the Chinese courtyard house, logically it must be the predecessor of Fujian earth dwellings. Secondly, there are more rectangular dwellings and older archeological evidence of their existence. Therefore, the rectangular dwelling must have come before the circular dwelling. The rounded corners of many rectangular dwellings are also considered as evidence that the rectangular dwelling evolved into the circular dwelling. The origin of the circular dwelling has been a long debated mystery. The discovery of Unit style circular dwellings of the *Hoklo* further confused all the theories. In 1988, Huang Hanmin proposed his new hypothesis for the evolution of Fujian earth dwellings. He argued that the circular earth dwellings evolved from the fortified *Hoklo* villages on the hilltop [山寨] when the *Hoklo* first migrated to Fujian. These fortifications were generally rounded due to the rounded hills. He also presented linguistic evidence. It is customary to refer to circular dwellings as *zhai* [寨], which means a 'fortified village'. In addition, Fujian *Hakka* uses the *Hoklo* word *cuo* [厝] to describe house or home. This word does not exist in *Hakka* language anywhere else[21]. The oldest circular dwelling known, *Qiyun Lou* [齊雲樓], is a Unit style dwelling built by the *Hoklo* in 1371. Huang stated the Unit and Corridor styles are the key difference between *Hakka* and *Hoklo* dwellings respectively. He concluded that the *Hoklo* invented the first Unit style circular earth dwelling, which subsequently influenced the *Hakka* Corridor style earth dwelling (image 2.28).

Presently, Huang Hanmin's once controversial theory has been accepted. His argument for the origin of circular dwelling is well grounded. Nonetheless, further research is required for a more accurate history of the Fujian earth dwelling. From the limited

2.29 *Cuelin Lou* [翠林樓]



2.30 *Yongchun Lou* [詠春樓]

[21] Huang Hanmin, 226.

information, the following facts could be concluded: 1. Generally, there are more rectangular dwellings than circular dwellings in *Hakka* regions, ie. Yongding county. Conversely, there are more circular dwellings than rectangular dwellings in most *Hoklo* regions. 2. There are considerably more Corridor style earth dwellings than Unit style dwellings. 3. There are more *Hoklo* circular dwellings than *Hakka* circular dwellings. 4. A large portion of circular dwellings are built in the 20th century, especially in Nanjing county. 5. The Five-phoenix dwelling style only exists on the flat land of Yongding county. Beyond these facts, the theory of evolution for the Fujian earth dwelling is still premature with the lack of proper surveying and archeological research. There are several unsupported, over-simplified or contradictary arguments remaining in Huang's theory:

1. The generalization of relating *Hakka* to the Corridor style and *Hoklo* to the Unit style dwelling is unjustified. The oldest surviving rectangular dwelling, *Yide Lou* [一德樓], is a Corridor style dwelling built in 1558 by the *Hoklo*.[22] Moreover, most of the older rectangular dwellings [ca. 16th century] are found in the surrounding *Hoklo* region, and they are Corridor style dwellings as well. Another contradiction is that there are more *Hoklo* than *Hakka* dwellings, yet there are twice as many Corridor than Unit style dwellings. It is true that there are very few Unit style dwellings in Yongding county, but it is an oversimplification to equate *Hoklo* with Unit style dwelling.

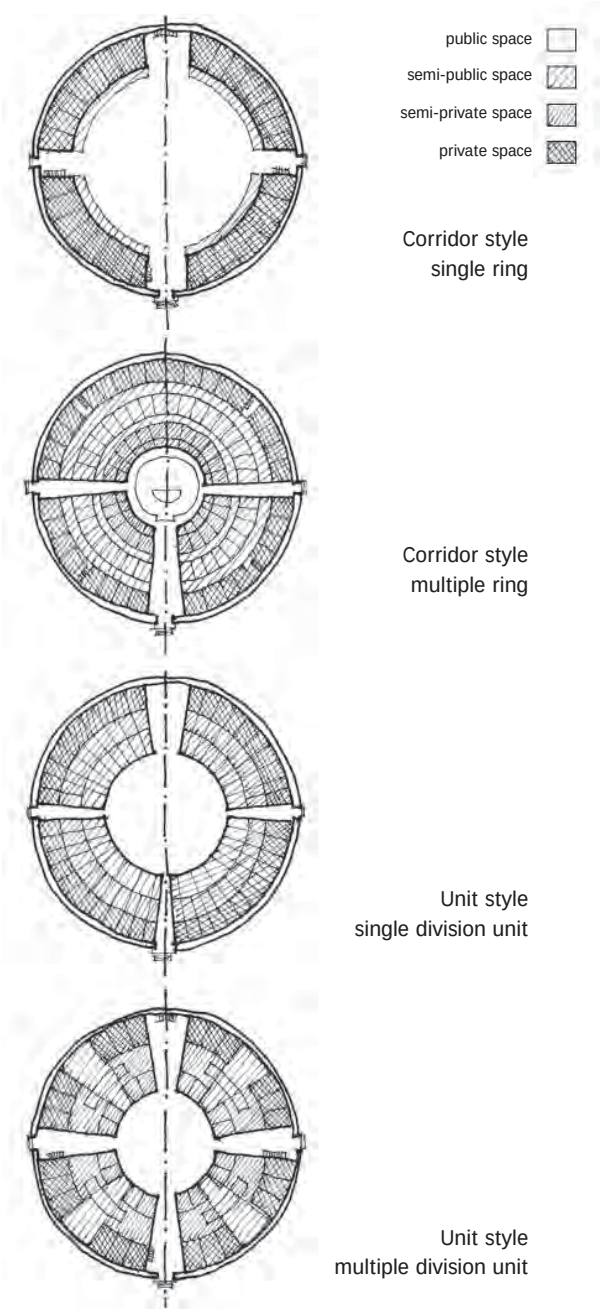
2. There is no solid evidence to support the theory of the evolution from rectangular to circular dwelling for the *Hakka* people. The oldest circular *Hakka* dwelling listed[23], *Cuelin Lou* [翠林樓], built in 1617, is as old as the recorded *Hakka* rectangular dwellings (image 2.29). Since there is no actual building information proving the existence of older rectangular dwelling in *Hakka* region, it is entirely possible that the *Hoklo* invented the rectangular Perimeter Fujian earth dwelling, both Unit and Corridor styles. If the circular dwelling is inspired by the hilltop fortifications of the *Hoklo*, then the *Hakka* circular dwelling would be a direct importation instead of an evolution from any previous *Hakka* dwellings. This assumption is reasonable, since *Cuelin Lou* [翠林樓] is at the border of *Hakka* and *Hoklo* regions. Also, rounding the corner of rectangular dwelling is mostly a *Hoklo* custom, thus it can hardly be suggested as transitional state for the evolution. It is more likely the by-product of Unit style dwelling. A larger radius would resolve the difficulties in dividing units at the corners (image 2.30).

3. The Five-phoenix dwelling is certainly a *Hakka* invention. However, it is unlikely to be the predecessor of rectangular and circular dwellings (image 2.28). First, the architecture is elaborate, articulate, less defensive and more expensive to build. Early immigrants would not even be allowed to build such high-status residences. Secondly, the majority of the Five-phoenix dwellings were constructed in 19th century.[24] The Perimeter style dwelling influenced by the Five-phoenix dwelling also appeared in 19th century. Fujian had always been ridden with bandits until the Qing Empire finally took a firm grip of the whole country in late 18th century. The *Hakka* people were encouraged to study and apply for provincial and national examinations, which awarded national recognition and government positions. The Five-phoenix dwelling is the creation of this prosperous era. These government officials would return home with fame and money to build a new architecture that would be more fitting for their status. They referred to the elaborate houses in Beijing as the model. The construction of the

Five-phoenix dwelling also shows greater building skill compared to other earth dwellings built at the time.

4. On the one hand, Huang disregards several renown dwellings due to the lack of credibility behind the myth. For example, many scholars approximate the construction of *Fuxing Lou* [馥馨樓] around 791 AD from the genealogical documentation. The documents recorded the migration of the *Hakka* family, and specified the generation that settled in the village, but the residents would not have had the financial means or technology to build an earth dwelling at the time. In another instance, the famous circular ruin *Jingshan Gu Zhai* [Gold Mountain Ancient Fortified Village] [金山古寨] located in Yongding was supposedly built in 1279 AD. While Huang talks about the forts and fortified villages in Holko region, he does not mention the importance of this ruin. Accurate statistics on this fortified village could be an important milestone in the evolution of *Hakka* earth dwelling. On the other hand, Huang Hanmin also draws on evidence without solid scientific support in his argument. One of the more critical pieces of evidence is the oldest circular dwelling, *Qiyuan Lou* [齊雲樓]. On the front gate of *Qiyun Lou* [齊雲樓], the engraving states, "built in Ming Wanli year 18 [明萬歷十八年] [1588 AD]". However, he chooses to use the information in the genealogy book stating that Kao family built *Qiyuan Lou* [齊雲樓] in Ming Hongwu year 4 [明洪武四年] [1371]. There are no supporting documents to prove that the structure built in 1371 was on the same site, or if it was even an earth dwelling.

The evolution of the Fujian earth dwelling will require further archeological evidences, as myths are often exagerated. The evolution of vernacular residential architecture is often developed through the unconscious mind of the masses. There is no architect, or clear concept. That is why vernacular architecture reflects the culture, geography and situation of the inhabitant. Though there are still many critical issues to the evolution of Fujian earth dwelling, there are many valuable lessons to be drawn from its current state, especially in the relationship between architecture and community.

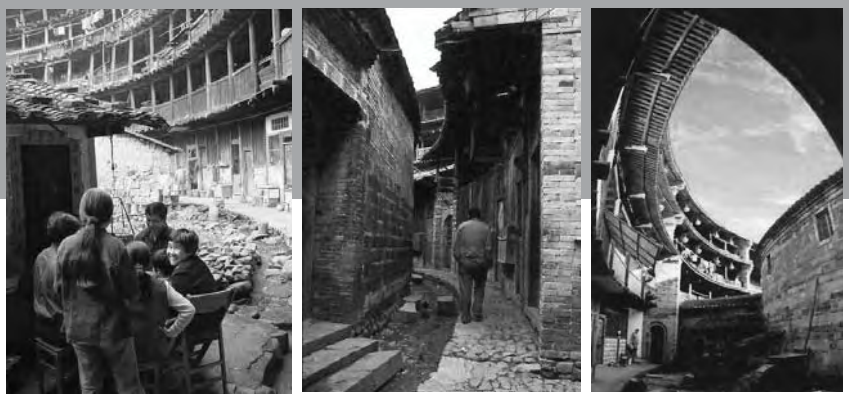


2.31 comparison of public and private spaces in Corridor and Unit style earth dwelling

[22] Huang Hanmin, 118. *Yide Lou* [一德樓] and many other older rectangular dwellings are located in Zhangpu County, which is solely occupied by *Hoklo* people.

[23] Huang Hanmin, 263. This statement is made on the limited data gathered majorily from the book, *Fujian Tulou*.

[24] All the data on the Five-phoenix dwelling I can find indicate that they are built in the 19th century. However, I do not have the statistics on all Five-phoenix dwellings.

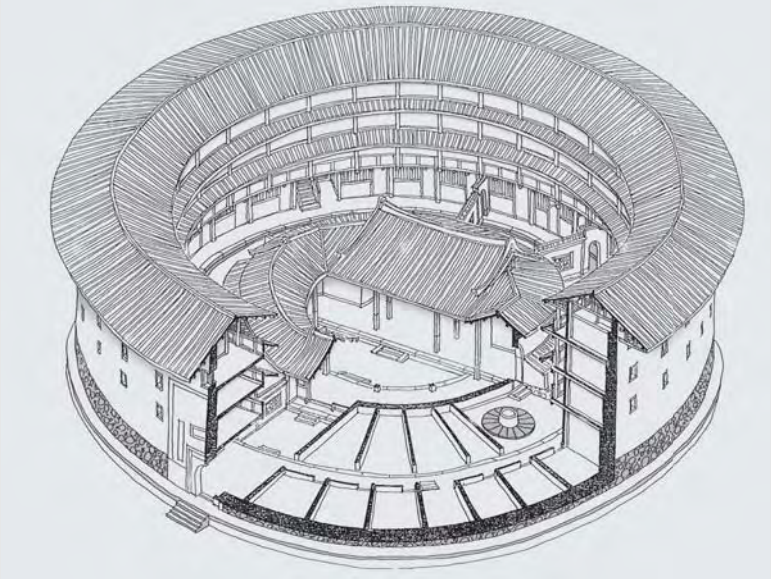


2.32 divided courtyards
in corridor style dwelling

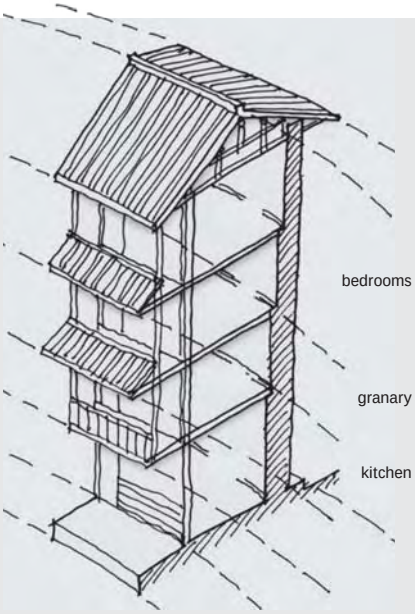
ii-v lives inside Fujian earth dwellings

While immigration culture requires cooperation in both defense and cultivating new land, the communal and solidarity aspects of earth dwelling residents is best demonstrated through the construction of the dwelling. The financial requirement is gathered by different families. The construction is carried out mostly by the future residents during winter, because it is the off season from farming. While villages often have quarrels amongst each other, close neighbours are usually on good terms. A single dwelling operates on a cooperative manner with one or more extended families. The large extended family collaborates in diverse activities including construction, farming (rice paddies, vegetables, orchards, herbs, tobacco, and animals etc.), forestry, hunting, fishing and gathering. Property, profits and fame are owned and shared by the family. While Chinese family communism[25] is common especially before the Second World War, *Hakka* families in earth dwellings practice it on a much larger scale. The largest dwelling could house over 600 residents from the same or different families. The mutual aid and tolerance between residences of the same earth dwelling is incredible. The utopian-style society within each dwelling represents a sustainable economic, social and political body.

The lifestyles are very different inside a Unit style and a Corridor style earth dwelling. The Corridor style promotes extreme communal living, while the residents of a Unit style dwelling also value privacy and semi-private spaces. The different layouts reflect the different priorities to the residents.

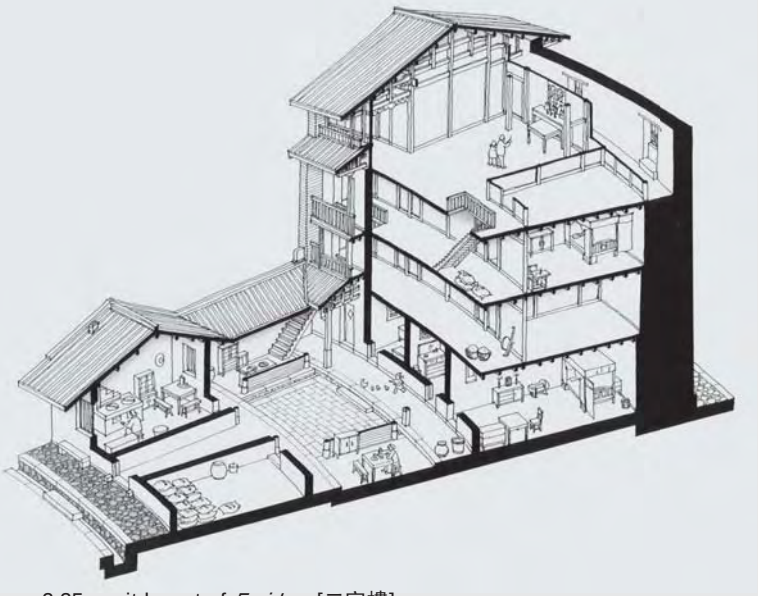


2.33 divided courtyards of *Huaiyuan Lou* [懷遠樓]



2.34 vertical division

In Corridor style dwellings, there are also varying degree of semi-public spaces,. The public and semi-public domain relates to the number of rings and division of the courtyard. In a one-ring building, there is only the one communal courtyard, and there is very little buffer between the public and private. In a four-ring dwelling, such as *Chengqi Lou* [承啟樓], the central axis and central courtyard is public. The courtyards between the outer rings are divided into semi-private courts (image 2.32, 2.33). In some cases, the idea of a shared courtyard is lost, and the small alleys between rings are dark and occupied by junk. Beyond the layout of the courtyard, the progression of hierarchy in the traditional courtyard house is transformed vertically. The ground floor contains semi-public functions and utility. The kitchen is always on the ground floor opened to the courtyard for fire safety and convenience. Attached to the kitchen is the dining room, and the spare rooms are occupied with storage. In the summer, many people would also set up tables to eat in the courtyard. Due to moisture, ventilation and lighting issues, there are few bedrooms on the ground floor. In the taller dwellings, the second floor is solely for the storage of grains and goods that might be ruined by moisture. The bedrooms are for the most part located on the upper storeys where larger windows provide better ventilation and

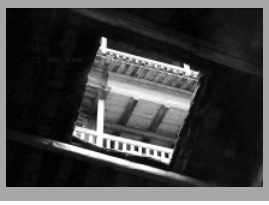


2.35 unit layout of *Eryi Lou* [二宜樓]

2.36 [top] central courtyard of *Eryi Lou* [二宜樓]

2.37 unit interior of *Xishung Lou* [西爽樓]

[25] Laurence G. Liu, 164. Liu describes the common extended family working as a whole and sharing property as Chinese family communism.



2.38 sky well

lighting. The segregation of functions by floor creates an interesting social condition. Each family unit occupies a vertical division (image 2.34). Nuclear or stem families are encouraged to socialize and share through the neighbouring kitchen. However, there are only two or four communal stairs for the entire building, therefore it is very inconvenient for the families to get to their own storage and kitchen. The priority of the whole, the extended family over the individual is clearly shown through the architecture.

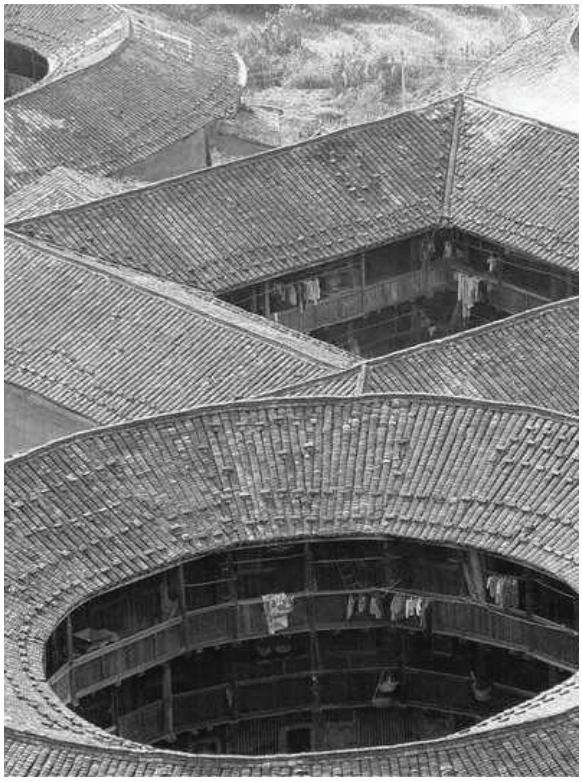
The Unit style dwelling presents a different living philosophy. While the central axis and central courtyard is completely public, each unit is self-contained with semi-public, semi-private, and private spaces. Again, there are varying degrees of semi-public and semi-private spaces, depending on the sizes of units. The arrangement of public functions and utilities differ with the number of rings as well. In *Longjian Lou* [龍見樓], a three-ring dwelling, there is an entrance foyer with front courtyard, leading to the front hall. The front hall is considered a semi-public space, to formally receive guests. The kitchen and the back hall, used as dining room, occupy the semi-exterior space surrounding the sky-well (image 2.16). *Eryi Lou* [二宜樓] is a two-ring dwelling with much larger units. There is no formal entrance or front hall. However, the semi-private courtyard is much larger (image 2.35). In most Unit style dwellings, the room distribution in the main residential wing and the exterior ring is similar. The bedrooms are on the lower floors; the top floor is reserved for the ancestral hall and storage. The semi-private space is prioritized in comparison to the Corridor style dwelling. Also, the idea of the individual is emphasized by the private ancestral hall in addition to the shared ancestral hall. The centre courtyard is never divided and it is

2.39 corridor style dwelling

the public space for work, social events and festivities.

On a nice summer day, Fujian women would do their chores in the courtyard during the day while the kids would play or help with light tasks. At dusk, smoke would rise up from the kitchens; the women would chat and gossip while cooking. Men coming back from the fields after a day of hard work would be greeted with dinner tables full of delicious dishes. Seafood would often be part of the daily meal as well. After dinner, everyone would sit in the courtyard; tells a few tales or lights up a pipe. In the winter, the earth dwelling is warm and full of life. There would no be any farm work, so the men attend to home improvement or prepare for the next season. A few would travel afar to sell their produce, but most would spend the day in leisure around the courtyard. When there is a wedding or a festival, the courtyard would be packed with people as are tables with food. Everyone would decorate and boast their dwelling against that of another. The new year is the most elaborate and exciting event of the year. Everyone would put on new clothing. Kitchens would be stocked up with dishes, desserts and candies. The celebration would continue for fifteen days. The courtyard would host dragon and lion dances, puppet shows, lantern festivals with riddles and gifts. The courtyard has hundreds of different faces, and acts as the centre of life for the people of Fujian earth dwelling.

Circumstances and people created this architecture; and this architecture in return promotes the social conditions of the earth dwelling.



2.40 *Tianluokeng village* [田螺坑村]

2.41 upper floor corridor

2.42 new year festival
dragon and lion dance

ii-vi conclusion

The architecture of Fujian earth dwelling clearly illustrates the culture and lifestyle of the residents. The building is a completely inward looking fortress in nature and society. The ancestral hall and the courtyard are the centre of their universe. These central concepts created by culture and physical environment act as the common tie to the three different typologies of Fujian earth dwelling: Corridor style, Unit style and Five-pheonix dwelling style. Each typology demonstrates a different perspective of the *Han* culture. The Five-pheonix dwelling emphasizes the hierarchy and order of the family. The Corridor style expresses the desire for a utopian society [大同世界] and the ideal of the communal over the individual. The Unit style strives for a balanced lifestyle, where the harmony of a small family unit is as important as the unity of the whole community.

[design premises]: Taiwan > Taipei 2006

台灣 台北

3.01 [cover] Taipei, 2004

3.02 Taipei

iii introduction

The cityscapes of Taiwan have rapidly changed in the last 50 years. Waves of urbanization have led to the densification of major cities around the island. The influence of modern technology and globalization has sculpted concrete forests with westernized condominiums, the new paradigm for residential architecture. The progress of modernization, however, varies widely from city to city. While Taipei has developed into a world-class metropolis with an efficient network of public transportation, many small towns still cling on to the traditional lifestyle. The old capital, Tainan [台南], has not been able to keep pace with the rate of modern development. Instead, the city encourages the revitalization of old traditions and festivals to attract tourism. Conversely, the new capital Taipei [台北] is modern and prosperous, but it has, in the most part, lost its cultural traditions and the sense of small community.

Every city in Taiwan struggles with the changes brought on by modernization. Modern technology and western typology provide a model for the vertical dwelling. The western condominium does not embody Taiwanese cultural values or social circumstances. Overall, the street houses are still the most popular housing type in Taiwan for several reasons. First, street houses provide the store owner with the convenience to take care of business and family at the same time. Small to medium size family businesses are the foundation of Taiwan's economy and the basis of the economic boom from the 1960s to the 1980s. Second, many Taiwanese feel an attachment to the ground plane. This is partially due to the old agrarian concept of the ownership of the land. In addition, the ground plane is the connection between the public realm and private homes. The porch, the arcade and the storefront are the intermediate zones where neighbours socialize and neighbourhood news circulate. Third, the mixed-use zoning of street houses means that all daily necessities are available within walking distance. The residents interact with each other during their daily routines, and they have a common interest in the economic well-being of the neighbourhood. It is interesting to note that, many store owners continue to worship the old village guardian god for prosperity. This is one indication that most neighbourhoods of street houses are able to retain both tradition and a sense of community. Originally, the street house was also named "through sky house" [透天厝]. One household would occupy the entire vertical slit including both the storefront and the residential spaces. Currently, new street houses are over four storeys high to satisfy density. Many function like stacked townhouses, with separate residential units per floor on the upper levels.

Nonetheless, most citizens in Taipei live in condominium units due to the social and economic structure of the city. Street houses simply cannot provide the density required. In addition, most Taipei citizens are employed in stores and offices, therefore they do not need a storefront. Condominium units are the most economically feasible residential typology to accommodate the capital's population. Due to urbanization, the housing cost in Taipei sky-

rocketed in the 1970s and 1980s. Residential architecture was driven by a market looking for cheaper and tighter units. During these two decades, there was no consideration given to the design of circulation space, shared facility, or the interaction with the surrounding community. Even now, amenities are often crammed into leftover space, which results in underused and neglected facilities.

The urban conditions and condominium typology create a new neighbourhood environment. Neighbours have no direct economic association with each other. The dwelling unit does not accommodate Taiwanese traditions and cultural activities, and the collective building does not provide social spaces for neighbours. Therefore, this typology aids the deterioration of traditional neighbourhood communities. The imported model alters the social and cultural behaviour of the residents. In many cases, the residents are making an effort to alter the dwelling to accommodate their traditions, such as creating space for the ancestral shrine. For the less devoted, such traditions are slowly forgotten. While individual families can continue many family traditions and rituals on their own, the architecture near extinguishes collective efforts. The residents have no control over the design and layout of the collective housing. In fact, most residents do not comprehend the isolating influences of the new architecture over their social behaviour. The Taiwanese assume that anything imported from the west must be the best. Also, under capitalist influence, many do not wish to pay for things they do not actually own, therefore the common and circulation spaces sacrifice. Too often, when residents move into a condominium, their social activities with neighbours abruptly stop. Their lives are confined to family, school and work. They lose the spiritual attachment to the space and neighbourhood of their dwelling.

The familial, cultural and social conditions in the city of Taipei have changed greatly with economic development and the condominium typology. This chapter will further analyze the city's current state and its correspondence to urban dwellings.

3.03 [top] the first highrise (five storey) public housing in Taipei, built in 1963

3.04 a 12-storey public housing in Taipei, built in 1976
The parks and landscape by the water are part of the community revitalization plan in the last decade.

3.05 Taipei citizens slept in the park for the city-wide protest on the unaffoardable housing, 1983.

3.06 bird's eye view of Taipei, 1935

iii-i family & culture

Taipei has been the capital of Taiwan since the Japanese occupation. It is the centre of administration, commerce, education, fashion, entertainment and the arts. Currently, Taipei has a population of 2.62 million citizens, in addition to many students and travellers. In most cities in Taiwan, the majority of residents have been settled in the city for more than three generations. In Taipei, more than three-quarters of the residents are first and second generation immigrants from other cities in Taiwan, China, or other countries. Most people move to the flashy new city to study or work. They come to Taipei with a dream. Many stay and raise their own families here.

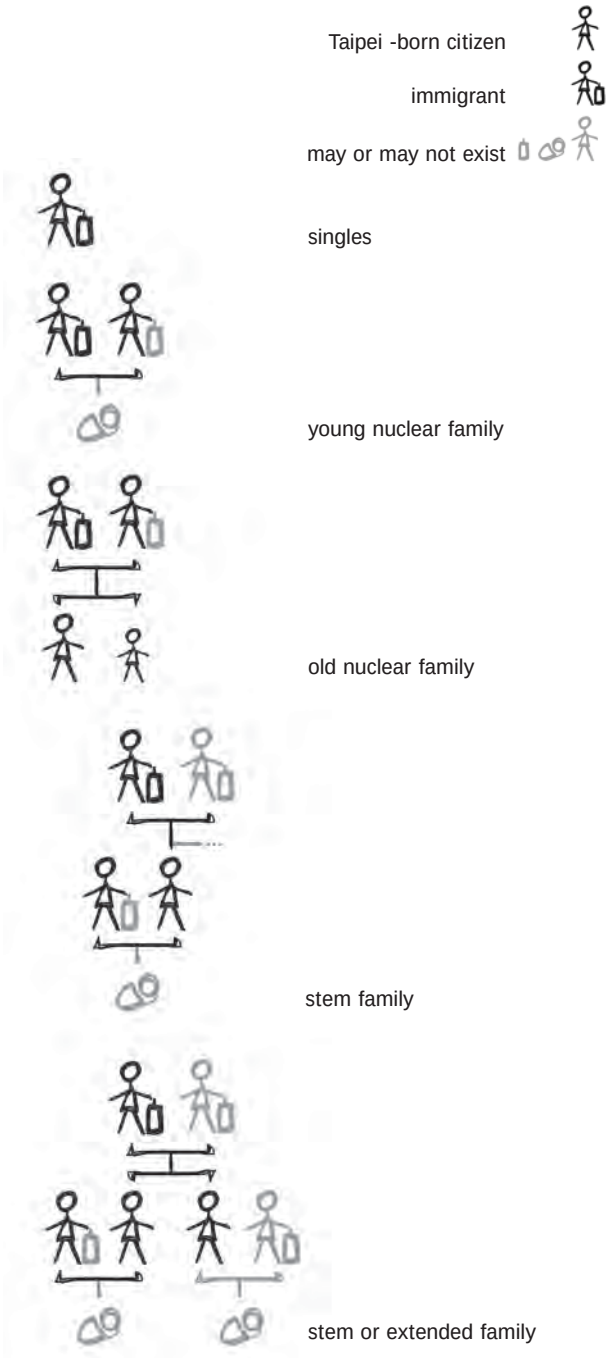
The residential development in Taipei can be divided into the following stages: 1) 1949-1960: The migration of the ROC government to Taiwan brings a large wave of immigrants into the city; 2) the 1960s: The success of exporting boosts the economy, dense four-storey apartments were built much faster than the community facilities and infrastructure; 3) the 1970s: The emerging high-rise dwellings create a great interest in real estate, and the mentality of the dwelling changes from a permanent and personal property to a marketable object. Also, the average living area per person increased significantly; 4) the 1980s and 1990s: The real estate market peaks both in 1980 and 1990. There are more tertiary economic producers than industrial manufacturers. While the density is very high in the city centre, the urban infrastructure, public transportation and community facilities lag behind in many parts of the city.[1] In each stage, the saturation of the city's existing infrastructure and dwelling is the result of urbanization - rural population seeking jobs and opportunities in the big city.

The cycle of immigration is constantly being renewed. Therefore the typical family profiles are as follows (image 3.07):

1) Singles: Migrants come to Taipei for study or work, with their families remaining in other cities or countries where they return to frequently.
2) Young nuclear family: Migrants become rooted and get married in Taipei, or young couples start their new life in Taipei, with their families remaining in other cities or countries where they return to regularly. None have ancestral tables in their residences.
3) Older nuclear family: Migrants with children born in Taipei, who are completely adapted to the lifestyle in Taipei. Some practice traditional customs in their homes; and most attend the annual ancestor worshipping or the neighbourhood festivals in their hometown.
4) Stem family: Many stem families settled in Taipei during the first wave of urbanization after the Japanese colonization. These early settlers brought the traditions and customs of their hometowns with them.
5) Stem or extended families: They are also families of farmers or businessmen in Taipei since or before the Second World War. They built the old temples and neighbourhood shrines, of which some are still standing between the skyscrapers of Taipei.

Collectively, they have established the traditions that are considered to be part of the Taipei heritage.

These simplified family categories are to be understood within the context of the societal behaviour of the Taiwanese people. The complexity of family relationships and traditions of family obligations and inheritance play an important role in the social structure found in Taipei. For example, singles, regardless of age, typically live at home unless they are working or studying in another city. Therefore, the 'singles' category refers to students and non-locals. Many students are fully supported by their parents, though part time jobs are a common source of extra spending money. Higher education and training in special skills, such as piano playing, are



3.07 family household structure in Taipei

[1] Yang, Fu-yu. "光復後台灣地區住宅發展與住宅論述的研究, A Study on Dialetic between Housing Development and Housing Discourse of Taiwan Since 1945."

measured as an important investment for the parents, in part as an expression of family pride, thus the parents commonly support their children through as many years of study as the children wish. When the children graduate and start working, they give a monthly allowance or contribution to their parents even if they are no longer living at home. The amount of their contribution is often boasted about amongst neighbours and family relations.

The nuclear family is the most common household type in Taipei. The younger generations are those who come to study or work and decide to marry and stay in Taipei. Or, they are young couples from other cities who are trying to start a new life in the big city. Others are married couples born in Taipei who are moving out from their parents' place. Traditionally, the oldest son would live with his parents even after his marriage. Currently, married children are no longer obligated to live with their parents. In some cases, one couple would stay with the parents, but not necessarily that of the oldest son. In other cases, parents would move in with their children after retirement, or after one of the parents passes away. Because of these norms, senior citizens are generally included in a stem family, unless they are living with an unwed child. Despite the strong family obligations in this society, the separation and independence of married children weakens family ties and jeopardizes the assurance that the children will take care of their parents in their old age. To strengthen the filial tie, parents often help with the purchase of the children's first residence, most likely are close to their own home. Studies have shown that, under this condition, the children are most likely to visit their parents frequently and eventually take care of them.[2]

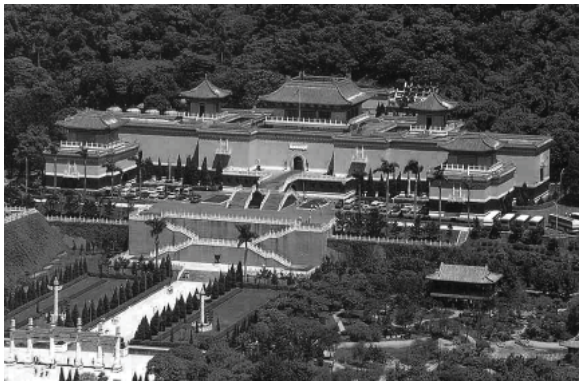
In Taiwan, a family is strongly tied together by traditions and obligations. However, friction and arguments are common in a large household, since many parents feel as if they have the right to intervene with their children's lives. Sometimes, they judge their children and in-laws with traditional values or their own expectations. With the influence of westernization encouraging rebellion against parental control, the grown children no longer consider filial obedience to be a necessity. The small condominium units in Taipei do not provide an appropiate buffer space needed between generations. The lack of small neighbourhood communities and activities also increases the anxiety and loneliness of the elderly. Consequently, the modern condominium life creates a heavier burden for the children to provide for the emotional needs of the elderly.

3.08 [left] Wenzhou Park [温州公園] in Daxue Li [大學里]; [right] the Li leader and the volunteer team of Daxue Li

The city of Taipei as a whole has come a long way in terms of senior welfare and senior facilities. The traditional mentality of senior homes as a taboo is also wearing off. Still, the aging of baby boomers is becoming a heavy burden for the government and society. Withdrawal from the society, community and family activities also quickens the aging of seniors. Alternatively, neighbourhood senior centres which offer daytime classes for arts and hobbies have been a huge success. By recruiting seniors for volunteer run community groups, the elderly can stay active and connected to the neighbourhood. Social strategies to involve the seniors can improve the relationship between generations within the society. For example, in Daxue Li [大學里], a neighbourhood in Taipei, a volunteer team composed of many senior members keep the neighbourhood park clean and safe for the children (image 3.08).

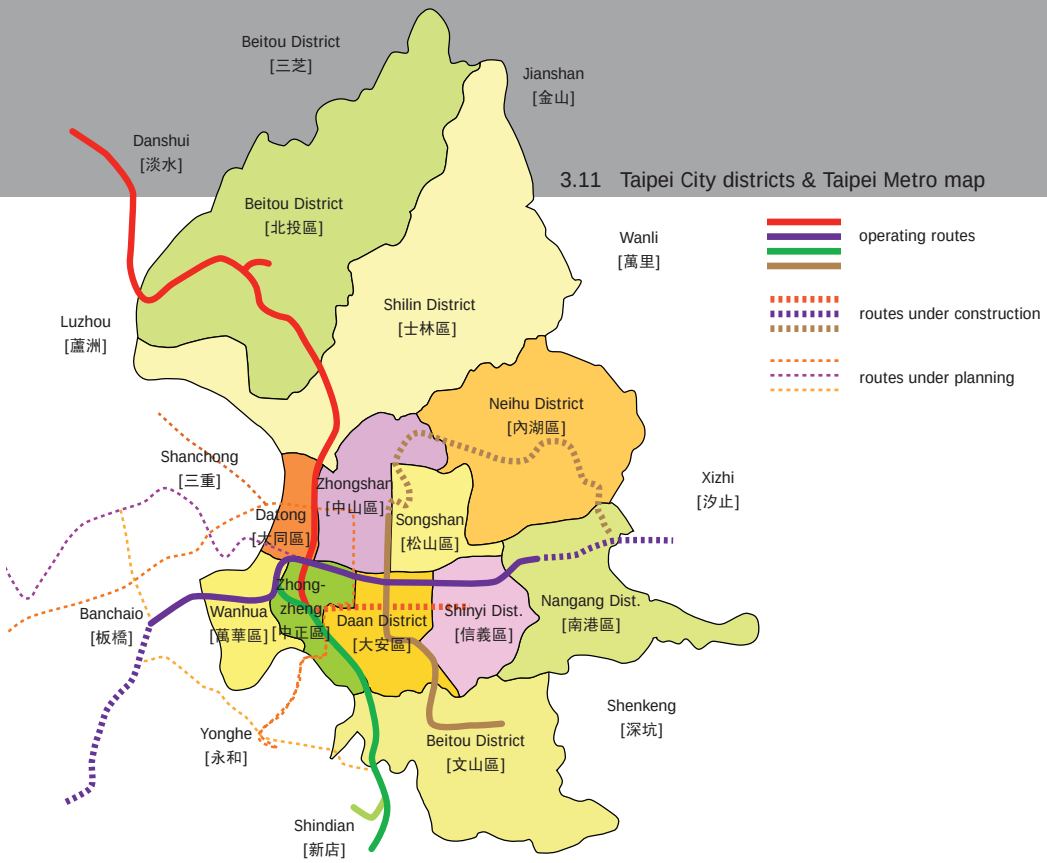
The city of Taipei is the pinnacle of modern life. To the rest of Taiwan, Taipei is the centre of technology, prosperity, and capitalism. Taipei residents are regarded as trendy and heavily influenced by Japanese and pop culture. Even their traditions and customs, such as particular Japanese words they use in their Taiwanese dialogue, reveal this characteristic. The city of freedom and anti-tradition has also brought along the decay of moral and family values. Taipei is also the centre of "culture", but the word takes on a different meaning. Universities, the National Theater Concert Hall [國家音樂廳] and the Taipei Fine Arts Museum [台北美術館] (image 3.09) embrace western knowledge and cultural values, such as symphonies, ballet, classical and modern music and paintings. As well, the capital preserves the "5000 years of Chinese heritage" through artifacts in the National Palace Museum [故宮], a duplicate of the museum in Beijing (image 3.10). The vernacular traditions and values have been cast aside in search for a better future. The generation of baby boomers bears witness to the rapid modernization and westernization of the city. Their children know very little of the old tradition, the heritage of their neighbourhood or even their native language, be it Taiwanese, Cantonese, *Hakka* or aboriginal dialect. The younger generation

3.09 the Taipei Fine Arts Museum [台北美術館]



3.10 the National Palace Museum [故宮]

[2] Hsu, Ping-hsiang. "The Socio-Economic Approach of Housing Studies: A Case Study of Intergenerational Transfer", Journal of Architecture 11 (2004): 21-34.



3.11 Taipei City districts & Taipei Metro map

of Taipei has not seen the neighbourhood festivals or the puppet shows played for the gods. On the surface, Taipei may have lost all of its heritage through years of capitalistic ideals.

Though both the pros and cons of modernization are observable in Taipei, the vernacular culture has not been totally destroyed by the massive developments and modernization. Here and there, the old village shrines and temples stand amongst the new condominiums and street houses. An old tree which houses an earth god is preserved in the midst of the city. There are still residents who carry out the old rituals in the temples. Most temples no longer have the valour of their glory days, yet the neighbourhoods find it in their hearts to save them from destruction (image 3.12). During Chinese New Years and before the national university entrance exams, the few large temples left in Taipei are packed with visitors lighting incense for the folk gods. The younger generations do not know the names of the gods enshrined or the history of the temple; still, they hang up safety charms in their car or carry them in their wallets. With the rise of the Taiwanese identity, Taipei citizens are starting to ask, “What is our heritage?”

Beginning with the full scale modernization of Taipei with the planning of the Taipei Metro in 1986, the government of Taipei aims to establish a new image for Taipei. Instead of a capitalist and governmental city, they want to present Taipei as a world-class multicultural city. The idea of diversity is always in the very heart of the Taiwanese vernacular culture. In the marketplace, there are foods from other cultures as well as traditional Taiwanese snacks, and the Taiwanese people are always willing to try new things. As the administration strives to preserve and revitalize vernacular culture, Taipei residents are being re-educated about what was lost. Heritage and tradition are no longer considered stifled or conventional. They are researched with renewed interest and fresh eyes (image 3.13).

iii-ii Taipei: condominiums & different scales of communities

The city of Taipei encompasses 272 km^2, with an average density of over 9500 people per km^2. The city limit is divided into 12 districts [區] (image 3.11). The downtown basin is built up with dense commercial and residential towers. The district with the highest density, Daan [大安], is occupied by 27,476 people per km^2, whereas the outer districts are hilly, having a lesser density of about 5000 people per km^2. Each district is further divided into communities, Li [里], and neighbourhoods, Lin [鄰]. For example, Daan District is divided into 55 Li [里]; within these, Daxue Li [大學里] occupies half of a city block, with 24 Lin [鄰], 3145 households and 8243 residents.[3]

The most significant difference between Taipei and the other major cities in Taiwan is the efficient network of public transportation. Taipei is the only city in Taiwan with an economy and infrastructure to support an intercity light-rail system. Taipei has four subway lines with a fifth line under construction. The buses are frequent and convenient with bus lanes on most major roads. Without this network, the economic growth of Taipei would be cluttered by its impossible traffic. Popular destinations on the outskirts of Taipei, such as Danshui [淡水] and Muzha Zoo [木柵動物園], have suddenly become closer and more easily accessible.

The typical downtown districts of Taipei are divided by grids of green boulevards. These boulevards are flanked by sidewalks parked with motorcycles and store arcades underneath tall towers and flat facades. Through the intermittent openings between buildings, one can see a different world behind the towers. Entering the gap between the towers, one discovers a bustling world of pedestrians, cyclists and cars compressed into a side street of two to four lanes. Small restaurants, breakfast stands, bookstores, and salons have vertical signs up the sides of condominiums and street houses. Their tables, merchandise and signs spill out into the arcade. Pedestrians slow down to look at the merchandise,

3.12 Yongyi Kong [永義宮] was the centre of folk religion in the old village.

3.13 The first Taiwanese Heritage Exhibition in Taipei [台北市寺廟民俗展] was a huge success. The event was hosted by Wanhua District [萬華區] government in 2000.

[3] Taipei Link. "大安區大學里", Taipei Link, 2006. http://taipeilink.net/mem/t/a/taan43/.

3.14 streetscapes of Taipei:
[left] major artery roads;
[right] side streets and alleys

or to go around the tables and crowds. From time to time, hurried pedestrians walk at the edge of the street for a more direct route. With another turn, the scale of the street shrinks again. There is only local traffic and motorcyclists zooming by. Here and there, a nice little yard in front of a small café or condominium takes attention away from the ordinary or even ugly facade above. There are also a few print shops, small manufacturers, and businesses scattered around. In the evening, one side of the alley is parked with cars with side mirrors folded in, and the drivers also fold up their side mirrors to squeeze by. On both sides, there are smaller back alleys or mews, where two cars can hardly get by. Vehicles have to wait on elderly women who wheel small grocery carts in the middle of the road. The little community park in the centre of the block is surrounded by small restaurants, fruit trucks and snack carts. Parents or maids watch the children play in the park. Seniors sit on park benches, chatting in various accents (image 3.14).

Within the dense fabric of Taipei, most residents live in condominium towers [公寓大廈]. Since the definition of condominium is "a building containing flats which are individually owned,"[4] the separate unit on the upper floors of street houses can be considered a condominium. These units consist of one or more floors, and there is rarely parking, an elevator, or common property. Since there is no building manager or committee, the neighbours have to solve any complications or conflicts together. As previously mentioned, the neighbourhoods of street houses are lower in density and many are able to retain an interactive community. The term "collective residence" or "collective housing" [集合住宅] more accurately describe the high density living situation which is the focus of this thesis. The collective residence mostly contains two or more units per floor. The intensity of its density and the lack of interaction between the residents results in problems and isolation within the community. For the purpose of convenience and clarity, the term "condominium" further mentioned in this chapter will only refer to the collective residence, but not the street houses.

Each district in Taipei has its own distinct characteristics. Besides its unique history and development, each district administration takes a different approach to the community's heritage and image as well. For instance, Neihu District [內湖區] was an old satellite city until the recent rapid development of its technology park. Divided by Neihu Road [內湖路一段], a clear distinction is visible between the old neighbourhood on the north and the new office and condominium towers to the south. Different marketing strategies also define different condominium typologies in different districts. For example, the gentrification[5] of the Shinyi District [信義區] was caused by the residential developers[6]. The luxurious condominium complexes, with five-star hotel service and facilities, feature the government's effort to create a neighbourhood with large green and open spaces (image 3.15). Within the old city blocks, small individual condominium buildings with small bachelor units are very popular with developers because of their high return rates. Without facilities, or sometimes even parking, bachelor units near subway stations could sell for a higher per square meter price

3.15 Shinyi District [信義區]

[4] The Oxford English Reference Dictionary, 2nd ed.

[5] The Oxford English Reference Dictionary, 2nd ed: gentrify, v.tr. convert (a working-class or inner-city district etc.) into an area of middle-class residence. In this case, it is transformed into the upper middle-class.

[6] Chen, Hsiao-Wei. "The Open Space of the Hsin-Yi District in Taipei City." Taiwan Architect 356 (2004): 84-87.

3.16 small five-storey condominium without common facilities or security within the old city block of Daan District [大安區]

than the larger units.

Collective Residences in Taipei can generally be divided into the following types: 1) enclosed condominium complexes with several buildings, landscaped areas, common facilities and a security gate, 2) large condominium buildings over six storeys tall with some common facilities as well as security, and 3) smaller condominium buildings under six storeys with or without common facilities or security (image 3.16, 3.17). The categories can be subdivided into residential or multi-use complexes, each with their own pros and cons. Large multi-use complexes and buildings are typically along the main streets. The ground floor façade facing the main street is occupied by separate arcade commercial units. The commercial units give the developers a higher rate of return. They provide street life on the ground plane and conveniences to the residents. In a single condominium building, residents access their units through a small lobby with a security guard and elevators. In many buildings, the division between residential and commercial units are unclear. Some apartment units are converted into offices or businesses such as bookstores. As for the large complexes, the residents enter the main gate located on a side or back street. Even in these complexes, home businesses such as tutoring schools and piano lessons are very popular for convenience and extra income. Therefore, even in purely residential complexes, one could not guarantee only residential traffic within the building. In any case, residential buildings are considered safer and quieter. Large residential complexes, common in the outer districts of Taipei, are often marketed as 'having a small piece of the countryside'. The few in the centre of the city are extremely expensive and marketed as luxury condominiums. In the centre of the city block, individual condominium buildings, with or without storefronts, are interspersed with old street houses (image 3.18).

The average condominium has few or no facilities. Or, the facilities are poorly maintained. Facilities and common areas are often featured in the initial sale, but many are poorly designed and inconviniently located. For instance, fountains in the lobby eventually become infested with mosquitoes. Children's play areas are at back corners where they are not visible, thus become underused. Sunrooms are so hot in the summer, they are almost unusable. Many of these flashy elements are imported from western or Japanese designs for their marketing value.

High rise condominiums are able to accommodate the growing city and offer Taipei residents somewhat affordable housing. However, as the towers grow taller, the sense of community is further diminished. Traditionally, Taiwanese culture was characterized by the strong bonds and self maintenance of communities. This was evident in the organization of neighbourhood festivals by the veneration commitee and the structure of local administration. The Li administration consists of the Li leader [里長], an administrative staff [里幹事], and volunteered staff. The Li leader is officially elected by the residents of each Li. Originally, it was an unpaid position elected by consensus and the Li leader's guest hall was his office. Currently, Li leader is a paid government position due to the growing population and the amount of administrative work involved. The Li administration is in charge of neighbourhood utilities, facilities and events. Responsibilities include maintaining roads and parks, arranging community classes,

organizing special events, and mediating serious conflicts between neighbours.

While the local administrative structure has stayed the same, the neighbourhoods are growing out of scale. A condominium complex now has as many residents as an old village once did. At the administrative level, the hierarchy of the community ranges from the city to the district to the Li. Within a Li, streets, sections of a street, condominium complexes, and buildings form different scales of neighbourhoods. A floor in a condominium can be considered the smallest unit for a neighbourhood.[7] The street name has always carried a strong identity, with a sense of pride and ownership.

In a current condominium environment, next door neighbours [鄰居] no longer share common spaces, activities, or interests. Everyone works in different fields and in different parts of the city. The efficient transportation network of Taipei brings residents away from their little neighbourhood and into the bigger community of Taipei. At the same time, people become alienated from those living closest to them. Many residents have lost interest or attachment to their building and neighbourhood. The smaller scale communities within the Li are almost non-existent. As the smallest units of the neighbourhoods fall apart, the deterioration of the community as a whole becomes more and more evident. The residents fail to maintain the streets and community spaces. They leave their neighbourhood to run errands and participate in recreational activities. The deterioration of community spaces is accompanied by family and social problems. While the middle-aged man focuses his life on his career and enjoys going downtown or to the countryside during the weekends, the seniors and youth have nowhere to go. The streets and parks are not safe; the neighbours are strangers. Taipei residents look to the municipal government to rebuild communities and provide better facilities. In response, the Taipei government has invested a lot of effort in the last decade in rejuvenating communities with park projects and community workgroups.

3.17 [top] an enclosed condominium complexes with several buildings, landscaped areas and security; [bottom] 12-storey condominium buildings with commercial frontage on a major arterial road

3.18 within the old city block of Daan District [大安區]

[7] Each Li [里] is also further divided into Lin [鄰]. A Lin is generally consists of around four hundred residents. However, Lin does not possess strong identity, or form a community.

Although Taipei communities have changed, the current social behaviour is not so different from the original vernacular culture in many ways. The common interest groups in parks, churches and temples still advocate for the improvement of the community environment. The old-fashioned markets, small breakfast stands and corner stores are still the favourite places of many residents, because there is personal communication instead of routine greetings and long line-ups as in a corporate store. There is a certain satisfaction and joy that is felt when a little girl gets an extra cookie, a 40-year-old office worker gets an extra fish ball in his noodle soup, or a 80-year-old grandmother gets a free bundle of green onions from her local grocery stand. For young families, their strongest ties to the community are the activities relating to their children. They get to know other parents from the daycare, school, piano lessons and summer programs they become involved with. Therefore, it is important that these facilities, programs and activities continue to be offered within the vicinity, as they attract the residents to be interested in spending time in their neighbourhood.

Older neighbourhoods can better provide for the daily needs of the residents as they have well-rounded community facilities. While a new community might have all the facilities and necessities planned in place, it takes time to form a community group. In the tragic cases of brand new satellite cities or suburbs, the community never reaches the density or economy needed to have a self-sustaining commercial network and community facilities. A theoretical design might also fail in its allocation of facilities. Moreover, many new housing developments in the outer district of Taipei use 'the quietness and serenity of the countryside' as their slogan, and they refuse to have any commercial element. As a result, the residents have to rely on vehicles for every task. Consequently, they have to live with the inconvenience of sitting in constant traffic.

Facilities are constantly renewed and reformed to accommodate the neighbourhood. In some cases, the community facilities fail to keep up with the growth of the community or of the city. The outdated facilities may lead to the economic downfall of the neighbourhood. For example, a traditional market has to compete with the price, variety, and tidiness of other markets or supermarkets. The economic downturn of a major marketplace would lead to the failure of surrounding restaurants and shops, and would eventually cause a decrease in real estate value in the neighbourhood and potentially increase crime rates. A well-rounded community includes services and daily necessities such as police offices, post offices, banks, clinics, corner stores, bakeries, groceries, salons, libraries and bookstores. In the dense cities in Taiwan, many of the community facilities are incorporated into the urban fabric. As such, the community library is on the second floor above a store and the kindergarten is in a street house. Daycares and schools are an essential part of the community. Each school is equipped with a standard-size outdoor track, basketball and volleyball courts, and an auditorium. They are important vessels for community classes, summer programs, sports facilities and events. The rare open spaces and large indoor gathering spaces are used as park space after school hours. A neighbourhood lacking in recreational facilities can also lead to emigration of wealthier residents and a decline in real estate value. Successful community and senior centres are often the result of concerted effort by local citizens. A healthy community should be constantly improved by a collective consciousness and commitment of the residents.

In the past decade and more, the government has gone through many redevelopments of the old neighbourhood in Taipei City, by cleaning up the street and parks, implementing community programs, and marketing the neighbourhood heritage and specialty. For example, the old street houses on Dihua Street [迪化街] are restored and their heritage have become a marketing tool for this wholesale Chinese medicine district (image 3.19). The construction of the network of intercity railways, streetcars, and buses also aided the revitalization of the surrounding neighbourhood (image 3.20). Easy access, pedestrian traffic flow and human interaction are the keys to vibrant commerce.

Despite the municipal efforts and success in revitalizing communities in the past decade, it is typical for the private sector to look to foreign solutions and imported models for any problems at hand. Even more common in small developments, the developer concentrates on the interior details and appliances for their marketing values, instead of the design of the building . There is no intention to improve the circulation space or provide common spaces on the upper floors of the condominium, since this would involve sacrificing valuable unit square footage.

There are many different factors that affect the interactions within the community of a condominium. The more essential factors are the different typologies of condominiums, the age of the building, and the age group of the residents. For example, a thirty year old bachelor meets up with old school friends and hangs out downtown. He does not know his neighbours and cares very little about his building, as long as everything is functioning. Homemakers used to be an important social link in the community. In the modern city, most couples are both employed to support the family. Generally, there are very few ties between neighbours in the same condominium. In some cases, there are families within the same building who visit each other and share daily activities. Friends within the condominium have often gotten to know each other through other venues. The community as a condominium is officially held together by the resident committee with regular

3.19 Dihua Street [迪化街], the wholesale Chinese medicine district; [bottom] inside the arcade

3.20 vendors in front of a Taipei Metro station

3.21 Social groups in a park rarely invite each other to their own homes.

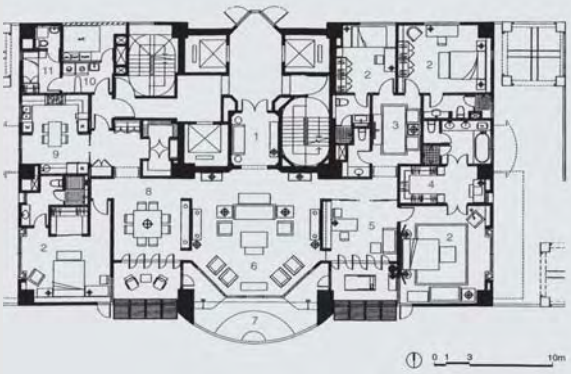
meetings, which are mostly attended by homemakers or older residents. The younger generations, especially singles living by themselves, have very little involvement in the life of the condominium.

At the larger neighbourhood level, there are many stories of successful revitalization in Taipei. This image of a pleasant and prosperous community is held together by the effort of a small group of local residents with the continuous guidance of the government. This revival is only concentrated on the ground plane and in the parks. The sense of community within a complex, a building, or a floor is still close to non-existent. There is still a large gap in the different levels of community in terms of the establishiment of a healthy social environment.

The strength of the community bond between two individuals is relative to the distance between their homes. In other words, the threshold of privacy between two strangers is proportional to the distance between their residences. The bond of vicinity is as strong as or stronger than the bond of common interest. For example, there are a group of parents with their young children and a group of seniors in the park. The parents slowly get to know each other, but they do no invite each other to their houses, because they feel the threshold is too great between the public park and the privacy of their home. One day, two couples realize they live on the same floor. At first, they chat in the corridor or in the elevator about their families and daily activities. Very quickly, they start to schedule park times or piano lessons together and alternate shifts. In the same scenario, the seniors and the young parents may rarely interact in the park, aside from perhaps a friendly nod. However, a mother would feel much more comfortable asking the old woman next door to look after her children in an emergency than she would asking the other parents from the park, who she talks to but never or rarely visits. Psychologically, the mother feels much more secure knowing exactly where her neighbour lives and who lives in the same unit. Also, the mother feels safer knowing that her child would not be leaving the smallest circle of her neighbourhood. As for the old woman, she is delighted that someone entrusts her with a task, and that she has something to do. In general, neighbours feel obligated to help, and believe that they can depend on the other's help in return. Though most neighbours in the collective housing no longer interact on a daily basis, the mentality of cooperative neighbours is still a part of the Taiwanese culture.

Nonetheless, it is difficult for neighbours to socialize without a semi-private space of comfort and leisure. Though neighbours are friendly to each other in the corridor or the elevator, these transitional places are awkward for more extensive conversations. More importantly, the small condominium unit represents a space of privacy. Therefore, most neighbours do not have a chance to know each other well enough to invite one another into their private zones. For those with common interests, there is no space for activities without intruding on each other's private space or having to go out into a larger community space. All of the above conditions demand the breakdown of public spaces into smaller scale neighbourhood spaces. The breakdown of the levels of community enables an individual to relate to their surroundings, and to be given a sense of security and comfort. This can be explained through the human connection of visual presence. In the traditional neighbourhood, everyone knows the grandmother sitting at the front door looking at the passerby. Even without verbal communication, there is a community bond between her and the children playing in the street. Similarly, in a contemporary neighbourhood, residents see the same neighbours in the surrounding area maybe everyday, or they might see the morning shift cashier in 7-11 everyday. But these faces are one out of a thousand or five thousand, thus most people become detached with these visual connections. Alternatively, visual presence in a smaller scale of community is the first step for residents to register the idea of neighbours. It is also the first step towards entering the comfort zone required to engage in mutual activities and to offer an invitation to enter one's private space. The pride and identity of a community, at any scale, is strengthened through the attachment and commitment of the residents to their neighbours and environment.

typical floor plan


typical floor plan

3.22 examples of condominium floorplans:
[top] a small six-storey condominium in Daan District;
[bottom] a luxury condominium complex in Shinyi District, in which there is only one unit per floor

3.23 a little cafe on Yongkang street [永康街]

iii-iii daily lives of Taipei citizens

Everyday, Taipei citizens live with their own routines without knowing how the city or the community is affecting their lifestyle. Seniors often reminisce about the old days, now that they no longer have the front doors to sit by. Some seniors proudly narrate the ups and downs of their neighbourhood.

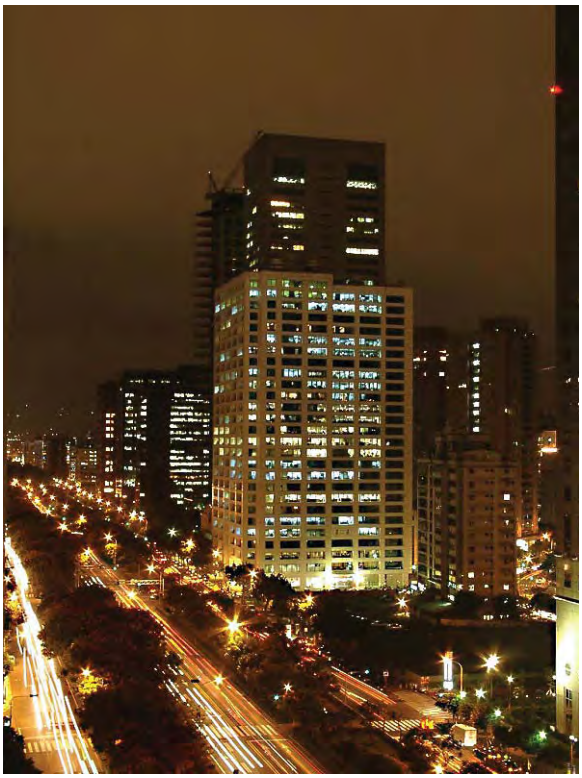
An English immigrant Mark Caltonhill articulated his observation of Taipei residents: Ten years ago, Taipei was all about money. Saturday was also a mandatory working day. And Taipei citizens worked as hard as they could without a concern for other aspects of life. With the legalization of two day weekends, the residents are able to step back and pursue a better quality of life.[8] Now, under the large sidewalks shaded by trees, there are people leisurely strolling about. Behind the busy streets, little cafés with tiny courtyards are popular with those who wish to steal a moment of peace. The stories of Taipei are told by the mosaic of 2.6 million individuals, including those who have just arrived in the city, those who grow fond of Taipei and those who are born, raised, and proud to be a Taipei citizen. These stories show a little glimpse into the culture and lives of average Taipei resident:

* * *

Ms Wang, 25, female, graduate student[9]

Wang wakes up at seven o'clock most mornings. She lives in the graduate student residence on the campus of the National Taiwan University [台灣大學]. The National Taiwan University is the most prestigious university[10] in Taiwan, located in the Daan District [大安區]. The two-person dorm room is cozy and spacious compared to the four person room she stayed in when she was an undergraduate student. Besides, the government subsidized rent is only a quarter of the usual rent in the Daan District [大安區]. She studies for a bit, grabbing a custard bun for breakfast while thinking about the good old breakfast stand of baked dough, fried dumplings and hot soya milk in her hometown, Tainan [台南]. At nine o'clock, she leaves her room on the 11th floor, and rides her bike to her classes. Although most students nowadays have motorcycles, her bike and the subway can take her wherever she wants to go in the city. At noon, she goes to one of the student cafeterias, where their deep fried chicken filet is famous and cheap. In the afternoon, she hangs out at the choir common room with her choir friends. After finishing a conversation on her cell phone, she rides her bike to a little café in the famous food district, Yongkang Street [永康街], ten minutes away from school to meet her friend. In the little café, there is a foreigner with his laptop sitting out on the porch. In the corner, a girl with headphones on is seemingly studying for a test. Another couple is enjoying their coffees and cakes. Wang also enjoys her favourite mocha while catching up with her

friend. With her bike, she gives her friend a ride to the Gongguan [公館] area at the other end of the university. It is a vibrant and popular district with little shops of clothing and accessories, restaurants and bookstores. Before seven, she says goodbye to her friend, because she is tutoring a high school student for English. Afterwards, she goes back to the residence to catch a late dinner. In the basement, there is a little convenience store and a restaurant. The restaurant is more like an open kitchen at the end of the common room/cafeteria. A middle-age couple runs the kitchen with a few different choices of entrees everyday. They stir fry the fresh vegetables for you when you order them. At night, Wang normally stays in, to chat on MSN or do her research. Sometimes, she skips dinner and goes to the night market with friends. In the night markets, there is a multi-cultural range of snacks and foods, such as stinky tofu, gyros in a bun, and crepes with all sorts of different fillings. Nearby, there are also self-serve cafeteria-style restaurants that provide cheap and well rounded meals.


3.24 Dunhua South Road [敦化南路] at night

On the weekends or holidays, she often leaves the neighbourhood or even leaves the city. On Dunhua South Road [敦化南路], her favourite bookstore is open 24 hours a day. 'Eslite Books' has a wide selection of books on the arts and a large collection of foreign books and magazines. Sometimes, she and a friend stay there all night. Once in a while, she goes back to her hometown by bus. She still loves her hometown but there are limited career opportunities there, especially for women. She used to go back home more often, but many of her friends are in other cities now.


3.25 a bustling fish market six o'clock in the morning

Uncle Shin, 59, CEO of an importing company[11]

Uncle Shin gets up at six and goes to the market. This is his daily exercise. Though he is the youngest of the siblings, he lives with his parents and takes care of them. His father died eight years ago, now he lives with his mother and her Filipino maid. It is a rather large condominium unit because they combined two units at the time of construction. The residential condominium complex sits in a busy neighbourhood, especially busy since the subway

[8] Zong, 42. "悠游中文世界的胡馬克." Taipei Pictorial 447 (2005).
[9] Wang, in discussion with and by obervation of the author, May 2005.
[10] To enter university, Taiwanese students must take a national exam whereby they are assigned a ranking. Only the highest ranked students have the option to go to the National Taiwan University.
[11] Uncle Shin, in discussion with and by observation of the author, May 2005.


3.26 a street lined with food vendors

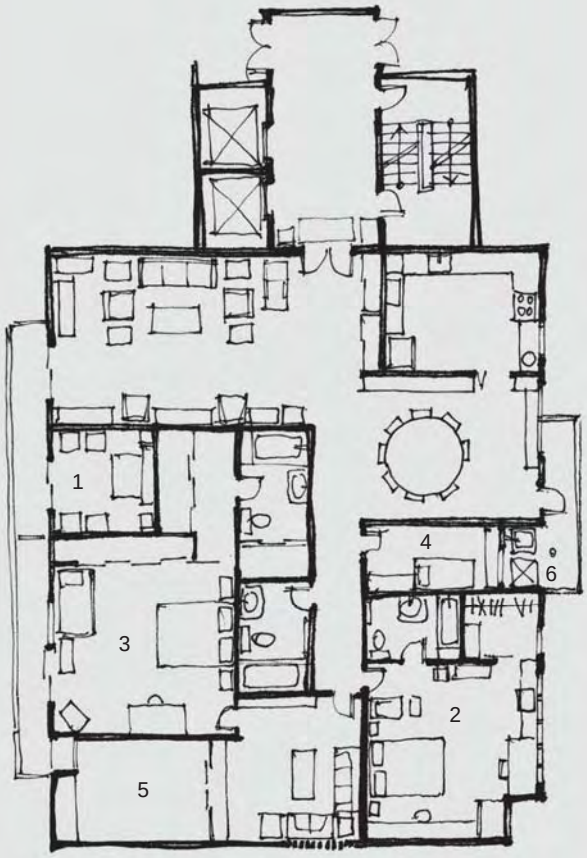
stop was built. There is a traditional market five minutes away on the south side, but he prefers this large one further away to the north. He cuts through the new park with people doing *taichi* and walking their dogs, then enters the busy market. He knows his way around the market and he needs to buy the ingredients for his famous soya sauce stew [滷味]: chicken feet, chicken heart, duck wings, pig's ears, and eggs. He is very picky about his ingredients; they must be clean and fresh. He goes around the market, buys out many stalls of their freshly cut chicken feet. He walks further into the warehouse for bulk vegetable sales straight from the farms, where the local restaurant owners go. They are about to clear out. He goes to his usual seller. "Do you have it?" "Here it is. I only have a few" "Okay. I'll take it all." He cleans out the endives from the seller. Endives are not very common in Taiwan. His wife tells him endives are very good for the eyes and she asks him to buy them for her father. He picks out some other in-season vegetables, and he gets them for a very good price because the seller is about to pack up and leave. As he leaves the market, the two-lane street is once again visible without the huge crowd and truck stands. He enters a little restaurant and orders a vermicelli soup with some chicken gizzards. The owner cooks on a little cart out front. "Sorry sir, I am out of chicken guts." "Darn. I know I am late today." He orders some other dishes and quickly finishes the little bowl of vermicelli soup and refills for another half bowl. "How much is it?" "A bowl and half of noodle plus a dish of tofu is fifty." Uncle Shin puts the change on the table, bids farewell to the owner, and leaves.

He goes home, and there is still plenty of time for him to catch the subway to work. He used to drive to work, or drive anywhere for that matter. It was just too much hassle to park, so he took cabs, but they were also trapped in traffic. Only lately has he discovered the convenience of public transportation. He then sold the car he rarely drove and rented out his parking space. He goes to work and returning home at noon for lunch. The maid is halfway through cleaning, and she has already sorted out his ingredients for the stew. After lunch, he starts cooking his stew. It will take a couple of hours, but he is the boss. His cell phone is probably more important than his desk or computer. Before three, he is on his way back to the office again. He brings some of his signature dish for his secretary. She is very nice and helpful to his mother when he is out of the country. He normally gets off work at five or six. His family eats dinner around six. After dinner, he packs up some more stew and heads upstairs to visit his friend. Uncle Shin has lived in this building for sixteen years, since its construction, and he is fairly active in the resident committee. But through the years, he only got to know this one family. Most other families have been here since this building was constructed as well, but he only knows them by their names. He and his friend get together and talk about retirement and investment. He comes back home at ten, watches a bit of the news and goes to sleep.

Grandma Shin, 90, widow[12]

Grandma Shin lives with her Uncle Shin, youngest son. Her husband passed away eight years ago and her oldest son three years ago. Her oldest son and his family rarely came to visit even when he was still alive. They have their own ancestral shrine set up at home, one of the few three storey single houses in the city. When Grandpa Shin died, his money was evenly divided between her and the children – three sons and a daughter. Since Grandma Shin does not have an income, she still worries about money. Her oldest son used to pay for all the expenses of her Filipino maid, about thirty thousand NT dollars a month [approximately $1000-1500 CDN]. Now, her daughter-in-law and granddaughter are only willing to pay for the maid's salary but not the benefits and the government fees. Grandma Shin used to be very good with money and numbers. Now she gets confused by the digits. Her daughter and youngest son hide her money so she cannot put it into the stock market. Her health and memory is definitely not as good as it used to be. She does not feel well from time to time and she does not have the stamina to take a walk. She still likes to go to the market and the park occasionally. Although she cannot hear very well, everyone is very nice to her. She used to have very expensive dresses made for her. Now she enjoys picking out clothes in the market. Of course, nowadays she cannot go anywhere without her maid, Maria. Sometimes, Grandma Shin takes the cab to a department store. A department store in Taiwan is a vertical mall. Each floor is a department, including food, entertainment, electronics, women's clothing, ...etc. The high-end Japanese supermarket in the basement sells her favourite Japanese pickled radish.

Grandma Shin starts her day by praying in front of the ancestral shrine. When they purchased this condominium unit before construction, they attached and altered two units together with one kitchen, and they also made a small exterior room for the ancestral shrine that could be accessed from the balcony. She says the prayer while counting beads on a rosary, and then she prays to the sky, the gods and the ancestors with lighted incense. She



1. ancestral hall
2. *Grandma Shin*'s master bedroom
3. *Uncle Shin*'s master bedroom
4. maid's room
5. raised *tatame* room/ guest room
6. washer & dryer

3.27 unit floorplan of the Shin's family

[12] Grandma Shin, in discussion and by observation of the author, May 2005.

considers herself a Buddhist, but the gods she prays to are Taoist deities. As a religious rite, she does not eat meat on the 15th of every month. She eats breakfast after her morning prayers. Sometimes she has a full traditional breakfast - congee with side dishes - like she always did when Grandpa Shin was around. Most mornings, she eats multi-grain steam buns with milk or soya milk. On Wednesdays, she goes to the hospital to get her weekly prescription. She used to have scheduled days to go to the banks, the stock market, and the park. Now, she doesn't go out much. She spends most of her days trying to remember things, or watch television. On Thursdays, Uncle Shin invites a few old friends to play *Majong* with her in the living room. She loves to play but she is getting really slow. They order lunch, brew a pot of good tea and play for the whole day until dinner time. After dinner, she prays again. Then she takes a bath and watches some soap operas on television before going to sleep.

Mr. Yang, 53, CEO of a development/construction company[13]
Yang just moved into his new apartment in Neihu District [內湖], close to his office in the Neihu Technology Park. He is very relieved about moving back into Taipei City. Previously, he lived in a beautiful penthouse suite in the Taipei County, built by his own company. The double-height, fully-glazed living room had a terrace and stunning views to the famous Danshui Fisherman Wharf [淡水漁人碼頭], but it was also extremely hot in the summer. The worst thing about living in Danshui had to be the drive to work and back. Many times, he almost fell asleep while driving home. His wife had to wake him up and take over the driving. His wife works for him, and so do his two brothers. Unlike his wife who takes care of many businesses for him, his brothers do not do much for their salaries. His mother asks him to take care of his brothers, since he is doing so well. Therefore, he always has to be on top of his game, to make sure he has enough for his children and his brothers.

His office used to be located in downtown Taipei, where his family lived before moving to Danshui. His children took the subway everywhere and the neighbourhood was very convenient. He decided to move because the interior space was getting too small, and large units are ridiculously expensive. But Danshui was too far. His youngest daughter, studying at the National Taiwan University, used to pester him every day about moving back. He likes his new office and the new condominium complex. He loves the clean, beautiful towers and large piazzas with restaurants in the Neihu Technology Park. The traffic is starting to get congested due to the construction of more and more offices and condominiums, but a new subway line connecting Neihu District to the city centre is already underway. He is sure Neihu District will become an integral extension of downtown Taipei.

Joseph, 26, graphic designer[14]
Joseph works for a small graphic design office in Taipei. He and his sisters immigrated to Canada in 1993. He moved back to Taipei after he finished college because it is easier for him to find a job here. Many Taiwanese emigrate because of the unstable political situation in Taiwan, but many move back for the same reason as Joseph. Though the pay is much lower, there are always job opportunities in Taiwan, especially for those who have English conversation skills.

Joseph goes to work before nine o'clock. He works all day in front of his computer, and eats his lunch in front of his computer. Sometimes, he orders lunch boxes with his coworkers. Since the implementation of the garbage penalty program in Taipei, they have to properly clean the lunch boxes and stack them for recycling. He often works through lunch and dinner, until midnight, and his only entertainment at work is chatting on MSN Messenger. He complains about the pay and the hours all the time, but from what he understands, it is the same everywhere in Taiwan. Everyone starts with a low salary, but if they are good at their job and work hard, they could double their salary in a matter of two or three years.

Since Joseph is really busy during the weekdays, he just wants to relax during the weekends. He often stays home and watches television and play computer games. Sometimes, he invites his friends over or he goes to his friends' places, but all they do is watch movies on DVD and play video games anyway.

* * *

The stories of these Taipei citizens might not represent Taipei as factually as statistical data would. They offer a snapshot of life in Taipei as it is experienced by thousands of Taipei citizens in similar situations. James Spradley defines culture as knowledge, thus he states that the perspective of the ethnographer[15] has shifted from the view of an outsider to the discovery of the insider's point of view.[16] Yet, it is difficult to be an insider and remain impartial. To support the conclusions decribed herein, a simple research, inspired by Spradley's methodolgy for ethnographic field work, was conducted. A set of questions was derived regarding the informant's neighbourhood relationships which were administered in casual conversation [appendix D]. The informants were condominium dwellers of no direct association with the author from various age groups and parts of the city. The results of the informal study coincided with my own observations of the lifestyles commonly found in condominiums, as described in this chapter.

3.28 Neihu Technology Park [內湖科學園區]

[13] The Yang family, in discussion with and by observation of the author, May 2005.
[14] Joseph, in MSN messanger correpondence with the author, April 2005.
[15] Spradley, 3. Enthnography is the task of describing a particular culture.
[16] Spradley, 9.

3.29 the “Smart House” [綠房子] in the National Taiwan University

v-iv sustainability in the city

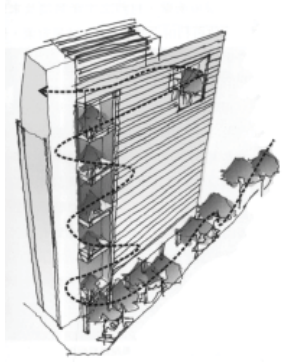
There are many different aspects to a sustainable city. Large cities have to depend on a balanced network with the satellite cities and rural areas. When there is an imbalance in the cyclical system, the breakdown can infringe on the development of the city. Environmental issues are the most noticeable. Similar to North American cities, all large cities have to deal with the crisis of excessive garbage. The situation in Taipei is even more desperate due to the limited space in Taiwan. Taipei County refuses to open up new landfills for the monstrous amount of garbage from Taipei. After fifteen years of recycling program and education, the city of Taipei has finally launched an extensive recycling and kitchen compost collection program in 2002. The homeowners have to pay a penalty for the actual garbage, which is collected via the price of the official garbage bag.

In the past ten years, sustainable architecture has been gathering increased interest in Taiwan. The National Taiwan University has developed a prototype called the “Smart House” [綠房子][17]. The Smart House looks like a North American cottage, or even a suburban home. It is completely unrealistic in terms of the living environment and density in Taipei, and the project concentrates mostly on new technologies and materials, instead of the vernacular aspects. Nonetheless, it generated great interest and served to educate the general public on how buildings are endangering their health and the natural environment. “Sustainable” and “green” are terms that are being used with increasing frequency but are open to definition. There is debate on the different approaches of sustainable architecture. Is the energy and material spent during the construction phase more important than low energy consumption during operation? The higher initial cost for sustainable buildings is also a marketing obstacle that can be overcome through educating the public. Many developers and building product manufacturers use these terms for their marketing values. For example, a developer featured a few trees around the perimeter as their “green” design. On a positive note, new building codes are being implemented for energy efficiency. Simple energy saving devices, such as overhang and external blinds, are publicly promoted. These devices will save energy wasted on air conditioning, the major energy drainage during the summer. Many new commercial buildings utilize rainwater collection. The filtration system and maintenance cost are comparable to the cost of water from the city. The main advantage of rainwater collection is that it helps to conserve municipal water expecially during drought season.

The less tangible aspects of sustainability are the social and cultural cycles of a community. In Taipei, the buildings do not accommodate traditional values or customs. Many might argue the culture itself changes with the new physical environment, as it should change to reflect modern life. But the essence of Taiwanese culture endures

despite the relentless modernization. The few large temples left in the city, such as Longshansi [龍山寺], are the most important destinations for many citizens during the folk holidays. The traditional funeral home in the centre of the city is always fully booked. Taipei residents often go to other cities for the traditional festivals. They long for the spirit of vernacular culture and society, but they are confused between the definition of culture, religion and superstition. The rituals and festivals of Taiwanese folk belief were born from the common wish for prosperity and well-being. In the modern perspective, they are cultural events which bring the neighbourhoods together, and they do not conflict with science, logic or other religions. The younger generations of Taipei residents may not comprehend the origin or rituals of folk religions, but they cannot deny it is part of their thinking and their daily lives.

Most people understand the concept of a healthy community as a community with open space and trees. They cannot grasp the concept of a healthy community in the context of sustainability. Economically, a community is sustainable when it is able to provide for all the necessities of the residents and it is able to regenerate itself in such a way that it will be at least the same or better in the years to come. A sustainable community also refers to the social health of the residents. The social environment is sustainable when the neighbours know and watch out for each other, when the different age groups interact positively, and when each resident contributes to the community. As such, the community runs on the effort and well wishes of every member, instead of on the tax money and implementation of laws. A “sustainable” community should be able to renew itself through the common efforts of the residents. Such a community is hindered by current residential architecture, which inhibits the interaction between neighbours.



3.30 Fu-An Building [富邦福安紀念館]
Many new commercial buildings in Taipei try to employ concepts and technology of sustainable architecture.

[17] [綠房子] literally translates to "Green House". "Smart House" is its official English name, presumably to avoid confusion with a planting greenhouse, which is called "warn room" [溫室] in Chinese. http://www.drinfosys.com.tw.

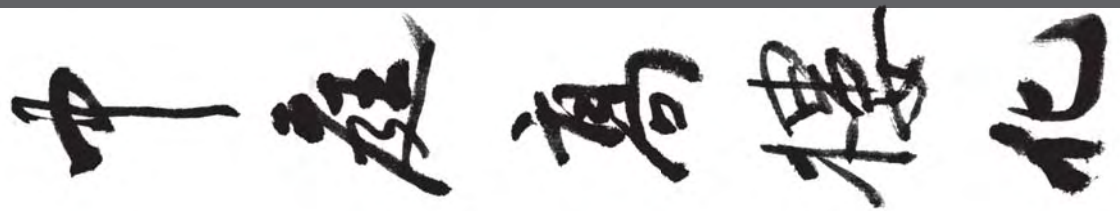
3.31 Taipei, 2004

iii-v conclusion: basis of design

There is a strong connection between the architecture and the community. Thus the community cannot stay the same when the architecture is altered through modernization and densification. The change and deterioration of the community resulting from high-rise collective housing is evident in the last two decades. Most residents do not understand the effect of the physical environment on their social behaviour. They blame the weakening of human relationships (compassion) [人情] for the disintegration of neighbourhoods.

In the last ten years, scholars have realized the importance of healthy communities for the stability of society. Therefore, the government is implementing urban plans to revitalize community parks and events. However, the seemingly successful renewal of community has not been able to bring together estranged neighbours. There is a huge gap between the lively parks and an overall strong neighbourhood. The park represents a community of thousands or tens of thousands of people. Without breaking down the community into smaller neighbourhoods, it is impossible to restore the intimacy of an old neighbourhood. By understanding the relationship between vernacular dwelling and the community, the neighbourhood can be revitalized through a new vernacular residential architecture.

[prototyping]: Courtyard Condominium



4.01 [cover]

4.02 condominiums in Taipei

iv design concept

The condominium typology provides the density needed for the city of Taipei. However, it diminishes the sense of community. Therefore, regardless of the government's effort to improve the public realm, Taipei has difficulty in re-establishing strong and healthy neighbourhoods. From examining vernacular dwellings and the intimacy of the old neighbourhoods versus the current condition, we can reinvent the condominium to encourage interaction and identity of smaller neighbourhoods.

By analyzing the Taiwanese vernacular dwelling, it is important to understand its essence in relationship to the different scales of families and neighbourhoods. Modernization and current culture should not be discounted. Most crucially, the concept is not to duplicate or superficially manipulate the form or layout of vernacular residences. For such projects do not take into account the effect of density and modernization on the traditional layout. For example, the infamous Chinese architect Lianyong Wu [吳良鏞] redesigned the concept of Chinese courtyard house to accommodate a greater density by enlarging the courtyard and extruding the housing complexes (image 4.03).[1] Though the project was praised at the time of construction in 1990, the project is now considered unsuccessful and the courtyards are now used for storage and parking.[2] The original residents could not afford to live in the new project after the redevelopment heist. The new residents are either wealthy people or foreigners. The sense of the old neighbourhood of *Ju-er Hutong* [菊兒胡同] was not re-established.

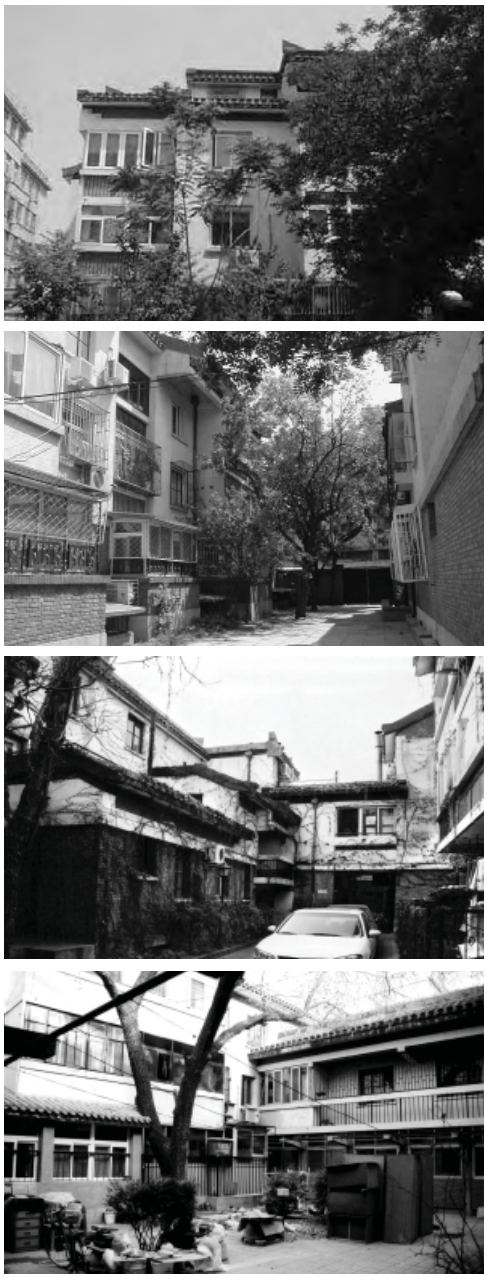
One could argue that in the case of the Fujian earth dwelling, the enlarged courtyard complexes are well used and the community within is strong. There are several significant differences from the community of a Fujian earth dwelling: 1) An earth dwelling is often occupied by family relations who have economic and social ties. 2) In the agrarian setting, a family lives in one earth dwelling for generations. 3) An earth dwelling, especially a large complex, often contains a hierarchy of common spaces [courtyards]. These smaller courtyards promote more intimate neighbourhoods (image 2.33, 2.35). 4) In the *Hakka* dwelling where all the corridors are public, the residents are forced to work and eat on the ground floor and interact with their neighbours. Whereas in the new *Ju-er Hutong*, the residents work at different places in the city, and they eat in their own unit behind the door. There is no incentive for the residents to stay in the concrete courtyard two or three floors below, shared by hundreds of people. There are very few chances for interaction between the residents.

The principles of Taiwanese vernacular courtyard dwelling are based on the ideology of family structure: the hierarchy and order of gods, ancestors and family members. These values are defined architecturally by the

geometrical concept of central axis and procession. In the multi-cultural society today, it is difficult to justify using this set of beliefs as the norm. Nonetheless, when these diagrammatic principles are examined in a modern context, the architecture of the vernacular dwelling creates a logical residential composition and a healthy neighbourhood that allows for social interaction. The following factors contribute to the well-functioning collective housing: 1) The enclosed or semi-enclosed courtyards form the psychological concept of intimacy and identity. 2) The centralized semi-public space, which is also the main route of circulation, insures direct relationship to and interaction with each dwelling to the courtyard. 3) The hierarchy of common spaces, from the courtyard to the shared space for each household, provides the threshold between public and private. 4) The separate quarters for each generation and nuclear family provide privacy and buffer zones between family members. High density vernacular dwelling, the Fujian earth dwelling, take into account all of the above factors.[3]

In an urban commercial setting of vernacular street houses, these principles are but slightly altered. The identity of a neighbourhood is defined by the street. The arcades and stores combined are the public courtyard. Individual units contain smaller courtyards creating semi-private buffer between the public storefront and the private living spaces. A street house unit is commonly occupied by a nuclear or stem family. The elder generation often occupies the separate and elevated quarter on the upper floor. In essence, the quality of vernacular dwelling, which promotes a sense of community, stays the same, namely: 1) A defined perimeter for an intimate scale of neighbourhood. 2) Each unit contains direct connection at ground to the semi-public realm shared by the neighbourhood. 3) This public space is the main circulation route and the leisure hangout. It is also important to provide a clear threshold of space between each nuclear family.

In the vernacular culture, these small units of community are brought together by markets, religious festivals, and worshipping committees. In a modern context, the equivalent adhesives are



4.03 *Ju-er Hutong* [菊兒胡同] in Beijing

[1] *Ju-er Hutong* [菊兒胡同] won the World habitat Awards in 1992.

[2] Calvin Cheng, in discussion with the author, June 2005.
Veronica, in MSN messenger correspondence with the author, October 3 2005. "Most of my friends in Beijing do not think *Ju-er Hutong* is a successful inner city neighbourhood redevelopment project..."

[3] The few exceptions are the smaller, single-ring corridor style dwellings, where there is no threshold between the private rooms to the public corridors.

the daily destinations, community wide activities and common interest groups. Examples of daily destinations include markets, corner stores, gym, salon and barber shop. In the dense modern city of Taipei, it is almost impossible to host an event in the community and expect every resident to attend, because everyone has their own schedule and interest. In addition, there is no space big enough to contain all residents in the community. At the scale of Li, the community hosts activities such as youth day, book shows, and farmer's markets in the park. Interest groups in the community such as church groups, temple groups, book clubs, community classes and *taichi* in the park are already common and successful.

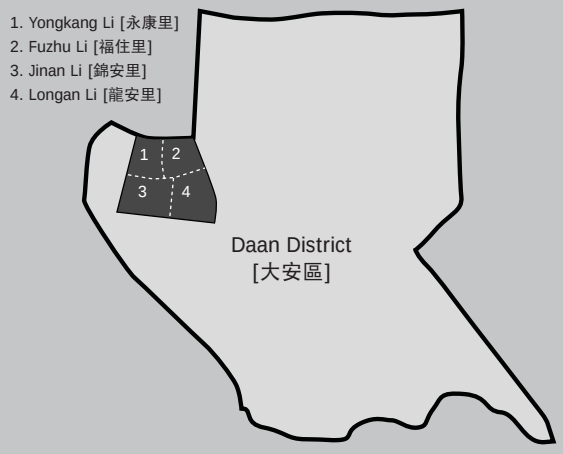
The high density vertical dwelling of today can be thoroughly re-evaluated and re-invented through the architectural principles extracted from vernacular dwelling. The unit should accommodate modern technology, current family structure and multiculturalism, including vernacular cultural values. A floor can be considered as a compound dwelling – a cooperative living environment with independent and complete units. The planning should promote the sense of neighbourhood as well as provide security. A residential or mixed-use building is comparable to a village, which should have common leisure and meeting spaces. The amenities and facilities of a residential building or residential complex depend on the zoning and the surrounding area. In a sustainable community, each scale of community should have common activities and events started by the residents, and the different scales of community should interact and intertwine. The government is responsible for providing the facilities needed, but the community should be responsible for the upkeep and activities of the facilities. The residents should care about the well-being of the community. As such, each resident does his/her share to keep the community and common spaces clean, pleasant and safe. They must be willing to donate their time, effort or money for the improvement of the community. A conscious community will constantly update the local administration on the status of the community facilities and the needs of the community.

A sustainable community cannot be achieved in a few days. Vernacular principles can provide the basis for interaction and shared activities at each scale of the neighbourhood. This chapter prototypes the vernacular architecture in the modern and vertical city. The proposed typology will aim to achieve a culturally and socially sustainable community in the older and densest part of Taipei, where the city infrastructure, facility and mixed-use zoning already suggesta a basic network for sustainable urban living.[4]

iv-i [s] the unit

Currently, the residents' main concern within a condominium is the individual unit. The buyers are often deceived by the marketing strategies and the model home. Developers commonly use foreign designs, designers or materials as their marketing tools. At the time of sales, the presentation package and the interior design for the model home are far more important than the design and layout of the unit. Ironically, the interior finishing is typically excluded from the purchase package for new constructions. In smaller condominium buildings, the kitchen and bathroom might be fully finished by the developers. The layout of the floor plan often does not accommodate the family situation. Therefore, the units are forcibly altered within the perimeter and around the structure. To systematically discuss the appropriate and ideal unit types, a matrix of unit layouts (image 4.16) can be formulated with a set of variables influencing the residents' preferences and standard living environment.

There is a variety of factors which have an effect on the relationship between a unit and the residents, mainly the household size, the family structure, and the age of its residents. Other variables include the household income, location and surrounding neighbourhood. The latter are specific and localized, and they often are the key factors in marketing strategies. The relationship between the various factors and the dwelling can be mapped by statistics of the city. To be more accurate as to the purpose of this thesis design, the statistics would show the average values for: 1) Taipei city [台北市], 2) Daan District [大安區], and 3) four sample Li in Daan District: Yongkang Li [永康里], Fuzhu Li [福住里], Jinan Li [錦安里], Longan Li [龍安里] (image 4.04). The unit matrix is intended to reflect the current living standard in the dense urban context. Daan District is the densest district in Taipei, even with the large areas taken up by universities and schools. The district is divided into 53 Li, 1024 Lin. It is inhabited by 312,666 residents in 112,480 households within the 11.36 km^2, constituted the density of 27,523 people per km^2 [appendix a-1]. The four sample Li form



4.04 Daan District [大安區] & the four Li

[4] In Taipei, every 1000 people own 663 vehicles including cars and motorcycles. In Daan District, every 1000 people own 587 vehicles.

household size	household structure	% of Taipei households % within the household size
1		8.46
	A single	100
	1. student/ worker abroad age 18-25	
	2. student/ worker abroad/ single age 26-45	
	3. worker abroad/ single age 46-64	
	4. single age 65+	
2		19.50
	B a parent w/ a child	7
	1. a parent w/ a child age 0-4	
	2. a parent w/ a child age 5-17	
	3. a parent w/ a child age 18-25	
	4. a parent w/ a child >26	
	C couple	65
	1. couple age 18-25	
	2. couple age 26-45	
	3. couple age 46-64	
	4. couple age 65+	
	D others	28
	1. roommates, siblings age 18-25	
	2. roommates, siblings age 26-45	
	3. roommates, siblings age 46-64	
3		20.71
	E couple w/ 1 child < 17	50
	1. couple age 18-25 w/ a child age 0-4	
	2. couple age 26-45 w/ a child age 5-17	
	3. couple age 46-64 w/ a child age 5-17	
	F couple w/ 1 child > 17	20
	1. couple w/ a child age 17-25	
	2. couple w/ a child > 25	
	G couple w/ 1 parent	20
	1. couple age 18-25 w/ 1 parent	
	2. couple age 26-45 w/ 1 parent	
	H couple w/ 1 maid	10
	1. rich couple w/ a maid	
	2. couple age 65+w/ a maid	
	l2 single parent w/ a child & a grandparent	
	m2 single w/ a parent age 65+& a maid	

household size	household structure	% of Taipei households % within the household size
4		31.01
	I couple w/ 2 children	70
	1. couple age <25 w/ 2 children	
	2. couple age 26-45 w/ 2 children both <18	
	3. couple age 46-64 w/ 2 children both <25	
	4. couple w/ 2 children > 25	
	J couple w/ parents	10
	1. couple age 18-25 w/ parents	
	2. couple age 26-45 w/ parents	
	3. couple age 46+ w/ parents	
	K couple [parent] w/ 1 child & 1 grandparent	15
	L single parent w/ children & grandparents	5
	1. single parent w/ 2 children & 1 grandparent	
	2. single parent w/ a child & 2 grandparents	
	M single/couple w/ 65+ parents & a maid	
	1. single w/ 65+ parents & a maid	
	2. couple w/ a 65+ parent & a maid	
5		13.58
	N couple w/ 3 children	50
	1. couple w/ 3 children < 18	
	2. couple w/ 3 children > 18	
	O couple [parents] w/ children & grandparents	30
	1. couple w/ a child & grandparents	
	2. couple w/ 2 child & a grandparent	
	P couple w/ parents & siblings	10
	l -1 single parent w/ 2 children & grandparents	
6 & up		6.74
	Q couple w/ 4 or more children	
	1. couple w/ 4 or more children < 18	
	2. couple w/ 4 or more children > 18	
	R couple [parents] w/ children & grandparents	
	1. couple w/ 2 children & grandparents	
	2. couple w/ 3 children & a grandparent	
	S couple w/ siblings & parents	
	T couple [parents] w/ sibling(s), child(ren) & grandparent(s)	
	1. couple w/ a sibling < 25, child(ren) < 4, and grandparents	
	2. couple w/ a sibling > 25, child(ren) > 4, & grandparents	
	U couple w/ children, grandparents & maid	
	1. couple w/ a child, grandparents & maid	
	2. couple w/ 2 children, a grandparents & maid	
	V extended family	

4.05 household and family structures in Taipei

a major city block, border by the major arteries of Taipei.

Extracted from the 2002 household income survey of Taipei [appendix b][5], most of the population lives in the household size ranging from three to five persons. Only 2.45% of the population is registered as households of one person. This statistic does not include most students, since they are still registered under their parents. 12.5% of Taipei residents are in a household of six persons and over, slightly more than the number of residents in households of two persons. The majority of Taipei residents live in households of three to five persons. A spreadsheet of possible family structures and their approximate percentage (image 4.05) can be formulated with the information on the spread of household sizes and average number of adults, employed persons, and income persons provided[6]. The hierarchy of the categories is: 1) the household size, 2) the household structure, and 3) the age range of the family. These factors have different relationships to the size of the appropriate unit layout. A household is defined as sharing of earning and cost. The incomes and expenses of the family are relative to the household size and family structure. The family structure also describes the basic living spaces required. The age range of the residents can be associated with an idea of preference and tolerance of the unit size. For example, young adults can only afford smaller units; and they can also tolerate crammed spaces. The middle-aged family can usually afford a larger place; and they have a higher expectation of living standards, space and privacy. Many seniors also prefer small, efficient homes for their convenience. The age brackets used in the unit matrix are: 1) infant and toddler: 0-4, 2) children under legal age: 5-17, 3) young adults: 18-25, 4) adults: 26-45, 5) middle-age adults: 46-65, 6) seniors: 65+.

The average personal space in the dense part of Taipei City is very small. However, the small unit is adequate for urban living and it is comparable to most dense metropolitan areas around the world. The emphasis of the thesis is on providing semi-private and semi-public spaces at different scales of community. Therefore,

4.06 compact and high-tech kitchenettes and bathrooms are the marketing features of “Sofa”, a small six-storey condominium in Daan District

[5] There is a discrepancy between the total population of Taipei in the household income survey [appendix b] and in the population statistics [appendix a], since they are taken in different years. The income survey is taken in 2002, and the population statistics in 2005.

[6] Appendix b.

4.07 Changhong [長虹] Park, a new development close to the new Neihu Metro station

the current average value would be used for the size of prototype units. The 2002 survey of average rent and unit size by different apartment typologies [appendix c] provides a basic understanding of living standards in terms of space in Daan District. The strategies for formulating the unit matrix are: 1) Defining the essential living space in correspondence to the family structure and age group, 2) Establishing the standard sizes of the essential living spaces by age and household size, 3) Defining the extra spaces needed for utility and cultural purposes, 4) Defining the principles for arranging spaces.

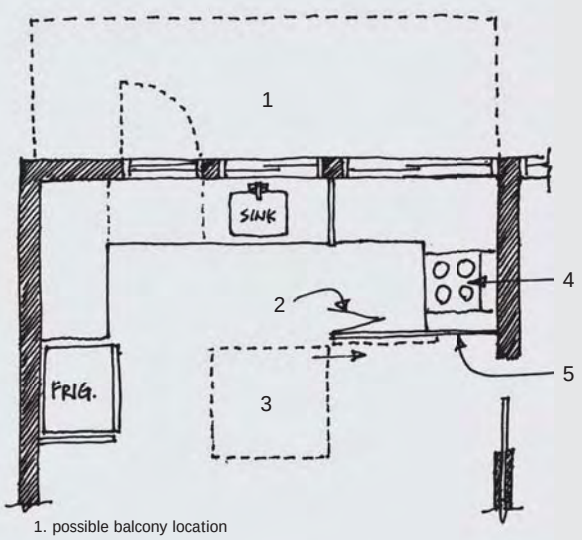
1. Defining the essential living space:

The essential living spaces include the living room, kitchen and dining room, bedrooms and bathrooms. There are different social and cultural aspects to these spaces.

1. Living Room: The equivalent of the living room is called the 'guest hall' [客廳]. In a courtyard house, it would be the central hall with the side halls being similar to the family room. Traditionally, the guest hall is a completely internal space, both in courtyard houses and street houses. The western influences impose the living room as a space with avisual connection to the exterior, and the Taiwanese readily acceped this concept. Unfortunately, there is no view to be enjoyed in most condominium contexts. Large windows are the source of light and views but it brings in excessive heat as well. As a result, the curtain is often drawn throughout most of the year. Another major impact of modernism on the layout of the living room is the television. It overtakes the formality of traditional layout, becomes the centre stage of focus, and it would be most suitable in a dark space with controlled lighting. Currently, there are two trends in the arrangement of the guest hall in a condominium. In a more traditional family, it is laid out formally with Chinese or western style furniture,

without a television. Televisions are placed in the secondary living space or in the master bedroom(s). However, in many families, the living room is a casual lounge setting with the television being an integral part of the layout.

2. Kitchen: In the vernacular dwelling, the kitchen is always in a hidden corner or attached on the exterior side. The modern kitchen has become a spectacle in the house, and many love the open concept of the western condominium. However, the implementation of the open concept is disastrous, because the smoke and smell of heavy cooking travels throughout the unit. A Taiwanese kitchen should be adjacent to the exterior wall, equipped with a heavy duty stove and exhaust fan, and it should be enclosable. In some of the recent luxury condominium designs, a large unit has two kitchens: a Taiwanese style kitchen and a western style open kitchen. This thesis proposes a movable glazed enclosure for the kitchen or for the stove compartment.
3. Dining Room: The dining room was considered the most private of all shared spaces. In a vernacular courtyard house, it is a luxury to have a separate dining room from the guest hall. Currently, most units have a seperate eating area apart from the living room. Some families have the habit of eating in the living room instead. Large households in Taiwan prefer circular tables with a lazy susan over long tables.
4. Bedroom: Infants and toddlers typically do not have their own room. They sleep in cribs or small beds in the parents' room. While younger children commonly share a bedroom, high school students often have their own room. High school curricula are very demanding, and the parents try to provide a better study environment for the children. Although Japanese *tatami* rooms (image 4.09) are very common during and after the Japanese occupation, most Taiwanese prefer to sleep on raised beds. *Tatami* rooms are often used as multi-purpose rooms, for functions such as guest room, children's play room, and temporary storage.
5. Bathroom: Bathroom fixtures are not as standardized in Taiwan as they are in North America. There is not a set size



1. possible balcony location
2. movable glazing door
3. fold-away table
4. stove compartment w/ operable window & hood
5. half wall w/ optional glazing

4.08 a stove compartment in small units of the unit matrix

4.09 *tatami* room

for tubs, showers, counters and basins. The unit matrix shows North American standard bathroom fixtures and sizes for prototyping convenience only. Traditionally, the bathroom was an interior room, wich achieve a sauna effect especially during the winter, since there is no heating. Taiwanese families follow the Japanese in their bathing customs. A person showers before entering the bath, and the tub of water is kept for the use of the whole family. The floor is well tiled and drained. The doors have openings with wooden blinds for ventilation. Currently, some families still take Japanese style bath daily. However, the western concept of natural lighting and ventilation for bathrooms and washrooms is catching on in the last ten years, which change layout of the condominium. Separate compartments for toilets or bathtubs are Japanese importations which work well in a compact condominium unit (image 4.11).

Examples of guidelines for assigning spaces are as such: Single young adults would only need minimum bathrooms and kitchenettes. Couples and mid-aged persons should have an ensuite bathroom. Adults living with their parents should have separate entrances. Couples living with the parents should have a secondary living space and separate entrance...etc.

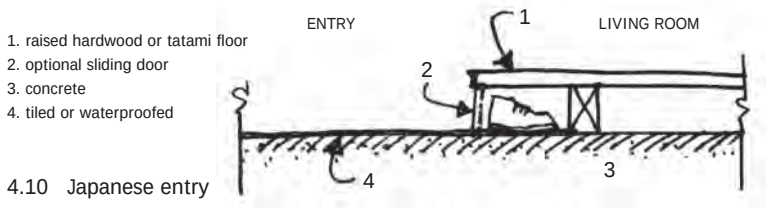
2. Establish the standard sizes of the essential living spaces:

The standard size of spaces are compiled from the rental housing survey [appendix c], and then factored in with the age group and household size for addition and expansion. For example, the middle-age persons would have a larger living space than young adults or seniors; and a larger household would have a large living room, kitchen and dining room. The prototype units are supposed to be compact, comfortable and culturally accommodating. The detailed allocations of spaces are listed in the unit matrix (image 5.16).

3. Define the secondary spaces needed for utility and cultural purposes:

There are several secondary spaces that are essential for a complete dwelling, which are not always standardized or customary in condominiums.

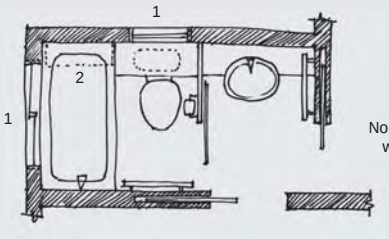
1. Entry or foyer: The idea of entry or having a foyer is a part of vernacular *Han* culture. The custom of entry in Taiwan is heavily influenced by Japanese culture. The residents never wear outdoor shoes beyond the entry. Therefore, the entry should be tiled or concrete and it should be always equipped with a closet, as well as shoe and slipper storage. The entry itself would create a clear threshold and define the act of entering into a dwelling. A common Japanese feature is an actual step up at the entry (image 4.10). Residents and guests would take off their shoes and put them under the step overhang, which is sometimes enclosed with sliding



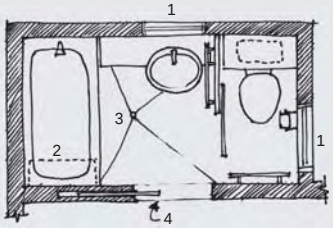
4.10 Japanese entry

doors. Juniors and seniors often sit on the step to put on or take off their shoes.

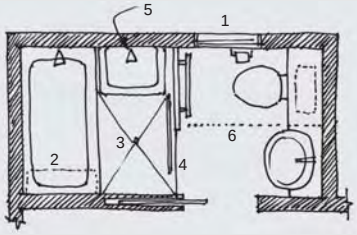
2. Balcony: There are three different typologies of balconies in condominiums in Taipei: 1) the residents enter their unit through a private balcony. There is a door before entering the balcony, which acts like a front yard. 2) Commonly, balconies are utilitarian, used for washing, drying, and storage. The washer and sink often are located on the balcony. Most Taiwanese families do not own a dryer, and they hang dry their laundry on the balcony. It is energy efficient but it is not aesthetically pleasing on the exterior. Therefore the utility balcony should accommodate cloth lines and provide visual barrier for the washer and clothes (image 4.12). 3) As part of the western influence, the balcony is promoted for leisure and viewing. In larger and more expensive condominiums, there are often separate 'viewing' balconies outside of the master bedroom or the living room. However, most people only use them for storage or potted plants. The smaller units might not have balconies at all.
3. Closets and storage: Closets and storages are essential in condominium setting. Taiwanese do not readily throw away used items, therefore a home is often cluttered with objects. The entry should have a closet for jacket and shoes. Bedrooms should also have adequate closet space. In Taiwan, most people have custom made build-in closets and cabinets during the the interior finishing. The prototype unit only describes the spaces needed and allocate their spatial relationship. They are not a guideline for the interior design. For convenience of prototyping, master bedrooms are allocated with an ensuite bathroom and walk-in-closet combination, which could be replaced by full wall custom carpentry in actual designs. Spaces above drop ceilings, such as at the entry and washroom, could be utilized as storage spaces, with sliding doors or curtains. The space under the stairs could also be well-used, for storage, shelving, cabinet, or entertainment cabinet in the living room.
4. Ancestral hall: The majority of Taiwanese still practice ancestor



North American style shower
w/ separate compartments
& two-way access



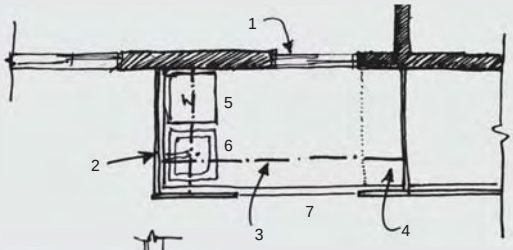
Taiwanese style shower
w/ separate compartments

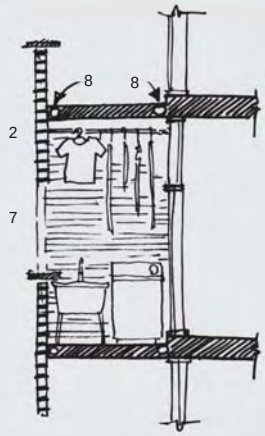


Japanese style shower
w/ separate compartments

1. possible window location
2. rake or shlef
3. floor drain
4. raised threshold
5. low basin w/ movable shower head
6. optional compartment

4.11 different bathroom options w/ separate compartments





1. glass sliding dloor
2. wood slots panel
   act as visual barrier and protection
   allows for ventilation
3. cloth line above (operable)
4. storage space, enclosure optional
5. washer or washer/dryer combo
6. sink
7. optional operable glazing enclosure
   for security and weather protection
8. drainage

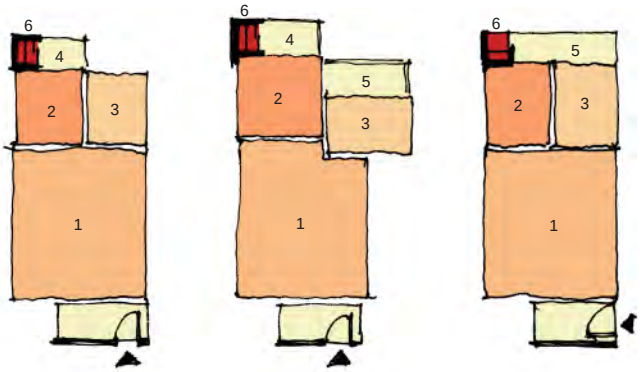
4.12 suggested utility balcony layout

4.13 ancestral table with god figure and ancestral tablet

worshipping, though not every household would own an ancestral hall. Most of the younger generations do not have an ancestral table at home; they join the ceremonies in their parents' places. Originally, the ancestral hall is at the end of the central axis as it is the most prominent space. In a street house, the floor plan is elongated, and the back portion of the house is occupied by the children's room, utility space and the backyard. Therefore, the ancestral hall is either placed in the living/dining room, or at the most elevated room facing the direction of the front door and the sky. In a condominium, the placement of the ancestral table cannot follow the old traditions, since it is impossible to face the front door and the sky at the same time. Overtime, a new set of guidelines are developed by those who firmly believed that the placement of the dwelling of ancestors and gods in a house has serious consequences to the wellbeing of the family. There are also those who do not follow these guidelines, since there are many [appendix e] and different geomancers provide even more tedious details making it almost impossible to design a place for the ancestral table. The prototype units accomodate the three options illustrated in image 4.14, which follows the new guidelines that are widely accepted.

4) Define the principles for arranging space:

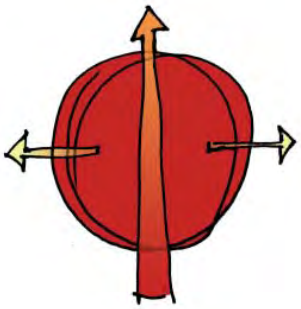
The prototype units are arranged according to the three principles of Taiwanese vernacular dwelling: 1) the shared space as the central axis, 2) the progression of public to private as prominence from front to back, 3) the left as more prominent than the right (image 4.15 a). These principles represent the cultural heritage; moreover, they are



4.14 suggested ancestral hall or ancestral table locations

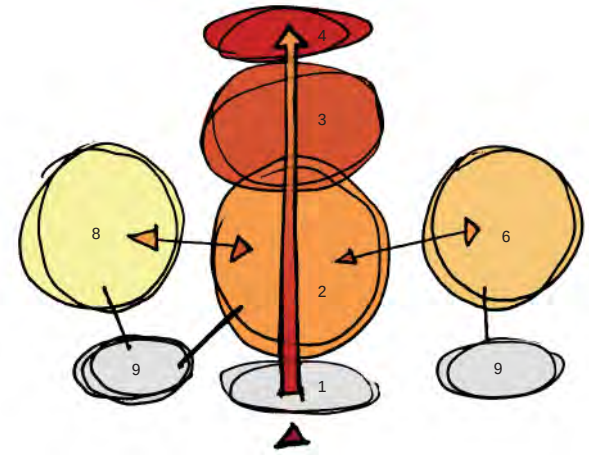
logical and efficient for space planning. They can be freely applied without the traditional ideal and aesthetics of perfect geometry, proportion and symmetry.

The central axis is occupied by the shared space, in the sequence of the entry, living room, and dining room. The entry is the threshold between the public and the unit, therefore it opens up to the most public space in the unit, the living room. The kitchen is no longer regarded as an utility space, but a part of the dining experience. The dining, kitchen space is more private than the living room, thus they are at the end of the axis. The second principle, the progression of privacy and prominence, is applicable and logical. From the entrance, one should proceed into the living room, the most public part of the dwelling. The end of linear progression is the exterior wall, which is also the most prominent because natural ventilation and light is desirable. The utility spaces should be placed near the front. Finally, the third principle, the prominence of the left position over the right, is no longer an integral part of Taiwanese thinking. However, a clear spatial threshold between different generations provides a buffer zone and privacy for the family members. Therefore, the unit matrix generally follows the rule: placing the master bedroom on the left and the children's room on the right [as one facing the front door]. Each generation would access the shared space directly, and thus they do not cross paths (image 4.15 b). For the larger units, there are two other essential principals adopted from the vernacular courtyard house: 1) the hierarchy of semi-private spaces, and 2) separate entrances for secondary courts. Similar to the condition in a courtyard house, the couple living with their parents would have a secondary common space connected to the living room. They would also have a secondary entrance exiting from their common space. The rooms of the younger couple and their children would surround the secondary common space (image 4.15 c). For a middle-aged adult living with parents, his room could be similar to a compact studio unit, in which there is a private living space and bathroom, and the bedroom is on the mezzanine (unit F-1).

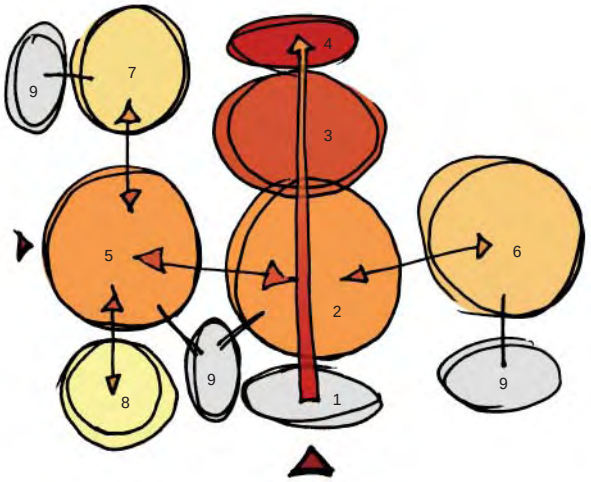


1. entry
2. living space
3. dining/kitchen
4. ancestral hall
5. secondary living space
6. master bedroom
7. 2nd generation master bedroom
8. children's bedroom
9. bathroom/washroom

a) three principles of Taiwanese vernacular dwelling



b) space planning based on the three principles of Taiwanese vernacular dwelling



c) unit plans with a three-generation household

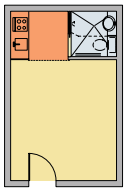
4.15 unit planning guidelines

4.16 unit matrix 1:250

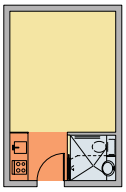
The unit matrix corresponds to the household structure breakdown in image 4.06. For example, unit A-1.1 represent type A [single] - 1 [student/ worker abroad age 18-25] .1 [layout option 1]. Both the space and distribution of spaces are standardized as listed.

type A

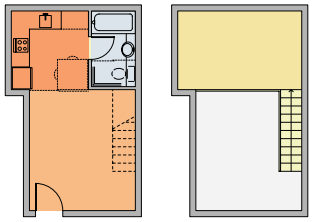
A-1.1



A-1.2

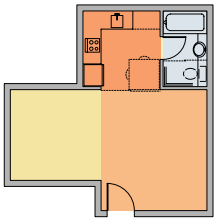


A-2.1

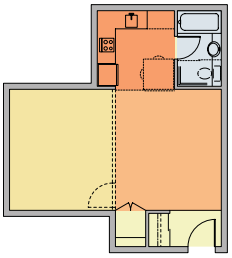


opt. mezzanine

A-2.2

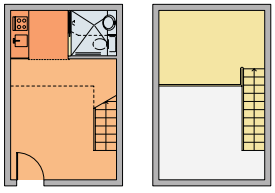


A-3



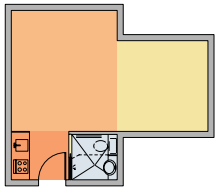
type B

B-1.1

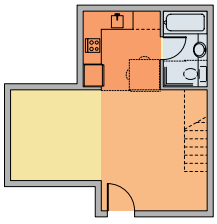


mezzanine

B-1.2

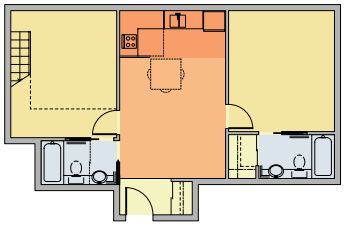


B-2



w/ mezzanine

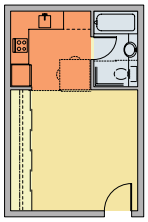
B-3



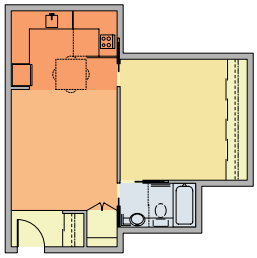
w/ mezzanine

type C

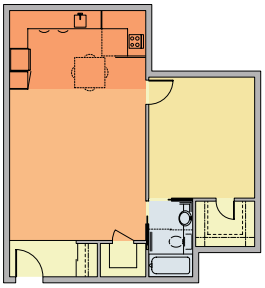
C-1



C-2

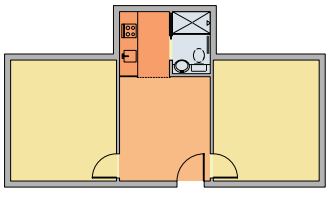


C-3

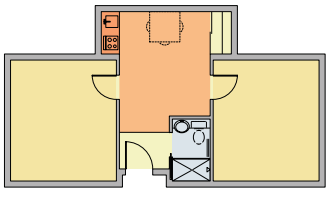


type D

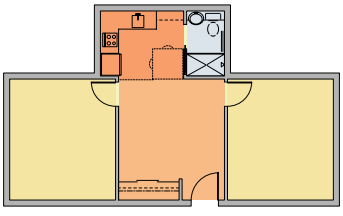
D-1.1



D-1.2



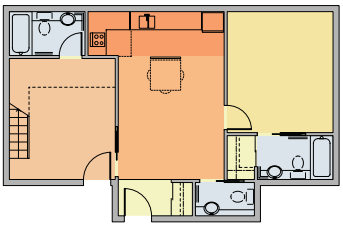
D-2.1



living space
secondary living space
kitchen/ dining
bedroom
bathroom
extra spaces: entry, closet, circulation
open to below

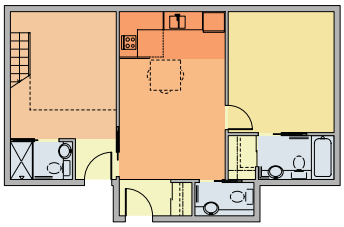
The formulae for the unit types are listed by the procession of space, from living room to kitchen to the private spaces. The bathrooms are listed after the space it services. If a bathroom is shared between the living spaces and the private rooms, it would be listed after the group of public spaces.

B-4.1



w/ mezzanine

B-4.2



w/ mezzanine

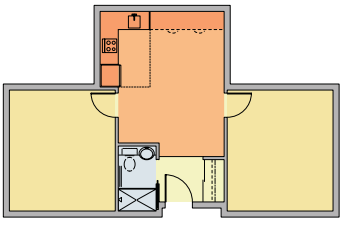
Household of 1 person:
type A
A-1 BR + Kt + wc/s
A-2.1 LR + K/b + B + BR [Mz]
A-2.2 LR + K/b +B + BRs
A-3 LR + K/b + B + BR
A-4 same as A-2.2 or A-3

Household of 2 persons:
type B
B-1.1 LR + Kt + wc/s + BR [Mz]
B-1.2 LR + Kt + wc./s + BRs
B-2 LR + K/b + B + BRs + opt. Mz
B-3 LR + K/b + B + BR + B/c
B-4 LR + K/b + wc + BR + B/c + LR* + BR [Mz] + B

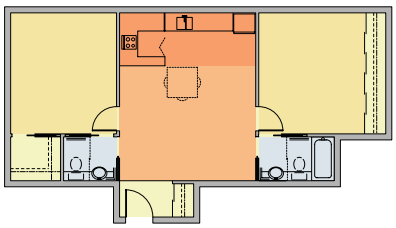
type C
C-1 BR + K/D + B
C-2 LR + K/D + B /c+ BR
C-3 LR + K/D + B/c + BR
C-4 same as C-2

type D
D-1 LRs + Kt + wc/S + BR + BR
D-2 LRs + K/D + wc/S + BR + BR
D-3 LR + K/D + wc + B + BR + BR

D-2.2



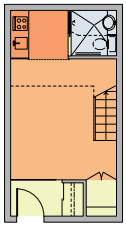
D-3



LR	standard living room	3500 x 4500
LRs	small living room	3000 x 3000
LRL	large living room	4500 x 5000
LR*	secondary living space	
Kt	kitchenettes	
K/b	kitchen w/ movable breakfast	
K/D	kitchen and dining	
BR	standard bedroom	3500 x 4500
BRs	small bedroom	3000 x 3000
BRL	large bedroom	4500 x 5000
wc	washroom	
wc/s	washroom w/ shower over sink	
wc/S	washroom plus shower room	
B	standard bathroom	
B/c	bathroom w/ closet	
B/wic	bathroom + walk-in-closest	
Mz	mezzanine	

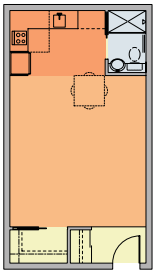
type E

E-1.1

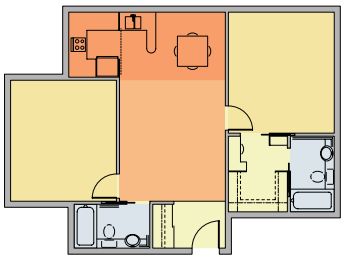


w/ mezzanine

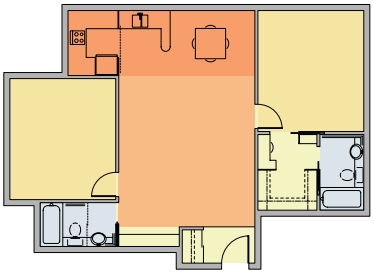
E-1.2



E-2

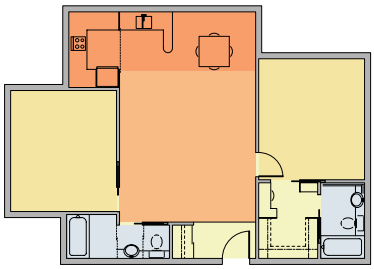


E-3

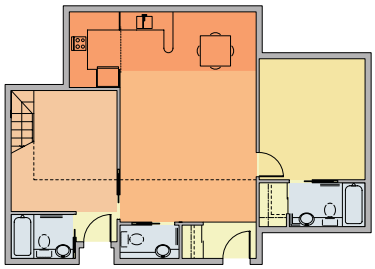


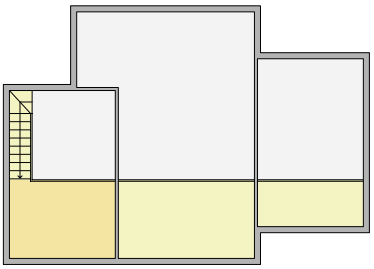
type F

F-1



F-2

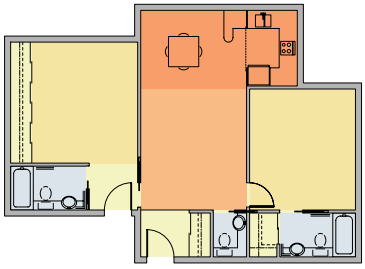




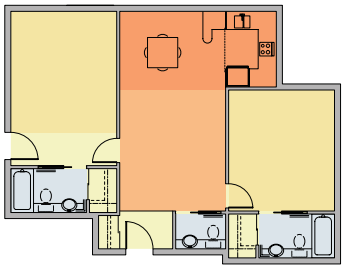
mezzanine

type G

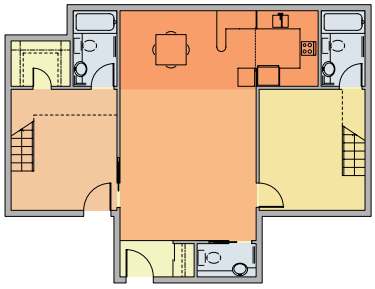
G-1.1



G-1.2



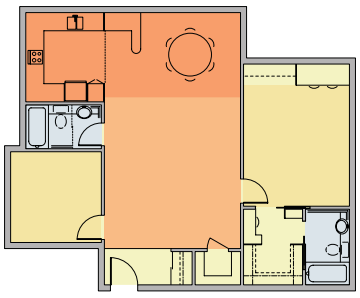
G-2.1



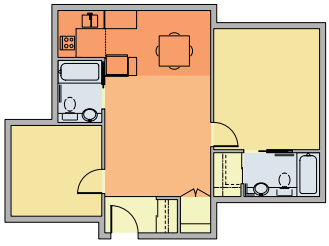
w/ mezzanine

type H

H-1



H-2



living space
secondary living space
kitchen/ dining
bedroom
bathroom
extra spaces: entry, closet, circulation
open to below

Bathroom variations such as two-way access, two-bathroom and Japanese style bathrooms (image 4.12) are not specified in the unit formulae. They are listed as standard bathrooms [B].

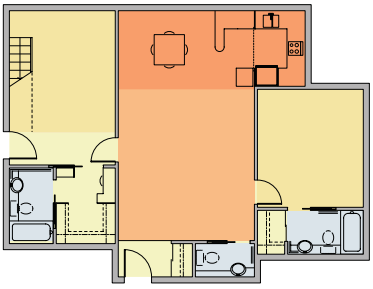
Unit types for households with two nuclear families or children over age 25 have separate entrances. They are marked by * behind the unit type name. [eg. E-1*]

Household of 3 persons:
type E
E-1.1 LR + Kt + wc/s + BR [Mz]
E-1.2 BRL + K/b + wc/S
E-2 LR + K/D +B + BR + B/wic + BR
E-3 LRL + K/D + B + BR + B/wic + BR

type F
F-1 LRL + K/D + B + BR + B/wic + BR
F-2* LRL + K/D + wc + BR + B/c + LR* + BR [Mz] + B

type G
G-1* LR + K/D + wc + BR + B/c + BR + B/c
G-2 LRL + K/D + wc + BR + Mz + B + LR* + BR [Mz] + B/wic

G-2.2

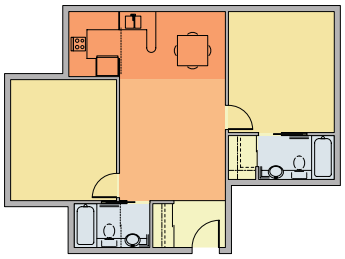


w/ mezzanine

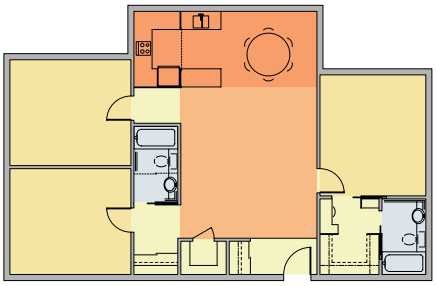
LR	standard living room	3500 x 4500
LRs	small living room	3000 x 3000
LRL	large living room	4500 x 5000
LR*	secondary living space	
Kt	kitchenettes	
K/b	kitchen w/ movable breakfast	
K/D	kitchen and dining	
BR	standard bedroom	3500 x 4500
BRs	small bedroom	3000 x 3000
BRL	large bedroom	4500 x 5000
wc	washroom	
wc/s	washroom w/ shower over sink	
wc/S	washroom plus shower room	
B	standard bathroom	
B/c	bathroom w/ closet	
B/wic	bathroom + walk-in-closest	
Mz	mezzanine	

type I

I-1

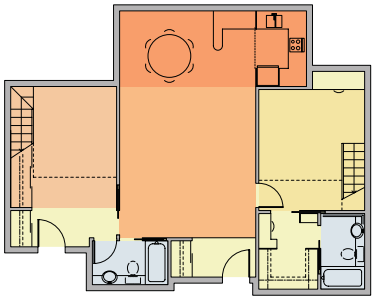


I-2

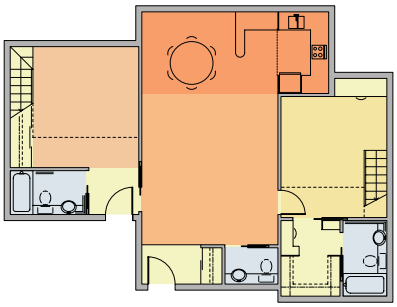


type J

J-1



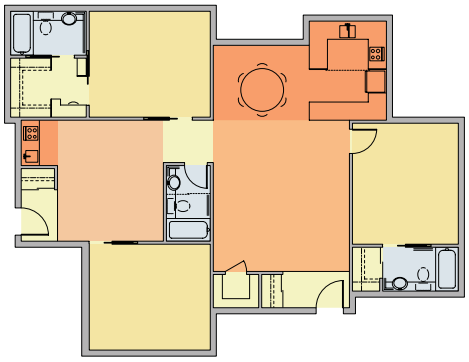
J-2



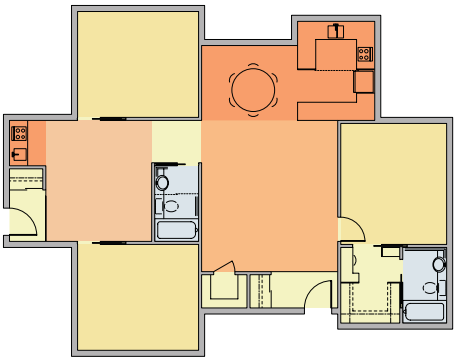
w/ mezzanine

type K

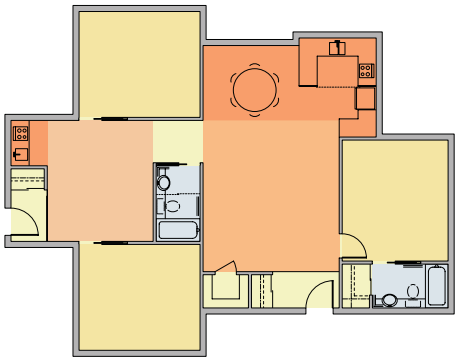
K-1



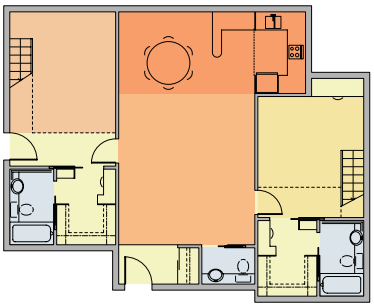
I-4.1



I-4.2



J-3



w/ mezzanine

LR	standard living room	3500 x 4500
LRs	small living room	3000 x 3000
LRL	large living room	4500 x 5000
LR*	secondary living space	
Kt	kitchenettes	
K/b	kitchen w/ movable breakfast	
K/D	kitchen and dining	
BR	standard bedroom	3500 x 4500
BRs	small bedroom	3000 x 3000
BRL	large bedroom	4500 x 5000
wc	washroom	
wc/s	washroom w/ shower over sink	
wc/S	washroom plus shower room	
B	standard bathroom	
B/c	bathroom w/ closet	
B/wic	bathroom + walk-in-closest	
Mz	mezzanine	

Household of 3 persons:
type H

H-1	LRL + K/D + B + BR + B/wic + BRs
H-2	LR + K/D + B + BR + B/c + BRs

Household of 4 persons:
type I

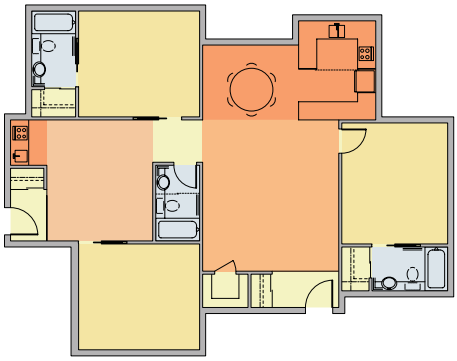
I-1	LR + K/D + B + BR + B/c + BR
I-2	LRL + K/D + B + BR + B/wic + BR + BR
I-3	similar to I-2 w/ Mz [over K/D and B/wic]
I-4.1	LRL + K/D + B + BR + B/wic + LR* + Kt + BR + BR
I-4.2	LRL + K/D + B + BR + B/c + LR* + Kt + BR + BR

type J

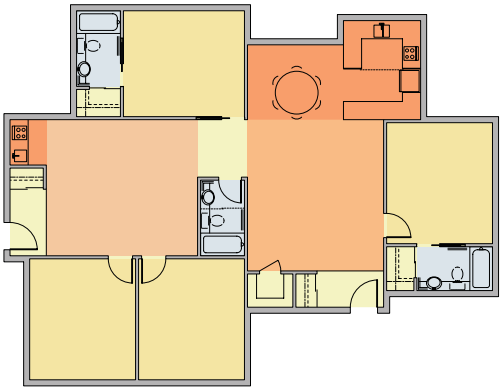
J-1*	LRL + K/D + B + BR + Mz + B/wic + LR* + BR [Mz]
J-2*	LRL + K/D + wc + BR + Mz + B/wic + LR* + BR [Mz] + B
J-3*	LRL + K/D + wc + BR + Mz + B/c + LR* + BR [Mz] + B/wic

living space
secondary living space
kitchen/ dining
bedroom
bathroom
extra spaces: entry, closet, circulation
open to below

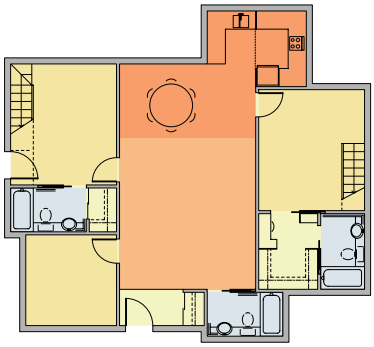
type L L-1.1



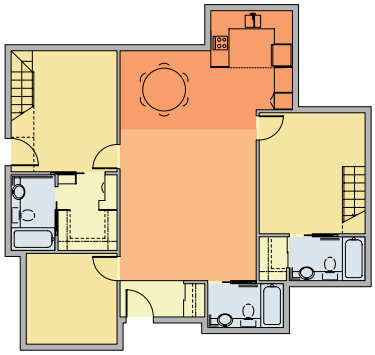
L-1.2



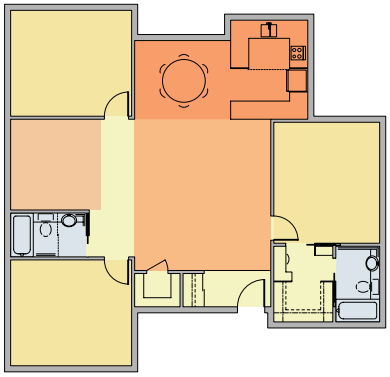
type M M-1



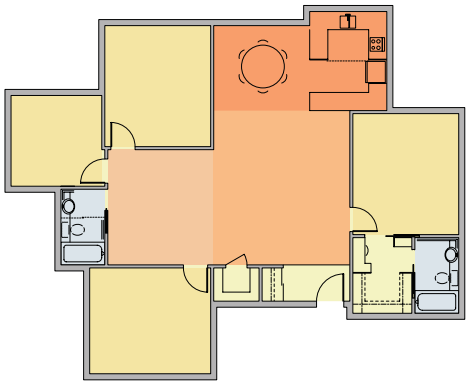
M-2



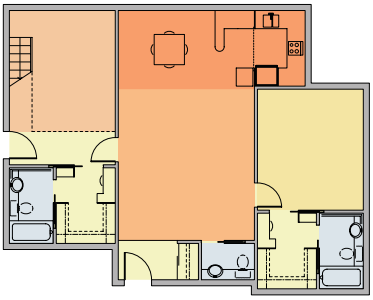
type N N-1.1



N-1.2

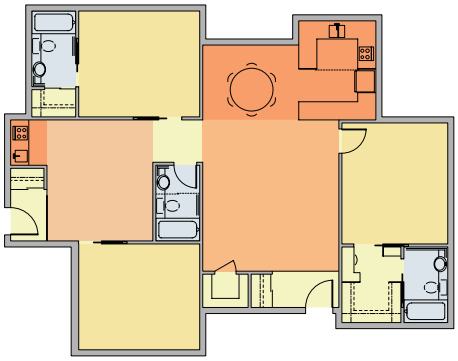


L-2.1

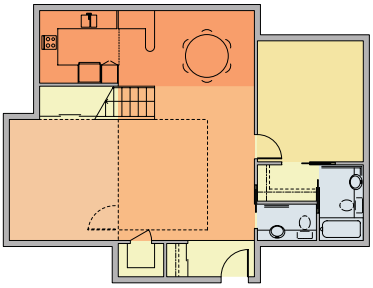


w/ mezzanine

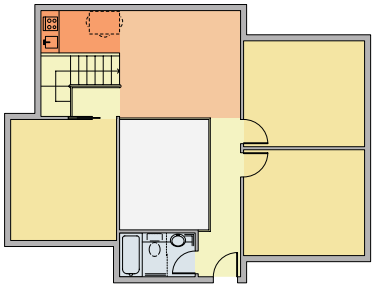
L-2.2



N-2



lower level



upper level

Household of 4 persons:

type K

K-1* LRL + K/D + B + BR + B/c +
LR* + Kt + BR + B/wic + BR

type L

L-1.1* LRL + K/D + B + BR + B/c +
LR* + Kt + BR + B/c + BR

L-1.2* LRL + K/D + B + BR + B/c +
LR* + Kt + BR + B/c + BR + BR

L-2.1* LRL + K/D + wc + BR + B/wic +
LR* + BR [Mz]+ B/wic

L-2.2* LRL + K/D + B + BR + B/wic +
LR* + BR + B/c + BR

type M

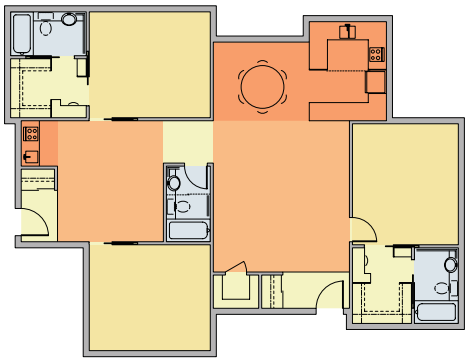
M-1* LRL + K/D + B + BR + Mz + B/wic +
LR* + BR [Mz]+ B/c + BRs

M-2* LRL + K/D + B + BR + Mz + B/c +
LR* + BR [Mz]+ B/wic + BRs

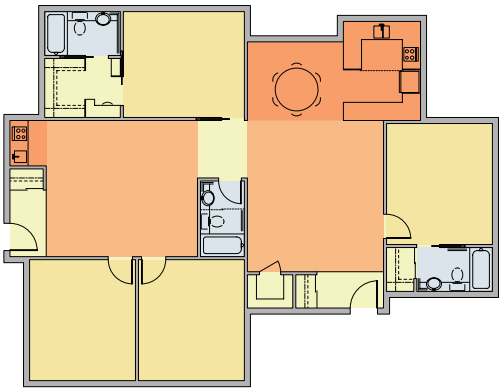
LR	standard living room	3500 x 4500
LRs	small living room	3000 x 3000
LRL	large living room	4500 x 5000
LR*	secondary living space	
Kt	kitchenettes	
K/b	kitchen w/ movable breakfast	
K/D	kitchen and dining	
BR	standard bedroom	3500 x 4500
BRs	small bedroom	3000 x 3000
BRL	large bedroom	4500 x 5000
wc	washroom	
wc/s	washroom w/ shower over sink	
wc/S	washroom plus shower room	
B	standard bathroom	
B/c	bathroom w/ closet	
B/wic	bathroom + walk-in-closest	
Mz	mezzanine	

type O

O-1

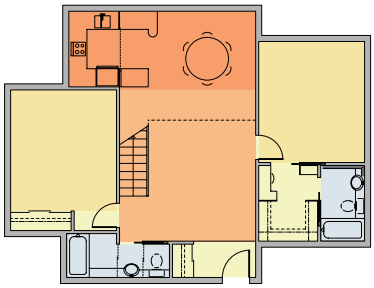


O-2

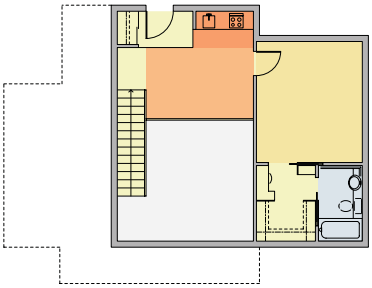


type P

P-1.1



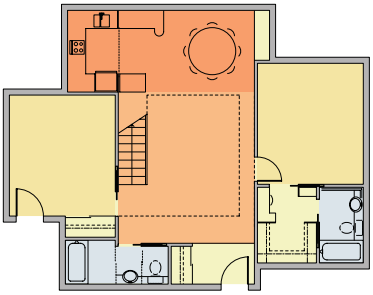
lower level



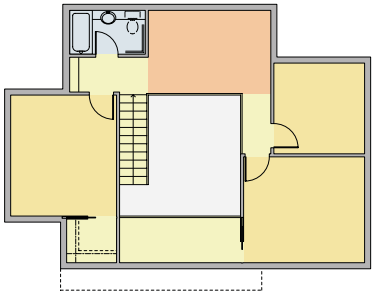
upper level

type Q

Q-2.1



lower level



upper level

living space
secondary living space
kitchen/ dining
bedroom
bathroom
extra spaces: entry, closet, circulation
open to below

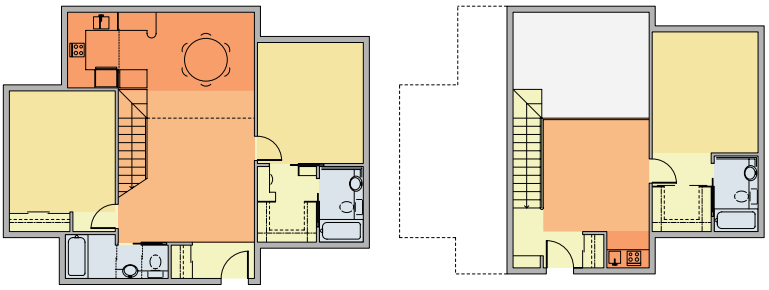
Some unit plans are consisted of two full storeys. The rooms on the upper floor is listed after [u].

Household of 5 persons:
type N
N-1.1 LRL + K/D + B + BR + B/wic + LRs* + BR + BR
N-1.2 LRL + K/D + B + BR + B/wic + LR* + BR + BR +BRs
N-2* LRL + LR* + K/D + wc + BR + B/c + [u] LR* + Kt + B + BR + BR +BR

type O
O-1* LRL + K/D + B + BR + B/wic + LR* + Kt + BR + B/wic + BR
O-2* LRL + K/D + B + BR + B/c + LRL* + Kt + BR + B/wic + BR + BR

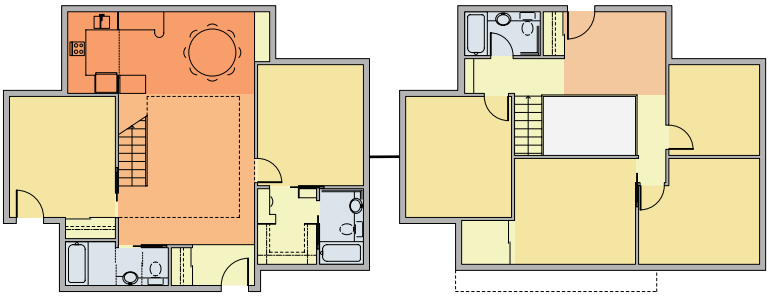
type P
P-1* LRL + K/D + B + BR + B/wic + BR
[u] LR* + BR + B/wic

P-1.2



lower level upper level

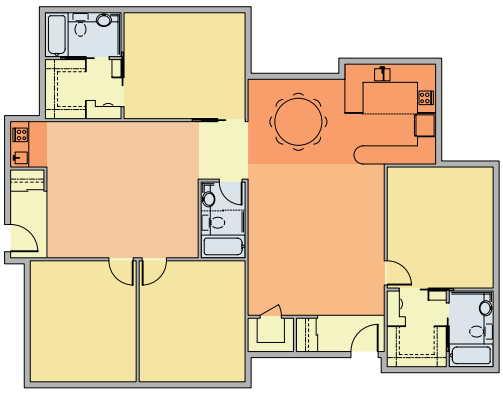
Q-2.2



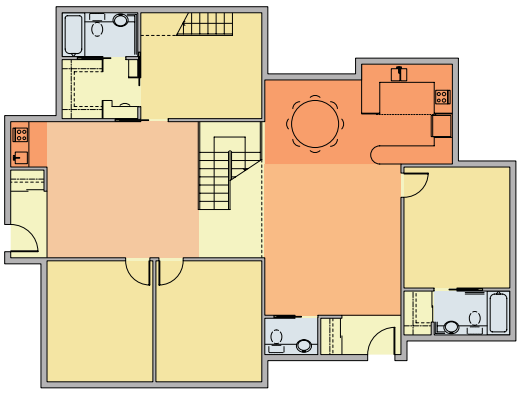
lower level upper level

LR	standard living room	3500 x 4500
LRs	small living room	3000 x 3000
LRL	large living room	4500 x 5000
LR*	secondary living space	
Kt	kitchenettes	
K/b	kitchen w/ movable breakfast	
K/D	kitchen and dining	
BR	standard bedroom	3500 x 4500
BRs	small bedroom	3000 x 3000
BRL	large bedroom	4500 x 5000
wc	washroom	
wc/s	washroom w/ shower over sink	
wc/S	washroom plus shower room	
B	standard bathroom	
B/c	bathroom w/ closet	
B/wic	bathroom + walk-in-closest	
Mz	mezzanine	

type R R-1

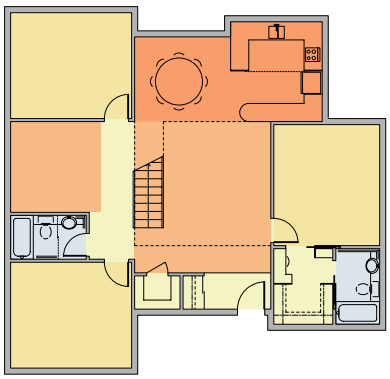


R-2

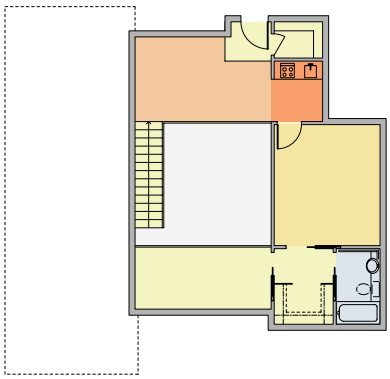


lower level

type S S-1.1

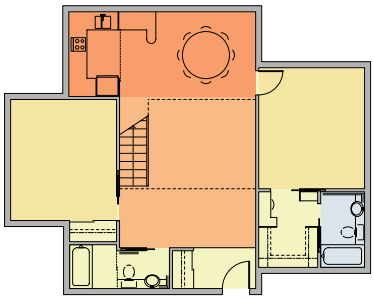


lower level

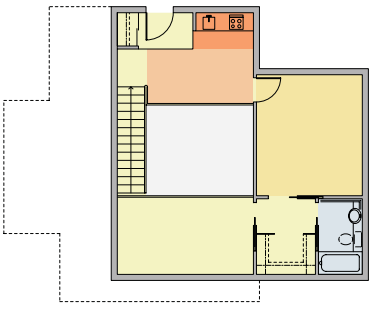


upper level

type T T-1

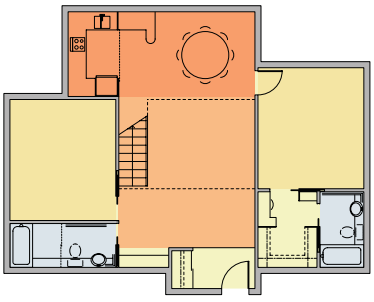


lower level

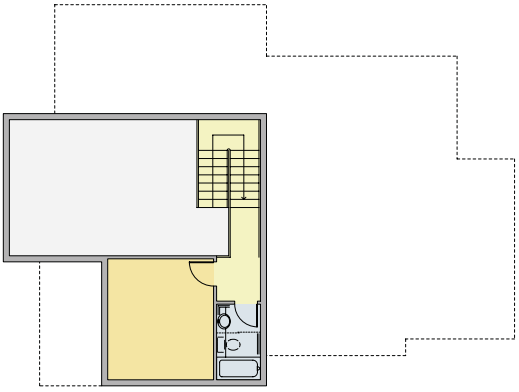


upper level

T-2

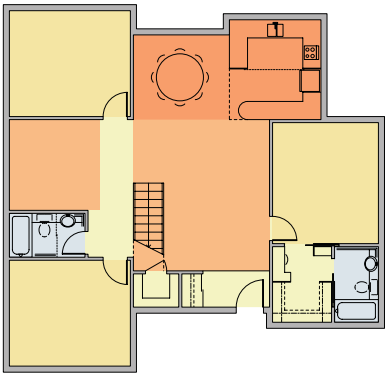


lower level

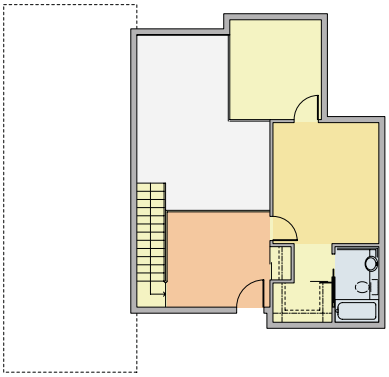


upper level

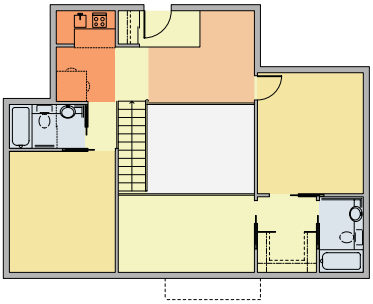
S-1.2



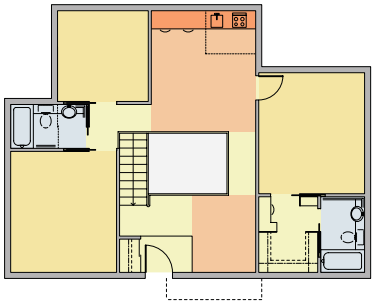
lower level



upper level



upper level- opt. 1



upper level - opt. 2

Household of 6 persons or more:

type Q

Q-1 same as N-1

Q-2.1* LRL + K/D + B + BR + B/wic + BR
[u] LR* + B + BR + BR + BRs

Q-2.2* LRL + K/D + B + BR + B/wic + BR
[u] LRs* + B + BR + BR + BR + BRs

type R

R-1* LRL + K/D + B + BR + B/wic +
LRL* + Kt + BR + B/wic + BR + BR

R-2* LRL + K/D + wc + BR + B/c +
LRL* + Kt + BR + Mz + B/wic + BR + BR
[u] B + BR

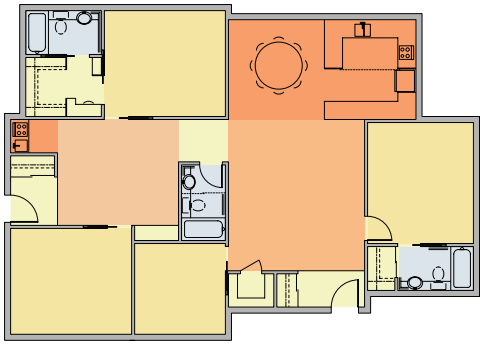
type S

S-1.1* LRL + K/D + B + BR + B/wic + LRs* +
BR + BR + [u] LR* + Kt + BR + B/wic

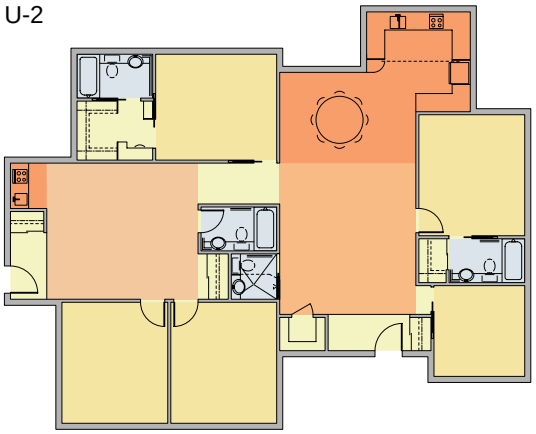
S-1.2* LRL + K/D + B + BR + B/wic + LRs* +
BR + BR + [u] LR* + BR + B/wic

LR	standard living room	3500 x 4500
LRs	small living room	3000 x 3000
LRL	large living room	4500 x 5000
LR*	secondary living space	
Kt	kitchenettes	
K/b	kitchen w/ movable breakfast	
K/D	kitchen and dining	
BR	standard bedroom	3500 x 4500
BRs	small bedroom	3000 x 3000
BRL	large bedroom	4500 x 5000
wc	washroom	
wc/s	washroom w/ shower over sink	
wc/S	washroom plus shower room	
B	standard bathroom	
B/c	bathroom w/ closet	
B/wic	bathroom + walk-in-closest	
Mz	mezzanine	

type U U-1



U-2



living space
secondary living space
kitchen/ dining
bedroom
bathroom
extra spaces: entry, closet, circulation
open to below

Household of 6 persons or more:
type T
T-1* LRL + K/D + B + BR + B/wic + BR
[u] LRs* + kt + BR + B/wic
T-2.1* LRL + K/D + B + BR + B/wic + BR
[u] LRs* + kt + B + BR + B/wic + BR
T-2.2* LRL + K/D + B + BR + B/wic + BR
[u] LRs* + kt + B + BR + B/wic +
BR + BRs

type U
U-1* LRL + K/D + B + BR + B/wic + BRs
LR* + Kt + BR + B/wic + BR
U-2* LRL + K/D + wc/s + BR + B/wic + BRs
LRL* + Kt + B + BR + B/wic + BR +BR

type V extended families

a typical extended family consisted of siblings living together, each with his own family. The parent(s) are most likely to be staying with them as well.

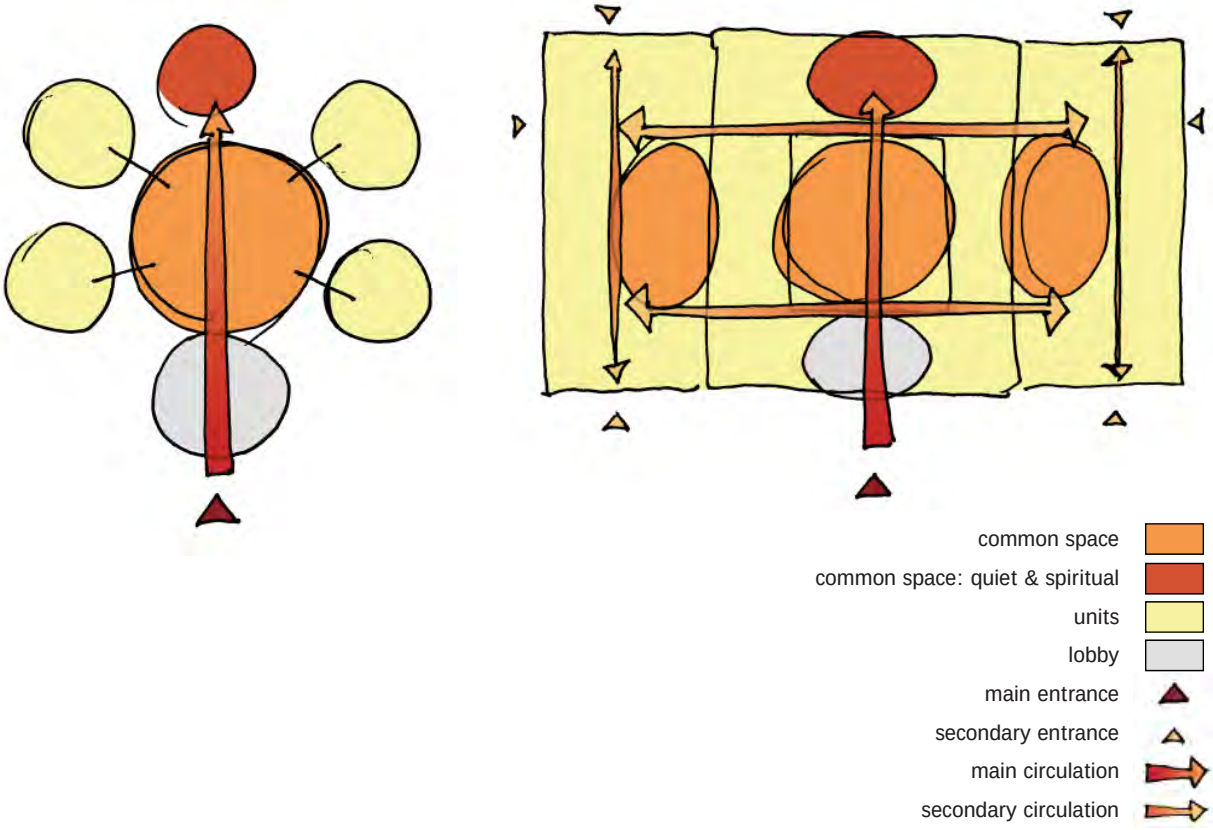
For households with two nuclear families, large units type such as type R, S, T and U would be suitable. For a household w/ three or more nuclear families, the options are: 1) having two or more adjacent units sharing the same semi-public space on the floor, 2) having two stacking units of the same or different unit types connected with stairs in the living space. If extra kitchens are undesirable, they could be easily converted into other shared space such as bar, lounge or study.

LR	standard living room	3500 x 4500
LRs	small living room	3000 x 3000
LRL	large living room	4500 x 5000
LR*	secondary living space	
Kt	kitchenettes	
K/b	kitchen w/ movable breakfast	
K/D	kitchen and dining	
BR	standard bedroom	3500 x 4500
BRs	small bedroom	3000 x 3000
BRL	large bedroom	4500 x 5000
wc	washroom	
wc/s	washroom w/ shower over sink	
wc/S	washroom plus shower room	
B	standard bathroom	
B/c	bathroom w/ closet	
B/wic	bathroom + walk-in-closest	
Mz	mezzanine	

iv-ii [M] the floor

Each floor of a condominium is comparable to a compound family residential complex, where several households of private apartments cluster around a shared space creating a small scale neighbourhood. In this common area, residents share leisure activities such as playing chess, drinking tea or doing taichi. Neighbours would interact on a daily basis, looking out for one another in times of need. Several elements are required to re-establish this intimate environment, each contributing to different strategies that might define the social structure on each floor.

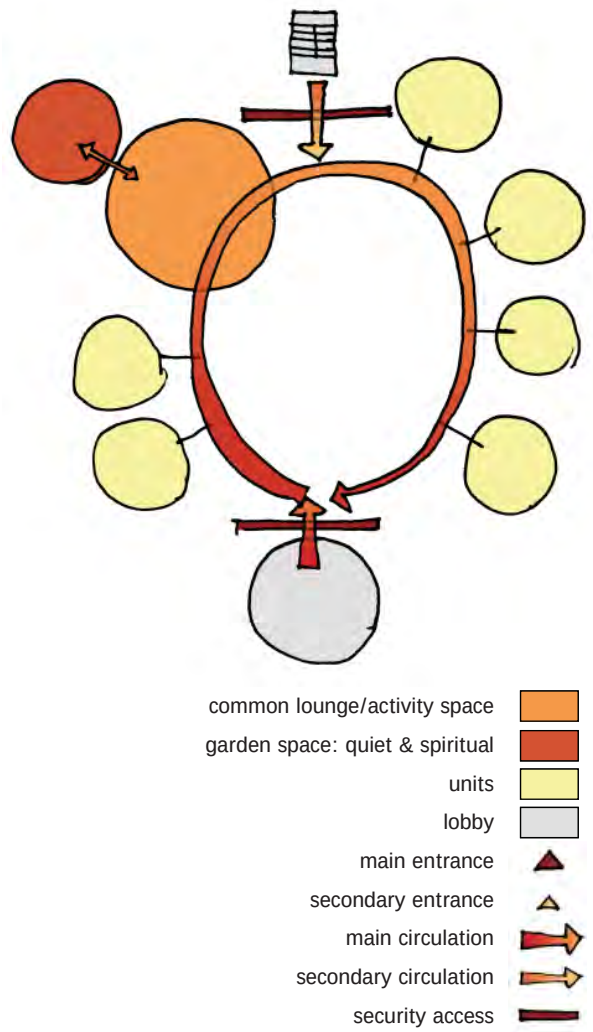
The foremost requirement in establishing a sense of community is to create a new ground plane for residents to interact directly. Furthermore, the boundary of private and public space must be delineated in order to create the intimacy of a small scale community. This boundary must be of a physical nature and of common interests. For a residential environment, the most important common concern is security. With controlled access on each floor, the common space of the floor is separated from the larger community facility, thereby giving the residents a sense of ownership to these semi-public spaces. The common space shared by the community should, even at the smallest scale, include a lounge/activity space and a green garden.[7]



4.17 units and common space relationship in the vernacular courtyard dwelling.

Many variables describe the sense of community on a floor, namely the family typology of the residents. First, the size of the community would depend on the size of the site, the building, and the strategy of distributing various-size units. Thus, there should be a guideline to the maximum and minimum number of households and residents per typical floor. It is difficult to remain intimate with too large a community, but it is also impossible to establish a sense of community with too few units. Roughly, there should be between four and twelve households: four in the case of larger households or smaller sites, and twelve in the case of smaller units and larger floor plates.[8] Within the various strategies for distributing different unit types, the more common practice is to group similar unit types on the same floor. These residents are more likely to have similar schedules and interests. For a floor with small studio units, the co-housing arrangement with shared kitchen and dining area would be most ideal. For new construction, the best scenario is to involve the floor residents in the design and appreciation of their own common space.

The final stage of designing a floor is the layout and arrangement of units and common spaces. Strategies for locating the courtyard will be discussed in the next section, as part of the strategy for the building as a whole. The general guidelines are as such: 1) the common space is on the main circulation route. 2) The unit should also have a small entry alcove, to protect the entry from the public route. Larger units would have a front court if possible. 3) The corridor should not have a long and straight stretch. The line of movement in the corridor should not line up with the unit entrance. This is considered taboo in *feng shui*, for evil spirits and negative energy would enter the house [路沖]. Logically, it would not a good layout because noise would travel into the house and its privacy would be compromised. 4) The common spaces should be an energy efficient space, relying mostly on natural lighting and ventilation.



4.18 units and common space relationship in the proposed floor layout

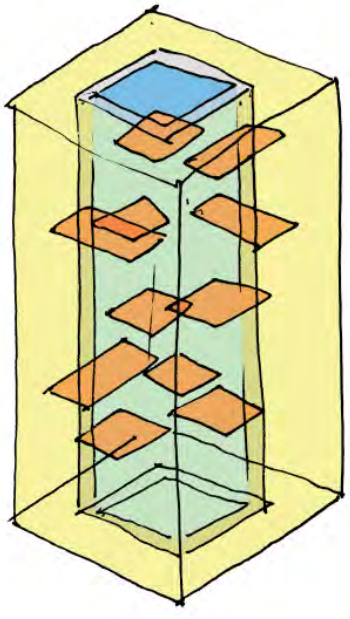
[7] The green courtyard needs not be fully soiled or extensive planted. Most Taiwanese courtyards are similar to Japanese courtyards in that the plantings are very controlled and they are often in planter and paved with pebbles.

[8] The exception would be the penthouse and other special units.

iv-iii [L] the building as the village

A building is a vertical village in the city and a village is made up of smaller communities from each floor. The physical building or complex provides a strong definition for the residents to identify with the community. The important step therefore is to bring the residents back to the building. A successful neighbourhood at the smaller scale of each floor would be able to attract its residents back to their own building environment. The next step would be to weave together the separate communities of each floor. There should be facilities that would be shared by all the residents in the building, which would be directly accessible after entering through the security of the building or complex. For example, there could be a series of public rooms that could be accessed from the elevator lobby on each floor. These rooms could be used as meeting rooms and game rooms. There could be a study room or a library that the residents could book for their tutoring classes for a small maintenance fee. This way, outside students would not enter the secondary security door on each floor. In a larger complex, there might be a fitness centre or a swimming pool. In any case, the condominium should provide enough parking spaces and a separate entry for cars, motorcycles and bicycles.

There are different typologies of the building as a village, depending on the size and the percentage of commercial usage. In a multiplex, the building would be similar to a village equipped with all the daily necessities, such as grocery and banking services. In most building types, the residents will depend on the network of surrounding communities. Within a building or a complex, it is possible to bring in vernacular elements, such as a small home business or a shrine, without breaching security. For example, there could be a corner store in the public courtyard. The corner store would be operated with a serving window from a unit by a retired person or a homemaker. The store would carry simple daily necessities and snacks.

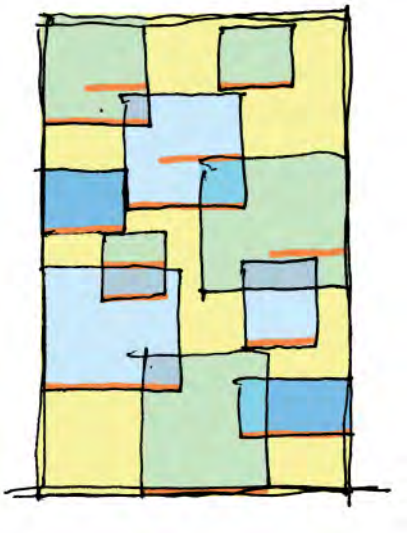


4.19 relationship between unit, common space, and openings derived from extruding traditional courtyard housing

The strategy for the location of the courtyards relates both to individual floor plates and to the composition of the building as a whole. The first response would be to imitate the vernacular courtyard formation. The layout of the *siheyuan* can be extruded, and the common spaces would partially occupy the centre opening, shifting from floor to floor (image 4.19). However, there are three major defects to this proposal: 1) Natural light will not be able to penetrate the opening, therefore the common spaces on the lower floors would be very dark. 2) The echoing and transference of noise would be excessive even in Asian standards. 3) The large monotonous interior opening does not create the atmosphere of a small neighbourhood or a new ground plane.

The proposed solution is to provide shifting voids in the building (image 4.20). These voids will act as courtyards, the source of light for the units and common spaces, and provide a visual connection between floors. Each floor has at least one large courtyard, which is open to two or three stories above. Some common spaces would overlook the large courtyards below, visually connecting residents from different floors. Each of these spaces should be enclosable to contain light and noise, provide security, and protect against weather.

The building could be set into the urban fabric or grouped into a condominium complex. The open ground space of a complex should be designed to promote use and pedestrian flow, instead of avoiding maintenance[9]. Depending on the neighbourhood environment, the front gate should encourage pedestrian entry instead of car access as in the North American model. The most suitable ground floor usage for a secured residential complex is landscaped gardens with trees that could provide shading, for benches and tables. Other facilities such as basketball or tennis courts should be carefully sited and designed for noise and safety.



4.20 conceptual sectional diagram of shifting voids and common spaces in the proposed building layout

[9] Many condominium complexes completely pave all the open spaces, with minimal landscaping. The bare space and the lack of shading does not attract usage.

iv-iv [xL] the building within the community of Li

Every building takes part in the identity of a Li, which is a neighbourhood defined as a quarter of a major city block. While some Li are separated only by secondary streets, most Li in old neighbourhoods have distinctive characteristics developed from their particular history. In addition, each community of Li is bounded by its administration for the direction of urban planning, marketing and revitalization. Thus, the adjacent Li often carry different charater traits.

The condominium building can be an integral part of the neighbourhood or an isolated island. In a vernacular urban setting, daily necessities are provided within a residential village. In new districts or large complexes in the outer part of Taipei, residents have to rely on vehicles for any daily errands. Small village centres should be provided in proportion to the density of the residential complex. The businesses should be set on the main access route of the condominiums, beside other popular facilities, to attract pedestrian flow. The siting of these businesses is vital to their survival, since residents are in the habit of driving and purchasing in bulk.

Mixed-use zoning creates far more sustainable small-scale neighbourhoods. With good circulation and security design, the residents can feel safe even if the ground floor is a part of the public space. The separation of pedestrian and vehicle flow and of the public and residential flow create private and pleasant residential entrances. In a condominium environment, the ground floor is not an ideal residential environment, because it is inherently public. Commercial strips are common and they maintain street life on the ground plane. Another choice would be to use the ground floor as community facilities, such as the Li office, a library, or a community centre with fitness facilities. Again, with proper traffic flow design, the public would not disturb the private residents. Since the perimeter of Li is within a five-minute walking distance, these facilities do not have to consider parking. Within a larger complex, the open spaces on the open ground can be developed into landscaped gardens with small cafés. It would be a public space that is both quiet and pleasant.

iv-v conclusion

The thorough analysis and prototyping of each and every scale of the condominium environment provides a guideline and insight into designing a new dwelling typology: the vertical vernacular, a high density collective housing which takes into consideration the vernacular cultural and social values. The vernacular principles are re-evaluated and applied to the design of the current model of the unit plan, the floor layout, the building composition, and the site design. While a unit should employ modern technology and account for the current lifestyle, it should also accommodate the vernacular tradition, values and family structure. In these designs, the floor becomes the new ground plane for residents, offering a secure semi-public space which the residents can directly access for daily leisure and social activities. In order to create an intimate scale for these courtyard neighbourhoods and to provide natural lighting, the building is inserted with large voids shifting throughout. The surrounding neighbourhood takes part in the design of the ground level of a condominium building or complex, so that in both mixed-use and residential settings, the simple daily necessities are within walking distance, to maintain the social structure of small-scale neighbourhoods.

The principles of the vernacular condominium aim to create a sustainable cultural and social environment for the modern urban dwellers. As such, the family and community ties are reinstated, the cultural activities and traditions can be accommodated, and a pedestrian urban lifestyle is promoted.

[the design project]: Vertical Vernacular

180 Shinyi Rd Sec 2 , Daan, Taipei

5.01 [cover left]: building perspective from Lishui Street
[cover right]: Shinyi Road perspective

5.02 Daan District

v the design project

The concept of a courtyard condominium could be adopted in any urban centre for a healthy, interactive community. However, in this thesis, the courtyard condominium is designed for a dense city of Taiwanese cultural background. It is meant to extend the vernacular culture and community into the vertical city. The prototypes previously introduced can be implemented according to different site conditions. The site specific design project at #180 Shinyi Rd Sec 2, Daan, Taipei [台北市大安區信義路二段一八〇號] exemplifies the process of applying the prototypes in the densest district of Taipei city.

5.03 Chinese Wenhua University Daan campus [中國文化大學]

the Site

Daan District [大安區] is culturally and economically vibrant. A portion of its land is taken up by rare open spaces in the city: the National Taiwan University [台灣大學] and Daan Park [大安公園], the largest urban park in Taipei. There are also several other universities, colleges and schools in the area. With the numerous public buildings, the Daan District still maintains the highest average density in Taipei, because it is considered one of the best living environments in the city centre together with the best universities and public schools. It promotes an urban lifestyle with necessities, entertainment and cultural activities all within walking distance of one's dwelling. With two subway lines passing through Daan and a third under construction, Daan residents can get to most places with convenient public transportation. All the above reasons make Daan popular both for young independent singles and families. The district is reputable for its multiculturalism in terms of its residents and its variety of religious establishments. The wide range of residents includes a large portion of transient residents such as students and foreigners, many of whom later become permanent Taipei residents. Other residents include professors, professionals, and families with different economic situations.

5.04 the main axis of National Taiwan University [國立台灣大學], taken in front of the main library

5.05 examples of multiculturalism in Daan District

5.06 Daan Park [大安公園]

5.07 Daan District zoning map and Yongkang Li [永康里]

The site is located in Yongkang Li [永康里], as previously introduced and sampled in chapter iii. Yongkang Li takes up the Northwest quarter of the major city block defined by Shinyi Road [信義路], Jinshan South Road [金山南路], Heping East Road [和平東路] and Xinsheng South Road [新生南路] (image 5.07). The city block is divided by secondary streets, Yongkang Street [永康街] and Jinhua Street [金華街]. Within the block, there is the National Teachers' University [國立師範大學], Taiwan Zhengzhi University [台灣政治大學] Daan Campus, Jinhua Women's High School [金華女中] and Jinhua Public School [金華小學]. Daan Park and National Taiwan University are within walking distance.

'Yongkang Street' [永康街] is famous with a long history and reputation. During the Japanese occupation, Yongkang Li and the nearby area were occupied by the Japanese military and its prison. After the Japanese left, the refugees and immigrants from mainland China took over the vacant land and warehouses. Since they had no employment or businesses, many started small restaurants out of their own kitchens, with some folding tables and stools on the side of the street. Yongkang Street became the famous 'small food street' [小吃街] with small cafés and a variety of restaurants featuring authentic local flavours from all over China. The Taiwanese love light meals, snacks, finger foods, and street foods. Yongkang Street was also the first and successful community revitalization in the 1960s. The revitalization aimed to re-establish Yongkang Street as a destination – a restaurant district with culture - instead of a rundown dirty old neighbourhood with some restaurants like many other parts of Taipei at the time. The community was cleaned up successfully, and the restaurants were able to renew their image through time. Currently, Yongkang Street is still a popular destination that is both traditional and hip, attracting students, locals, tourists and foreigners.

The design site posed various interesting challenges, because it sits at the outer fringe of Yongkang Li on a major arterial road. The Yongkang street community is a mid-rise [4-10 stories], dense urban fabric with small storefronts on secondary and tertiary

5.08 Yongkang Street [永康街]

5.09 on the rooftop of Shinyi Road looking toward Daan Park [05.2005]

5.10 [left] the inner block of Yongkang Li versus [right] the streetscape of Shinyi Road

streets contained within the large city block. The surrounding major arteries present a completely different atmosphere. Shinyi Road is one of the major east-west arteries in Taipei. It runs eastward into the heart of Taipei's financial district with the world's tallest building, *Taipei 101*. Shinyi Road is mostly flanked by tall buildings. The idea to create a grand boulevard is supported by the zoning for arcades with no setback. There are also many older four to ten storey buildings left scattered on narrow and deep lots. Buildings along the major arteries in Daan District are mostly mixed-use. This is not because the area could not support enough commercial usage to fill the high rises along the arteries. The businesses including retail, offices and studios are completely spread out within the city blocks and buildings.

The project site is located on Shinyi Rd, taking up the small block between Yongkang Street [永康街] and Lishui Street [麗水街] (image 5.07, 5.12), approximately 60 m in length and 40 m in depth. The site is currently occupied by five old street houses. It is common that the developer would try to develop the entire block at once for maximum efficiency and return. A free standing lot is more convenient in terms of construction, design freedom and neighbour conflicts. A small lot would also restrict the height of the building. This section of Shinyi Road is destined to grow rapidly in height and residential density with the construction of the new Taipei Metro Neihu Line [捷運內湖線], which connects this area directly to the Neihu Technology Park. A new station is under construction directly across from the project site (May 2006).

The location of the site is chosen for the challenge of its density, and the pedestrian culture of the vicinity. The neighbourhood of the district and the Li provide well for the daily neccessities, leisure and cultural facilities, educational institutions and a strong sense of identity. The environment offers a basis for a sustainable community and lifestyle. The design project will aim to achieve the density of current developments while utilizing the conceptual prototypes at different scales.

5.11 looking West on Shinyi Road, with the construction of the new subway line [05.2005]

SITE PLAN 1:1000

v-i [xL] site strategy & building programme

The design project should reflect and react to both the ideal of Shinyi Road as a boulevard and the atmosphere of the Yongkang Street. The siting also suggests the program as a mixed-use commercial and residential building. The building should address Yongkang Street and Lishui Street as entrances into the inner restaurant district.

New developments often treat a block as an independent object. They address the major arteries and leave the sides and the back as quiet residential entrances. On this particular site, both side streets, Yongkang Street and Lishui Street, are prosperous commercial streets. The small restaurants, café, stores and small manufacturers and studios can also be seen in the mews. With the new Taipei Metro station right across from Shinyi Road, the building should emphasize its pedestrian entrances into the Yongding restaurant district and allow the back mews to have opportunities for small businesses as well.

The program of the building is: 1) the Shinyi street façade would have two-storey large commercial units with a standard 4 m deep arcade. 2) The monumental scale of the Shinyi Road façade would break down on the side streets. 3) The units facing the side and back streets are to be individual street houses, where the owner would have the choice of using it for business, residence or both. 4) The building would have a separate commercial lobby on Shinyi Road which accesses three storeys of office spaces on top of the large commercial units. 5)The upper floors would be taken up with condominium units. 6) The residents would enter through separate residential lobbies.

The building is a porous block utilizing the conceptual prototypes to create a sustainable and pleasant living environment.

5.13 the proposed project site


5.14 the corner of Shinyi Road [信義路] & Shinsheng South Road [新生南路]

5.15 ground floor plan
scale 1:750

utility/circulation
secured door
cone of vision
common lounge
residential balcony
shared garden
private garden
two-storey storefront commercial units
office space
three-storey street house units
condominium units

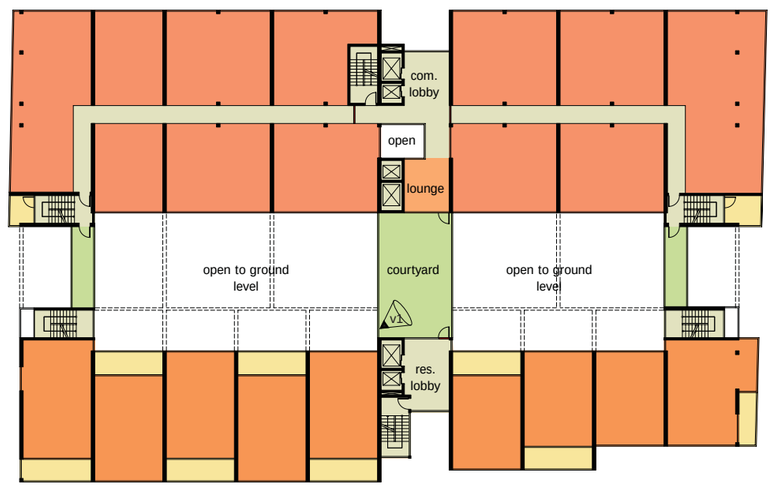
v-ii [L] the building as a village

Unlike a North American multiplex with an internal mall as the base, the ground floor of this design project faces the city and merges into the surrounding urban fabric. The new building recognizes the success of the Yongkang Street community, and it mediates between the two different scales of commercial zones. For example, Yongkang Street and Lishui Street typically do not have arcades. The design provides 2 m arcades fronting both streets to resolve the bottle neck currently at the street entrances. The one way parking and the central loading lane also relieves commercial traffic from parking on the streets.

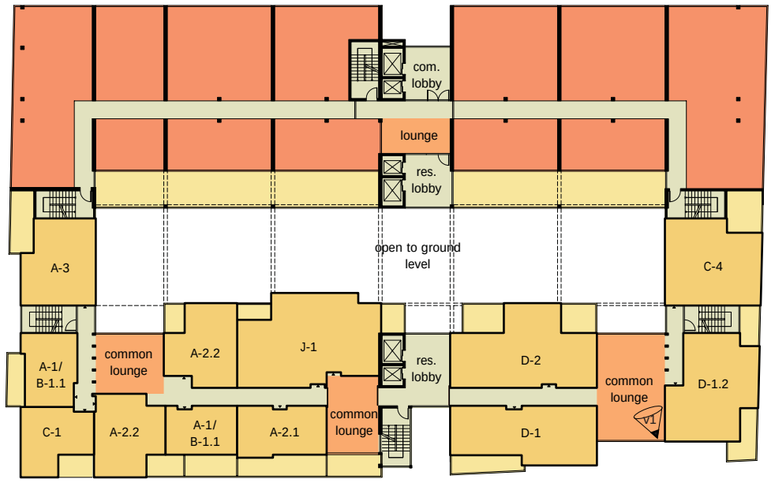
The building accommodates the variety of businesses and residents of the area. On Shinyi Road, many of the residential units are converted into offices or specialty stores which do not need a storefront. The businesses in the residential area breaches the safety of the residences, therefore the design aims to clarify the public and private zones by secondary security access doors and separate circulation. The project provides a total of 2190 m^2 of office spaces on the third, fourth and fifth floors, which could be directly accessed from a separate commercial lobby off Shinyi Road. The commercial lobby provides security control for the night. The residents can also access the offices directly from the secured residential lobby. The offices share an exterior hanging garden with an interior lounge on the third floor.

If a building is compared to a small village, then the lower floors are the public square and the market, while the elevator core becomes the main street. With a secondary security access on each floor, the elevator lobbies are the semi-public realm which can be freely accessed by all the residents. The multi-purpose rooms off the lobby on every residential floor are used as common facilities for the whole building, such as game rooms, study rooms and meeting rooms. The residents can book these rooms for their home businesses such as tutoring. Thus the outside students donnot enter through the secondary security point.

6.16 floor plans at a glance



6.17 third floor plan
[second floor plan similar]
scale 1:500



6.18 fourth floor plan
[fifth floor plan similar]
scale 1:500

5.19

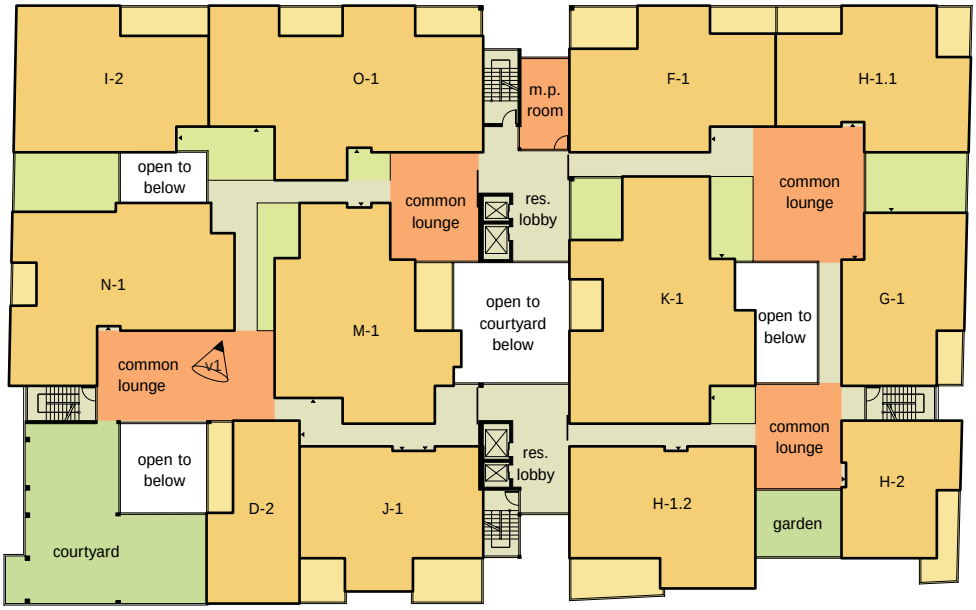
SIXTH FLOOR PLAN

1:250

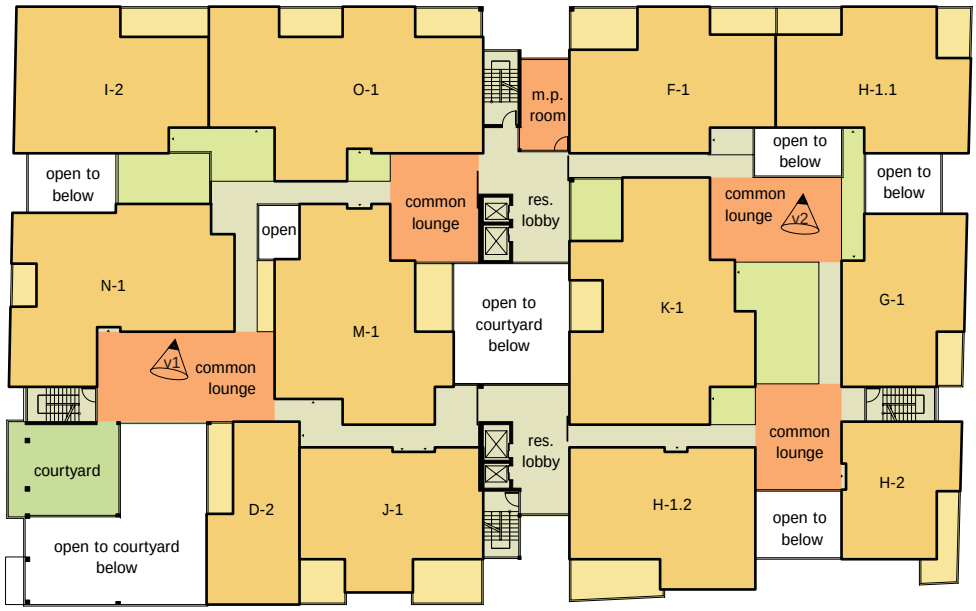
utility/circulation
secured door
cone of vision

common lounge
residential balcony
shared garden
private garden

two-storey storefront commercial units
office space
three-storey street house units
condominium units

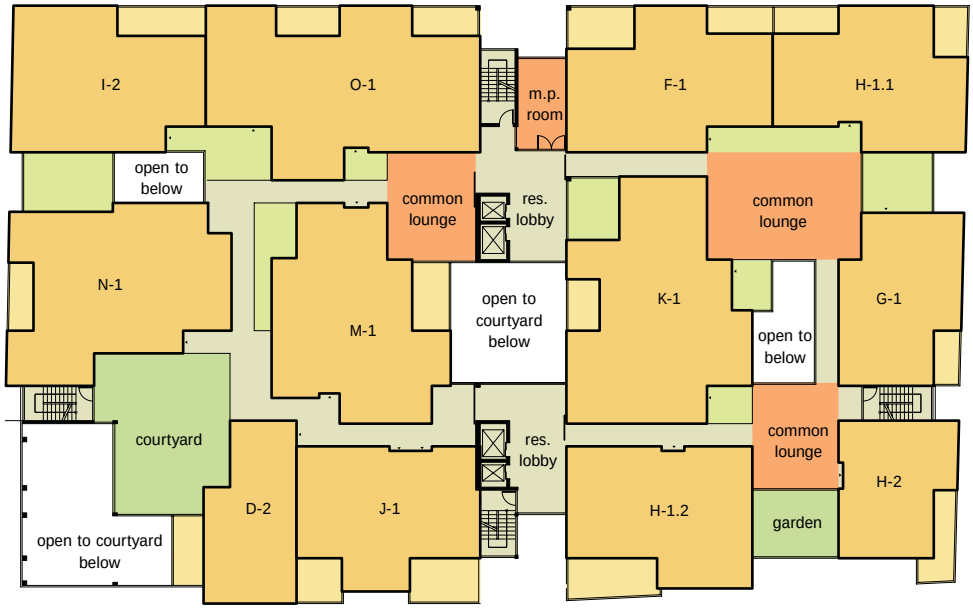


5.20 seventh floor plan
scale 1:500

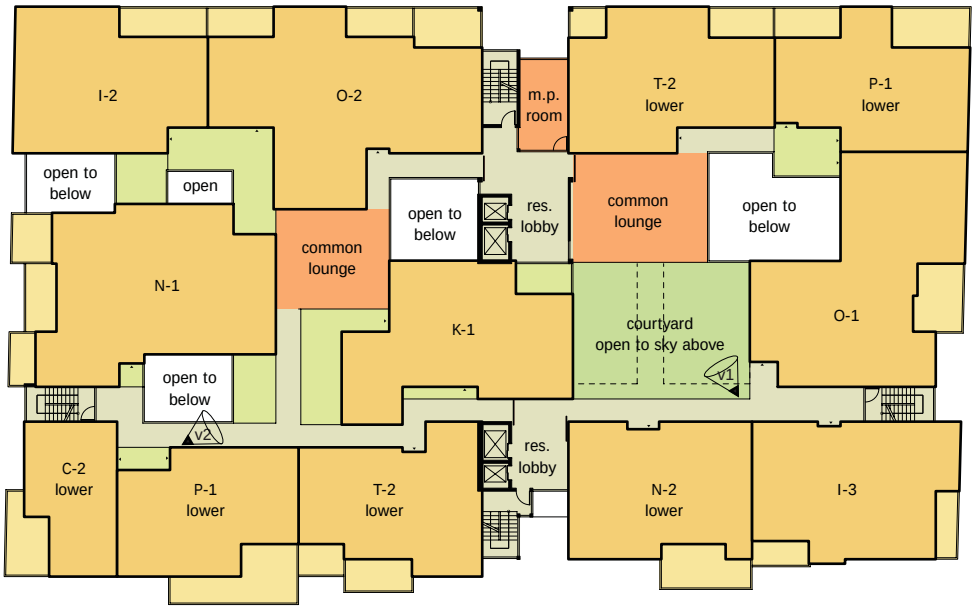


5.21 eighth floor plan
scale 1:500

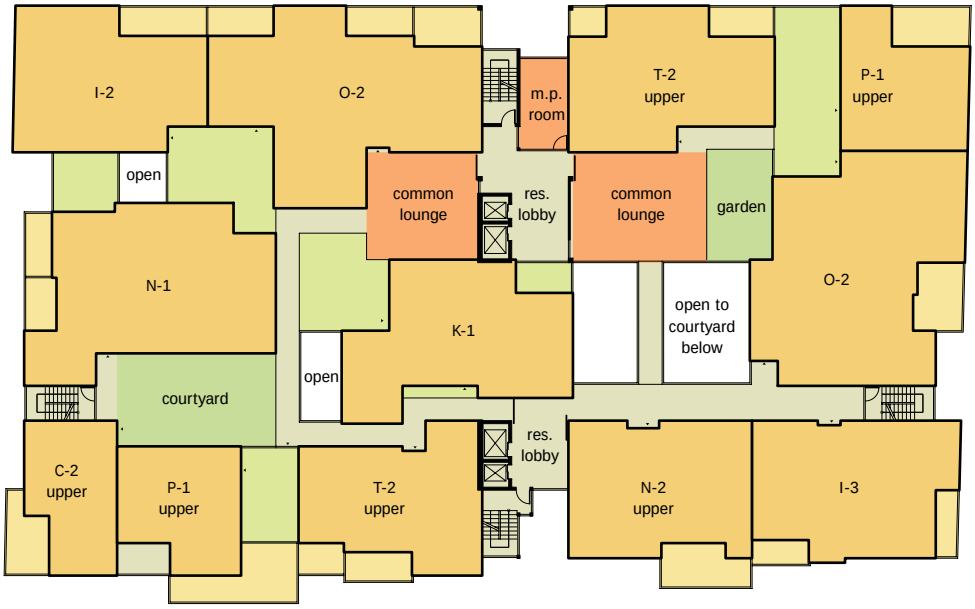
utility/circulation
secured door
cone of vision
common lounge
residential balcony
shared garden
private garden
two-storey storefront commercial units
office space
three-storey street house units
condominium units



5.22 ninth floor plan
scale 1:500

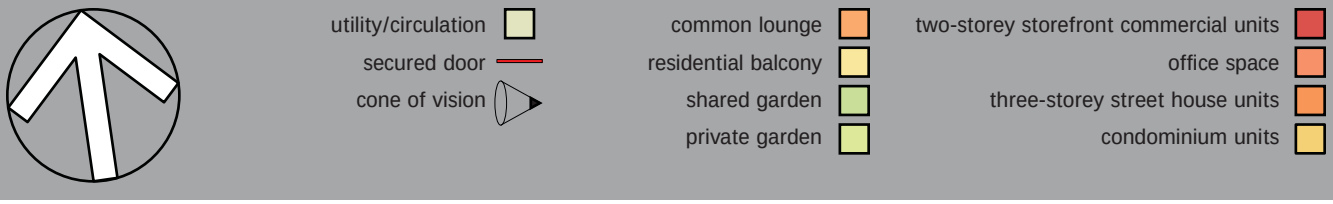


5.23 tenth floor plan
scale 1:500

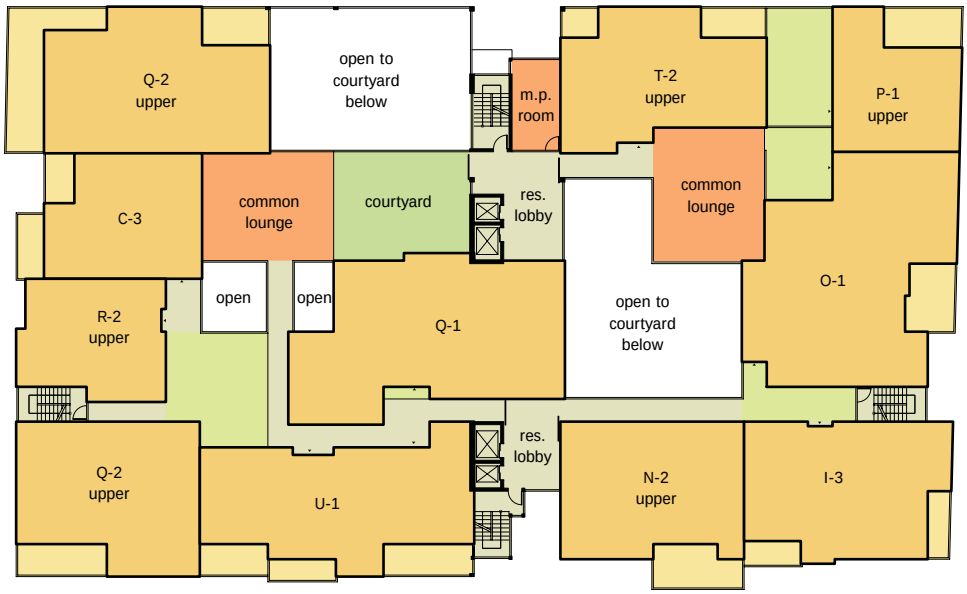


5.24 eleventh floor plan
scale 1:500

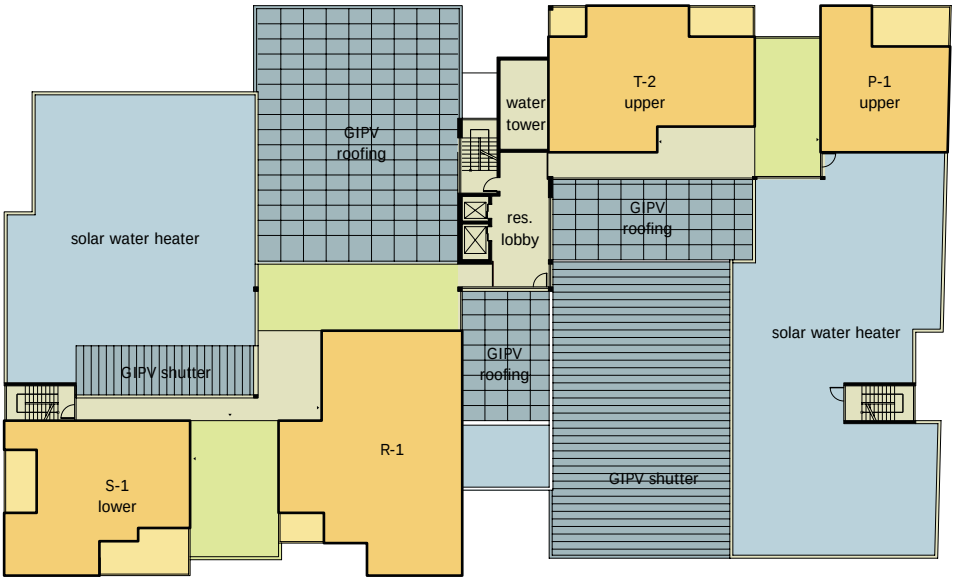
5.25 twelfth floor plan
scale 1:500



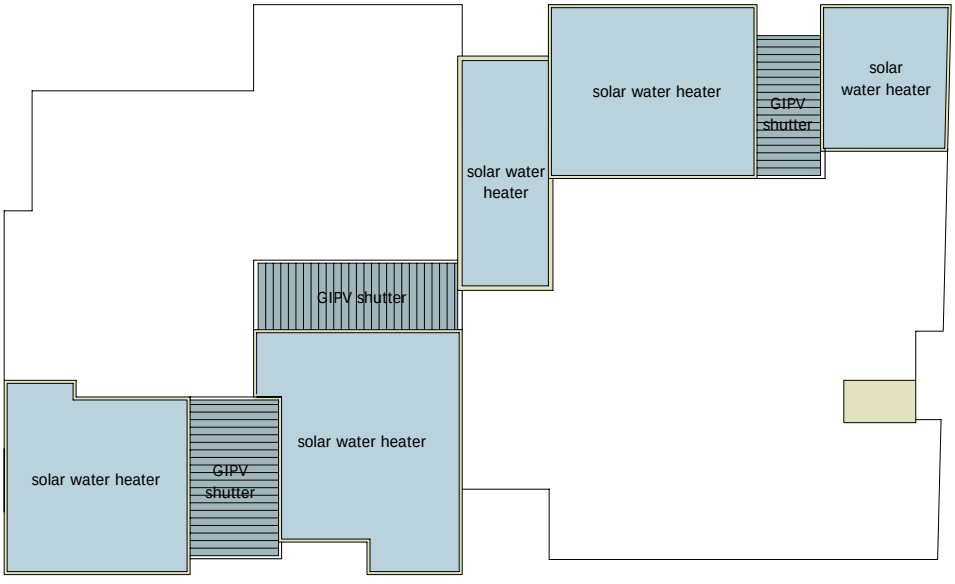
5.26 thirteenth floor plan
scale 1:500



5.27 fourteenth floor plan
scale 1:500

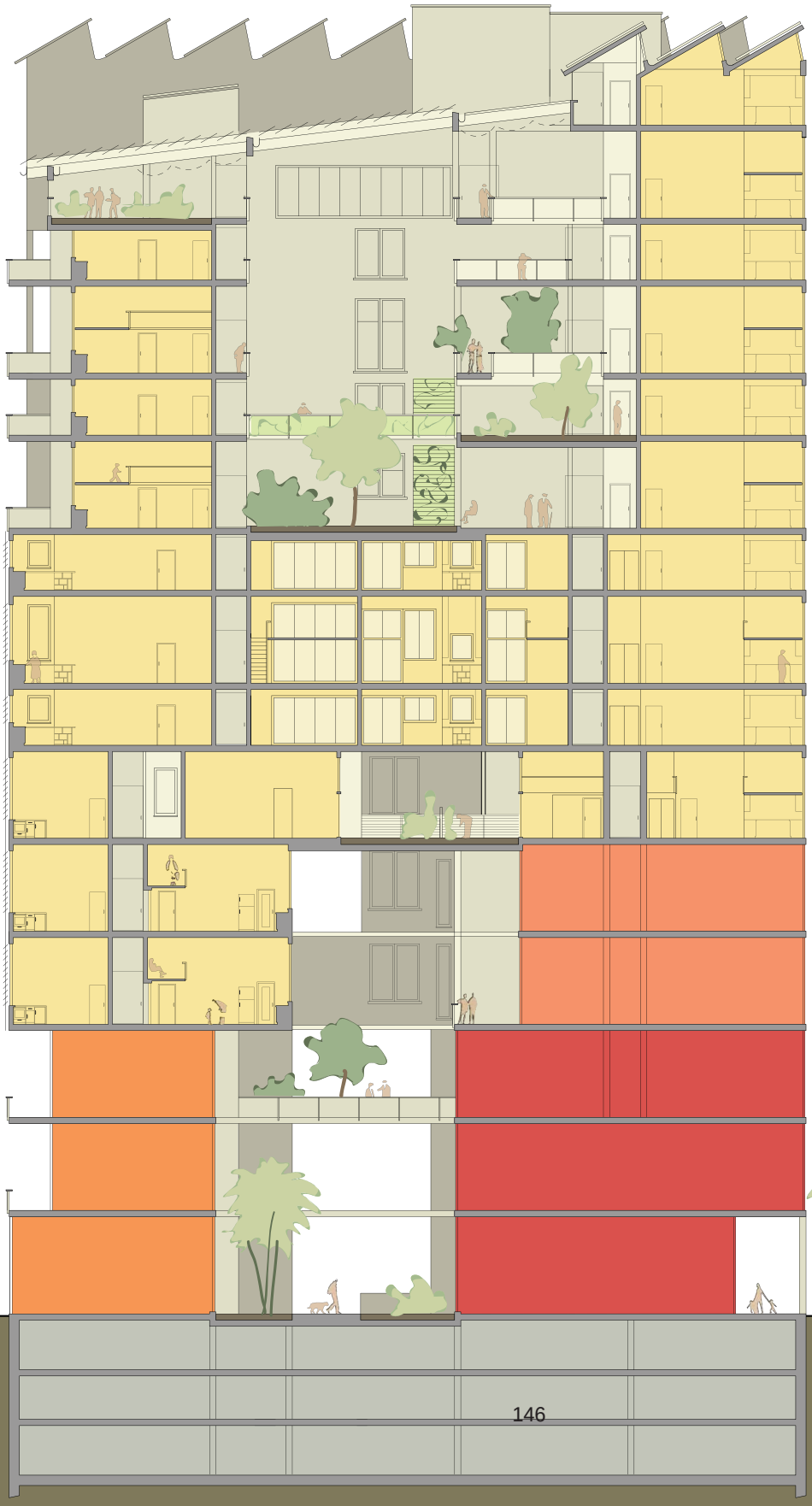


5.28 fifteenth floor plan
scale 1:500



5.29 roof plan
scale 1:500

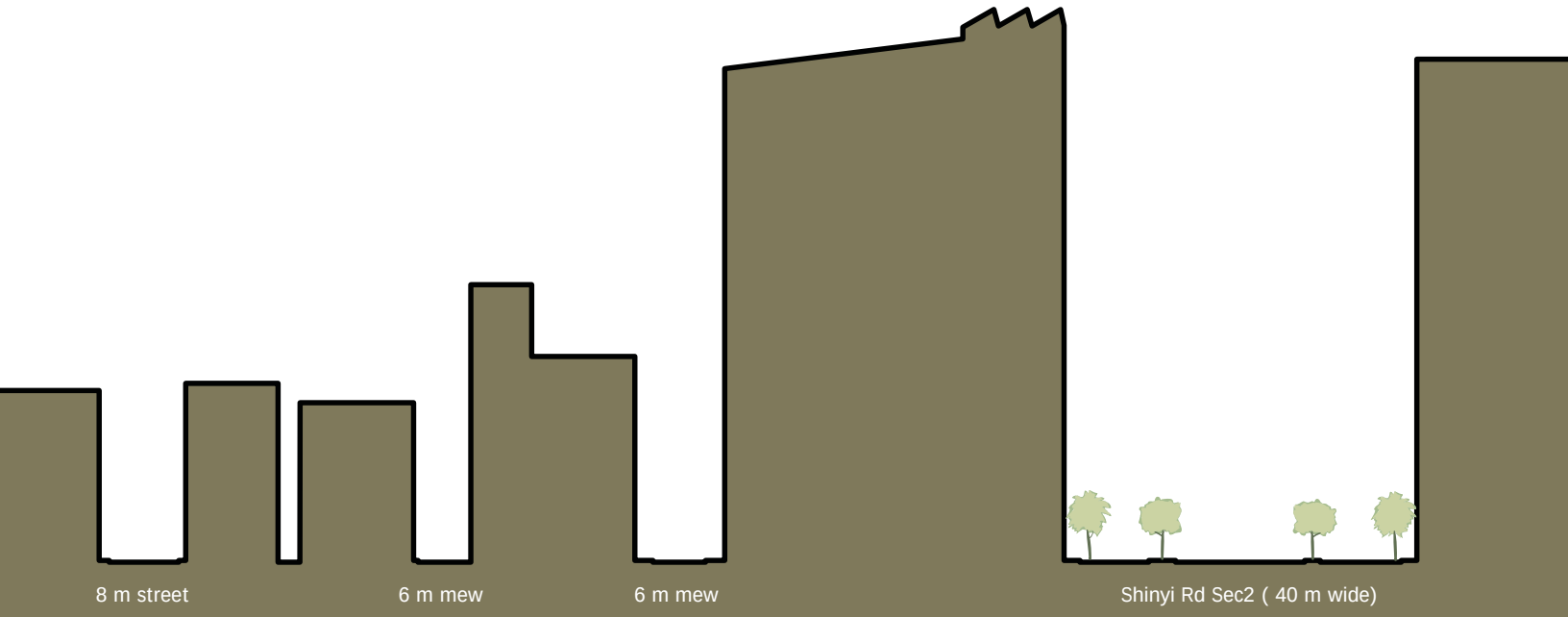
artery street commercial
office space
street house
condominium unit

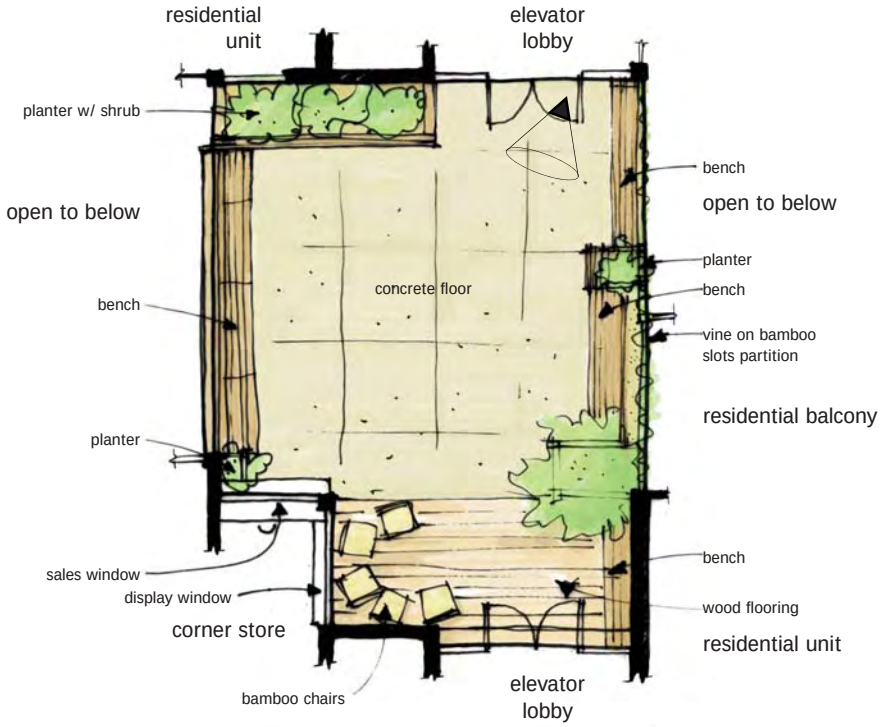


5.30 building section
1:400

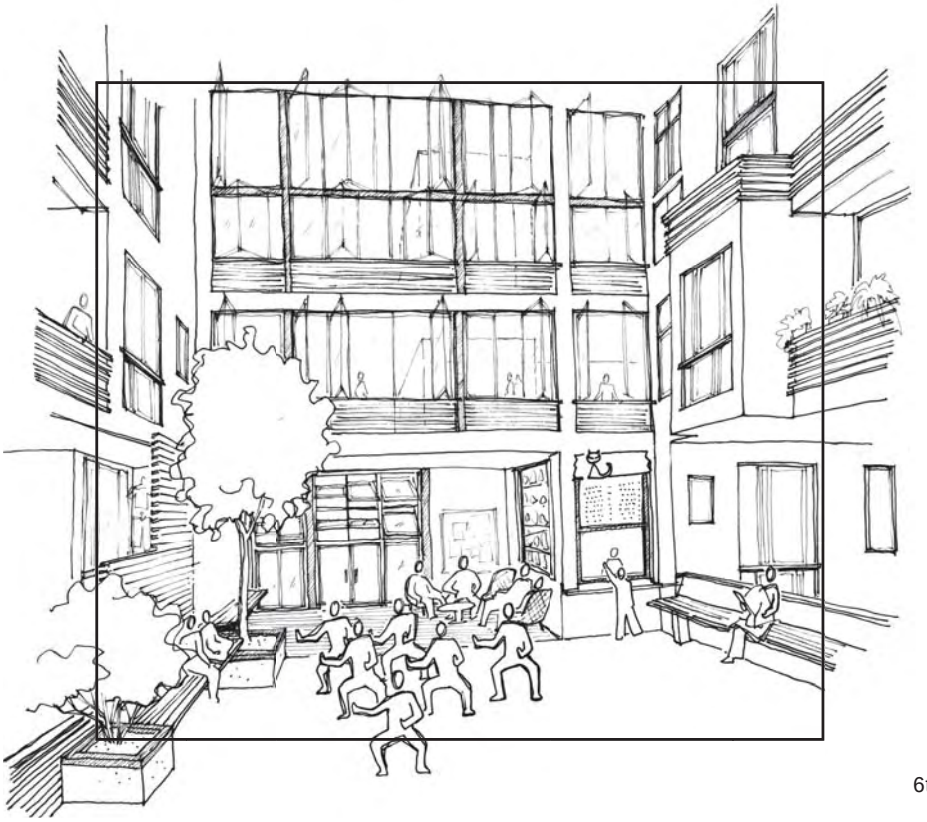
5.31 site section
[not to scale]

The scale of the proposed design is proportional to the major arterial road. The density of these large buildings make it possible to maintain the smaller scale within the city blocks of Taipei.





plan 1:125



perspective
6th floor - view 1 [see foldout floor plan]

5.32 plan and perspective of 6th floor courtyard

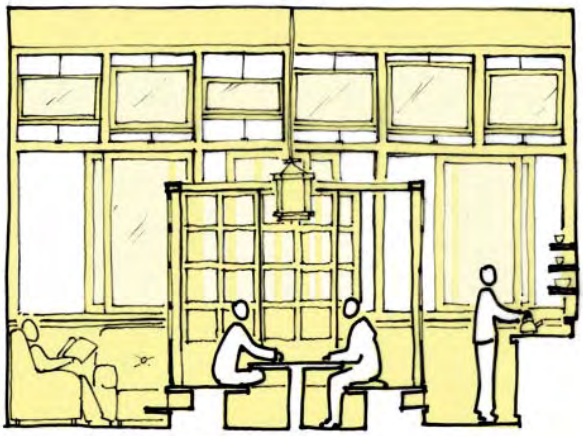
v-iii [M] the floor

The residents share the building facility as a community, which is further broken down by floor. Each floor is divided in half by the elevator core into two small neighbourhoods. The residents in each neighbourhood are connected together by a new ground plane.

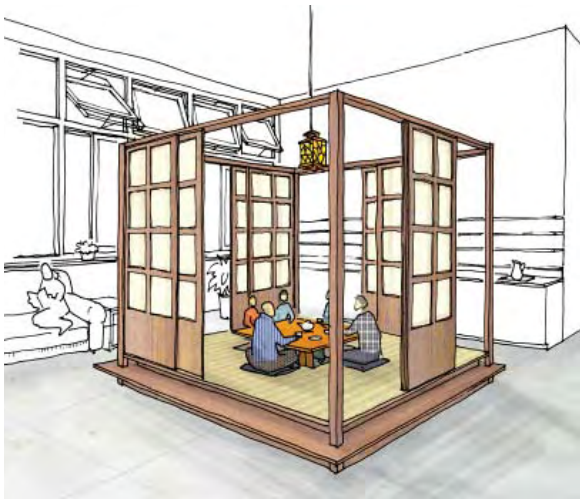
Each neighbourhood unit contains similar condominium typologies and thus operates their own cooperative committee for deciding how to best utilize their common spaces. Residents in similar units are more likely to have similar interests. For example, residents of the small units on the lower floors are more likely to want a shared kitchen and lounge. The students, singles and young couples can share meals, or at least have occasional access to a full kitchen. Residents from large families are more likely to eat at home. The common lounge might be used as a children's play area, a tea/chess lounge, or a movie lounge. The floor communities also own semi-private gardens or courtyards, which would be ideally maintained by the residents. The floor as a community may decide to treat their garden in different ways such as a floral garden, an herbal garden, or a paved courtyard with a few planters of large trees.

On each floor, the communal spaces are already designated as lounges, courtyards or gardens. Common lounges are located on the main circulation route for high-visibility and easy-access, so as to attract passers by. These lounges are semi-interior spaces which promotes interaction and a cooperative lifestyle among the neighbours. The courtyards or the gardens are semi-exterior spaces. A courtyard signifies a space for activities; paved and landscaped with plants. A garden is more secluded; it is a fully planted space with a few seats for solitude and reflection.

A building community with a complete spectrum of age groups is the most sustainable. Different age groups offer well-rounded staff to organize and administrate the floor and building committees. Seniors are more likely to volunteer for gardening and looking



section
not to scale



perspective
6th floor - view 2

5.33 section and perspective of 6th floor common lounge [tea / chess room]

perspective
6th floor - view 2

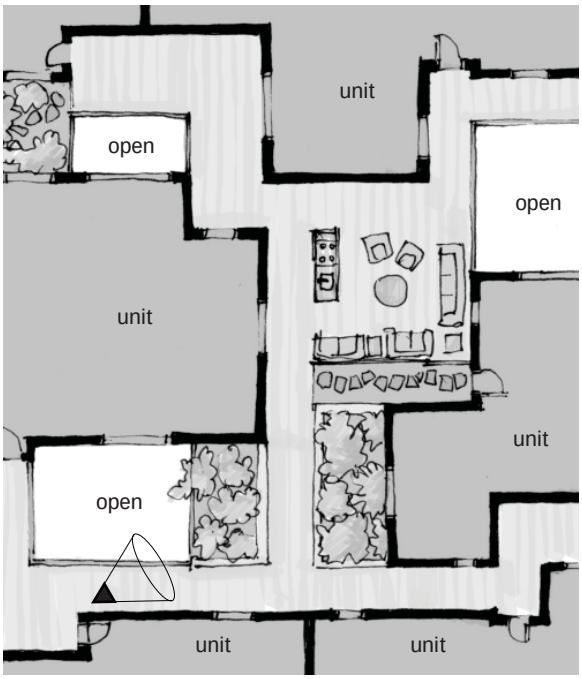
section 1:250

5.34 section and perspective of 10th floor common garden

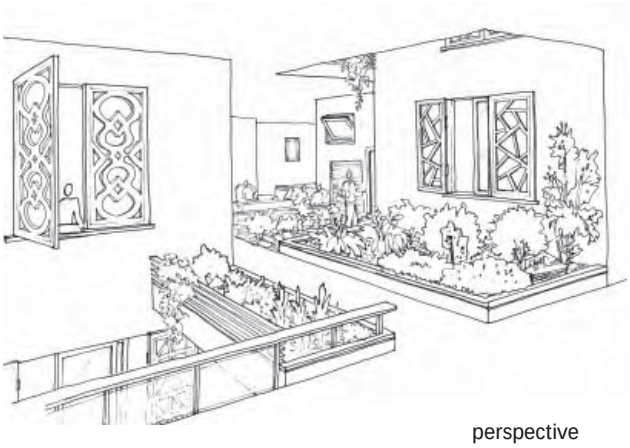
after the children. Seniors would also urge other community members to assist in building improvements. The younger generations would be helpful in administration which involves digital and internet skills. The building committee could oversees the usage and upkeep of the building facilities. They could also be responsible for community events and assisting in setting up activities such as *taichi* groups, book clubs or study groups within the building.

The sixth floor plan demonstrates the uses of common lounges (image 5.19). The floor is occupied by smaller units for 1 to 4 occupants. Therefore, each neighbourhood [right and left] has a common kitchen and dining area. As an example of multiple usages for the common lounge, there is a raised *tatami* tea room/ chess room (image 6.33) on one side and a movie lounge, with black, sound absorbing curtains, on the other side.

The sixth floor is also a special floor because it is the first fully residential floor. There is a semi-public courtyard connecting the two elevator cores, which can be accessed by all residents in the building. The courtyard is a larger activity space for the building community, ideal for *taichi* and aerobics groups. Another special feature of this courtyard is the opportunity for a corner store, where the children can buy popsicles and snacks, while the adults can pick up newspapers or daily condiments. There are two semi-public courtyards and several multi-purpose rooms. The courtyard is located at the first fully residential floor for its visual accessibility to attract traffic. The residents would drop in to interact with others. Whereas the multi-purpose rooms have specific functions and people do not enter unless they are going to use the particular facility, therefore they do not have to be as visible. The other semi-public courtyard equipped with barbecues is located on the 14th floor for better natural ventilation.



plan 1:250



perspective
10th floor - view 2

5.35 plan and perspective of 10th floor private garden

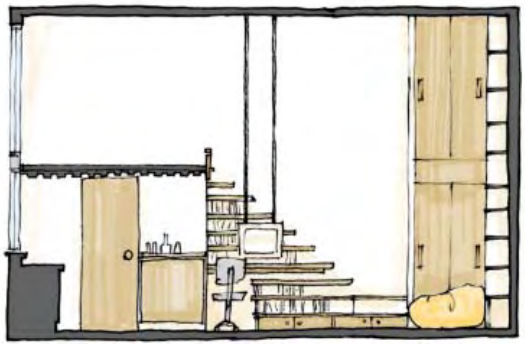
v-iv [s] the units

The unit number indicated on the floor plans refers to the unit matrix from chapter iv. There are minor changes to the dimension and entrance of each unit according to their orientation and structure. There are also units with more playful alterations. For example, the E-3 unit just north of the West stair tower has a mezzanine over its private garden. The private garden functions as a light shaft bringing natural light into the common lounge and corridors (image 5.19 Sixth floor plan foldout).

The sample layouts demonstrate how to utilize different unit types. The compact design of studio units would be best equipped with built-in movable interior elements. For example, the folding dining table folds and retractable desk under the stairs give the unit a more spacious feel. The *tatami* mezzanine functions much like a oversized bunk bed (image 5.36). The large units offer the opportunity to have both the traditional living room and a family room (image 5.37).

mezzanine plan

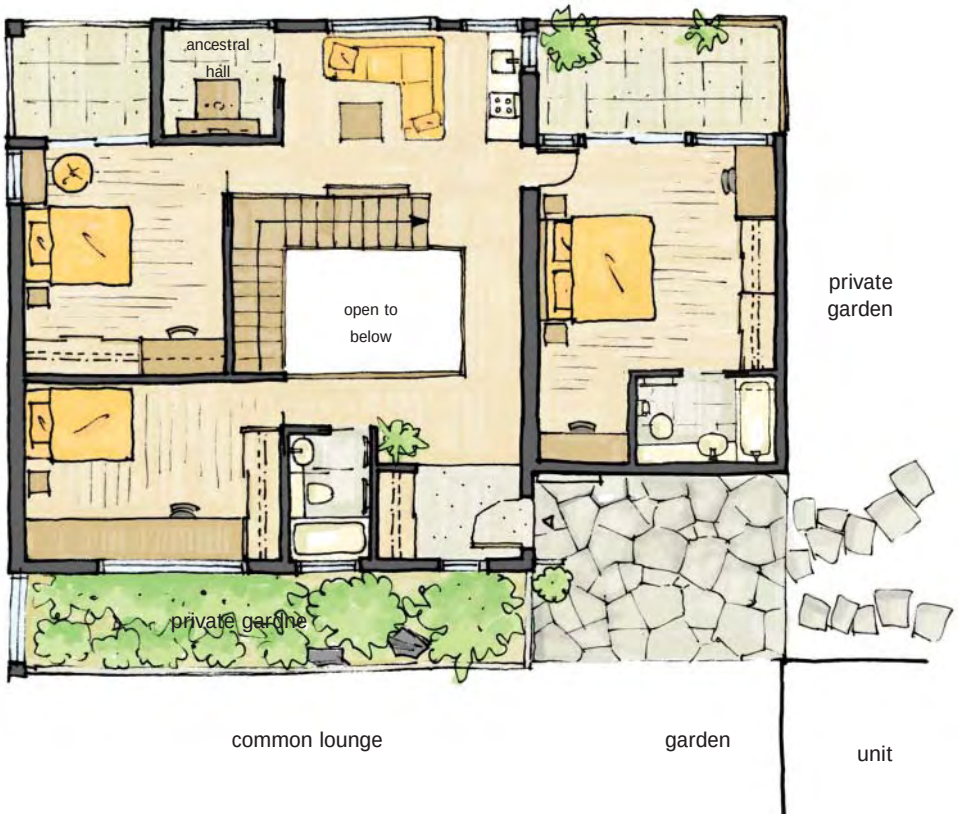
entry floor plan



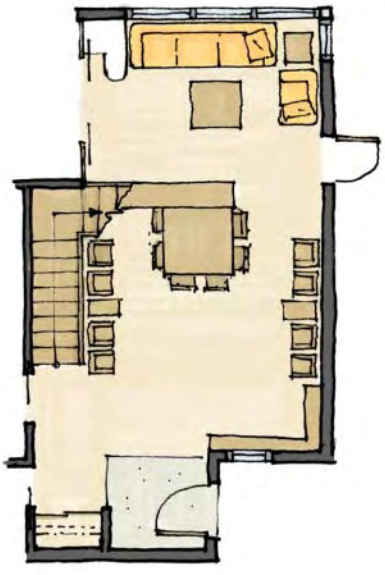
longitudinal section

cross section

5.36 sample plans & sections of unit E-1 [scale 1:125]

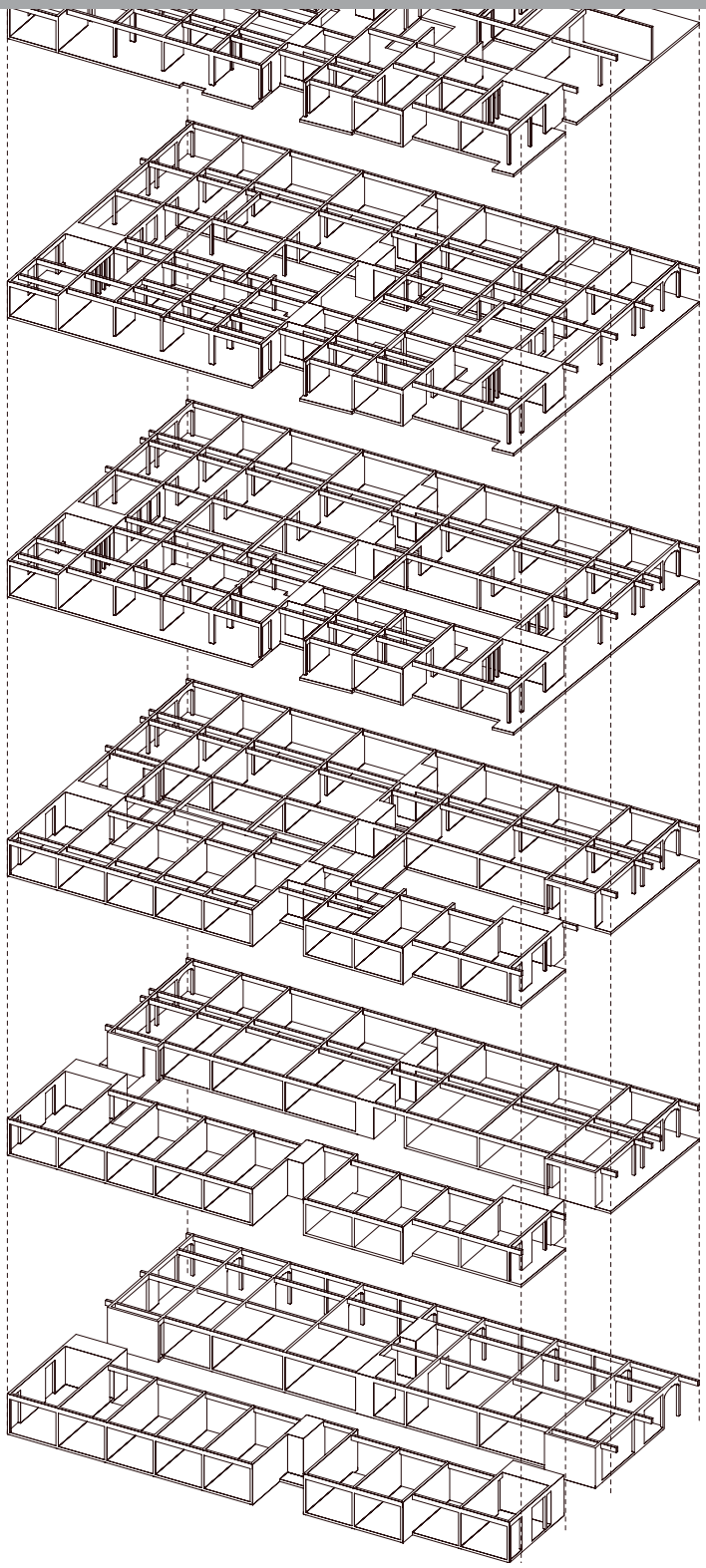


entry floor plan



alternative living room layout

5.37 sample layout of unit T-2 [scale 1:125]



5.38 exploded isometric structural diagram
not to scale

v-v other design concerns

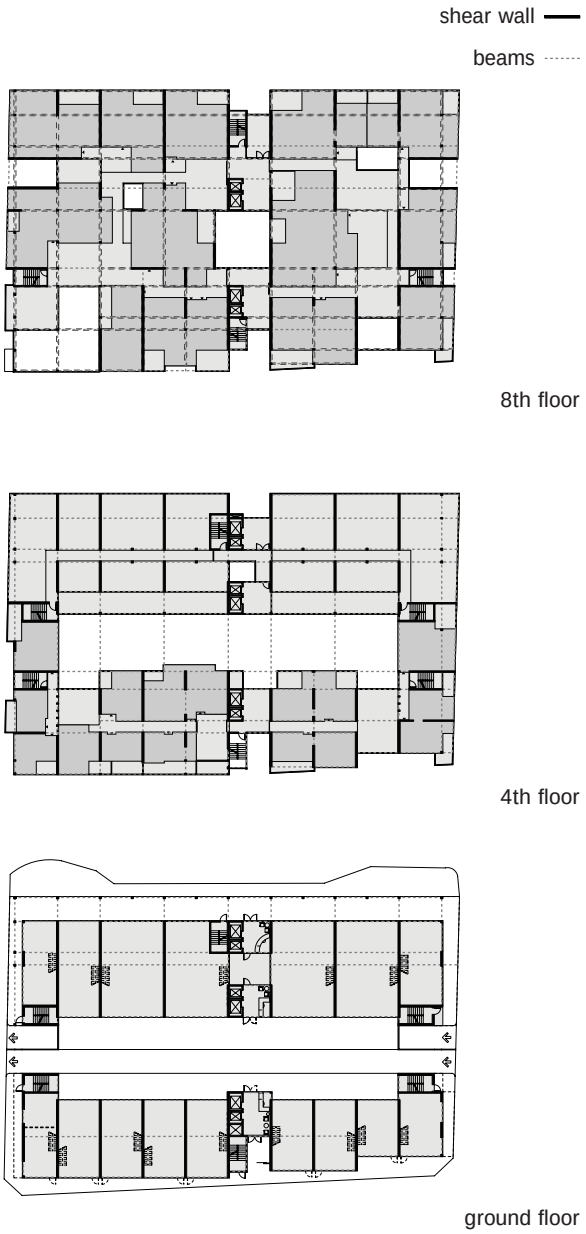
The objective of the design project is to create a sustainable community with groups of small cooperative neighbourhoods. The courtyards shift within the building to break down the monumental scale of the vertical village. Though the first priority is to implement the conceptual ideal of the courtyard condominium, there are several factors that should be considered simultaneously to create a feasible project and a comfortable living environment.

The two obvious issues that must be addressed for the concept of the condominium courtyard are: 1) a regular structure that supports the variety of condominium units and shifting voids, 2) positive economic and marketing value.

A comfortable living environment is essential to a good dwelling design, and is an excellent marketing tool. A comfortable dwelling is measured through weather protection, proper lighting and ventilation. For over twenty years, comfort in a dwelling in Taiwan is provided by technology such as air conditioning and fluorescent lights. Recently, the Taiwanese are beginning to prefer natural light and ventilation for comfort, economic and environmental reasons. The project is designed with full consideration for passive energy savings, natural lighting and ventilation; and it could be equipped as extensive self-sustainable dwelling.

structure

The design of the project utilizes reinforced concrete construction, which is common for residential projects in Taiwan. The shear wall system lies on two grids of different spacing to accommodate the two different scales of the urban fabric. The two grids overlap on the upper floors. Since the building is long on the x-axis and short on the y-axis, the shear wall system is dominant on the y-axis and only secondary on the x-axis (perpendicular to the exterior wall) in preventing bending. The slabs are an integral part of the structural system and prevents twisting.



5.39 structure diagrams

5.40 street perspectives

financial aspect

A theoretical project which aims for humanity over profit and efficiency is generally unacceptable for developers. Additional shared semi-private spaces will lower the profit per square footage, unless the developer promotes and sells the project as luxury high-end commodity. The project has the potential to be an urban mansion, but that is not the intent of the design concept. The ideal is to provide a vernacular living environment for the average Taipei citizen in a dense urban fabric.

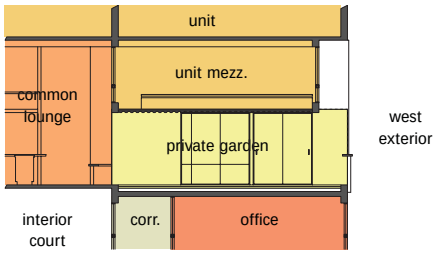
The design project is economically feasible in comparison to current developments, under the particular site condition of the design project for the following reasons:

1) The commercial frontage on Shinyi Rd. is very valuable, so are the office spaces above. Most developments tend to treat the back alley as unusable space. It is usually fully paved, or landscaped as a residential entrance and docking spaces. The project utilizes the ground floor to its full extent. The street houses in Daan District are very marketable and valuable, which would be a large extra profit for the developer.

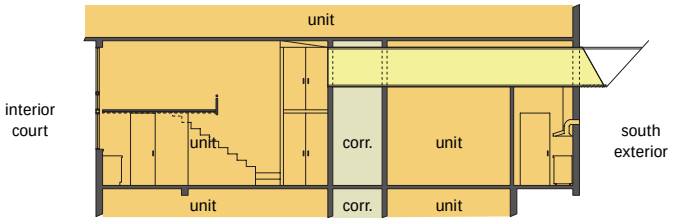
2) The porous structure as proposed by the design project will be as economically efficient as is the current practice. On Shinyi Road, the condominiums are commonly laid out as very deep double loaded corridors. Other developments have point towers on top of commercial skirts. On this specific site, the building depth is too wide for one double-loaded condominium and too narrow for two. Point towers offer more exterior façades, but at the same time, they are more expensive structurally and much space is taken up by stairs and elevators. Thus, the proposed design can sustain as many units as the double-loaded corridors or the point towers.

3) Taipei citizens have been demanding a better community and improved living environments. The idea of leisure and green space before one's doorstep is attractive and marketable. The vertical vernacular project aims to promote the implementation of this new typology as a new trend for urban residences, without creating another price heist in Taipei real estate.

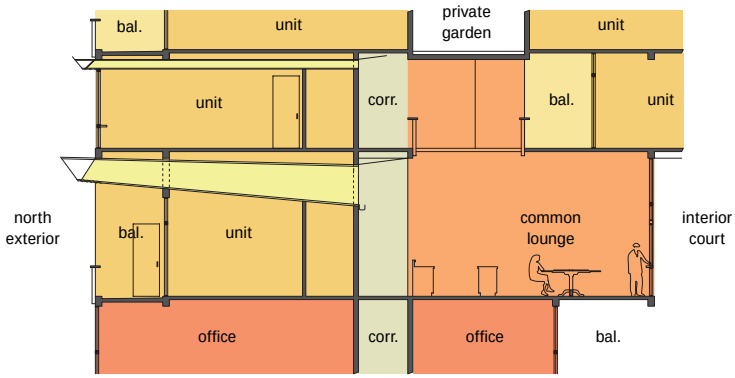
5.41 residential development at the corner of Shinyi Road & Xinsheng South Road; [bottom] the back entrance



section a-a
thru 6th floor west wing



section b-b
thru 6th floor south wing



section c-c
thru 6th & 7th floor north wing

5.42 examples of light shaft and light tube in the design project

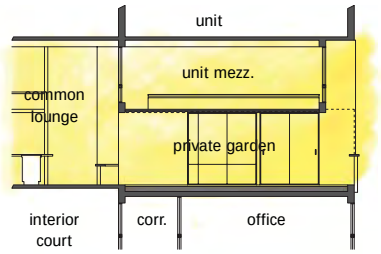
light

Natural light is a tricky issue in sub-tropical climate. Abundant sunlight is associated with solar heat gain during the long summer season. Projects which use full wall glazing result in fully drawn curtains and an air conditioned interior. Many other projects are deep, dark and rely almost completely on artificial lighting.

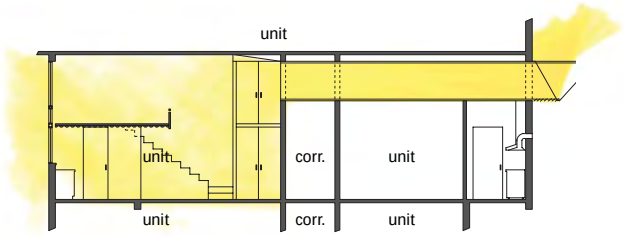
Natural light is an integral part of a pleasant living and leisurely environment. It is also an essential part of passive energy saving. The proposed design aims to utilize natural light for both the residential units and the common spaces. Semi-private and private gardens and balconies punctures the building mass to bring in natural light. There are also large light shafts at the mezzanine level and light tubes to deliver natural light to the common spaces, corridors and units. (image 5.35, 5.37)

Taipei is one degree north of the North Cancer, therefore the sun travels almost exactly East to West in the centre of the sky during the summer. Units facing north and south can enjoy lots of glazing with ambient light. Retractable overhangs can reduce ambient heat gain in the summer while bringing in light in the winter. The eastern and western units on the upper floors need external blinds to avoid direct sunlight and too much heat gain in the summer. The internal units will get natural light from openings into courtyards, gardens and other open spaces. The soft light will not be able to penetrate as far into the units, thus there are light shafts and tubes reflecting natural light into the darker corners. While these units would be comparatively darker, they would be cooler and their views to the courtyards would also be enjoyable.

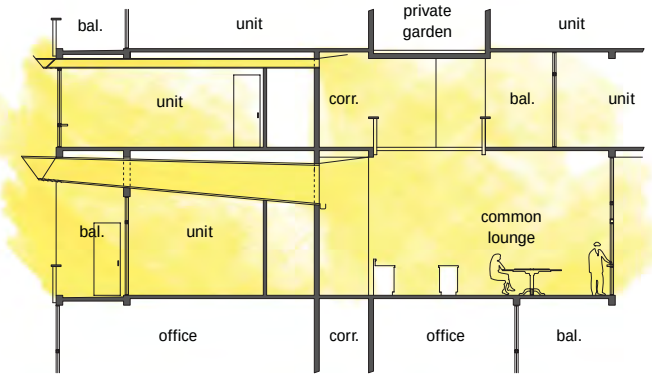
Digital lighting simulation software, Desktop Radiance, is used to visualize and simulate the natural lighting condition in each courtyard and common space. The goal is to keep the luminance over 300 lux in the mid winter days. Revisions were made to the floor layout accordingly. The courtyards would also have external blinds and movable canopies to prevent heat gain in the summer.



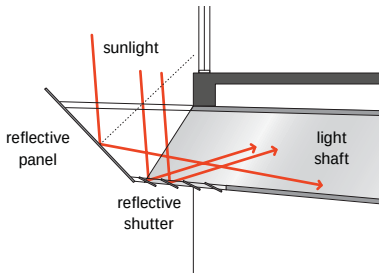
section a-a
private garden as a light source to the common lounge



section b-b
large 1.2m x 4m reflective light shaft at mezzanine level
providing natural light to interior units



section c-c
30 cm dia. reflective light tube on 7th floor & light shaft on
6th floor providing natural light to the common lounge



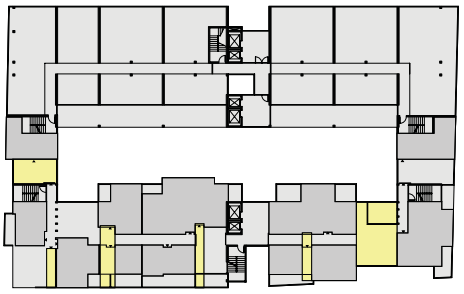
light shaft detail

5.43 two dimension lighting diagrams

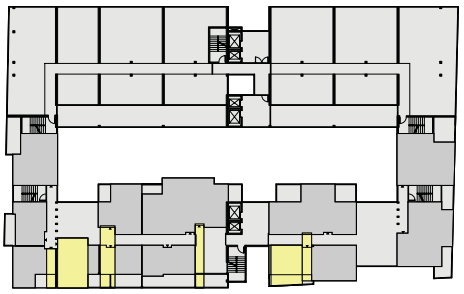
5.44 light shaft and light tubes throughout the building

The commercial floors has 4.5 m high ceiling. On an even residential floor [6,8,10,12,14], the ceiling height is also 4.5 m. The light shaft create bulkheads or dropped ceilings over an entire room. On the odd residential floors [7,9,11,13,15], the floor height is only 3 m. They do not accommodate mezzanines or light shafts. The light tubes are reflective circular tubes, 30 cm in diameter. These could be exposed or covered inside residential units.

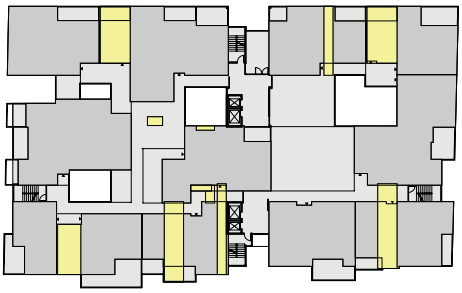
6th floor



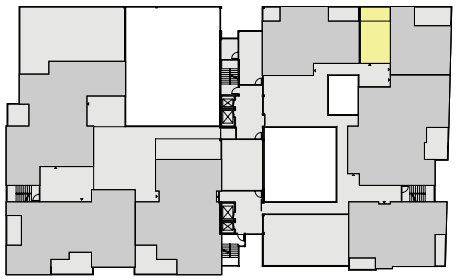
5th floor



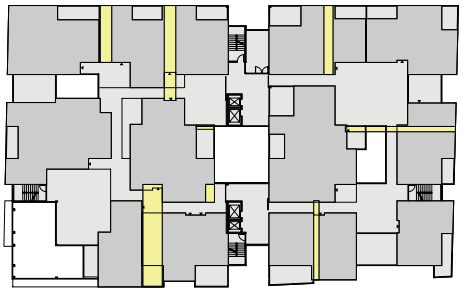
4rd floor



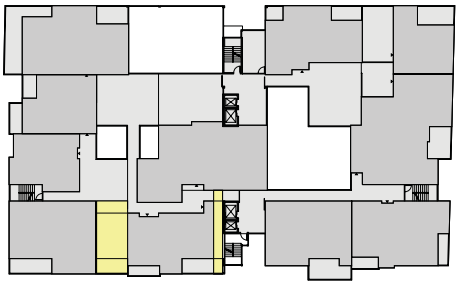
10th floor



14th floor

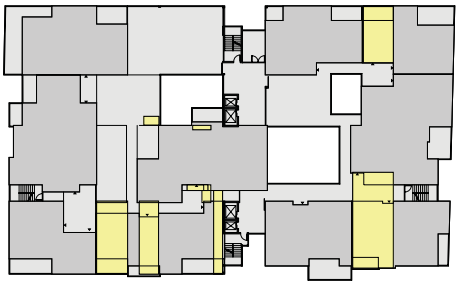


9th floor



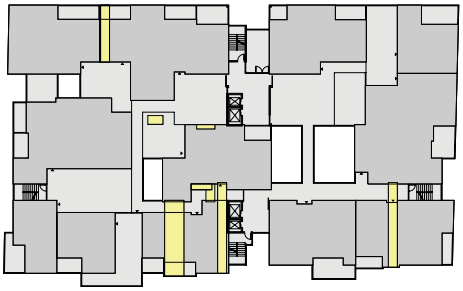
13th floor

8th floor



12th floor

7th floor



11th floor

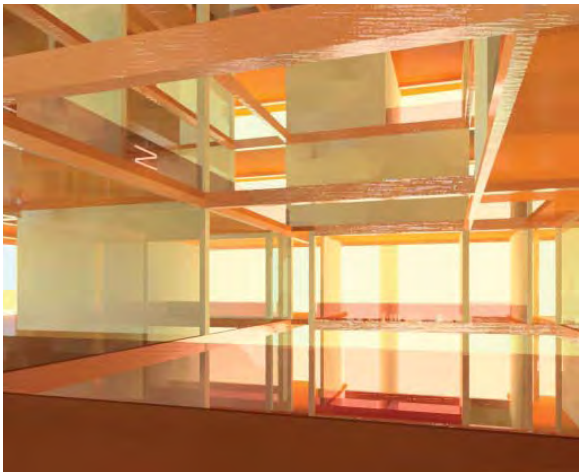
Image 5.47, 5.48 & 5.49 are different Radiance simulations. The light conditions are simulated under these parameters:
location: Taipei, Taiwan. Lat. 24°N, long. 121°E.
turbidity: 2
time: January, 15. 3 pm.
light bounces: 25
materials: polished concrete driveway, eggshell painted walls, wood flooring & ceiling, glass railing.

5.45 Desktop Radiance light simulations - luminance

Desktop Radiance is capable of simulating the realistic effect of light rays bouncing off surfaces, refered to as 'global illumination'. With global illumination*, it is possible to take into account the light coming through light shafts and light tubes. Luminance simulation calculates the visual effect of light rays bouncing off surfaces. These High Dynamic Range Images (HDRI) contain a wide range of exposures within a image similar to camera film. The light analysis model also includes the surrounding building to produce realistic values.

* To save computing time, the common practice is to define the number of light bounces. If the light value does not increase with the number of light bounces, then it has reached the state of global illumination.

ground floor- view 1



3rd floor - view 1

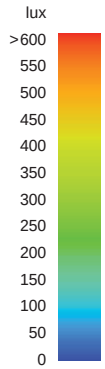
5.46 Desktop Radiance light simulations: illuminance

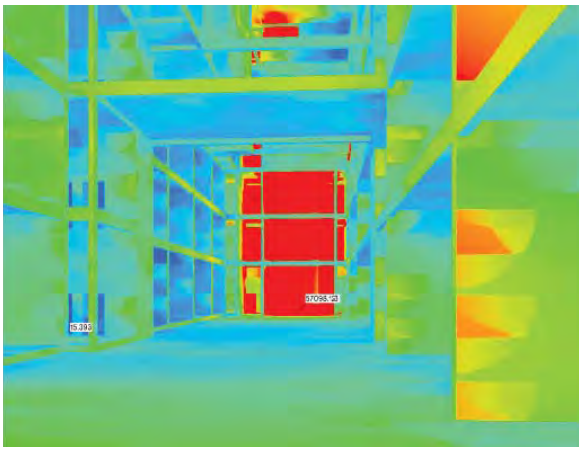
Illuminance simulation in Desktop Radiance calculates the amount of light hitting on a surface. These illuminance renderings do not represent the visual appearance of the particular spaces. It measures the brightness of surfaces, which is important for activities such as reading and cooking. Please note the light level at table height would be higher than on the ground.

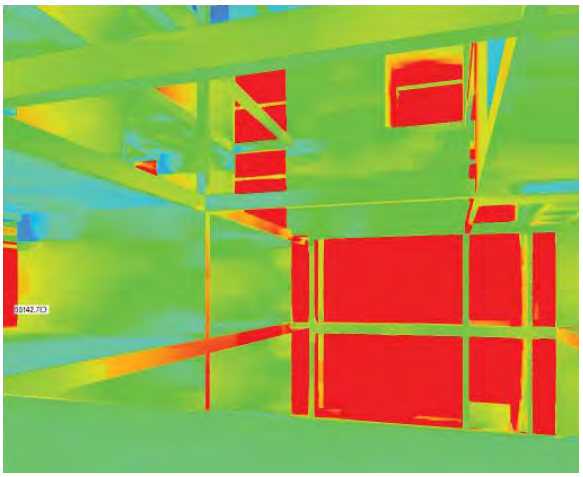
5.47 Desktop Radiance light simulations: false colour

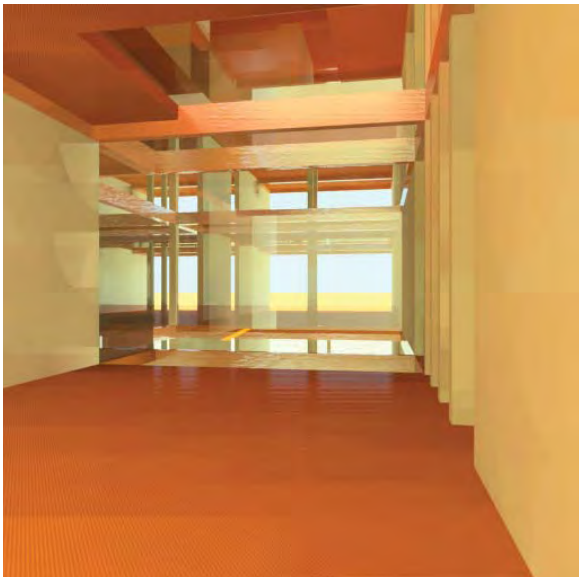
The false colour analysis is derived from illumination renderings. These image-based graphs provide accurate values of the quantity of light on particular surfaces. The values shown are the lowest level of natural light in the year.

According to *U.S. Energy Sciences*, illumination level of 150 lux [turquoise] is appropriate for 'working spaces where visual tasks are only occasionally performed', such as the lobby.
'Performance of visual task of high contrast or large size', such as magazines and newspapers, requires 300 lux [green].



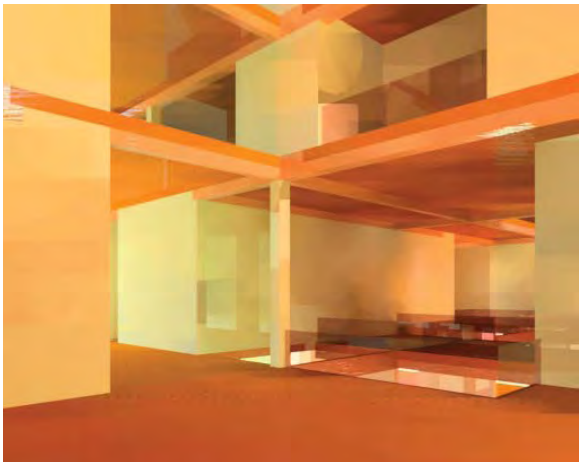




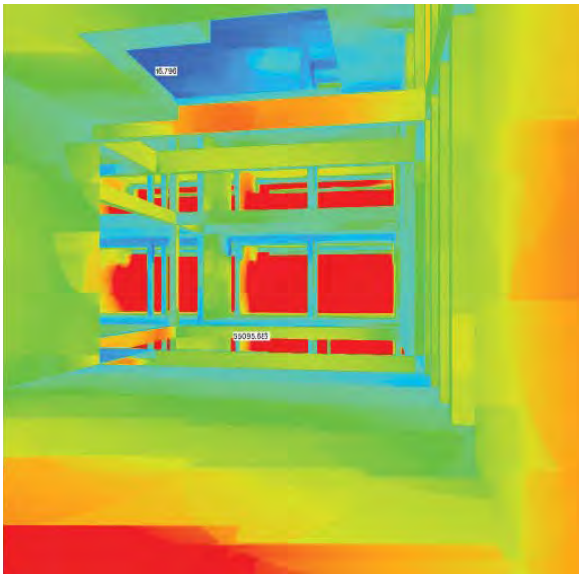


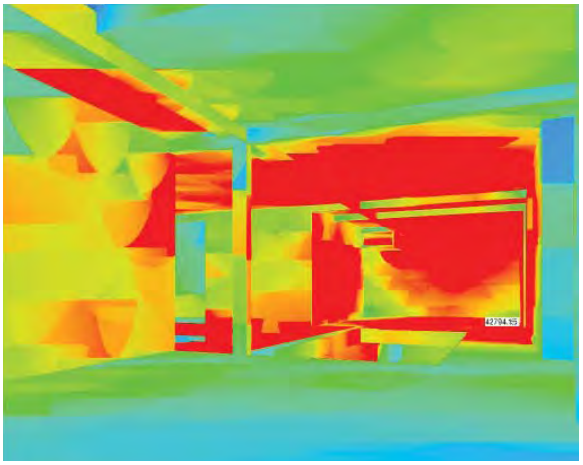
4th floor - view 1

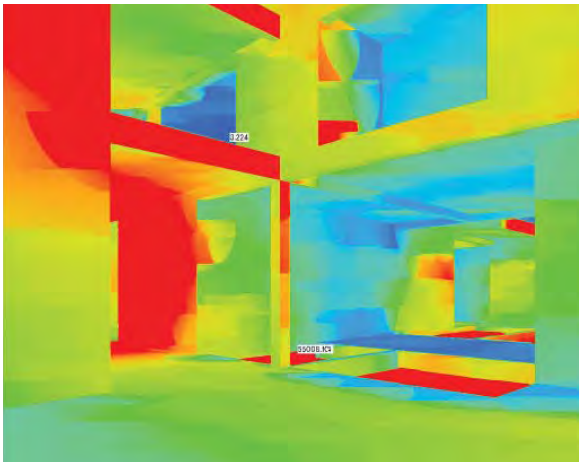
6th floor - view 3



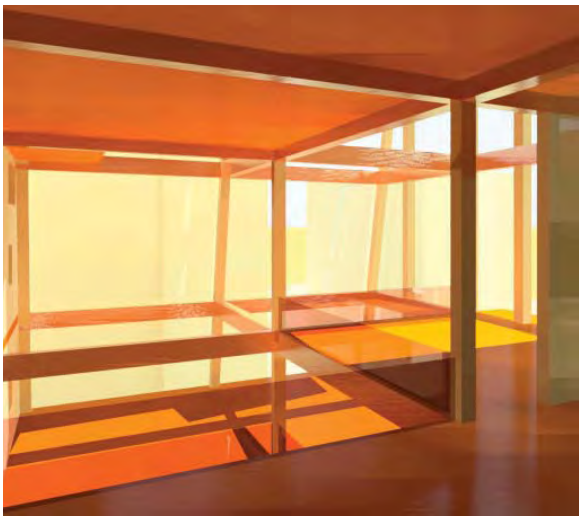
6th floor - view 4



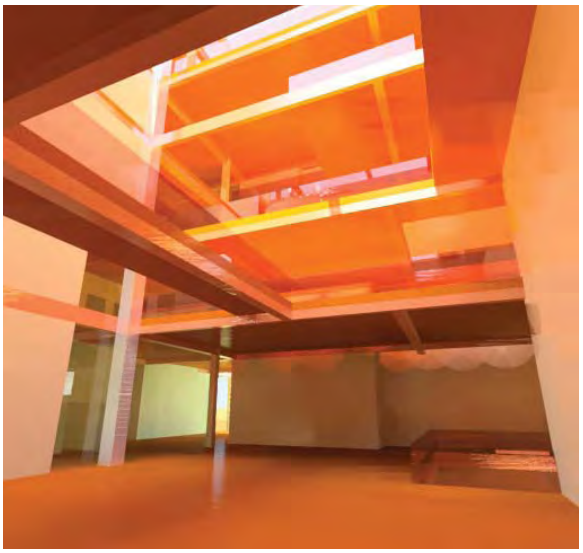




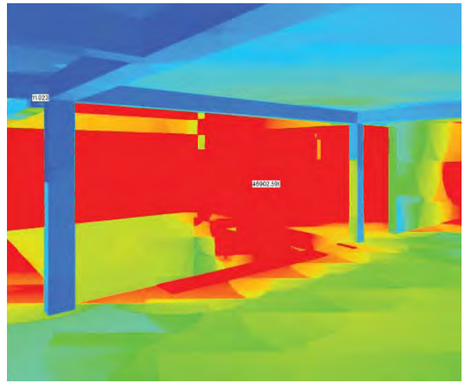
7th floor - veiw 1

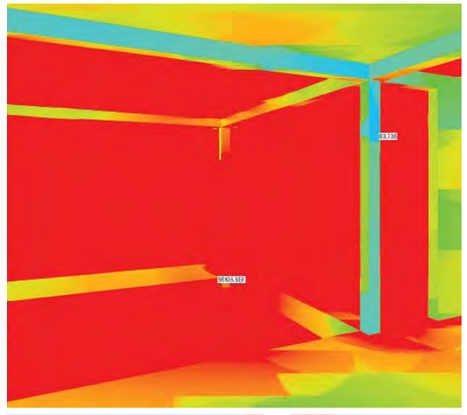


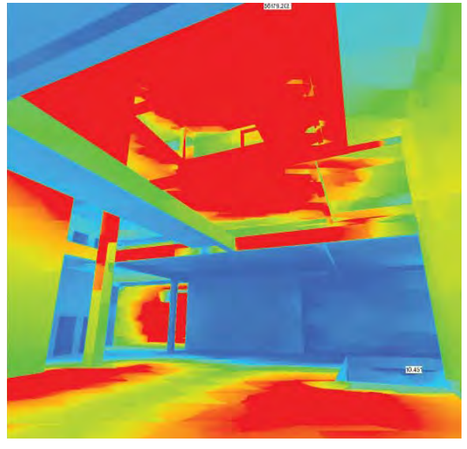
8th floor - veiw 1



10th floor - view 1







6.50 Taiwanese vernacular windows

ventilation and weather protection

Taipei is in the sub-tropic climate zone where heating and cooling is not necessary throughout the year. Taipei averages 30°C during July and August. The city reaches 36°C during the hottest days and cools down to under 25°C during the nights. However, Taipei citizens are used to condominiums with bad ventilation; therefore most residents depend on air conditioning in the summer. During January and February, the average temperature is 15°C. The temperature fluctuates greatly during the winter due to global warming. Some days were as hot as 30°C in February 2005, while the coldest day was 7°C. Most dwellings do not have heaters, so the residents dress warmly during the winter.

In the proposed design, the large punctures of gardens and light shafts throughout the building keep the interior courtyards well ventilated. There are window openings to the interior courtyards and corridors, similar to the vernacular Taiwanese windows (image 5.47). The windows have two operable layers: The outer layer of patterned or ornate fenestration obstructs view and provides security while letting air through, and the inner layer of frosted glazing completely blocks the view, noise and air, providing a fireproof enclosure. The design provides cross ventilation for the residential units. The cool air from the interior courts can drift through the units and flush out the hot air from the high windows toward the exterior.

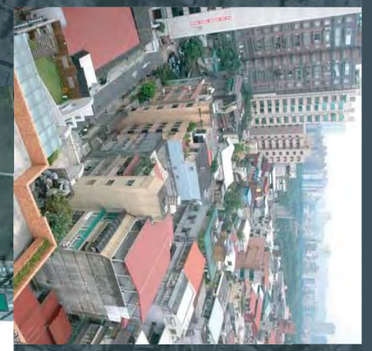
By avoiding direct sunlight and providing cross ventilation, there should be no need for air conditioning in the summer. Since Taipei is very humid, heat exchange devices such as desiccant wheels are recommended over air conditioners. By extracting the moisture from the air, the moving air feels much cooler to the human senses. Desiccant wheels use less energy and do not create pollutants such as coolants for air conditioners.

While heating or cooling is not necessary, protection from storms and typhoons is essential for a comfortable dwelling in Taipei. The exterior envelope of the residential floors is completely clad for weather proofing. The balconies and gardens have fully operable single pane glazing, which can be secured during storms. This will prevent flooding and damage to the balcony and the units. The stairwells have large external blinds. The skylights (glazed roof) have operable vents at the upper end to let out hot air and induce air flow.

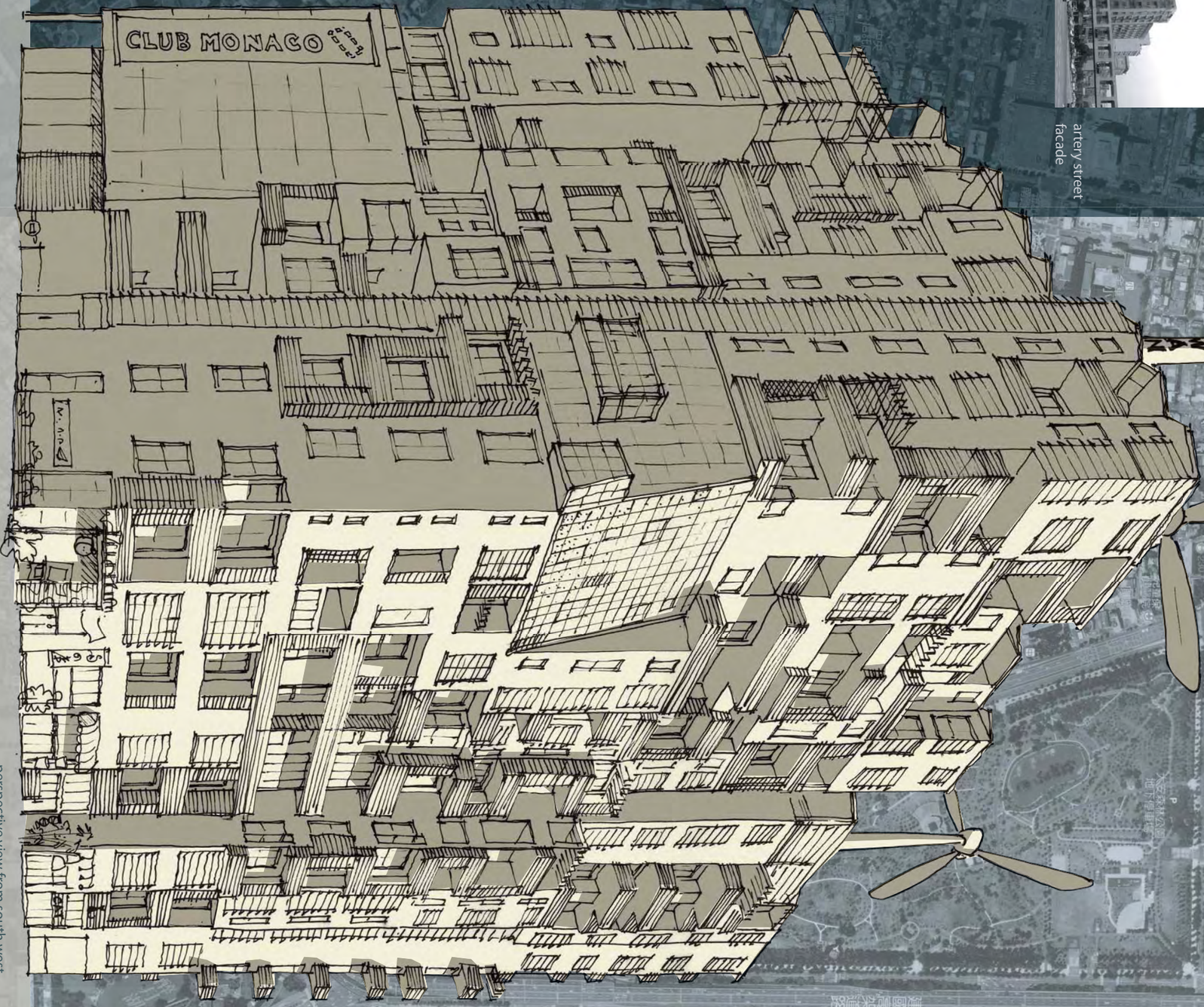
vertical vernacular:
learning from the past for a sustainable future

artery street facade

vibrant side streets



view to south east



perspective view from south west

Taipei , Taiwan

possibility for self-sustainable community

A city requires sub-cities and a rural network for its food and energy supply. A community in a city also depends on other communities for services, employment and recreation. The ideal of sustainable architecture is to create a community which is environmentally self-sustaining. The community would require minimal external energy supplies and it will output minimal waste. Sustainable architecture is often equated with vernacular architecture, since people were able to achieve low energy consumption and low waste with the vernacular lifestyle. However, it is impossible for us to return to the vernacular lifestyle, especially in an urban environment. Nonetheless, by learning from the vernacular architecture and lifestyle together with advanced technology in renewable energy, architects and environmentalists are closer to reaching this goal.

In a vernacular Taiwanese dwelling, the only fuel needed was for cooking and for lighting at night. Therefore, it is absolutely possible to achieve an almost self-sustainable energy cycle in residential architecture in Taiwan. The three criteria to achieve sustainable dwellings are: 1) good passive energy saving design, 2) environmentally minded residents, 3) utilizing renewable energy.

The proposed project designs for passive energy in lighting, ventilation and cooling. The light shafts and tubes utilize an optimal amount of natural light. Cross ventilation creates fresh air movement. Moreover, the cool air from the inner courts provides day and night cooling. With the recycling and kitchen waste collection program in Taipei and environmentally minded residents, the building can achieve a low refuse waste emission.

During the initial design stage, the design project, “Vertical Vernacular”, was considered and revised for a complete self-sustainable energy cycle and minimum waste emission. The project was submitted for the Advanced Architecture Contest at Institut d’arquitectura avancada de Catalunya in Spain, with the following description:

As our technology advances, our lifestyle has become more and more unsustainable. Our built environment is almost unbearable without the use of nuclear energy, chemicals and enormous landfills for our waste. Our daily routine involves long drives work, play or running simple errands. The phenomenon of suburbia is spreading around the globe and creating a heavy burden on the Earth and on our psyche.

Our technology should aid us in maintaining the Earth, not in destroying it. High-density urban environments are the solution for a sustainable living style where our daily amenity could be reached by walking, biking and public transportation. However, the city has always been painted as unhealthy. Many world-class cities have experienced crises such as blackouts, water shortage, and shortage of landfills. If we can find a solution for healthy, self-sustaining urban residences, we are one step closer to live in harmony with nature.

I have chosen my site to be in a dense, commercially and culturally vibrant part of Taipei, the capital city of Taiwan. With the pleasant weather of Taiwan, where neither heating nor cooling is necessary, a self-sustaining project is entirely possible. The site is in the vicinity of the National Taiwan University, and within walking distance of two subway lines. The building faces north, onto a 40 m wide major arterial road that is lined with brand name storefronts and monumental façades. The particular city block is famous for its vibrant lives within the allies, with small cafés and restaurants. The south façade faces an 8 m wide local street with high potential for ground floor commercial. There is an elementary school on the Southwest corner and public parks nearby. My design includes a 5-storey commercial floors (2-storey storefront and 3-storey offices) facing the arterial road, 3-storey townhouse units providing the opportunity for the residents to live on top of their stores, and 15-storeys of residential units, containing 127 units, with a range of studio, bachelor, 1-bedroom to 5-bedroom unit types.

Vernacular Taiwanese courtyard housing is my solution to an environmentally, socially and culturally sustainable future. The courtyard encourages a communal and social living style and it acts as the nucleus of the environmental microcosm. The courtyard is the key element in the design for natural lighting, ventilation and cooling. The plants and living walls in the courtyard create pleasant spaces, while filtrating air and water for a healthier environment. The building is almost a self-sustainable after the first cycle, with the exception of drinking water supply and refuse waste.

Electricity, water, and gas are the three resources that are needed to maintain a comfortable and modern lifestyle. The first step toward sustainability is to reduce the usage through good architectural design and environmentally conscious thinking. All appliances should be low energy consumption units. Unnecessary appliances such as dryers or dishwashers should be avoided. The vernacular courtyard provides a co-housing opportunity for smaller units. The community could share meals and cooking responsibilities, for a sociable, healthy and energy efficient daily routine.

6.1 [foldout] self-sustainable competition entry - panel1

floor to floor height: 3 m
15th floor plan

floor to floor height: 4.5 m
mezzanine optional
14th floor plan

floor to floor height: 3 m
13th floor plan

floor to floor height: 4.5 m
mezzanine optional
12th floor plan

floor to floor height: 3m
11th floor plan

floor to floor height: 4.5 m
mezzanine optional
10th floor plan

floor to floor height: 3 m
9th floor plan

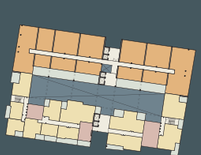
floor to floor height: 4.5 m
mezzanine optional
8th floor plan

floor to floor height: 3 m
7th floor plan

floor to floor height: 4.5 m
mezzanine optional
6th floor plan

floor to floor height: 4.5 m
5th floor plan

floor to floor height: 4.5 m
4th floor plan



floor to floor height: 4.5 m
3rd floor plan

floor to floor height: 4.5 m
2nd floor plan
similar without
centre bridge courtyard

floor to floor height: 5 m
ground floor plan

1:2000

floor to floor height: 4.5 m
mezzanine optional
6th floor plan

1:300

commercial
store fronts & offices

commercial/residential
townhouse w/ store fronts

residential
127 units range from studio to 2-storey 5-bedroom

communal green space
courtyards & gardens

common space
shared kitchen/dining, lounge, game room & tea room etc.

private garden

private balcony

courtyard on 10th floor

The building is powered mainly by the three wind turbines and supported by Glass Integrated Photovoltaics [GIPV]. There are two separate water systems, the drinking water comes from the city, and the rest is supplied through rainwater collection and bio-treated greywater. The greywater is filtered through a series of courtyards and livingwalls. The blackwater(sewage), together with compost from the kitchen, would be collected and treated in an anaerobic digester. BioMethane generated in the anaerobic digester is then filtered and distributed for kitchen use, replacing natural gas (Methane). The carbon dioxide produced in this process is again filtered by the livingwalls throughout the building. The waste goes to a second stage of decomposing and becomes enriched garden soil. Geothermal Heat Pumps are used in providing heat for the anaerobic process. Tubular solar collectors are also installed over the roof for water heating. The hot water supply is supplemented by places where heat can be recovered, such as the wind turbine generator. All systems are integrated to reduce wasted energy.

Densifying the vernacular courtyard housing and adjusting for self-sustainability provides a new approach to design in the urban environment.

The self-sustaining collective residence proposal is a conceptual idea that will need to be further studied to develop into a feasible design. The following subjects would need to be analyzed in detail: 1) energy consumption and waste emission, 2) the amount of energy generation of each device on the particular site, 3) the structure, vibration and noise level of the wind turbine, 4) the filtration and deodorization of BioMethane. Having renewable energy devices would increase the initial capital for the development. It is hopeful that Taipei citizens will eventually understand their long term benefits and push for a new standard of living.

6.52 [foldout] self-sustainable competition entry - panel 2

wind turbine

one 250kW + two 100 kW wind turbines
elevation: 105m, 90m, 85m
rotor dia.: 30m, 21m, 21m
Taipei ave. wind speed:

Wind turbine is the cleanest and efficient green power. The heat generated in the process could be recovered with coil of water for hot water to supplement the low solar season.

tubular solar collector & northern sky light

glass intergrated photovoltaic: GIPV

GIPVs can achieve power generation, natural lighting and shading. It is very suitable for warn countries with abandon sun light.
The 600mm GIPV panels are operable for sun direction, heat evacuation, semi-protection in case of rain and storm.

GREEN: courtyards and living walls

The series of courtyards and living walls are vernacular social and culture elements that serves as an intergral part of the sustainable eco-system. They are the gray water treatment and air filteration system.

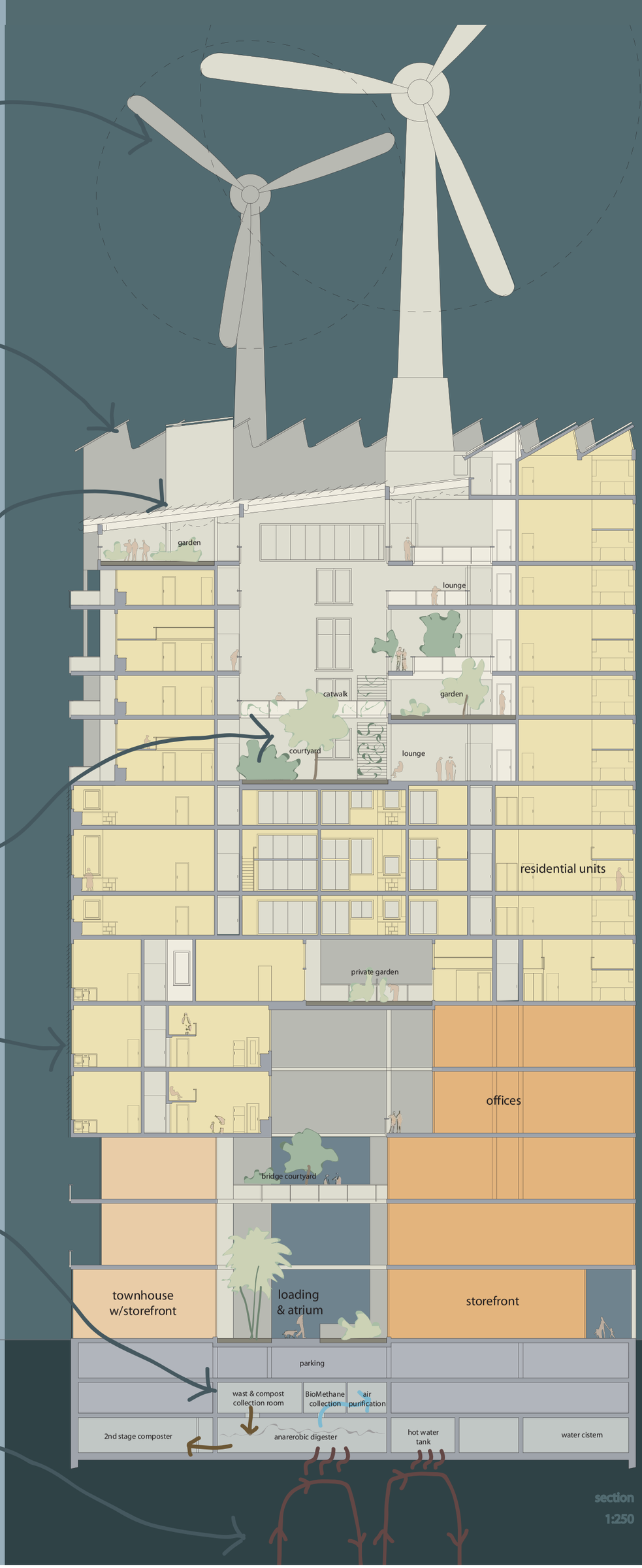
External Shutter

BioMethane: human waste and compost

The nature process of decomposting organic waste produces methane and carbon dioxide. By speeding up the process in the anarerobic digester, a large amount of BioMethane can be generated. After filtration, methane is distrubuted for residential use, mainly the stove. The carbon dioxide is filtered through the living wall.

geothermal pumps

Geothermal heat pumps provide the heat to induce anarerobic digestion and to heat water.



section
1:250

v-vi conclusion

The application of the courtyard condominium prototypes on a real site project aids the refinement of the theories. The design project represent the thesis in creating a vernacular environment within a vertical village. The courtyard identifies with the Taiwanese cultural and social behaviour; it transforms the densest condominiums into friendly, pleasant and healthy living conditions. The proposal is to prove and promote an ideal, that all the residents of Taipei City will eventually be able to lead a vernacular and modern lifestyle, within a pleasant and healthy environment in an urban setting.

5.51 [foldout] self-sustainable competition entry - panel 3

[conclusion]: the Courtyard City

I believe the Vertical Vernacular project has incorporated the essence of Taiwanese vernacular architecture in such a way that renders the condominium a sustainable community both culturally and socially. The idea of vernacular culture is not a particular tradition, ritual or religion. Traditions change through time, as evolution is part of the human society. The courtyard condominium is not about re-establishing traditions and rebuilding the ancient layout. It is an evolution of the imported condominium typology, to reflect the vernacular values that are important to the residents, and to improve the community environment within the high-density residences. Lessons are learnt from both the current condominium and the vernacular dwelling. This new typology has the capacity for the continuity of cultural and social evolution. The new community around the courtyard is no longer bounded by blood relations; the building as a village is not bounded by a village guardian god. Nevertheless, like the old days, they are bounded by the courtyard, the stewardship for their living environment, and the pride of their community. The neighbourhoods of the courtyard condominium are not the revival of the old Taoist-based community. The residents will form a new cooperative culture that belongs to the multicultural urban centre of Taipei.

Taiwanese culture encompasses the various values of its complex heritage. The essence of the islander and the immigrant spirit is reflected in the vernacular communities where people from different origins are brought together by festivals and veneration committees. The sudden change of residential architecture due to modernization and urbanization creates a disjuncture between the vernacular way of life and the condominium

lifestyle. Many of the vernacular values endured the waves of westernization. Even in Taipei City, night markets still thrive, small vendors are at many street corners, and ancestral tables still have their place in crammed condominium units.

However, neighbourhood communities are lost, forced by the change of the physical dwelling. The neighbours do not share common spaces or activities; they don't even know each other. Recently, Taipei citizens have noticed the community deterioration in high-density residential neighbourhoods. Government efforts of community revitalization through green spaces and events are able to create a pleasant living environment at the ground plane, but it does not bring neighbours closer together, or initiate cooperation for the improvement of communities. There are definite connections between residential architecture and the lifestyle within. The relationship is most clearly witnessed in those who moved from vernacular dwelling types into condominiums. Through time, residents change the architecture to accommodate their habits and rituals, the architecture also alters their way of living. Since people have no control outside of their units, the condominium typology completely changes the social interaction between neighbours, and consequently the larger community and society.

Despite my conviction in the value of vernacular architecture as being applicable in the modern city, many believe that the future of Taiwanese vernacular architecture lies only in the preservation and renovation of its aesthetic. As I began the process of my design in Taiwan, May of 2005, I encountered the Blue Print, a bar renovated from a wooden street-house during the 1800s. I was genuinely intrigued by the exposed wood structure and the juxtaposition of steel reinforcement and glass partition. At the same time, I was completely lost in the enormous gap between vernacular dwelling and current condominiums.

I am not looking for an architectural style. Do people think the vernacular culture and lifestyle cannot coexist with the modern city? Yet I see it and hear it everywhere, as vernacular culture is a part of every Taiwanese citizen.

I re-evaluated the condominium at different scales: the unit, the floor, the building as a village and the neighbourhood. Each is compared with the vernacular architecture and considered under current priorities, many of which included traditional aspects. The unit plan should foremost accommodate different family structures, providing clear thresholds of public-private progression and a hierarchy of shared spaces. The layout of its components should reflect the customs and cultural activities of the residents. A floor is the smallest unit of a community, comparable to a vernacular courtyard dwelling compound. Similarly, the courtyard or common space, can establish a new ground plane on each floor, to establish visual connection, and encourage shared activities and cooperative lifestyle. The larger community of the condominium

building, is bonded together by the vertical street of the elevator core, with communal courtyard and facilities. The possibilities of scheduled activities and community events within the building offer an opportunity for a strong and identifiable community, like a villiage. The larger neighbourhood should also be socially and culturally sustainable, where daily errands, necessities and common cultural activities can be performed without a long drives. Ideally, a resident should be able to depend on walking or public transportation. The neighbourhoods of downtown Taipei generally satisfy this condition. Therefore, the revitalization of smaller-scale communities can provide a sustainable and pleasant living environment within the urban setting.

The Vertical Vernacular project, set in the densest district of Taipei, utilized the prototypes and criteria established for each scale of community. There are no promises one can make for a theoretical project. Even after a project is built, it often takes five, ten years or even longer to verify the success of a project, especially when the design aims for sustainability in any aspect. Can neighbours deal with quarrels of sharing a space, as in the old days? Research on cooperative sociology can further the preparation for community committees and education for the residents, as the right mindset is key to success of in cooperative housing. The Vertical Vernacular project is economically feasible due to its site condition and dimension. The concept of courtyard condominiums could easily adapt to other situations, such as a lower density, satellite city or luxurious urban mansion. To bring the project into reality, further studies will need to be made in lighting, heat gain, air movement, weather-proofing, material efficiency, and the appropriate size of the common spaces. Thorough simulations and projections from different perspectives and for different situations in the design phase would safeguard against the need for major modifications after the building is built or the complete failure of the concept. A successful architecture should withstand the test of time, in the function and maintenance of its physical entity and in sustaining the community within.

The dwelling has always represented the people within, and reflected the philosophy of the society. The trend for westernization has slowed down. At this time, the Taiwanese are in search of their own identity and grasping for their heritage. Taipei City would like to stand for both the contemporary and the vernacular. The idea of Taoist worship and the veneration festivals have become a symbol of culture instead of religion. Similarly, the urban dwelling should reflect the vernacular values not as rigid traditions, but as part of the current culture. The concept of the courtyard condominium tries to bridge the gap between the dwelling and the culture. Furthermore, its goal is to create sustainable, co-operative communities, which is the very spirit of Taiwanese identity. Taipei can become the courtyard city, where citizens are woven together by a series of communal spaces, and their love for their dwelling environment.

a-1 District Breakdown & Population

Date: January 2005
source: Household Registration Office, Daan District, Taipei City

administrative area		district 區數	li 里數	lin 鄰數	household 戶數	population 人口數	area km^2	density $/km^2$
Taipei City	台北市	13	449	9458	924978	2617694	271.8	9631
Daan District	大安區		53	1025	112480	312666	11.36	27523
Yongkang Li	永康里			10	1253	3572	0.1358	26303
Fuzhu Li	福住里			17	2086	6375	0.1469	43397
Jinan Li	錦安里			17	1924	5650	0.1777	31795
Longan Li	龍安里			17	3174	7723	0.1848	41791

a-2 resident status in Taipei City

Date: January 2005
source: Household Registration Office, Daan District, Taipei City

administrative area		population	male	female	citizen	non-citizen	% of non-citizen	native
Taipei City	台北市	2,622,472	1,282,151	1,340,321				11,295
Daan District	大安區	312,666	149,112	163,554	239,159	73,507	23.5	776
Yongkang Li	永康里	3,572	1,655	1,917	2,599	973	27.2	
Fuzhu Li	福住里	6,375	2,927	3,448	4,403	1,972	30.9	
Jinan Li	錦安里	5,650	2,701	2,949	4,046	1,590	28.1	
Longan Li	龍安里	7,723	3,844	3,879	5,818	1,905	24.7	

a-3 population by age group bracket

Date: December 2004
source: Department of Civil Affairs, Taipei City Government

Administrative Area		0-4	5-17	18-25	26-45	46-64	65+	total
Taipei City	台北市	133,010	430,883	299,941	851,704	620,460	286,474	2,622,472
Daan District	大安區	14,869	51,793	31,148	95,800	79,173	39,771	312,554
Yongkang Li	永康里	158	768	342	1,054	831	440	3,593
Fuzhu Li	福住里	443	1,444	575	1,949	1,429	612	6,452
Jinan Li	錦安里	321	1,184	497	1,698	1,336	660	5,696
Longan Li	龍安里	410	1,424	617	2,392	1,978	950	7,771

a-4 detailed population breakdown by age group of 5

date: January 2005
source: Household Registration Office, Daan District, Taipei City
unit: person

area	Taipei City 台北市	%	Daan District 大安區	%	Yongkang Li 永康里			Fuzhu Li 福住里		
sex					M	F	Total	M	F	Total
0	21,453	0.82%	2,160	0.69%	10	12	22	34	26	60
1 - 4	111,557	4.25%	12,709	4.06%	71	65	136	200	183	383
5 - 9	159,458	6.08%	19,736	6.31%	132	139	271	287	297	584
10 - 14	171,870	6.55%	21,237	6.79%	169	164	333	313	267	580
15 - 19	164,807	6.28%	17,803	5.69%	112	104	216	196	178	374
20 - 24	194,071	7.40%	20,070	6.42%	113	110	223	170	185	355
25 - 29	198,375	7.56%	20,585	6.58%	110	114	224	173	214	387
30 - 34	200,688	7.65%	21,894	7.00%	95	121	216	137	250	387
35 - 39	217,376	8.29%	24,909	7.97%	93	176	569	196	356	552
40 - 44	229,283	8.74%	27,124	8.68%	136	203	339	219	349	568
45 - 49	228,936	8.73%	26,916	8.61%	130	165	295	247	318	565
50 - 54	207,849	7.93%	26,300	8.41%	144	134	278	218	238	456
55 - 59	129,408	4.93%	17,886	5.72%	88	90	178	137	147	284
60 - 64	100,867	3.85%	13,454	4.30%	52	83	135	108	141	249
65 - 69	83,709	3.19%	10,848	3.47%	49	71	120	79	100	179
70 - 74	72,761	2.77%	9,562	3.06%	45	56	101	61	81	144
75 - 79	64,484	2.46%	8,980	2.87%	35	45	80	78	69	147
80 - 84	40,062	1.53%	6,091	1.95%	45	33	78	50	36	86
85 - 89	17,274	0.66%	2,900	0.93%	20	21	41	16	21	37
90 - 94	6,315	0.24%	1,070	0.34%	9	6	15	8	6	14
95 - 99	1,349	0.05%	231	0.07%	3	1	4	2	3	5
100+	520	0.02%	196	0.06%	1	0	1	0	0	0
total	2,622,472		312,661				3,875			6,396

Jinan Li 錦安里			Longan Li 龍安里		
M	F	Total	M	F	Total
31	22	53	34	20	54
153	115	268	184	172	356
255	211	466	299	286	285
233	249	482	315	267	582
160	160	320	155	169	324
162	161	323	208	195	403
162	169	331	225	245	470
136	216	352	218	285	503
169	268	437	290	369	659
215	310	525	297	407	704
220	244	464	373	315	688
210	230	440	291	338	629
141	174	315	254	227	481
127	97	224	170	154	324
75	104	179	115	111	226
80	68	148	94	91	185
69	66	135	119	92	211
58	53	111	88	74	162
35	32	68	49	31	80
7	8	15	35	11	46
2	2	4	17	11	28
0	0	0	12	0	12
		5,660			7,412

b-1 average family income & expenditure per household by household size

date: 2002
source: Taipei National Tax Administration, Ministry of Finance
unit: New Taiwan Dollar [NT$] [CAN$1 = approx. NT$26 in 2002]

household size	total/average	1 person	2 persons
no. of household	900,651	76,156	175,657
no. of persons	3,103,844	76,156	351,314
average household size	3.45	1.00	2.00
ave. no of adult/household	2.58	1.00	1.93
ave. no. of employeed persons/household	1.44	0.58	0.77
ave. no. of income persons/household	1.62	1.00	1.25
1. total reciepts	1,514,440	753,511	1,049,128
1. employee compensation	896,586	372,191	501,312
2. entrepreneurial income	182,151	70,720	86,679
3. net property income	127,261	84,354	124,020
1. interest income	54,250	45,939	61,515
2. investment income	31,404	18,202	29,174
3. others (actual rent income etc.)	41,607	20,214	33,332
4. imputed rent income	103,470	68,657	91,655
5. current transfer receipts	204,644	157,005	245,193
6. miscellaneous receipts	329	584	269
2. non consumption expenditure	282,053	145,863	186,116
1. interest	41,040	32,018	26,002
2. current transfer expenditures	241,013	113,844	160,114
3. consumption expenditures	951,978	463,586	704,505
1. food	196,608	76,285	134,698
2. beverage	8,284	4,731	5,652
3. tabacco	4,559	2,715	3,232
4. clothing & footwears	29,459	13,660	18,175
5. rent & water bills	255,755	181,094	236,925
6. hydro & fuel	20,663	10,547	16,051
7. furniture & equipment	17,388	7,831	14,970
8. household operations	23,470	15,318	17,154
9. health care & medical	89,221	32,290	75,462
10. transportations & communications	97,822	33,108	53,964
11. education & recreation	137,072	52,060	77,454
12. miscellaneous	71,676	33,948	50,768
disposable income	1,232,387	607,648	863,012
final consumption expenditure	951,978	463,586	704,505
savings	280,409	144,062	158,507
current receipts	1,605,896	807,623	1,129,731
% of households in total households		8.46	19.50
% of population in total population		2.45	11.32

3 persons	4 persons	5 persons	6 persons	7 persons	8 persons	9 persons
186,502	279,266	122,315	42,346	14,036	3,454	918
559,505	1,117,064	611,575	254,077	98,255	27,633	8,265
3.00	4.00	5.00	6.00	7.00	8.00	9.00
2.48	2.75	3.34	4.14	4.71	6.23	6.49
1.41	1.73	1.88	2.17	2.52	3.07	2.50
1.55	1.78	1.91	2.16	2.61	3.55	3.00
1,503,244	1,789,909	1,833,058	1,903,307	1,979,977	2,048,089	2,633,098
912,935	1,168,029	1,033,423	1,052,018	1,229,292	1,357,297	1,914,036
166,428	207,932	326,588	263,014	196,350	143,338	0
115,807	120,771	147,825	238,010	185,060	67,867	98,917
51,048	54,083	46,498	70,423	66,856	67,469	98,917
18,261	38,696	55,582	8,861	27,509	398	0
46,498	27,992	45,745	158,726	90,695	0	0
102,021	112,290	116,877	123,163	114,749	90,679	44,628
205,706	180,635	208,024	226,581	254,047	388,584	575,516
348	253	321	520	479	325	0
276,582	349,867	341,239	315,172	324,090	277,811	378,868
43,105	48,541	48,777	50,379	18,062	2,557	0
233,477	301,326	292,462	264,793	306,028	275,254	378,868
923,541	1,096,265	1,148,568	1,284,585	1,305,971	1,462,453	1,834,461
186,835	228,892	250,821	290,959	301,817	351,238	422,483
7,913	9,678	9,746	12,402	10,996	14,240	9,099
4,238	4,574	6,779	5,909	9,953	12,188	2,975
30,058	35,384	33,486	40,863	48,051	77,049	49,169
254,447	269,105	277,879	307,989	277,321	336,227	267,419
20,272	22,838	25,235	27,692	29,999	32,357	39,694
17,579	20,583	18,576	17,625	21,388	18,588	27,108
26,739	26,038	25,890	18,537	36,537	65,031	11,653
85,849	94,348	107,743	143,098	137,915	191,344	487,787
94,207	118,973	127,559	170,451	137,027	130,390	124,369
119,084	180,196	185,625	167,349	201,382	153,467	222,147
76,319	85,653	79,228	81,709	93,584	80,335	170,557
1,226,662	1,440,041	1,491,819	1,588,135	1,655,887	1,770,279	2,254,230
923,541	1,096,265	1,148,568	1,284,585	1,305,971	1,462,453	1,834,461
303,121	343,776	343,251	303,550	349,916	307,826	419,770
1,597,286	1,882,982	1,942,877	2,025,310	2,086,447	2,147,425	2,766,983
20.71	31.01	13.58	4.70	1.56	0.38	0.10
18.03	35.99	19.70	8.19	3.17	0.89	0.27

c-1 land parcel and building survey

date: January 2005
source: Department of Land, Taipei City Government

Administrative Area		area	no. of land parcel	no. of building	total
Taipei City	台北市	1,136	30,969	119,943	152,048
Daan District	大安區	26,085	416,576	978,220	1,420,881

c-2 building age and unit area survey, Daan District

date: January 2005
source: Department of Land, Taipei City Government
unit: 1 Taiwan *ping* [坪] = 36 m^2, 1 *ping* = 2 standard *tatami*

Building Age	< 10 *ping*	10-15 *ping*	16-20 *ping*	21-25 *ping*	26-30 *ping*	31-35 *ping*	36-40 *ping*	> 40 *ping*
< 5 yrs	598	207	212	272	244	446	284	1007
6-10 yrs	1726	601	383	351	616	417	270	934
11-15 yrs	421	296	469	513	759	905	718	2267
16-20 yrs	1154	828	1621	5315	4988	3766	2395	4710
21-25 yrs	1097	1044	1412	3651	4976	4188	2688	3470
26-30 yrs	53	158	258	277	429	382	284	804
> 30 yrs	426	337	362	900	1243	1139	664	1745

c-3 Rental Housing Survey, Daan District

date: July 1, 2004
source: Tsuei Ma Ma Foundation for Housing & Community Service
unit: rent [NT$], unit area [$m^2$]

type: room [shared kitchen & bathroom]

year	average rent	average area	ave. rent/m^2	no. of sample
2001	6,001	140.4	1,600	346
2002	6,089	142.9	1,599	550
2003	6,111	146.2	1,582	474

type: suite [private kitchenette & bathroom]

year	average rent	average area	ave. rent/m^2	no. of sample
2001	9,897	254.2	1,471	71
2002	10,065	237.6	1,599	136
2003	9,824	6.8	1,507	180

type: bachelor apartment/ studio apartment

year	average rent	average area	ave. rent/m^2	no. of sample
2001	13,774	432.7	1,183	69
2002	13,935	423.0	1,227	127
2003	13,436	411.5	1,221	143

type: one or more bedroom apartment

year	average rent	average area	ave. rent/m^2	no. of sample
2001	25,487	1,138.3	817	317
2002	24,049	1,094.4	803	470
2003	23,558	1,091.9	787	437

d research fieldwork notes

Date: May 3-31, 2005

Methodology: Retrieve information or answers to a set of questions through casual conversation

Informants: condominium dwellers in Taipei City

Basic categories: age bracket [18-25; 26-35; 36-55; 56-65; over 65]; sex [male; female]

Information extracted:

living condition:

1. family structure
2. household size
3. number of floors in one's condominium
4. number of units on one's floor
5. condominium facility
6. community facility

neighbourhood condition:

7. relationship with neighbours on the same floor
8. number of family known in the same condominium
9. how do one know one's neighbour
10. socialization activities with neighbours
11. number of family known in the same community (Li)
12. how do one know the neighbours in the community
13. socialization activities with community neighbours

daily activity:

14. ways to get around/get to work
15. leisure activity during weekday
16. leisure activity during weekend and holidays
17. ancestor worshipping habits

notes:

18-25, male
1. single, living father & a father's friend
2. 3
3. 4
4. 2
5. none
6. kindergarten, public schools, parks, swimming pool, basketball courts, markets, post office, church/temple
7. don't know
8. 0
11. 1
12. school
13. hangout
14. 1) motorcycle, 2) public transportation
15. 1) home, 2) school, 3) downtown, 4) friend's house
16. 1) downtown, 2) home, 3) around school, 4) out of the city
17. no ancestral hall

18-25, female
1. single, living roommate
2. 4
3. 4
4. 2
5. none
6. public schools, parks, markets, post office, church/temple
7. greeting
8. 2
9. corridor
10. none
11. 4
12. corridor
13. none
14. 1) motorcycle, 2) public transportation, 3) bike
15. home
16. home
17. no ancestral hall

26-35, male
1. single, living with parents and siblings
2. 4
3. 5
4. 3
5. none
6. public schools, parks, markets, post office, bank, church/temple
7. 1) very close friend, 2) don't know at all
8. 7
9. 1) school, 2) markets
10. 1) school, 2) markets
11. 24
12. 1) school, 2) markets
13. 1) school, 2) markets
14. 1) home, 2) motorcycle, 3) public transportation
15. 1) home, 2) downtown, 3) around school
16. 1) home, 2) downtown
17. ancestral hall at home

26-35, male
1. single, living with parents and siblings
2. 5
3. 4
4. 2
5. none
6. public schools, parks, swimming pool, basketball courts, markets, post office, bank, church/temple, flower market, supermarket
7. 1) very close friend, 2) greeting
8. 2
9. 1) school, 2) corridor
10. none
11. 10
12. 1) school
13. none
14. motorcycle
15. 1) home, 2) downtown, 3) library or out of the city
16. 1) home, 2) downtown, 3) library or out of the city
17. ancestral hall at home

26-35, male
1. single
2. 1 person
3. 7
4. 6
5. none
6. public schools, university, parks, post office
7. don't know any
8. 0
11. 0
14. motorcycle
15. 1) downtown, 2) home, 3) vicinity
16. 1) downtown
17. ancestral hall at parent's house

26-35, female
1. single, living with parents and siblings
2. 5 persons
3. 7
4. 10
5. none
6. day care centre, kindergarten, public schools, parks, stadium, markets, post office, bank
7. 1) very close friend, 2) chat and exchange things, 3) greeting
8. 3
9. 1) school friend, 2) corridor
10. 1) home; 2) school
11. 10
12. 1) school, 2) facility, 3) corridor
13. 1) home, 2) school
14. 1) public transportations, 2) car, 3) motorcycle

15. 1) home, 2) at friend's house, 3) community facility
16. 1) home, 2) out of the city, 3) friend's house, 4) downtown, 5) community facility, 6) around school
17. ancestral hall at home

36-55, male
3. 4
4. 4
5. none
6. public schools, parks, stadium, markets, post office, bank, church/temple
7. 1) very close friend, 2) greeting
8. 3
9. community facility
10. home
11. 10
12. community facility
13. home
14. work at home
15. home
16. downtown
17. ancestral hall at home

36-55, female
1. living with spouse and children
2. 5 persons
3. 22 floors
4. 10 units
5. children's play area, fitness room, swimming pool, ping-pong & pool table.
6. public schools, parks, markets, post office, bank
7. 1) chat and exchange things, 2) greeting, 3) last name basis
8. 4
9. 1) relatives, 2) corridor
10. 1) home, 2) condominium facility
14. car
15. 1) home, 2) at friend's house
16. 1) home, 2) out of the city
17. ancestral hall at home

36-55, female
1. living with spouse, parents and children
2. 5 persons
3. 3 floors
4. 1 units
5. none
6. kindergarten, public schools, parks, markets, post office, church/temple
7. 1) greeting, 2) last name basis
8. 3
9. community facility
13. home, community facility
14. 1) public transportation, 2) car
15. 1) home, 2) friend's house
16. 1) home, 2) friend's house, 3) out of the city
17. no ancestral hall

56-65, male
1. living with spouse, parent & children
2. 4 persons
3. 11
4. 2
5. tennis court, pingpong table
6. daycare, kindergarten, public schools, university, parks, markets, post office, bank, church, temple
7. last name basis
8. 1
9. corridor
10. greeting
11. 6
12. 1) condominium meeting, 2) corridor
13. 1) home, 2) shopping
14. 1) public transportation, 2) taxi, 3) car
15. home
16. home
17. ancestral hall at home

56-65, male
1. living with spouse, parent & children
2. 4 persons
3. 5
4. 2
5. none
6. daycare, kindergarten, public schools, university, parks, stadium, swimming pool, markets, post office, bank, church, temple
7. last name basis
8. 2
9. corridor
10. none
11. 7
12. children's teacher, relatives
13. 1) home, 2) relative's home
14. car
15. home
16. home
17. Christian

over 65, female
1. living with children & grandchildren
2. 4 persons
3. 5
4. 2
5. none
6. daycare, kindergarten, public schools, university, parks, stadium, swimming pool, markets, post office, bank, church, temple
7. greeting
8. 4
9. 1) church, 2) corridor
10. church
11. 7
12. 1) church, 2) park
13. 1) church, 2) park
14. retired, 1) public transportation, 2) car

15. 1) home, 2) vicinity, 3) friend's house
16. 1) home, 2) vicinity, 3) friend's house
17. Christian, set up like a ancestral hall but with photos without tablets.

over 65, female
1. living with children & grandchildren
2. 4 persons
3. 11
4. 2
5. none
6. daycare, kindergarten, public schools, university, parks, stadium, swimming pool, markets, post office, bank, church, temple
7. last name basis
8. 2
9. corridor
10. none
11. 15
12. 1) park, 2) market
13. 1) park
14. unemployed, 1) taxi,
15. 1) home,
16. 1) home, 2) vicinity, 3) friend's house
17. ancestral hall at home

e-1 guidelines for the placement of ancestral table

selected general rules translated by the author from the following sources:

1. Chat room posting, Chen, 19 November 2004. <http://www.lucky8.com.tw/lucky8/talk/Detaiview.asp?TitleId=50>. (8 April 2006)
2. Geomancer services, Yang, 2004. <http://www.1212.com.tw/god/index.asp>. (8 April 2006)
3. Fushantang [福山堂], Daoist organization, 2002. <http://www.fushantang.com/1003/c1002.html>. (8 April 2006)

The ancestral table shall not have its back toward the front door. It is best to face the front door or the window.
There should be a large opening in front of the ancestral table. (Discounted the glazing enclosure.)
The ancestral table shall not face a room door, the bathroom, the kitchen, or unsightly things.
The ancestral table shall not be next to the bathroom or the kitchen.
The ancestral table shall not be facing the stairway, under the stairway, or used as a partition.
The ancestral table shall not face a mirror.
The ancestral table shall not be placed in the corner.
The ancestral table shall not be placed under a beam.
The ancestral table shall not be under direct fluorescent light.
The ancestral table shall be on flat flooring.
The ancestral table shall not have window openings above or on its sides.
The ancestral table shall be cleared at all time and the space under the table shall not be used as storage space.
The ancestral table shall not be directly underneath the water tower.
The best direction of the ancestral table can be determined by the *bagua* graph in accordance of the time moving in to the dwelling.
It is best to have abundant natural light.

f-1 location of Fujian earth dwelling cited

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Changyuan Lou [長源樓]: Shichiao village, Shuyang country, Nanjing county, Fujian. [石橋村, 書洋鄉, 南靖縣, 福建省].

Dafudi [大夫第]: Datangjiao village, Kaopao town, Yongding County, Fujian. [大塘角村, 高陂鎮, 永定縣, 福建省].

Dehui Lou [德輝樓]: Xiayang town, Yongding County, Fujian. [下洋鄉, 永定縣, 福建省].

Eryi Lou [二宜樓]: Dadi village, Xiandu town, Hua-an County, Fujian. [大地村, 仙都鎮, 華安縣, 福建省].

Half Moon Lou [半月樓]: Daping village, Xiouhau town, Zhao-an County, Fujian. [大坪村, 秀篆鎮, 詔安縣, 福建省].

Heguei Lou [和貴樓]: Pushan village, Meilin country, Nanjing County, Fujian. [璞山村, 梅林鄉, 南靖縣, 福建省].

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Longtian Shiju [龍田世居]: Shenzheng City, Bao-an county, Cantone. [深圳市, 寶安縣, 廣東省].

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Shunyuan Lou [順源樓]: Kaodong village, Kaotao country, Yongding County, Fujian. [高東村, 高頭鄉, 永定縣, 福建省].

Tianluokeng village [田螺坑村]: Shuyang country, Nanjing County, Fujian. [書洋鄉, 南靖縣, 福建省].

Umbrella Lou [雨傘樓]: Yangzhujing village, Kaoche country, Hua-an County, Fujian. [洋竹徑村, 高車鄉, 華安縣, 福建省].

Xin Wei [新圍]: Longnan County, Jiangxi. [龍南縣, 江西省].

Xishuang Lou [西爽樓]: Xi-an village, Xiazhai town, Pinghe County, Fujian. [西安村, 霞寨鎮, 平和縣, 福建省].

Yijing Lou [遺經樓]: Shangyang village, Kaopo town, Yongding county, Fujian. [上洋村, 高陂鎮, 永定縣, 福建省].

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Zhenfu Lou [振福樓]: Xipian village, Hukeng town, Yongding County, Fujian. [西片村, 湖坑鎮, 永定縣, 福建省].

Zhuanshang Cheng [庄上城]: Zhuanshang village, Daxi town, Pinghe county, Fujian. [庄上村, 大溪鎮, 平和縣, 福建省].

g-1 specific task illuminance level guide

date: February 10, 2005
source: US Energy Sciences
*see g-2 for Illuminance Categories

Types of activity	Illuminance Category* or Level [lux]
Auditoriums	
Assembly	C
Social Activity	C
Assembly Tasks	
Simple	D
Moderately difficult	E
Difficult	F
Very Difficult	G
Audiovisual Area	D
Bakeries	D
Banks	
Lobby - general	C
Writing Area	D
Teller's stations	E
Breweries	D
Clothing Product	
Cutting & sewing	G
Pressing	F
Conference Rooms	D
Corridors	B
Drafting	
Mylar, vellum or trace	E
Low contrast	F
Blueprints	E
Exhibition Hhalls	C

Types of activity	Illuminance Category* or Level [lux]
Libraries	
Reading rooms	D
Merchandising spaces	
Circulation	300
High activity	300
Medium activity	200
Low activity	100
Offices	
Offices	C
Lobbies, lounges	C
Reception areas	C
Reading	
Xerography	D
Computer screens	D
#3 pencil & darker	E
#4 pencil & lighter	F
Ball-point pen	D
8 & 10 point type	D
Glossy magazines	D
Newsprint	D
Schools	
Classrooms	E
Science Laboratories	E
Stairwells	C

g-2 illuminance categories

date: February 10, 2005
source: US Energy Sciences

Cat.	Type of Activity	Lux
A	Public spaces with dark surroundings	20-30-50
B	Simple orientation for short temporary visits	50-75-100
C	Working spaces where visual tasks are only occasionally performed	100-150-200
D	Performance of visual task of high contrast or large size	200-300-500
E	Performance of visual task of medium contrast or small size	500-750-1000
F	Performance of visual task of low contrast or very small size	1000-1500-2000
G	Performance of visual task of low contrast or very small size over a prolonged period	2000-3000-5000

h-1 cultural glossary of Chinese terms

Each character [字] in Chinese has its meanings, and characters are put together as terms [詞], to further the expression or description. This glossary translates each character of selective terms in the thesis, in hope to minimize the gap of translation and satisfy the curious reader. (All pronounciation in mandarin with the exception of []* in Japanese).

Taiwan, 台灣[taiwan]: 台[tai] platform, stage; 灣[wan] bay, gulf

Taipei, 台北[taipei]: 台[tai] refers to Taiwan; 北[pei] north

Tainan, 台南[tainan]: 台[tai] refers to Taiwan; 南[nan] south

Central Plains, 中原[zhongyuan]: 中[zhong] centre, middle; 原[yuan] plain, field

China, 中國[zhonguo]: 中[zhong] centre, middle; 國[guo] country, nation

Mainland China, 大陸[dalu]: 大[da] big; 陸[lu] land, continent

Sino-Japanese War, 甲午戰爭[jiawuzhanzheng]: 甲[jia], 午[wu] Chinese counters for year [1984], 戰[zhan] -war, action of fighting, 爭[zheng] conflict of interest

Shinto, 神道[*shinto*]*: 神[shin] god, diety; 道[to] the way

shrine, 神社[jinsha]*: 神[shin] god, diety; 社[sha] organized bodies

Hoklo, 福佬[fulao]: 福[fu] refers to Fujian; 佬[lao] fellow, hillbilly

Hakka, 客家[kejia]: 客[ke] guest; 家[jia] house, home

local wealthy residents and scholars, 鄉紳[xiangshen]: 鄉[xiang] countryside, hometown, township; 紳[jia] gentleman

theophany, 顯靈[xianling]: 顯[xian] appear, show; 靈[ling] spirit, soul

crossover, 超渡[chaodu]: 超[chao] to exceed, supernatual; 渡[du] to cross over a river, to help

ancestral worship, 祖先崇拜[zuxianchongbai]: 祖[zu] ancestor, the founder; 先[xian] before, beginning; 崇[xian] adore; 拜[bai] action of kneeling, worship

sky worship, 敬天[jingtian]: 敬[jing] respect, reverence; 天[tian] sky

auspicious, 吉祥[jixiang]: 吉[ji] favorable; 祥[xiang] lucky, auspicious

feng shui, 風水[fengshui]: 風[feng] wind; 水[shui] water

farmer's Almanac, 黃曆[huangli]: 黃[huang] refers to the mythical first emperor of China, Huang Emperor [黃帝]; 曆[li] calendar

Earth Spirit, 土地公[tudigong]: 土[tu] earth, soil; 地[di] ground, land; 公[gong] respected elderly

Gods of Pestilence, 瘟神[wenshen]: 瘟[wen] plague, pestilence; 神[shen] god, diety

Confucian, 儒學[ruxue]: 儒[ru]a learned man; 學[xue] knowlege, school

Utopia: Utopia is translated phoneticly as 烏托邦. There are two similar concepts in Chinese philosophy, the Confucian 大同世界[datongshijie] and Daoist 桃花源[taohuayuan]. 大[da] big; 同[tong] unity; 世[shi] the world, an age; 界[jie] the boundary; 桃[tao] peach; 花[hua] flower, blossom; 源[yuan] the beginning, the source, spring or fountain

yin yang, 陰陽[yinyang]: 陰[yin] moon, shade, negative, underworld; 陽[yang] sun, positive, of the living

five element, 五行[wuxing]: 五[wu] five; 行[xing] to go, conduct

nine square graph, 九宮圖[jiugongtu]: 九[jiu] nine; 宮[gong] palace, womb; 圖[tu] illustration, graph

Chinese courtyard house, 四合院[siheyuan], 三合院 [sanheyuan]: 四[si] four; 合[he] enclose; 院[yuan] courtyard; 三[san] three

family clan, 宗族[zongzu]: 宗[zong] ancestor, clan; 族[zu] race, clan

household family, 家族[jiazu]: 家[zong] family, home; 族[zu] race, clan

ancestral hall, 祠堂[zitang]: 祠[zi] shrine, ancestral shrine; 堂[tang] hall

outhouse, 茅廁[maoze]: 茅[mao] reed; 廁[ze] washroom

earth dwelling, 土樓[tulao]: 土[tu] soil, earth; 樓[lao] multiple storey building

community, 社區[shequ]: 社[she] society, organized bodies; 區[qu] administrative division

neighbour, 鄰居[lingju]: 鄰[lin] close by, vicinity; 居[ju] residence

neighbourhood, 鄰里[lingli]: 鄰[lin] neighbours; 里[li] the basic unit of city administration

road & street counters, 路, 街, 巷, 弄[lu, jie, xiang, nong]: In Taiwan, only the main streets are named, the sub-streets are numbered with the suffix 巷[xiang], which might further sub-divided into 弄[nong].

condominium, 公寓大廈[gongyudaxia]: 公[gong] public, shared; 寓[yu] residence; 大[da] big; 廈[xia] tall building

collective housing, 集合住宅 [jihezhuzhai]: 集[ji] gather; 合[he] enclose, combine; 住[da] to live; 宅[zhai] residence, house

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