

# **Urban Morphology of Traditional Chinese Cities in the Context of Modernization – A Case Study of Suzhou**

## **1. Introduction**

This paper is concerned with the urban morphology of traditional Chinese cities that constitutes a set of recognizable physical and spatial features. This set of features is conducive to the distinctiveness and uniqueness of Chinese cities, hence it is necessary to sustain them in modern China. In the light of this, the paper is by and large an attempt to answer some of the basic questions about the nature of the urban morphology of traditional Chinese cities, and to study a better approach for the future development of the distinctive morphological features.

### **1.1 General Background of the Paper**

With the rapid growth, China has been experiencing dynamic changes in its political, economic, as well as socio-cultural structure. In the past few decades, what has been created in the cities of China is very much different from the urban patterns of the old China. The old scale and pace of urban development inherited from the old China have been overtaken, along with which the inherent spatial and physical features, instead of being strengthened, have been crowded out, or even expunged. As a consequence, many urban areas in China, be they developed from old urban fabrics or from greenfield sites, are nowadays criticized for being homogenous and lacking local distinctiveness.

Against the criticism of urban standardization, interest in vernacular urban culture and environments that reflect a particular locality has been rising, questing for ways to retain the distinctiveness of traditional Chinese cities for the future. The context of a particular locality has become an important consideration in practices of urban planning and design. Urban planners and designers often seek inspirations and reference from the context, while new developments in modern China are aspired to reflect the distinctive qualities of traditional Chinese cities. However, the process connecting the inspirations and the expected qualities of the new developments appears to be the challenge.

### **1.2 Study Delimitation**

In response to the challenge discussed in the previous section, this section defines the major focuses of the study. Urban planners and designers consider the context sources of reference and inspirations, which involves interpretation of the urban morphology of traditional Chinese cities. Kostof (1991, p. 10) argues that urban environment is 'very lamely informative of intention', and only understanding the 'conditions that generated it', which include the cultural, social and historical aspects, allows a correct interpretation. It encompasses comprehending the 'conditions' in relation to the urban morphology from a range of perspectives, including political, economic, socio-cultural and environmental.

The 'conditions' that generated the urban morphology of traditional Chinese cities would not be coincident with the 'conditions' of the modern Chinese cities. With this, the differences between the two sets of 'conditions' become the focus of the study. This paper is essentially about understanding the ways traditional Chinese cities work in the context of modernization. These differences can explain whether the morphological features and qualities of traditional Chinese cities can be incorporated in new development in the context of modernization.

A case study is necessary for this examination in the paper and Suzhou is selected for further analysis. The major reason for selecting Suzhou is that the city epitomizes the differences between the two sets of 'conditions' as mentioned above. Suzhou is a historical

city which was constructed according to a set of traditional planning notions. The city claims a past dating back to the late sixth century B.C. Its urban growth and development, even till now, has been regarded as a 'physical continuation' of this historical construction (Xu, 2000, p. 1). Therefore, the interaction between inhabitants of Suzhou and the existing urban environment provides an appropriate context for this study.

### **1.3 Purpose of the Study**

The main thrust of the paper is to study how the urban morphological features and qualities of traditional Chinese cities can be sustained in the context of modernization. This attempt essentially encompasses a forward-looking agenda that encapsulates concepts such as historic continuity, transformation and sustainability. It is hoped that, with the effort of this paper, new developments in China will be more responsive to the respective context, which can put forth the qualities of traditional Chinese cities while fulfilling the modern requirements.

Delivering the goal of the study entails a two-fold objective:-

Firstly, it is to construct an analytical framework for contextual assessment, suggesting an approach for urban planners and designers to interpret the urban morphology of traditional Chinese cities, so that their thinking can be built upon the features and aspirations from the context, and to arrive at new developments responsive to a particular locality.

Secondly, it is to study if the morphological features and qualities of traditional Chinese cities are adaptable and desirable in the context of modernization. As a subsequent step, attempts are to be made to devise guiding principles for incorporating the desirable features and qualities in new developments, in favor of the current intensified growth in China.

### **1.4 Organization of the Paper**

The paper is composed of four sections. Section 1 considers the introductory section. Sections 2 and 3 comprise the integral section of the paper. The case from Suzhou is studied in Section 2 to examine the relationship of the Suzhou inhabitants in the modern context and the urban environment inherited from the historical Suzhou old city. Following an overview of Suzhou, seven issues are identified in relation to the typical morphological features in Suzhou for further examination in the case study. Section 3 reviews and analyzes the findings from the Suzhou case study, examining if the traditional morphological features and qualities of Suzhou are adaptable and desirable in the modern era of China, and by what guiding principles they can be incorporated in new developments in favor of the growth of today's China. In this Section, an overall approach to the examination is firstly presented, following with an analysis at three respective levels, namely the housing scale, the neighborhood scale and the urban scale. Section 4 is the concluding part which summarizes the results of the study.

## **2. A Case from Suzhou**

This section examines the relationship between the Suzhou's residents in the modern context and the urban environment inherited from the historical Suzhou old city. After an overview of the Suzhou city, seven issues regarding typical morphological features in Suzhou are identified for examination.

### **2.1 An Overview of Suzhou**

#### **2.1.1 Location**

Suzhou is located on the lower valley of the River Yangtze<sup>1</sup> in the southeast of Jiangsu Province, east-central China. To the southwest of the city lies the Lake Tai, the great

freshwater basin out of which flows innumerable streams throughout the region. Hence, the region around the Lake has been the richest and fertilest land in China.

### **2.1.2 Historical Background**

The city of Suzhou was founded as the capital of the State of Wu in 514 B.C. in the Zhou Dynasty (c. 11th Century – 221 B.C.). The city was built as an expression of the ambitions of the State of Wu in the pursuit of hegemonic power. An 'idealized order' of both social and cosmic significance was employed in the city layout, with the hope that the city could be imbued with vitality and cosmic power. The city was believed to conform to the canonical principles advocated in *Kaogongji* of *Zhouli*<sup>2</sup>(Xu, 2000). The conception of the city by its inhabitants was as significant as its physical reality. Therefore, the relevance by the idea of a cosmic centre to the Suzhou inhabitants was already lost when the State of Wu was overturned. This was particular so in the imperial era<sup>3</sup> after the Qin unification in 221 B.C.

In history, the important growth of Suzhou commenced in the mid-Tang Dynasty (618-907 A.D.), when there was proliferation of commercial and business activities. The 'medieval urban revolution'<sup>4</sup> took place and notable transformation in urban structure came along with. The transformation involved the breakdown of the closed neighborhood and market system in the city, allowing for a freer street plan where trade and commerce could be conducted.

### **2.1.3 Current Development**

In 1982, the 14.2km<sup>2</sup> Suzhou old city was selected by the State of China as a historical and cultural city<sup>5</sup> (Ruan et al, 2005). Nowadays, the Suzhou old city remains the core district of the expanded city, which is flanked by two industrial parks. Being a historical and cultural city, the rehabilitation and preservation of the distinct characters of the old city as well as its adaption for modern uses have been treated with priority (Ruan et al, 2005).

Mote (1973, p. 51) observes that the principal structure of the Suzhou old city, as inscribed in the ancient map<sup>6</sup> of 1229 A.D., correlate closely with the features observable in today's Suzhou. The dual canal-street network, city gates, bridges, principal buildings and the rough outlines of the city walls can still be readily identified (Wei, 2002).

Yet in today's Suzhou, the traditional and the new are juxtaposed or even mixed together casually. While there are calls for preserving the traditional fabrics more thoroughly, one the other hand, to its inhabitants an internet pub amid an ancient street running along a canal of hundreds of years old is nothing incongruous, without creating any sense of dissent (Ferguson, 1999).

## **2.2 Typical Morphological Features in Suzhou**

### **2.2.1 Physical Manifestation and the Social Order**

Social order is a physical phenomenon which can be reflected in the spatial order of the physical elements. In traditional Chinese cities and the indigenous Chinese houses, the models of relationships and social hierarchy upheld by Confucianism<sup>7</sup> can be read. Suzhou, as a city with distant history and cultivated in the central Chinese culture, is no exception.

On urban scale, the old city layout has shown a 'mixture' of the central hierarchical culture and the local system. Located in a region with nexus of innumerable streams, the Suzhou old city followed the basic format of gridiron road network yet with modification to fit the river network to form a distinctive dual canal-street chessboard-like system, which has been maintained as the morphological framework for the Suzhou old city for centuries.

On housing scale, the use of courtyard is the principal form of spatial arrangement in indigenous Chinese housing. So is the traditional Suzhou houses, yet they are a kind of local variations because their design has been responsive to the socio-economic and environmental conditions of the city. With this, Xu (2000, p. 180) argues that formal and topological differentiation in traditional Chinese houses is naturally associated with the daily activity pattern, but there are no functional and organizational distinctions among different social institutions.

In today's Suzhou, the traditional Suzhou courtyard houses are still commonly found. The main feature of the houses is the axiality with central axis as both spatial and social coordinator. Rooms and spaces of different functions and degrees of privacy are arranged in a hierarchical order with reference to the central axis, which epitomizes the Confucian social order, especially in larger houses.

Yet concerning the social order, it is embedded in the spatial order in the traditional Suzhou courtyard houses, which is particularly observable in large ones. In today's Suzhou, however, with the transformation in family structure from a big and extended family model to a nuclear one. A lot of the traditional houses are subdivided for several families, in which the spatial order is altered and its manifestation of the social order thus becomes obscure. With the change in family structure and socio-cultural values in the society, as well as the pursuit of individualism affected by the western culture and the socio-economic dynamics, the significance of the Confucian ideology and the social order in today's China is debated.

### ***2.2.2 The Courtyards in the Traditional Houses***

A traditional Suzhou courtyard house is fundamentally concerned with one or more clusters of individual buildings centering on courtyard void space. There are two elements in the houses, one is an enclosed indoor space, and the other is an enclosed outdoor space. This is also the principal building layout for Chinese architecture as well. Li (1993, p. 141) argues that its significance could be attributed to the nature of the courtyards which is of people's basic need. The nature of the courtyards enhances the environmental and well as living quality in traditional Suzhou houses. In general, courtyard can be in forms of front yards or rear yards, which appear as subsidiary of a building. However, in traditional Suzhou courtyard houses, the courtyard is the spatial coordinating centre, which realizes the organization of the individual buildings to form a housing entity. In the light of this, courtyard in the houses is as important as the buildings themselves.

Due to the change in family structure, traditional Suzhou courtyard houses are generally occupied by a number of families. The courtyards hence become an essential commonplace for the immediate neighborhood. The enclosed nature of the courtyard creates a strong sense of domains and thus enhances the sense of neighborhood among the family units. Since the courtyard is the essential and natural paths which connects the doors of individual units and the outside, the setting provides a place for meeting and thus encourages social interactions. However, since the courtyards in traditional Suzhou houses are generally small, it is argued that privacy to residence becomes a problem when they serve as the communal space of the immediate neighborhood. By and large, there are desirable qualities suggested by the courtyards in traditional Suzhou houses, both for environmental and social aspects. As a prominent feature in the traditional housing design, the courtyards also serve to constitute a familiar regularity which embedded in the old city.

### ***2.2.3 Shop-Houses and Street-Centered Development***

Shop-houses are the product of the socio-economic dynamics in Suzhou. Harris et al (Thomlinson, 1969, p. 149) argues that there are certain forms of urban settings pertinent to particular types of socio-economic activities. Shop-houses are commonly found in the

Suzhou old city till the present days, constituting market streets which are one of the appeals in the city, especially those abutting canals. Along the market streets, shops are arranged in long rows with one shop closely adjacent to the others. While lines of shops open to streets or canals, behind them remains a closed complex of buildings and courtyards which serve the daily life of the inhabitants. Succession of buildings and small courtyards extend into the background, for large houses it could reach a hundred meter deep. Behind the shops there are the living quarters of the families of the shop owners, together with spaces for storage, workshops, and whatever the owners needed for their business.

In Suzhou, while shops-houses have been developed on street or canal frontage in perimeter block form combining residential and commercial functions, the behind area also shows a highly mixed land use pattern. Unlike the segregation of residential and commercial quarters in the western cities, a wider diffusion of business can be found throughout the city of Suzhou. On the other hand, the intimate relationship between shops and houses in the 'shop in front, residence behind' settings of the Suzhou old city realizes a street-centered development. With this, streets become the major social space of the nearby neighborhoods, juxtaposing the functions of circulation and commerce as well.

#### **2.2.4 Dual Canal-Street Network**

Throughout the city, the dual system of water and road transport prevails in a way that the canals and streets either intersect at right angles or run in parallel with each other to form the chessboard-like urban layout. The network of canals, largely unchanged from earlier centuries, though in some cases widened roads and modern bridges have partly covered the canal system (Ferguson, 1999).

The waterway system also offers many benefits of convenient daily use, waterborne transport and beautification of the landscapes to the city, all of which are closely related to the living of its inhabitants. While Suzhou has been developing its road network that automobiles comes with increasing significance, the canals are still important lines of communications, connecting within the city as well as with the surrounding areas for carrying goods to and fro. The dual canal-street system allows two traffic means independent of each other, namely boats and pedestrian traffic.

People are fond of having access to water body that most houses have openings or direct accesses to the waterways wherever it is possible. In neighborhoods, it is not uncommon to see the canal fronts as places for laundry and daily contacts. Some street markets, on the other hand, run along the streets abutting the waterways, with shops crammed with commodities and crowded with shoppers. All of these illustrate a coherent combination of the traditional Chinese ideology that the man-built settlement is in harmony with nature.

#### **2.2.5 Neighborhood Hierarchy**

With reference to the study of urban morphological structure of Beijing (refer to the hierarchical diagram in Appendix 3) (Wu, 1994, p. 117), the Suzhou old city can be divided into three neighborhood hierarchy levels. The main streets form the first level, most of which are along with canals where shops and activities are crammed. To penetrate housing blocks from the main streets, instinct would generally lead people down to a lane or an alley which constitutes the second level. In some cases, there are gateways marking the entrances of the lanes. A lane is a public passageway in nature, yet with increased sense of private domain comparing to the first level. In the Suzhou old city, it is said that the lanes reflect the local daily lives, though they serve mainly as circulation and transition that in general without commercial activities. Main entrances of traditional Suzhou courtyard houses mostly open to lanes directly, which lead to the third level of the neighborhood hierarchy. The third tier comes to the dwelling units, in which the courtyard is the common place centered by a

cluster of individual buildings that on the other hand turns out to be a personalized and private extension of the living quarters.

The neighborhood hierarchy in the Suzhou old city is clear in order, although in some cases the physical boundaries has dissolved in a way that the domains between the public and the private involve merely an unannounced spatial transformation. The hierarchy in the old city is here valued, which on one hand is of its traditional importance, and on the other hand is for its purpose for people to orient themselves in the urban settings. With the circulation system which is pedestrian-oriented with intimate scale, the three-level spatial sequence of neighborhood explicitly makes the urban environment easy to be understood, without conscious attention and any disorientation at all.

### **2.2.6 Streets and Communal Spaces**

Streets are essentially socialized open spaces in the old Suzhou city which more represent the richness of the urban life and culture, and at the same time reflect the different modes of living in their corresponding neighborhoods.

In the traditional urban setting, apart from streets and alleys, the courtyards have been the only form of urban spaces in both intentionally and conventionally contrived way. In traditional houses, the courtyards and, in some cases, private gardens share primarily only by the members of the respective families, hence it demonstrates that they are in essence private spaces. On the other hand, the courtyards of temples, be they Buddhist, Taoist, Confucian or others, have retained a public nature, since these temples principally open to and invites all sections of the society to participate in their ritual or other activities. The Xuanmiao Taoist Temple<sup>8</sup> at the centre of the Suzhou old city has been engendered as 'the loci of urban activities' (Xu, 2000, pp. 180-184).

Xu (2000, pp. 180-199) argues that the communal spaces by the Xuanmiao Taoist Temple never intends to constitute a kind of Chinese version of the civic square in the West. It is concerned with the distinctive Chinese concept of communal space. Xu argues that communal spaces in the traditional Chinese concept should be pertaining to a certain kind of social institutions, so as to explain its existence and meaning. With this, the Xuanmiao Taoist Temple as the central traditional communal space in the Suzhou old city has been an instance.

The Xuanmiao Taoist Temple is located on Guanqian Street<sup>9</sup> in the central location of the Suzhou old city. Just like the Chenghuang Temple<sup>10</sup> in Shanghai and the Confucian Temple in Nanjing, the Xuanmiao Taoist Temple is also a busy traditional bazaar all through the ages with shops and different kinds of activities, attracting people from different walks of life. In today's Suzhou, the areas in the proximity to the Temple have become the central commercial district where locals and visitors would make it a destination for various purposes.

### **2.2.7 Garden and Landscape Design**

It is argued that only in Suzhou one can experience an unrivaled collection of Chinese classical gardens. The large amount of quality private gardens<sup>11</sup> in the city accounts for its receiving. The native philosophy of Chinese culture encourages closeness to nature and promotes natural peace over urban bustle, so city-dwelling scholars have created an illusion of natural tranquility in small but deliberately designed private gardens. These classical Chinese gardens are beautiful and serene, showing the essence of Chinese art and appearing as a statement: it is where people dwell with spiritual integration with nature and in seclusion on distant vista for contemplating nature.

While in the West people *plant* gardens, the Chinese *build* them (Golany, 2001, p. 202; Keswick, 1986). In the classical Chinese gardens, the man-built structures are as important,

if not more, than the plants, which are designed to blend with the natural environment. For instance, a pavilion ideally should be in part hidden by trees and loom unexpectedly from behind. Water and hills are considered to be the two essential elements of a classical Chinese garden. An integration of bodies of water, both natural and artificial, comes to be a principle. The private gardens in Suzhou uses water extensively, as in the city. Stones are also used, either in sculptured form or scattered within the water, to build a small island with pavilions and bridges.

Another principle for the garden design is 'scene borrowing' (Golany, 2001, pp. 202-211). For instance, the pavilions are sited at a raised level that seems poised in the mid-air with upturned eaves, in order to capture discreet views of nature distilled, as if taken in form a thatched-roof cottage with a mountainside vantage point (Prentice, 1998, p. 24). There are two different angles to view the classical Chinese gardens: an 'in-position' viewing that the visitors of a garden pick up a certain fixed view and see certain features of the scenery; and 'in-motion' viewing in which the visitors walk through the garden and continuously receive various deliberately designed perspectives which aim to stimulate their curiosity to explore more. Here, the classical Chinese private gardens in Suzhou have been designed to include both of the viewing angles (Golany, 2001, p. 202; Chen, 1984, p.1).

The classical private gardens in Suzhou illustrate a longstanding esthetic code central to the visual identity of the traditional Chinese culture. The code embeds the people's preference towards their desirable environment which is closely related to their cosmological view and human-nature relationship. It consists of recognizable elements that can be re-articulated in countless ways and with the application of the artistry to accomplish its sublime (Prentice, 1998, p. 23).

### **3. Review and Analysis**

This section reviews the Suzhou case study to find out the morphological features and qualities in traditional Chinese cities which are adaptable and desirable in the context of modernization, as well as through what guiding principles they can be incorporated in new developments in favor of the growth of today's China. It is by and large in four parts, consisting of a general approach and a three-tier analysis of the case study in terms of the building scale, the neighborhood scale and the urban scale respectively.

#### ***3.1 General Approach: Historic Continuity, Transformation and Sustainability***

The main thrust of this paper encompasses a forward-looking agenda that encapsulates concepts including historic continuity, transformation and sustainability. These concepts support the four criteria that the Chinese State adopted for selection of Suzhou as one of the historical and cultural cities which need priority conservation. It is in particular for the fourth point regarding the constant and continuous functioning of the old urban fabrics.

To sustain the historic continuity of traditional urban fabrics, there is a tension from modernization. There is something missing in terms of the intelligibility and intimacy to people, whether in China or in elsewhere, in the standardized modern city design. The missing elements can only be found from the traditional urban fabrics and distinct features pertaining to the respective locality.

However, arguably, naive quotation of traditional morphological elements can never mean to preserve traditional spatial quality and urban fabrics, while the dumb duplication of traditional types will lead to functional failure due to the changing requirement of modern life. Therefore, some forms of transformation are needed.

Without being nostalgic, it is nonetheless believed that modernization does not necessarily require the eradication of traditional form and culture. The success hinges on the potential of traditional urban morphology to accommodate modern functionality, while a meaningful process of modernization must understand the urban fabrics and spatial quality as well as respect the socio-cultural and behavioral roots from the context.

### **3.2 On the Building Scale**

The traditional Suzhou courtyard houses have been inherited from the city's distinctive urban conditions of socio-cultural and socio-economic aspects as well as others like environmental uniqueness. Arguably the traditional houses are desirable and adaptable in the modern context. It is to be discussed from the following two perspectives, namely the social order and the spatial quality.

#### **3.2.1 Social Order and Spatial Order**

Traditional Suzhou courtyard houses conforms the Confucian social order in form of spatial arrangement. Confucianism has often been used as synonymous with traditional Chinese culture. However, in the past century, it has become the object of debate in the discussion on social relationships and social interaction in China regarding its fate in the modern world. In the context of modernization, it is believed that in China there has been a fundamental transformation of the cultural orientation as well as social and family institution. With this, Confucianism has been critically evaluated. Some radical criticisms blame the Confucian cultural heritage for China's backwardness as authoritarian and undemocratic, that Confucianism has been identified as the problem rather than a solution to the need for modernization; on the other hand, some scholars like Liang Shuming and Xiong Shili claims that a reconstruction of Chinese society is needed in the modern era which it should be accomplished through the promotion of Confucian values and morality (Stockman, 2000, pp. 69-93).

The argument for and against Confucianism has not, or unlikely at all, reached a settlement. Nonetheless, from the debate there are two points much relevant to the present study. Firstly, it is concerned with the transformation in social institution of the Chinese society, regardless by the change in values or by political-administrative measures, that small and nuclear family becomes the dominant mode of family pattern in today's Suzhou as well as other cities in China. Secondly, it is concerned with the transformation of the position of individuals in relation to the society, which has been moving towards the ideas of individualism of the western culture and universalism of the western morality.

However, Confucianism, it is believed to be the case, still has significance in Chinese culture, inasmuch as that it constitutes the socio-culture root of the Chinese society which is relatively stable compared with transformation in other aspects. Confucianism is a theory of society, which aims to accomplish social stability and harmonious order within the society through social relationships. It also upholds familial cohesion, virtues of humanity like considerations for others by not doing to them what someone would not want to be treated, and other social virtues like good faith, a sense of duty and filial piety (Stockman, 2000, p. 72). Therefore, it is questioned how the Suzhou traditional courtyard houses manifest these Confucian ideologies in form of spatial arrangement, especially for engendering and enhancing communal interactions; and how they can be incorporated in today's housing, as discussed in the following section.

#### **3.2.2 Spatial Configuration and the Courtyards**

In the traditional Suzhou courtyard houses, the axially and the spatial configuration centering on courtyard are the most prominent characteristics. With the social order, the rooms and



spaces are arranged to show an intimacy gradient. While the contemporary debate has been dealing with if the social hierarchy embedded in the spatial order is worthy promoting or not, the spatial sequence corresponding to their degree of privateness is essential for the inhabitants to give each space within a house its meaning, and thus for their appropriate activities. The central axis is vital to realize the spatial sequence that in the traditional houses, it coincides with the circulation path (refer to Appendix 4 for the schematic diagram of Chinese courtyard houses).

It is noted that the circulation path within a house, as well as the room arrangement which stimulates the movement, has much effect on the communal actions. Here, the practice in the traditional Suzhou courtyard houses is a constructive instance. In the traditional houses, circulation path is connected through courtyards and rooms in buildings, which is broad and munificent in comparison with the corridor-type passage. Along the path, the rooms and courtyards become communal places for gathering and interactions. On the other, there are private rooms open directly off these spaces, which mutually support the communal importance of the circulation spaces.

The courtyard demonstrates the essence of the traditional Chinese houses. As an enclosed open space within a house, it provides a place for its inhabitants to breathe in the sun<sup>12</sup>, to garden and to perform various activities. Essentially these benefits from courtyards enhance a better quality of life of the dwellers. To this end, it is to question what contribute to the fundamental nature of the courtyards, through understand which then the traditional feature can be promoted in modern housing, as discussed in the next section.

### **3.2.3 Recommendations**

On the building scale, the spatial and social implications in the traditional Suzhou houses brought by the spatial arrangement with a central axis conform to the Confucian ideologies for engendering and enhancing communal interactions. These implications are insightful to today's housing design, in which topological variation of the axiality can be applied while the overlay of circulation path on communal domains can be upheld to encourage stronger interactions among family members while presenting an intimacy order of the spaces.

Beside the spatial arrangement within housing units, courtyards in traditional Chinese housing are another feature which is desirable and adaptable in modern buildings. The courtyard is essentially the spatial centre of the traditional houses, neither subsidiary nor juxtaposing the building masses. Without this spatial coordinator, the configuration of the houses cannot be made possible. With this, the courtyards bear various functions, including spatial coordination, circulation, being communal spaces as well as a natural domain in the midst of the man-built environment. By and large, the multi-faceted functions and qualities of the courtyards in traditional Suzhou houses encompass eminent features which are adaptable and desirable to be brought forth in the modern urban environment.

In today's modern housing, tower blocks are ordinary which stand as objects on field with gardens subsidiary to the buildings themselves (refer to Appendix 5 for the modern housing in the Suzhou New District). Under this setting, the 'interface' between the building and the attached garden, which is regarded as the major determinant to the use of the open spaces, could be effectively serviced. However, the remaining areas of the garden would be underused, either lacking a sense of entity with a positive quality or spilling out indefinitely around corners. Arguably if a courtyard configuration is employed, the interfaces can be maximized along the four edges of the buildings which cluster to enclose the courtyard. Hence it is argued that higher efficiency can be achieved in terms of more contact points between the buildings and the open spaces, both physically and visually. This kind of courtyard configuration is advantageous in the practical perspective as well, especially in low-rise housing.

### **3.3 On the Neighborhood Scale**

The courtyards on the housing scale have spatial and social implications on the neighborhood scale as well, in line with the idea that the spatial order attributes continuity to different extents across a continuum of scales (Rapoport, 1977, p. 14). On the neighborhood scale, the Suzhou old city has shown a clear neighborhood hierarchy, wherein the communal spaces are created symbiotically supporting the hierarchical framework. With these, in this section, the courtyards and the neighborhood hierarchy are firstly discussed, which are followed by the development potentials of the communal spaces of the old city in the realm of modernization.

#### **3.3.1 House Cluster and the Neighborhood Hierarchy**

This part continues the discussion regarding the courtyards in traditional Suzhou houses in the previous section. In today's Suzhou, most large traditional courtyard houses have been sub-divided to accommodate a number of families, in which the courtyards become the communal places for the immediate neighborhood. In other words, it demonstrates a form of house cluster of which the buildings centre on a shared communal land. Nowadays, wherever the houses are arranged in row blocks on streets, there are no ways in which the land plots immediately abutting the blocks can be common places for the dwellers. Addressing this issue, the courtyard house clusters provide an appropriate model of configuration, in which the courtyards serve as the natural focal point for neighborly social interactions.

The house cluster constitutes the first level of the three-tier neighborhood hierarchy as identified in the Suzhou case study. From main streets to lanes and further to the clusters of dwelling units, the hierarchy attributes the fundamental framework of the urban morphology. In this way, the Suzhou inhabitants are in general engaged in three levels of neighborhood. And on each level, beginning with the dwelling in the respective house cluster, it demonstrates an increasing degree of publicness. Arguably, these neighborly levels support a quality of neighborhood life from which the inhabitants are able to derive a sense of belonging. This is the missing elements that people can only dimly perceive in the broken down neighborhood of the modern housing estates.

Alternatively, the neighborhood hierarchy enables a clear and well-structured circulation realm to the city. For the case of a complete stranger, in this setting there are two types of clues which provide hints to him for finding his way around. On one hand, when penetrating towards the lower ends of the hierarchy, he would encounter an environment with increasing sense of privateness as it has already moved into the private domains of the locals. On the other hand, as long as the stranger is able to recognize the simple three-tier spatial sequence, he could easily orient himself in search for the main streets and then get his own way out. By and large, while this model of neighborhood hierarchy is common in Chinese cities, the straightforward and clear structural progression provides a familiar urban regularity to the urban inhabitants, and is thus worthy sustaining in the new modern developments.

#### **3.3.2 Streets and Communal Spaces**

Apart from the neighborhood courtyards within house clusters, there are mainly two types of communal open spaces in the Suzhou old city, namely streets and communal focal points originated from temple courtyards. For the nature of communal spaces in the traditional Chinese cities, with the two major modes identified in the case study, this section aims to examine what kinds of quality their settings possess could facilitate activities and social interactions, since it is believed that constant activities are vital to sustain a successful

communal spaces. With this, it then proceeds to question what and how the features and quality found in the communal spaces are desirable in today's Chinese cities.

Streets stand in the highest end in the neighborhood hierarchy of the city, being the most public domain shared among the neighborhoods in its respective vicinity. With this, streets in one way or another reflect the local interests and thus their forms and patterns have been shaped by the respective neighborhoods, inasmuch as that there are some forms of socio-spatial persistence suggesting particular morphological settings. Apart from this, the streets also illustrates the conventional Chinese disposition of socio-economic activities, shops selling the same types of merchandizes usually cluster together, in some cases occupying entire streets spanning several blocks. In general, streets constitute the major mode of socialized open spaces in the Suzhou old city, displaying the richness and diversity of the urban life and culture of the city.

The communal nature of the streets found in the Suzhou old city has various virtues. Lynch (1960) in his book *The Image of The City* identifies five elements with reference to mental images in relation to people's perception to a urban environment, namely 'path', 'edge', 'node', 'landmark' and 'district'. 'Paths', such as streets and canals, are movement channels and form the predominant elements in people's image of the city, which Lynch believes that other elements mainly relate to, and are organized around, 'paths'. This idea is supported in the Suzhou old city that streets, along with the waterway system, constitute the fundamental framework of the urban morphology to serve a multi-fold function. Various activities on streets, in particular the commercial and social ones, much hinge on access, which they need locations near traffic arteries. Due to historic and geographical constrains, or in other words it is regarded as an opportunity, the streets and lanes in old neighborhood quarters in Suzhou are narrow, which prohibit automobile traffic yet promote a pedestrian-friendly walking precinct. This setting facilitates streets as a socialized and communal open space in the city.

### **3.2.3 Recommendations**

The configuration of house clusters with courtyards as spatial centre and the neighborhood hierarchy discussed in the previous part are desirable elements that have been identified in the Suzhou old city. Both of them can contribute positively to enhance the sense of belonging on the neighborhood scale. The courtyards within housing clusters serve as the respective communal spaces, with which the configuration promotes higher efficiency for the use and contact of open spaces, as abovementioned in the building scale.

For this neighborhood level, there are two considerations for sustaining the courtyard feature in the modern context. The first one lies in the scalar relationship between the courtyard voids and the building masses. Arguably the courtyard configuration is beneficial to as well as applicable in the modern neighborhood settings. However, the potential of a successful application hinges on the proportion and the size of the courtyard in relation to the volume and height of the buildings. This factor is vital because on the traditional urban morphology the buildings are in general small in size and low in height, so that the courtyards are in a more intimate scale. For modern housing, advancement in building technology as well as pressure from housing demands are resulted in taller and bigger buildings. In this case, if the housing blocks are too tall with respect to the size of the courtyard, then the latter would become merely a light well and the qualities of which would be ruined.

The second consideration is concerned with the permeability of the courtyard for a neighborhood. The nature of the courtyards is neither backyard nor leftover space, but the central spatial coordinator that the building masses are arranged in a peripheral form. The outer sides are immediately open to the streets or lane whereas on ground floors there would be shops that already constitute the street settings. The courtyards come to be an

intermediate space between the streets and the individual housing units. In traditional Chinese houses, the courtyards are a highly private domain which is enclosed, whereas in the sub-divided courtyard houses in today's old city the courtyards are pertaining to the immediate neighborhood. Here, the enclosed nature is a symbolic marker of the neighborhood precinct, yet it attributes the formation of isolated islands of neighborhood units that endanger the public realm in the city. In this regard, for incorporating the courtyard configuration into modern housing design, the enclosed nature should be balanced with adequate degree of permeability.

With the courtyards as one of the level in the neighborhood hierarchy in the Suzhou old city, the three-tier system is clear and distinct in terms of the sense of neighborhood, spatial orientation as well as realm of circulation. Yet, the master layout of the Suzhou new district has shown a rather different spatial disposition of housing blocks (as illustrated in Appendix 5), in which the traditional neighborhood hierarchy has been broken down. In today's Chinese cities, beside this spatial transformation, the social institution has also changed. Arguably the high mobility of modern life tends to weaken the social bonds of place-based communities inherited from traditional society. In the realm of modernization, the social networks are no longer place-based, instead by common interests and social attributes (Friedmann, 2005).

However, human beings instinctively need for belonging to a place. For coping with the social transformation of Chinese cities, 'community construction' becomes the Chinese State's watchword, through which the government, including the local government of Suzhou, attempts to reconstitute place-based communities (Friedmann, 2005). The attempt is both social and spatial. With this, there are qualities in the place-based communities with the traditional three-tier neighborhood hierarchy which value, since the spatial setting promotes a sense of belonging to its residents. Therefore, through incorporating the neighborhood hierarchy into the master layout design for the neighborhoods, the sense of belonging that is basic to the community aspiration can be strengthened.

For the communal spaces from the traditional urban morphology of Suzhou, to put forth their virtues, it needs to understand the nut of the setting of these spaces, in relation to their functioning in the modern context. By and large, the two modes of communal open spaces identified in the Suzhou old city are basically a network of paths and nodes, wherein the streets are linear in nature connecting the nodal communal focal points which are most likely originated from courtyards of temples. It is noted that the communal spaces appear as a network which covers and connects the whole urban area, rather than in form of large and centralized civic squares at prominent locations in the city. This idea of networking open spaces for the whole urban area is also relevant to the discussion on the urban scale in the next section.

For the civic squares as new form of communal spaces in many Chinese cities, its introduction is generally regarded as a democratic advancement since along with the squares there is also the promotion of humanity and citizenship in the society. However, while it is in theory with the nature of humanity, the civic squares are usually not of proper human scale and thus not welcomed to engender and encourage activities. With this, the traditional settings offer source of inspiration, from which the concept of networking the communal spaces enables a better communal environment for various activities as well as a more cohesive organization of urban areas.

### ***3.4 On the Urban Scale***

The overall urban environment is an aggregate of the individual fabrics, including those on the building and neighborhood scales, to form an entity. In the following parts, the land use pattern, the dual canal-street network and the landscape in the cityscape of the Suzhou old

city are firstly discussed with respect to the inspirations that can be drawn from these morphological features for today's urban planning and design practices. Recommendations will then be made to see how these features can be sustained in the modern context.

### **3.4.1 Mixed Land Use Pattern**

In the Suzhou old city, mixed land use pattern is found that there is no clear zoning is designed for uniform land use. Commercial and residential mix is common whereas workshop and factories are not unusual amidst houses. In the Suzhou new district, with the economic development, the land uses have been patterned more like those of the western cities that there are specific districts for residential, commercial, industrial, as well as for gardens and parks.

The forms and settings of the urban environment by the land use pattern in the new district are very much different from those of the old city. Since the land use pattern is concerned with the disposition of human socio-economic activities in cities, there are regularities in the pattern of the old city that reflect people's adaptation to urban environment. With this, the mixed land use pattern inherited from the traditional urban setting is desirable to be incorporated in the new developments. It is particular so for the idea of commercial and residential mix that commercial uses are scattered at a quite uniform density throughout the old neighborhoods, though the incompatible land uses like factories amidst houses are undesirable and has been planned to be removed in the re-planning scheme.

### **3.4.2 The Dual Canal-Street Network**

In the Suzhou old city, the dual canal-street network composes the morphological framework of the city, which has been playing an important role both physically and socio-culturally. The dual canal-street network with the neighborhood hierarchy forms a cohesive spatial pattern in the city. On one hand, it provides a physical enduring shell for the urban development which has engendered a continuing pattern of open and occupied spaces; one the other hand, the waterways and the streets are much attached to the daily life of the Suzhou residents, especially in the older quarters of the city. The network serves with an overlay of communications, namely the modes of waterborne transport and the road traffic. It has been sustained through centuries and still playing a significant part in the functioning of the city, arguably it is attributed to the well-connected nature of the two systems.

Here, it is concerned with the ways the network is well-connected, to see what insights they can provide for the modern planning practices. The success of the dual canal-street network lies in the concept of connection among systems of communications to form a well-united web. This concept is particularly useful for public transport system in today's cities. Completing such a connected network encompasses various considerations, including practical ones like competitions among different modes of transportation, cooperation and management issues. However, the nature of the connection by all means facilitates commuters and thus encourages patronage of the networked transportation modes. With this, there is a strong incentive to install a well-connected network like the one in the Suzhou old city.

In the network, the interchanges of the two modes of transportations are as important, if not more, as the waterways and the streets themselves. Separately, there are obviously two linear systems in forms of two independent agencies, namely the waterway network and the street network. Generally, in the new district of Suzhou, the linear systems are treated as the primary elements in the overall transportation services, as in many modern cities. However, with insights from the case of Suzhou, it comes to suggest that while the interchanges rather than the linear systems have been placed with principal considerations, then both of the linear systems can be benefited.

### **3.4.3 Landscape in the Cityscape**

The waterways are the prominent feature that constitutes the overall images of the Suzhou old city. With the dual canal-street network, the waterways, together with the roads, perform as spatial connectors and dividers for individual land plots within the city. In the dual network, the waterways are more overwhelming than the roads, for the spatial qualities offered by the water bodies in the urban environment. Arguably when comparing a street and a waterway of same width, the later would apparently be wider than its reality and always with more visual pleasure and higher environmental qualities. It is particularly insightful in the dense urban environment. On the other hand, from the case in the Suzhou old city, while the waterways define land plots within their geographical network, they also act as borders which invite activities along them.

The waterways bring environmental benefits in terms of beautification in the urban environment. The settings in Suzhou reflect the native philosophy regarding the harmonious and sustainable relationships with nature, wherein the inhabitants' preference towards desirable living environment can be found. Many new developments nowadays are introduced with water features resembling the canal network of Suzhou as an important physical fabric. Besides, what is also inspiring from the Suzhou old city for landscape design is the classical Chinese gardens. There are a number of design principles, such as the skills for 'scene borrowing', the concepts of 'in-position' and 'in-motion' vistas, which fundamentally aims to create a natural tranquility by integrating the man-built environment into nature. By and large, to introduce the landscape in the cityscape, lots of design inspirations and reference can be drawn from the waterway settings as well as the classical garden design in the Suzhou old city.

### **3.4.5 Recommendations**

The mixed land use pattern inherited from the traditional socio-economic dynamics is vital to vibrant urban neighborhoods. With various functions juxtaposing in the same locality, the zoning of districts should not be set with rigid boundaries and barriers. Planning of the mixed land use pattern is essentially based on primary uses and then their supporting secondary functions. For instance, the most common pattern in the neighborhoods of the Suzhou old city is the residential and commercial mix, that the houses serves as a primary use and shops support the residents' daily needs. With the mixed land use pattern, diversity can be generated which promote more livable urban environment (Jacobs, 1964).

The dual canal-street network is insightful in terms of its well-webbed nature of different modes of transportation. The concept of connection emphasizing interchanges rather than the lines of transportation as primary element is worthy sustaining in today's modern cities. With this, modes of transportations are not necessarily restricted to the waterborne one and the street traffic or in form of waterways-street combination like that in the Suzhou old city; yet they could be rails, trams, ferries, walkways or even escalators. To this end, because of their differences in speeds and scales, it is not to say the forms of interchanges found in the Suzhou old city is readily replicable for these other modes, since by no means it can be done. Rather, it is to see the application of the concept of connection among individual transportation agencies to form a well-networked web.

For landscape and garden design, there are excellent instances in the Suzhou old city that unfold an ideal model, from which people's standard towards quality environment can be found. Herewith, the waterways that constitute a network within the city can be introduced in forms of landscape features in master layout designs of neighborhoods. While they provide visual and environmental pleasure, it is important that the waterways should be on intimate scale to the users and with constant functions that keeps themselves as part of daily life of the residents.

For the garden design, although the classical gardens in Suzhou are in form of private domains, the principles of the garden design like 'scene borrowing', 'in-position' and 'in-motion' vistas can be applied in urban design practices. Since the principles uphold the pursuit of sustainability, they are by all means adaptable and desirable for the landscape in modern city, and could be applied in different scales in the urban morphology. On the urban scale, the city is an aggregate of a range of urban fabrics. The garden design principles can serve to guide the arrangement and layout of different urban elements, for instance the disposition of open spaces and landscape with the buildings, so that the idea of integrating nature and man-built environment can be incorporated in the urban scale planning.

#### **4. Conclusion**

This paper is concerned with how the urban morphological features and qualities of traditional Chinese cities can be sustained in the context of modernization. To study this research question, this paper has firstly sought to understand the nature of the urban morphology, and then see what and how the features and qualities are adaptable and desirable in today's urban environment.

To sustain urban morphological features and qualities in today's cities, some forms of transformation for matching with modern functionality are needed, which must be based on understanding of the urban fabrics and spatial quality as well as respect the socio-cultural and behavioral roots from the context.

The case of Suzhou studied in this paper is insightful, from which there are quality urban environment on the building, neighborhood and urban scales which provide inspirations for today's urban planning and design practices. With the issues raised in Section 3, further studies are suggested to investigate the consolidated approach for putting forth the identified features in the contemporary practices, and incorporating them in the modern development.

## Appendices

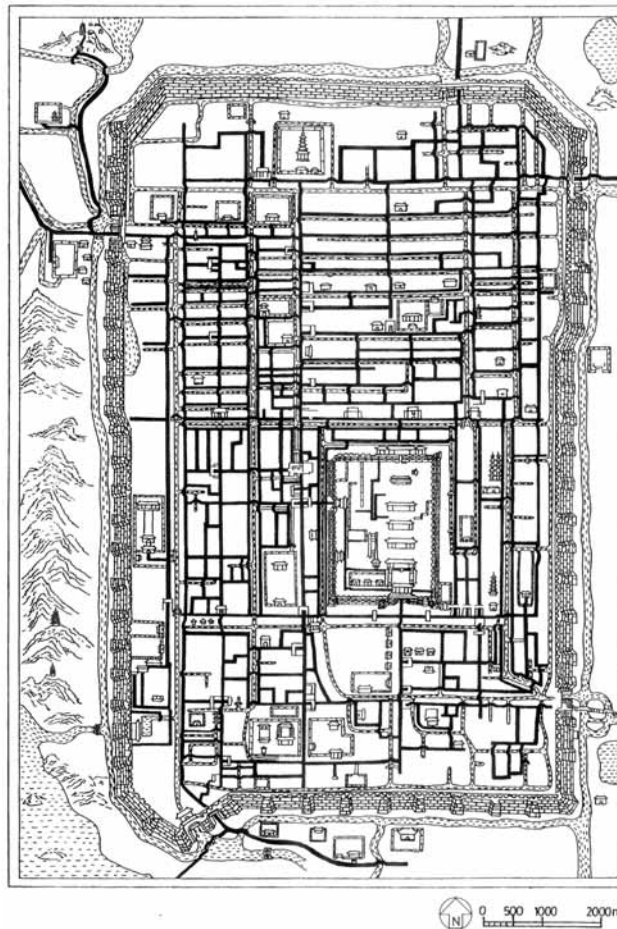
### Appendix 1: Chronological Table of Chinese Dynasties

Shang (商) Dynasty	c. 16th Century – c. 11th Century B.C.
Zhou (周) Dynasty	c. 11th Century – 221 B.C.
Qin (秦) Dynasty	221 – 206 B.C.
Han (漢) Dynasty	206 B.C. – 220 A.D.
Three Kingdoms	220 – 280
Jin (晉) Dynasty and Sixteen States	265 – 439
Southern and Northern Dynasties	420 – 581
Sui (隋) Dynasty	581 – 618
Tang (唐) Dynasty	618 – 907
Five Dynasties and Ten Kingdoms	907 – 979
Song (宋) Dynasty	960 – 1279
Yuan (元) Dynasty	1271 – 1368
Ming (明) Dynasty	1369 – 1644
Qing (清) Dynasty	1644 – 1911

(Source: Wright, 2001, pp. 219-220)

### Appendix 2: Pingjiang Tu (Map of Suzhou in 1229 A.D.)

Figure 1: Pingjiang Tu

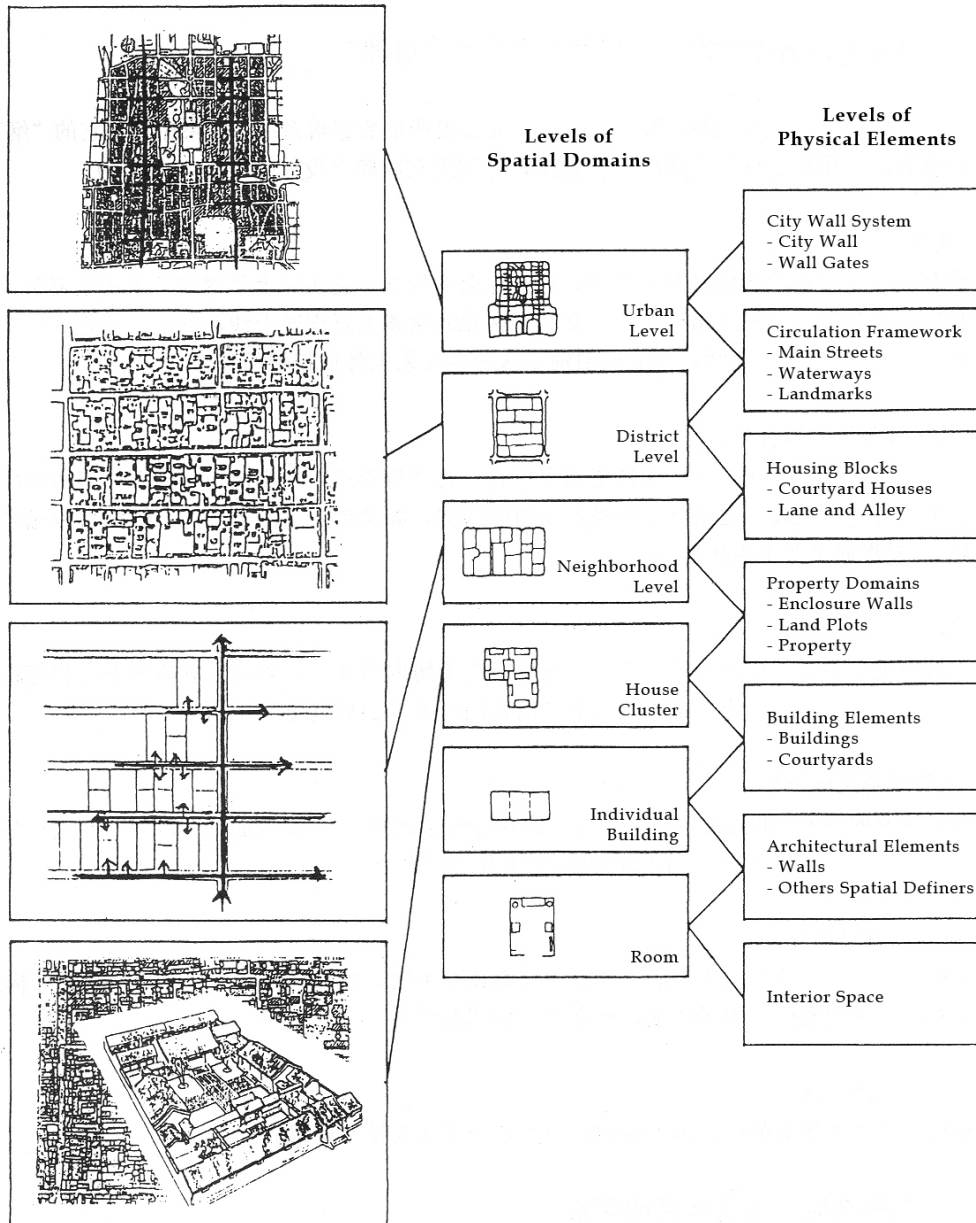


(Source: Golany, 2001, p. 216)



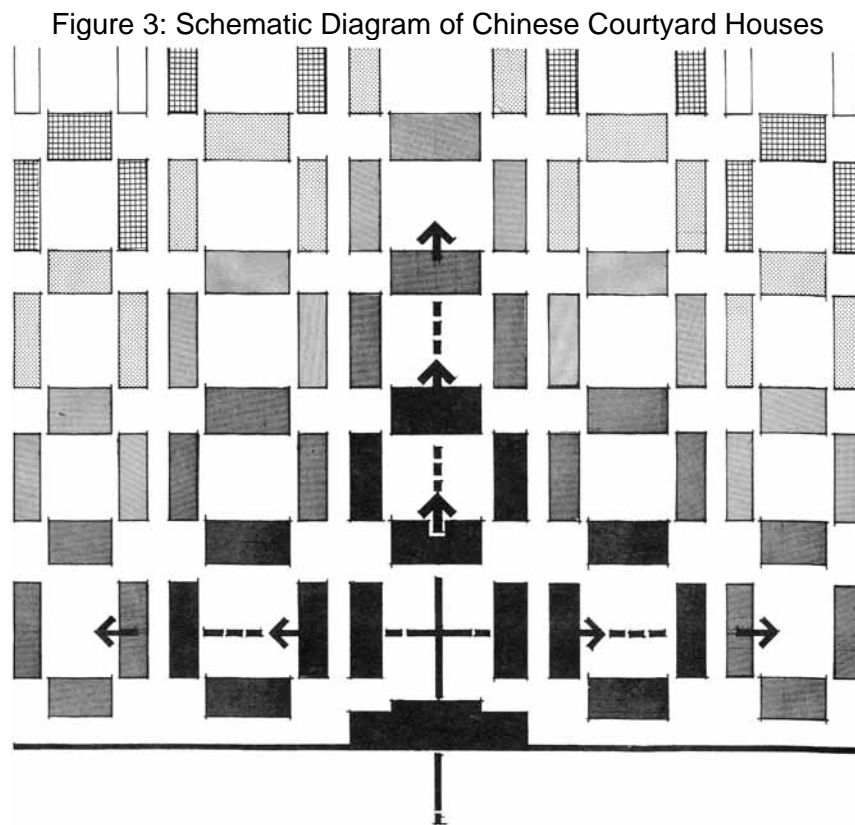
**Appendix 3: Neighborhood Hierarchy of Traditional Chinese Cities**

Figure 2: Neighborhood Hierarchy of Traditional Chinese Cities



(Source: Adapted from Wu, 1994, p. 119)

**Appendix 4: Schematic Diagram of Chinese Courtyard Houses**



(Source: Li, 1993, p. 143)

**Appendix 5: Suzhou New District in the East of the Old City**

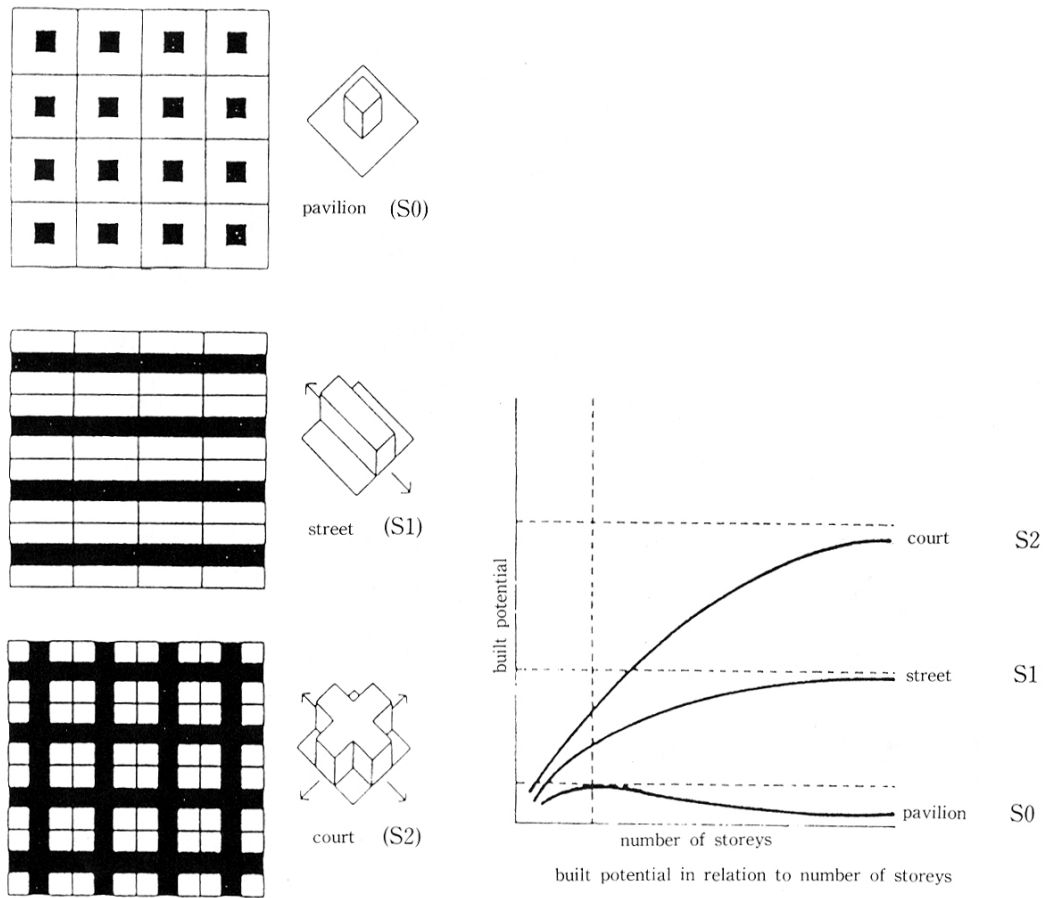
Figure 4: Suzhou New District showing the Disposition of Highways, Canals & Houses



(Source: Ping, 2005, p. 102)

**Appendix 6: Comparative Studies of Housing Forms**

Figure 5: Comparative Studies of Housing Forms



(Source: Wu, 1994, p. 98; Martin and March, 1972)

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## Endnotes

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<sup>1</sup> The River Yangtze (or named Changjiang) is the longest river in China. The River originates in the mountains on the eastern part of Tibetan plateau. It runs through a number of provinces, receiving more water from innumerable smaller lakes and rivers, and eventually reaches the East China Sea at Shanghai. The Yangtze River Delta generally comprises the triangular-shaped region of Shanghai, southern Jiangsu Province and northern Zhejiang Province. Since the fifth century, the Delta has been a main cultural and economic center of China. In modern times, the Delta has become the center of Chinese economic development, and surpassed all other regions in China in terms of economic growth, per capita income and productivity (Zhu, 2001). Suzhou is one of the key cities in the Delta, as a second-tier of regional cities (Ferguson, 1999).

<sup>2</sup> *Zhouli* is the treatise of the Zhou Dynasty's ritual systems, codified by the Zhou rulers documenting the order of society, the way of people's life, and the moral standards. Based upon the root of *Zhouli*, Confucianism was established, become matured, and took the prominent ideological place of the society. It became the fundamental and the most influential philosophy throughout the history of traditional Chinese society (Huang, 2000).

<sup>3</sup> The beginning of the imperial period of China was marked by the unification of China in 221 B.C. under Shi Huangdi (始皇帝, the First Emperor) of the Qin Dynasty. The imperial period lasted until the fall of the Qing Empire in 1911.

<sup>4</sup> Since the mid of the Tang Dynasty (618 – 907 A.D.), considerable changes in socio-economic conditions and the emergence of widespread commercial activities gave rise to a new stage in the development of the Chinese medieval city, by which the urban structure was enriched by the emergence of the new urban paradigm is one of the most dramatic and important changes in Chinese urban history. A 600-year period has been highlighted as the 'medieval urban revolution' in China, in which the impact on the urban development was manifold. Skinner (1971, pp. 23-27) summaries three salient and typical morphological changes: (1) the replacement of the government-controlled walled-ward system of residential and market quarters by an open street and market system; (2) the development of commercial suburbs outside the city walls; and (3) the development of small market towns between the regional administrative centers.

<sup>5</sup> Criteria for the selection was based on the four considerations as follows: (1) the city should have long history or there should have been events of historical significance taken place; (2) the city should have substantial amount of built heritage; (3) the city should have substantial amount of cultural heritage, for instance craft and opera; and (4) the city should have been functioning and will continue to be in use (Yang, 2006, p. 2).

<sup>6</sup> The ancient map is the *Pingjiang Tu*, a remarkable picture map engraved on a stone slab measuring 2.79m by 1.38m in 1229 A.D (Appendix 2). *Pingjiang* is an ancient name for Suzhou, and the map was a record that reflected the city in its 1229 A.D., the year it has been believed that the stele was created. Xu (2000, p. 88-89) makes comparison among the *Pingjiang Tu*, and other two maps of the city of year 1797 and year 1916, from which the morphological stability of the old Suzhou city can be illustrated.

<sup>7</sup> Confucianism is thought of a *theory of society* about the positions of individuals and groups within a society. It was established based upon the root of *Zhouli*, of which the elements accumulated over time and matured in terms of rites and relationships. Confucianism implies the social order representing the core of distinct Chinese values. This social order, according to Confucianism, is concerned with 'a structure of hierarchical relationships between distinct categories of people, who were expected to follow their sense of duty and behave towards each other in ways appropriate to their relationship'. The central social relationships are codified by the 'five cardinal relations', which based on the fundamental Confucian concept *li*, translated as rites or propriety. With this, it is believed that when the expectations associated with individuals' status are upheld, social stability could be achieved and harmonious cosmic order could prevail (Stockman, 2000, p. 71).

<sup>8</sup> The Xuanmiao Taoist Temple, literally refers to the Monastery of Sublime Mystery, is the most important temple located in the central area of the Suzhou old city with long history. In the beginning, for mainly religious function which welcomed people to participate its activities therein, the temple

gradually became a notable venue where various religious, social and economic activities have been conducted. It has been a communal space in the city that functions as 'the loci of urban activities' (Xu, 2000, pp. 183-184).

<sup>9</sup> Guanqian Street literally means 'before the temple', with its location lying in front of the Xuanmiao Taoist Temple running east-west direction explains its name.

<sup>10</sup> The Chenghuang Temple literally refers to the temple for the God of Town.

<sup>11</sup> There are three main types of Chinese classical gardens, namely the private gardens, public gardens and imperial gardens. Private gardens can be further classified into the northern and the southern styles. The northern private gardens originated in Beijing whereas the southern ones have been developed mainly in the lower valley of the River Yangtze, in and around cities like Suzhou, Hangzhou and Yangzhou (Lou, 2003). The idea of public gardens were given rise along with the introduction of Buddhism, which have been built in the precincts of the temples to promote meditation and oneness with nature. Imperial gardens were originally built for the royal as a hunting preserve, and were generally larger in size and lavishly decorated (Golany, 2001).

<sup>12</sup> Martin and March (1972) compare three different arrangements of building and open space, namely pavilion-like block, row housing and courtyard housing, using the ratio of built floor area to total site area as a measure of density and the semi-depth of the building as a measure of daylight conditions. Refer to Appendix 6, the diagram shows that when given the same density and requirements for minimum spacing for sunlight, the courtyard arrangement has the greatest build-out potential. This comparative study of the three housing forms offers an alternative view towards traditional Chinese courtyard houses.