THE COURTYARD AS CITY: A FRAMEWORK FOR APPLYING ALEXANDER'S A PATTERN LANGUAGE METHOD TO CHINA

by

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ABSTRACT

During its long history, Chinese architecture has achieved brilliant results-developing a system of architecture that is unique, excellent and independent in a global context. However, faced with the challenges of new social and economic programs and new technologies, traditional building types and landscape architecture have been largely set aside in favor of an international style. As a result, the regard for harmony and unity, which is the essence of traditional environmental design in China, is generally lacking in contemporary Chinese architectural and landscape architecture practice. It has been an important research to consider the potential future evolution of Chinese contemporary architecture and landscape architecture based on both old and new cultural and economic traditions.

This is also the motivation and aim of this thesis.

In this thesis, a research and design model is proposed for a "New and Chinese" architecture and landscape architecture, which is to apply Alexander's "A Pattern Language" to Chinese community design and to begin to develop a unique Chinese pattern language for contemporary Chinese architecture and landscape architecture.

Better community site planning and landscape design is urgently needed in China today. The unique Chinese patterns distilled and presented in this thesis focus on the community environment in North China, based on the archetypal residence of northern China, the Beijing courtyard house. These patterns are rich in Chinese spirit, support cultural expectations and can help to make the new Chinese living environments "alive" and "whole".

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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Introduction

1.1 Problem Statement: "Character Crisis" in Contemporary Chinese Architecture and Environmental Design

Architecture is a product of human activities, a mirror of human life. People inhabiting different areas of the world are influenced by their political, social and cultural environments, as well as the historical and geographical backgrounds of each specific region or nation. These influences gradually form their particular life and culture, which are then translated into specific spatial forms, buildings and cities. Thus, different nations produced characteristically unique national architectural forms.

In the past 3,000 years or so, China has developed its own unique architecture and landscape architecture. They were independent systems, which were a true reflection of the life and culture of the Chinese people and fulfilled physical needs while simultaneously expressing meaning through a unique symbolic vocabulary.

However, because of the drastic change from a lingering feudalistic society to a modern industrial culture in the 19th and 20th centuries, traditional building types could no longer serve an emerging world faced with the challenges of new aims and technologies. With the introduction of modern building materials such as reinforced concrete and rolled steel joists, International Style dominated architectural and environmental design practices, which maintained that modern building materials and construction methods should be universal and ignored national culture. "It became apparent that China was in danger of being swamped with a kind of modern international architecture, so losing its traditional building characteristics." (Liu, Laurence G, 1989, Chinese Architecture. P.274) Chinese contemporary architecture is losing its continuity and wholeness with the past.

1.2 Nature of a Solution: "New and Chinese"

Under these new social, economic and technical conditions, new architecture and landscape architecture should be created, based on both old and new cultural foundations, which again once again reflect Chinese life and culture.

Traditional Chinese architectural heritage is still significant to contemporary Chinese architecture and environmental design, not only in their aesthetic value but in their deeper cultural meaning. The achievements of the ancient handling of architectural sequence, human habitations, open spaces, and the secrets of scale in the fabric of cities should be included in the contemporary Chinese architecture and environmental design.

However, to promote the development of a 'Chinese' architecture does not mean to deny that of the 'West'. We must absorb all the positive elements of the architectural art and science of the 'West' in order to enrich the seed-bed, and make them contribute to the final blossoming of a 'Chinese' architectural form. However, Western methods and advanced technology should not be copied and applied unconsciously. Rather, they should be digested and assimilated on the basis of understanding and applicability to China's current situation.

1.3 Thesis Goal

■ Based on Alexander's A Pattern Language, the primary goal of this thesis is to distill and build patterns of Chinese communities, by which the spirit of Chinese architectural and landscape architectural culture would be inherited in contemporary works. These patterns mainly focus on the physical forms deeply influenced by cultural, philosophical and religious factors in China.

■ The current study introduces a rational, problem-oriented and self-conscious design approach to Chinese professionals, where solution-oriented and unself-conscious approaches are still dominating.

■ This thesis proposes a new research model for a "New and Chinese" architecture and environmental design, which is to distill and develop a Chinese pattern language based on Alexander's A Pattern Language. This research model fills the gap between the old and new, the regional and universal, the national and foreign, the Eastern and Western.

1.4 Thesis Objectives

The objectives of this thesis were to:

- Understand the essence and contribution of Alexander's A Pattern Language and the possibility and necessity of its application and adaptation in China;
- Understand past research and practice of the "New and Chinese" architecture and environmental design in China;
- Understand Contemporary community development in China;
- Study the characteristic and meaning of Chinese architecture and Beijing courtyard;
- Examine the adaptability of Alexander's A Pattern Language in China;
- Distill and develop patterns unique to China;
- Describe the patterns distilled and developed in this thesis;
- Draw Conclusions.

1.5 Scope of the Investigation

In the words of Christopher Alexander, "we hope that the environmental pattern language will ultimately contain hundreds of sub-systems and tens of thousands of individual patterns. Every conceivable kind of building, every part of every kind of building, and every piece of the large

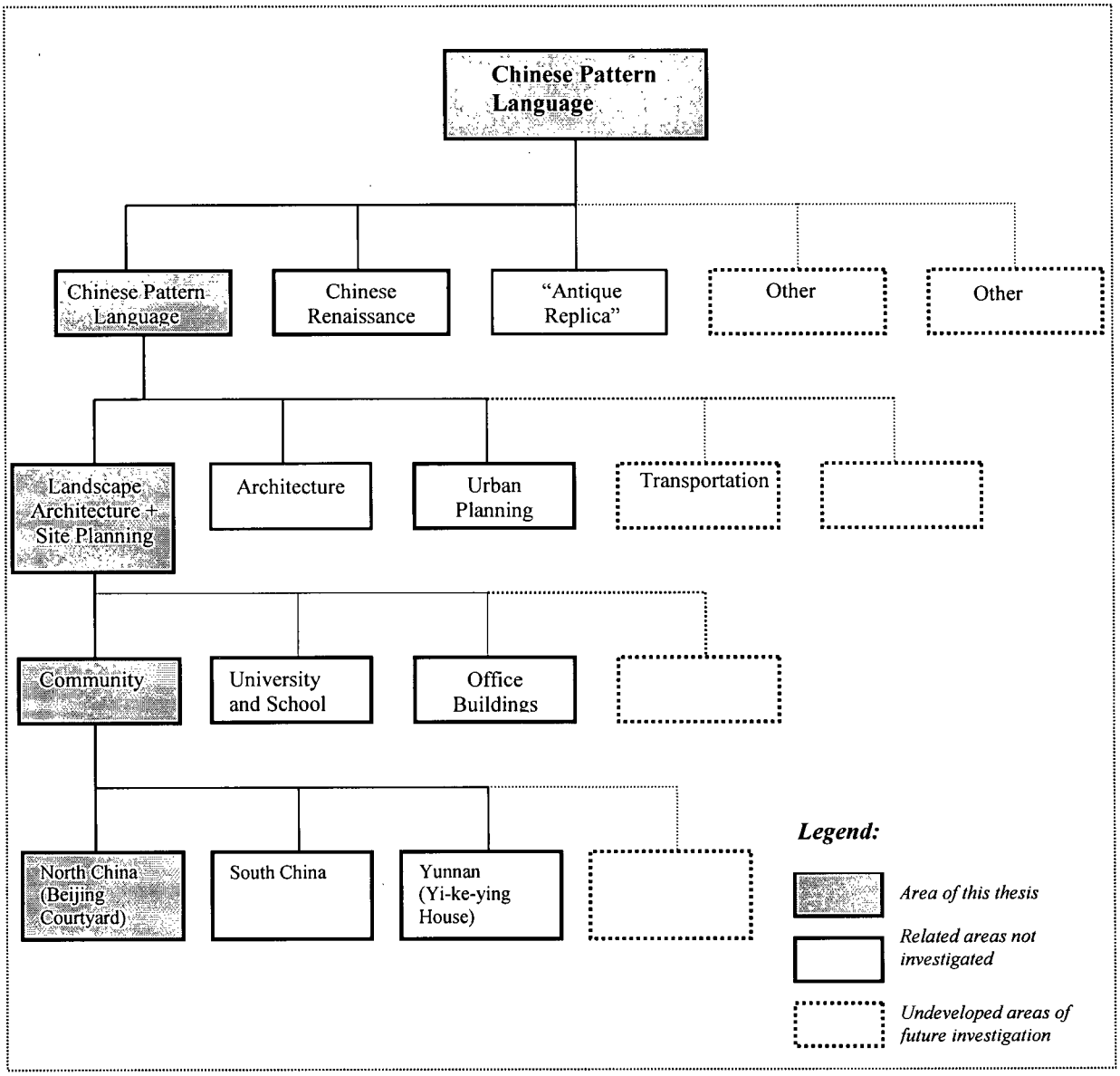
environment will then be specified by one or more subsystems of the environmental pattern language." (Alexander, Christopher, 1968, "The Environmental Pattern Language". *Ekistics,* May v25, p.336-337.) Alexander's Pattern Language is "a composite of theoretical models from a widely divergent set of fields: systems theory, natural science methodology, linguistics, cognitive psychology, biology, genetics". (Turner, Tom, 1996, City As Landscape, A post-postmodern view of design and planning. p. 56) Therefore, a thorough Chinese pattern language would be an extraordinarily complex theoretical structure. Due to the limited space, time and energy, the scope of this thesis only deals with parts of this structure, which are based on the archetypal houses in North China, referred to as "Beijing Courtyard" houses.

The following figure shows the composition and structure of this framework and the scope of this investigation.

This framework includes the fields of architecture, landscape architecture and site planning, urban planning and design. It also includes some undeveloped fields, such as transportation, for future investigation.

In landscape architecture and site planning, it includes different types of patterns, such as patterns on community, university and school, office buildings, open spaces.

Figure 1.The framework and the scope of the investigation of this thesis: (by author)



Procedures to apply Alexander's A Pattern Language Method to China

(1) Reviewing the patterns of Alexander's A Pattern Language

The patterns of Alexander's A Pattern Language should be reviewed first. The criteria should be set up to review the patterns. The patterns could be divided into three categories:

Applicable patterns which could be applied directly;

Modified patterns which should not be applied directly after some modification has been done;

Non-applicable patterns which are not suitable to China and should not be applied under the current circumstances in China.

The appendix at the end of this thesis provides the criteria and reviewing results for the Chinese community landscape architecture.

1.6 Chapter Summaries

The following is a brief description of each chapter of this thesis and of how it is structured.

Chapter One focuses on a literature review of the essence and contribution of Alexander's A Pattern Language, past research and the practice of "New and Chinese" architecture and landscape architecture and the contemporary community development in China and the problem statement for the thesis. This chapter establishes the research basis for this thesis.

Chapter Three investigates the essential meaning of Chinese building and landscape architecture, including relevant aspects of sociology, arts and philosophy—the basis, on which the form and character of Chinese buildings were shaped. It seeks to identify the unique characteristics of Chinese architectural and landscape architectural culture, even under the new economic and technology of today. It provides a background for the effort to distill Chinese pattern language.

Chapter Four studies the characteristics of the Beijing courtyard house, from which the Chinese patterns are distilled later in this thesis. In addition to the detailed physical forms and spatial organization of these houses, this chapter focuses on the social life and culture promoted by the Beijing courtyard house.

For more universal applications, Chapter Five provides seven patterns, which distill the design principles of the Beijing courtyard.

The last chapter is the conclusion which reviews the research work of this thesis and proposes the future studies.

Chapter 2 Literature Review

2.1 The Essence and Contribution of Alexander's A Pattern Language

> *'I believe this to be perhaps the most important book on architectural design published this century. Every library, every school, and every first-year student should have a copy'. (Ward, Tony, from Montgomery, Roger, 1970, "Pattern Language, The contribution of Christopher Alexander's Center for Environmental Structure to the science of design". Architectural Forum. JAN/FEB-1970, v132, n.1, p. 52-59.)*

2.1.1 What is A Pattern Language?

During the early 1970s, Christopher Alexander and a team of associates in his Center for Environmental Structure at University California at Berkeley created the outlines of a universal design vocabulary and grammar. They call it A Pattern Language, and used it to specify some of the spatial relations necessary for wholeness in the city. These patterns are the physical forms of spaces, distilled and built on the basis of archetypal, traditional, vernacular architecture, which meets people's needs both physically and mentally and tries to fill the gap between the old and new, the regional and universal. The patterns of A Pattern Language range from the large urban scale to the details of building construction. Detailed patterns are described for towns and neighborhoods, houses, gardens, and rooms.

Pattern language means a set of elements or component images called patterns, plus the rules for their combination into complete designs. It is a system of explicit patterns, so organized that all the patterns relevant to any given context can be obtained in the order most appropriate for design and then combined, by simple combinatory operations, to form a whole. Just as a verbal language is made up of

words and grammatical rules for their combination into sentences, the pattern language is composed of physical or spatial elements and rules for their combination into built form. Patterns, in turn, generate buildings and building groups much as sentences generate narratives.

The most important elements of the language are the patterns themselves, which correspond to the rules of grammar in a verbal language. Every pattern is essentially a re-useable design idea for the environment, which defines three things:

1.) The problem which this pattern solves;

2.) The range of spatial arrangements which solve this problem;

3.) And the range of contexts in which it makes sense to use this pattern.

Patterns can be stated equally well for the details of buildings, the overall layout of a building, ecology, large-scale social aspects of urban planning, regional economics, structural engineering, and building construction.

2.1.2. The Essence and Contribution of Alexander's A Pattern Language

2.1.2.1The Primary Goal of A Pattern Language

Pattern Language is based on a unified vision of the physical environment, which has variously been expressed as the "the quality without a name" and an architecture that is "alive". Such qualities can be illustrated by traditional vernacular architecture, but Alexander claims they are singularly missing in the architecture of the 20th century. "The cities and buildings we live in today, do not meet human needs. The environment does not form an organic whole; nor does the urban life within it." (Alexander, Christopher, 1970, "An Early Summary of 'The Timeless Way of Building'", Designing for Human

Behavior, p. 5) By distilling and building the patterns based on archetype that meet people's needs, the goal of Alexander's A Pattern Language is to make the city and environment whole and real and "make people feel alive and human". (Alexander, Christopher, 1977, A Pattern Language, p.xvii)

2.1.2.2Tentative and Dynamic Process

> *"We have spent years trying to formulate this language, in the hope that when a person uses it, he will be so impressed by its power, and so joyful in its use, that he will understand again, what it means to have a living language of this kind. If we only succeed in that, it is possible that each person may once again embark on the construction and development of his own language—perhaps taking the language printed in this book, as a point of departure." (Alexander, Christopher, 1977, A Pattern Language, p. xvii)*

"Patterns are very much alive and evolving" (Alexander, Christopher, 1977, A Pattern Language, p.xv). The constructing and development of pattern languages is a dynamic evolvement instead of a static process. "We have written this book as a first step in the society-wide process by which people will gradually become conscious of their own pattern languages, and work to improve them." (Alexander, Christopher, 1977, A Pattern Language, p.xvi)

Therefore, "every pattern is always tentative, which represents our current best guess as to what arrangement of the physical environment will work to solve the problem presented. It is a current 'best guess'; it will change constantly, and improve cumulatively, under the impact of fresh evidence. In this sense, patterns play the same role in environmental design that hypotheses have played in science. (Alexander, Christopher, 1970, "An Early Summary of 'The Timeless Way of Building'", Designing for Human Behavior, p. 56)

2.1.2.3 "A Pattern Language as a Picture of a Way of Life"

(1) "A pattern language is, in short, a picture of culture. And each personal version of the language is a work of art; a personal effort, by each person, to create a single picture of his culture which fits together and makes sense of life." In order to create an integrated picture of a future way of life, which is whole, all members try to create such personal languages, and share them. (Alexander, Christopher, 1970, "An Early Summary of 'The Timeless Way of Building'", Designing for Human Behavior, p. 59)

In addition to the individual patterns, whole pattern languages will ultimately contain sub-systems, which include every conceivable kind of building, every part of every kind of building, and every piece of the large environment.

"We hope, of course, that many of the people who read, and use this language, will try to improve these patterns—will put their energy to work, in this task of finding more true, more profound invariants—and we hope that gradually these more true patterns, which are slowly discovered, as time goes on, will enter a common language, which all of us can share." (Alexander, Christopher, 1977, A Pattern Language, p.xv)

(2) "Every society which is alive and whole, will have its own unique and distinct pattern language;" (Alexander, Christopher, 1977, A Pattern Language, p.xvi) "Every culture has its own language which defines the total environment for that culture. Every subculture in a culture, and every institution in a culture, has its own sublanguage, a sublanguage of the language for that culture". (Alexander, Christopher, 1970, "An Early Summary of 'The Timeless Way of Building'", Designing for Human Behavior, p. 57) "Every individual in such a society will have a unique language, shared in part, but which as a totality is unique to the mind of the person who has it. In this sense, in a healthy society there

will be as many pattern languages as there are people—even though these languages are shared and similar." (Alexander, Christopher, 1977, A Pattern Language, p.xvi)

Just like every individual in such an alive and whole society, pattern languages in these different cultures and societies will have a unique language, shared in part, but which as a totality is unique to each of them who uses it.

2.1.2.4 Methodological contribution

Credit for the worldwide movement to give design a rational basis belongs in large part to Christopher Alexander. From the *Notes on the Synthesis of Form,* to *A City Is Not a Tree* and then *A Pattern Language,* a series of his publications stimulated the thought and gave direction to architects and others working to modernize design methods as well as bring scientific rigor into their ancient craft.

Christopher Alexander's earlier work in problem-handling in his "Notes on the Synthesis of Form" is the dominant paradigm for constructing a logical means of working through complex design tasks, using as his working example the innumerable "needs" of the population of an Indian Village. In his later work, *A Pattern Language*, Alexander defines a "pattern language" in which the particular configuration of design elements to meet a particular set of situational conditions is intended to be applied to another similar situation. The way in which research findings from the human sciences are integrated into patterns—elements of a building or site—is another of Alexander's major methodological contributions.

(1) Design-by-drawing

Complexity is one of the great problems in the preliminary stage of design, which focuses on the data collection and analysis. The ill-defined character and the complexity of architectural problems are often

accompanied by contradictions among physiological, activity pattern, psychological, and technological requirements. The major constraint on design solutions is that it is impossible to identify all possibilities. Adequate information about the existing environment and about the types of place that it is desirable to make cannot be kept inside one brain. Life is too short. Moreover, there is no rule telling the architect when to stop searching for a better solution. It is thus impossible to ensure an optimal design.

Fortunately, Alexander's design-by-drawing made a significant contribution to solving this problem. His "Pattern Language" deals with the complexity in design. The central argument of the Alexander's A Pattern Language is that, in the face of complexity, humans have evolved archetypal designs, which solve recurrent problems. These solutions are called patterns. In primitive societies, humans had ways of using mud and grass to make dwellings. They remained constant from generation to generation. In modern societies, a greater range of patterns is available. Yet, the Pattern Language argues, there are still ways of doing things that over endless periods of time, have satisfied complex human requirements. Using the ancient patterns will, Alexander asserts, produce 'the quality without a name'.

Alexander's A Pattern Language is conceived as 'the archetypal core of all possible pattern languages, which can make people feel alive and human' (Alexander, Christopher, 1977, A Pattern Language, p.xvii), which helps people to work out intricate relationships between parts.

(2) Self-consciousness Design

"Unself-conscious and self-conscious approaches to the designing process have been distinguished by Christopher Alexander." (R.M. Kramer, 1969, "Participation of the Poor", Englewood Cliffs, N.J.: Prentice-Hall) According to Jon Lang, designing is usually unself-conscious in societies where there is a narrow range of environmental problems to consider and a low division of labor. The unself-conscious process is one in which most designs evolve by trial and error over. Today's situation is quite different

because problems are of a larger scale and of greater complexity. Many building types now cater to a wider range of needs, there is a high division of labor, and design is done largely by professional specialists. Design today is a self-conscious process and is becoming more so.

Many architects are wary of efforts to analyze and understand their design methods. This comes from a fear that analysis may hamper creativity. However, recent studies of suggest that otherwise. During the past decade there has been an increasing recognition by the profession that the processes of designing can be made more explicit and thus should be the subject of increased research. (Lang, Jon, 1974, "A Model of the Designing Process", Designing for Human Behavior, pp.43-47)

(3) Problem-oriented Approach

A traditional design approach is solution-oriented, is largely intuitive, and is often poorly structured. (Lang, Jon, 1974, Designing for Human Behavior, pp.8-10). The traditional solution-oriented design approach encourages divergent thinking, which can result in innovative design. It tends to emphasize problem identification and analysis, leading to an attempt to synthesize solutions. It is useful to develop strategies of design or models of the process before beginning a project. However, it might increase the probability that the wrong problem will have been solved. To reduce this possibility, explicit methods of designing are beginning to emerge and are being used by architects and urban designers on an increasing scale. This approach called by Jon Lang the problem-oriented approach. The aim of this approach is to bring to the attention of those involved in the process all elements of the problem in a systematic way. Alexander's Pattern Language provides designers with such an explicit, systematic and problem-oriented design approach. (Lang, Jon, 1974, "A Model of the Designing Process", Designing for Human Behavior, pp.43-47)

2.1.3 Alexander's A Pattern Language: the Possibility and Necessity of its Application and Adaptation in China

Jon Lang states that Industrialization in North America has reduced social contact between people. (Lang, Jon, 1974, "A Model of the Designing Process", Designing for Human Behavior, pp. 43-44) Since the dawn of industrialization, the needs of man have tended to take second place to those of the machine: the environment has been almost completely subject to direct and indirect demands of machines and of industry and its products. Science and technology, developed for and by the means of production, have never been directed seriously at those physical elements of the environment which were not immediately and materially productive.

"Most of what we have built in the past 150 years has been haphazard and unplanned. Its ultimate effect has often been antisocial and inhuman. " (Geoffery Spyer, 1971, Architect and Community, p.121).

The situation became worse and worse after 1945, when the International Style became widespread in industrialized countries. A great number of residential communities built under the influence of International Style during the past decades have been criticized in books such as Architect and Community: " 'There's No Place Like Home': The international owes nothing to context and responds to a rational desire to regulate man's habit" (Spyer, Geoffery 1971, Architect and Community, p.121). As Alexander stated: "the languages which people have today are so brutal, and so fragmented, that most people no longer have any language to speak of at all—and what they do have is not based on human, or natural considerations." (Alexander, Christopher, 1977, A Pattern Language, p.xvi).

China today is experiencing almost the same problems that happened in North America in 1960's to 1970's. China is a large country comprised of many ethnic groups, with various climatic conditions and

diverse geographic environments. Owing to regional differences in the natural environment and ways of living, Chinese architecture varied regionally and was a true reflection of the life and the culture of local areas. However, influenced by either the Beaux-Art, the Modern Movement or both, Chinese contemporary architecture and environmental design is undergoing a "Character Crisis", a new kind of "Stereotyped Style". "From east to west; north to south, large cities to small cities, there is no difference among the regional, national, and aesthetic aspects." (Zhang, Weigeng, 1999, "Developing Chinese classical architecture", Architectural Journal, v374, Oct. 1999, pp.17). The answer to this problem is to create a new architecture and environmental design, which fuses the old and new, the regional and universal, and makes the city "alive" and "whole". This provides the motivation for selecting Alexander's A Pattern Language as the basis of this research.

According to Alexander, "We have written this book as a first step in the society-wide process by which people will gradually become conscious of their own pattern languages, and work to improve them." (Alexander, Christopher, 1977, A Pattern Language, p. xvi) This notion makes this research necessary: on one hand, it would help to make Chinese architecture alive and whole; on the other hand, since every culture and subculture has its own language, which defines the total environment for that culture, or subculture, (Alexander, Christopher, 1970, "An Early Summer of 'The Timeless Way of Building'", Designing for Human Behavior, p.57) these new unique patterns, distilled from Chinese culture would be an important supplement to Alexander's A Pattern Language and its objective to make the world "alive" and "whole".

2.2 Past Research and Practice of "New and Chinese" Architecture and Environment in China

The idea of a "New and Chinese" architecture was first put forward by Su, Gin-Djih in his book, "Chinese Architecture, Past and Contemporary", 1964. He believes that all the positive elements and culture of the "old" Chinese architecture should be used to create a "new" form. The so-called

exemplary examples and culture of the "old" are the unique classical and traditional architectural presentation and technique, which can lead to the achievement a new content and style for architecture. To promote the development of the "Chinese" national architectural form does not mean to deny that of the "West". We must absorb all the best examples of the architectural art and science of the "West" in order to enrich the seed-bed, and make them contribute to the final blossoming of a "Chinese" architectural form. (Su, Gin-Djih, 1964, Chinese Architecture, past and Contemporary)

According to Su, there were two schools that used Chinese national architectural heritage to develop contemporary architecture and environment design. These were the Chinese Renaissance and Replicas of old buildings and landscapes.

2.2.1 Chinese Renaissance

This architecture movement was launched by the Society for Research of Chinese Architecture and instructed by both Prof. Liang Szu-cheng, an architectural researcher and theoretician, and Prof. Liu Tun-chen, who jointly conducted research on the building methods and theories of the Sung and Qing dynasties and investigated ancient Chinese buildings. What resulted was the Chinese Renaissance, which dominated Chinese architecture and environmental design before 1953, when China's First Five Year Plan was implemented and in the field of building, the new fundamental principles—'*utility, economy and, if possible, beauty*' were set.

The Chinese Renaissance was the result of the work of Prof. Liang Szu-cheng. He considered architecture an art, and demanded that it be treated as such. He evaluated the excellence or defects of a building by its large supports and out-stretched eaves. He opposed the 'glazed box-like' designs and encouraged a national style and reactionism. He upheld the characteristics of ancient Chinese buildings, such as the platform, the body, roof, supports and trusses. These characteristics, he felt, were the

grammar of Chinese architecture. He said that architecture should be based strictly on grammar in the same way as writing is. He also said that any buildings, large or small, high or low, should be constructed in accordance with the traditional Chinese style and grammar. The national style should be presented first in the overall sketch of the buildings, then in the ratio of the doors to the windows, and lastly, in the rhythm and anthemia. In short, in his conception, every house should be built within a large 'national-style' of roof, supports, and projecting eaves which should be freely added to the major parts of the building; the application of colors should be bold; colorful glazed tiles and bricks among the building materials available should be largely used; the hidden decorative power of various colors of paints should be utilized as much as possible; and carvings should be made on wooden materials, the surface of the stone and the brick-wall. This is reflected in many buildings completed in Peking and other places between 1930 to 1953... All these buildings have carried the Three-section design—platform, wall and decorative eaves. With a strong indication of the national style, they have amply presented building as art.

Figure 2. Example of Chinese Renaissance

China Architecture & Building Ministry, Beijing

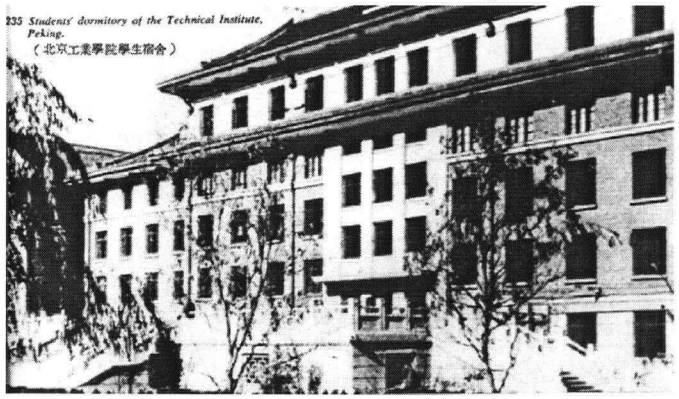


Figure 3. Example of Chinese Renaissance

Students' Dormitory of the Technical Institute, Beijing

(Both images from Su, Gin-Djih, 1964, Chinese Architecture, Past and Contemporary)

Prof. Liang suggested distilling the Chinese patterns from traditional architecture to create new Chinese architecture: "Most of our traditional plan layouts, from city to house, are the answers to our modern life

and deserve studying again and again...We have to create our own architecture." (from Zhang, Weigeng, 1999, "Developing Chinese classical architecture", Architectural Journal, v374, Oct. 1999, pp.16-18) The architectural conception of Prof. Liang Szu-cheng became a guide to the building professions of that time. His theory and practice prevailed throughout the mainland, from Peking to various other cities and all the provinces.

Figure 4. National Muse,, Nanjin,(from Su, Gin-Djih, 1964, Chinese Architecture, Past and Contemporary)

However, the Chinese Renaissance had only a short history. The reasons for this are:

(a) There existed a tendency to neglect the general fundamental principles of 'economy' and 'utility' of a building in favor of singular devotion formalism aimed at the outward beauty of a building. An inclination towards reactionism was also noted;

(b) Kalsomine-plastered and gold-leaf coated buildings, with large roofs, cornices and painted beams, and built in a palatial or temple style, were to be found everywhere in the country. These magnificent decorations not only wasted the nation's precious funds, but also lowered the utility value of the buildings, as utility was blatantly subjected to "beauty".

(c) After this formalism had developed into something like reactionism, the ancient style was ironically put on the modern buildings. The designs and techniques of the Chinese Renaissance did not comply with the present building techniques and could not reflect the outlook of the present time. Therefore, this formalism and reactionism in reality departed from considerations of the national economy, and from the directions of national construction.

2.2.2 Replica of old buildings and landscapes

The second school of rehabilitating Chinese architecture focused on mechanically copying a traditional building format or style. Some examples simply duplicate ancient design works, such as "MingQing Street" or "TangSong Town". In these cases, the only result is the destruction of the authenticity of the original.

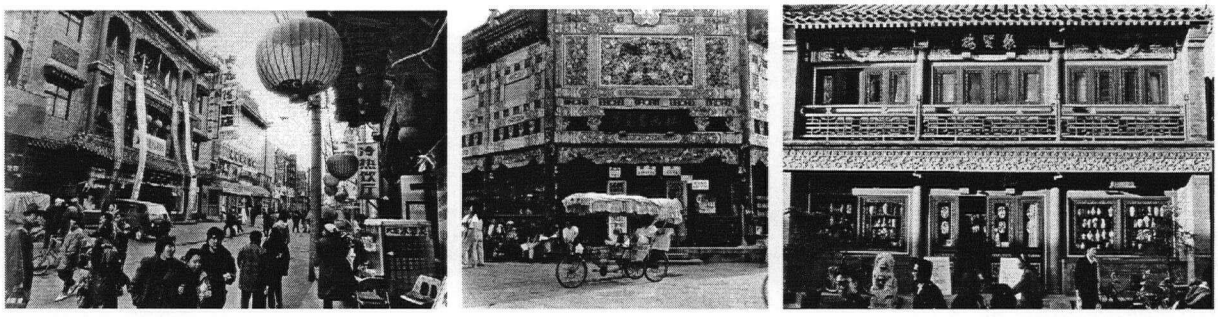


Figure 5. Antique Street, Beijing, Replica of Qing commercial streets,(from Shen, Yantai; Wang, Changqing, 1997. Life in Hutongs)

Undoubtedly there were excellent works of these two schools; however, their overall achievement was not satisfying. The Chinese Renaissance often stuck to one rule and remained unchanged finally becoming architectural reactionism; Replicas of old buildings and landscapes imitated the ancient architecture monuments blindly. Both schools reproduced old forms rather than creating new works by fusing old and new, regional and universal. (Su, Gin-Djih, 1964, Chinese Architecture, Past and Contemporary. Pp.152-164)

2.3 The Development of Contemporary Communities in China

2.3.1 Community design and construction is becoming one of the most important parts of the Chinese economy

With the steady growth of the Chinese economy, community construction has developed rapidly and become an important part of the Chinese economy since 1990. Compared with communities built before the 1990's, the characteristics of these new communities are as follows (Yuan, Jingshen, 1999, "The Spring of Architecture Creation", *Architectural Journal*, v374, Oct. 1999, p. 10):

(a) The scale is large. The building area of these communities generally ranges from thousands to hundreds of thousands of square meters and some of them are even millions of square meters in size. These large-scale communities consist of many buildings and are separated from adjacent communities by a road or green boundary.

(b) The planning and designing of these communities has paid much more attention to landscape environment design than ever before in Chinese cities.

Figure 6 and 7 New developed communities in Beijing, China (by author)

Figure 8. New developed communities in Beijing Figure 9. New developed communities in southern China

(from Fifty years of the Capital Urban and Rural Construction, People's Republic of China, 1949-1999)

(c) There are different types of residential buildings that the customer can choose from: low buildings; multi-houses and high-rises. Compared with buildings built before 1990's, there have been great improvements in the design details and facility convenience, such as the layout of the bedroom, living room, bathroom, kitchen, balcony, etc.

(c) There is an open space in the center of the community, where shops, restaurants and entertainment facilities exit to serve the neighborhoods. These public spaces in the center of the community provide an important outdoor communication and recreational area.

(d) Increasing emphasis has been placed on the sustainability of community development.

According to 2001 statistics from the China Ministry of Architecture & Building, the total annual built residential area is more than 300 million square meters, making China the largest residential housing market in the world. In Shanghai alone, there are more than ten million square meters of residential development each year. This unprecedented rapid growth of community development in China has become the focus of world attention. (Song Chunhua, 1999, Shoulder Heavy Responsibilities for Chinese Residential Construction, Architectural Journal, v 374, Oct. 1999, p.8).

2.3.2 Potential Markets for Community Construction

China is still in urgent need of residential space and this demand will continue for a long period of time. "During the next 10-20 years, there still will be a large demand for residence in China" (Song Chunhua, 1999, Shoulder Heavy Responsibilities for Chinese Residential Construction, Architectural Journal, v 374, Oct. 1999, p.5). According to 1998 statistics from China Ministry of Architecture & Building, community construction has been increasing rapidly since 1978 and the standard of living has greatly improved.

Table 1 shows the details.

Table 1. Community construction in China,1978-1998

YEAR	INVESTMENT OF COMMUNITY CONSTRUCTION (BILLIONS OF DOLLAR, RMB)	BUILT RESIDENTIAL AREA(,000,S M^2)	RESIDENCE AREA PER (M^2)
1978	39.21	3,752	3.6
1979	77.28	7,477	3.7
1980	123.37	10,211	3.9
1981	149.23	11,661	4.1
1982	190.91	13,830	4.4
1983	193.75	14,090	4.6
1984	208.19	14,718	4.9
1985	314.81	18,790	5.2
1986	375.57	22,152	6.0
1987	440.35	22,257	6.1
1988	578.77	23,950	6.3
1989	531.41	19,708	6.6
1990	498.34	17,317	6.7

1991	640.83	19,240	6.9
1992	1013.54	24,003	7.1
1993	1904.09	30,382	7.5
1994	2704.22	35,676	7.8
1995	3278.19	37,489	8.1
1996	3326.22	39,450	8.5
1997	3319.67	40,550	8.8
1998	4310.81	47,600	9.3

Source: China Ministry of Architecture & Building, 1998

According to Chinese standards, a residential building area of nine square meters per person is defined as that of a comfortable standard. This standard has been reached at the end of 20th century and is ahead of schedule. However, it is only a short-term objective and there is still huge gap between the rich and the poor. There is a large market for community development in China, both now and in the future.

2.3.3 An Urgent Need of High Quality Community Environment: New and Chinese

> *It is inappropriate, whatever the budget, to regard landscaping, site layout, play areas, and community facilities as luxury extras. All the evidence suggests that a medium-or high-density family development designed with little concern for these features will be doomed to failure, no matter how much effort and budget were spent on building interiors. One study of private sector housing in London indicates that to most people appearance means landscape and layout first, architecture second. (Shankland, 1969, from Marcus, Clare Cooper; Sarkissian, Wendy, 1986. Housing as if People Mattered: Site Design Guidelines for Medium-Density Family Housing. P.46)*

Under the Chinese fundamental principles—'utility, economy and, if possible, beauty' and the influence of the Modern Architecture Movement, the majority of people want a ready-made dwelling, as long as it fulfills the functional and symbolic needs of 'home'. And because budgets are tight, time is short, and immediate functional needs have to be met, more subtle, yet crucial, human needs such as privacy, territory, play space, and security are sometimes over-looked or inadequately fulfilled.

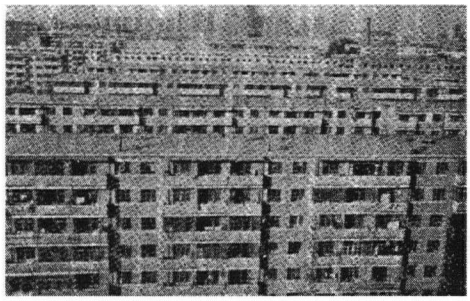


Figure 10. Barrack-type layout communities

Figure 11. Barrack-type layout communities in Beijing, China

(Figure 10 from Community Design, Beijing Architectural Design and Research Institute)

(Figure 11 from Fifty years of the Capital Urban and Rural Construction, People's Republic of China, 1949-1999)

Parallel blocks of the barrack-type apartment building dominated China community planning and design until recently. The space between these blocks is usually an elongated area of ground of identical shape and ambiguous function, not suitable for use. An elongated space gives a feeling of circulation and is not a place for pausing.

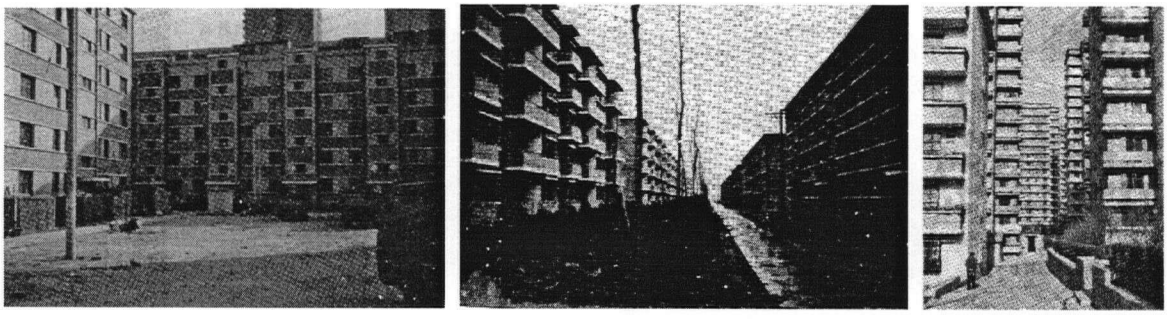


Figure 12. Nobody wants to stay in these elongated spaces (from Community Design, Beijing Architectural Design and Research Institute)

Today the "outdoor living environment" in the new communities is as important as other design components, such as architectural design. Landscape architecture is no longer a low priority aspect of development decided by funds or other factors. Compared with the past, new facilities are often luxurious and extravagant, however, the function is unsatisfactory. As Albert Mayer once noted: "we all naively thought that if we could eliminate the very bad physical dwellings and surroundings would almost 'per se' cure social ills". (Albert Mayer, from Lang, Jon, 1974, Designing for Human Behavior, p.5) Functional and human environmental design is in urgent need in contemporary Chinese communities.

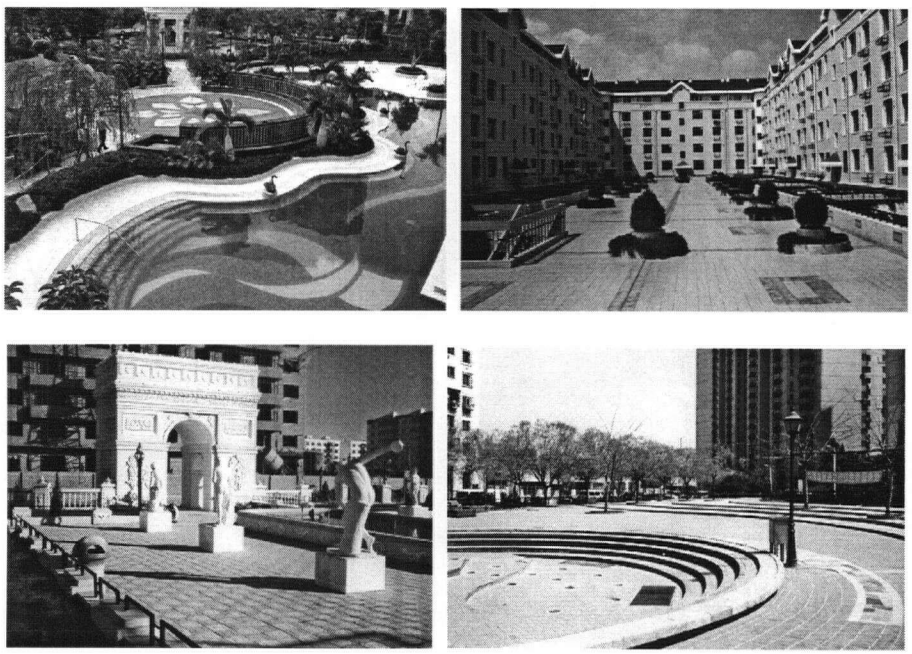


Figure 13. New-developed communities without consideration of human needs, although luxurious, even extravagant, (image by author)

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Chapter 3 Essential Meaning of Classical Chinese Building and Landscape Architecture

The unique culture and geographic environment of ancient China had worked together to produce an architecture which not only differed from the architecture of the rest of the world, but which also had retained its continuity for almost 2,000 years. From the form of a city to that of a single building, from construction to form, and from design concept to practice—that there was only minor changes made throughout such a long period is not only unusual within such a large nation, but is also a remarkable achievement worldwide. When discussing the history of Western architecture, we must describe the design concept, construction method, space, and meaning of architecture for each period of development. In contrast, in order to give readers a glimpse of the whole picture of Chinese architecture, we must describe the characteristics and meaning of Chinese architecture in general. (Chang, Chao-Kang, 1987, China, Tao in Architecture, p. 65)

3.1 Continuity and Assimilation

The phases of Chinese history are much broader in scope than those of the West, and China remains much more resistant to change than the European countries. The changes in architectural style are by no means so apparent as in our civilization. Once a form has been adopted it persists for centuries. This confers a notably greater uniformity. (Blaster, Werner, 1979, Courtyard House in China, p. 11)

3.1.1 Continuous Chinese Social Culture

3.1.1.1 Unmolested Ancient Chinese Culture

Every two or three centuries, European countries changed masters. From the Assyrians to the Egyptians, the Greeks, the Romans, the Mongols, the Arabs, the Turks, and so many others, Europe has seen all, endured all, absorbed all—and from them all it has distilled a civilization changed with various elements which are the source of its incomparable wealth. China, in the course of thousands of years of history, suffered no abrupt break in her traditions, no sudden importation of a foreign culture. China lived its own life. It was able to develop its own genius unmolested. China had the unheard of good fortune, denied to Europe, of being able to delve to the depths of its culture, to draw from it, never interrupted in its slow labor of elaboration. But China has not had the other gift of nature, perhaps yet more precious, that Europe has had, of being enriched by gifts from the outer world, gifts foreign to its genius, which have given it breadth.

3.1.1.2 Chinese Traditional Cosmology: a source of stability

Unlike that of Europe, where the taste for change had become a factor in conservation, there was no taste for change and no liking for novelty in China, due to the Chinese cosmology, which has long been influenced by Confucian philosophy. Founded on optimism and contentment, there is no psychological justification for innovation in Confucian philosophy, which believed the thing that has always been done is good and must remain good for all time.

Benevolence, hierarchy of class and seniority, the concept of 'sky does not change, so everything does not change', natural phenomena (hills, rivers, trees), the feudalistic system grown from and adapted to the sky, all expressed a permanence which controlled Chinese thinking, forming the seemingly

unchanged, unique Chinese architectural style. In Europe the relics of the past are respected, but each age brings its own further contribution. In China the same houses, the same temples were eternally rebuilt. In Europe there are ancient buildings and modern ones that differ from them; in China everything was both modern and ancient—ancient in taste, in conception, modern in date. In China almost all the oldest buildings date from the seventeenth century. But they reflect a taste of perhaps thousands years ago, a style perfected well before the rise of Gothic art.

For the same reason, when people talk in China of decay or growth, they do not mean decay of taste, for Chinese taste scarcely changes. They refer to decay of technique, to the greater or lesser perfection of execution. In Europe, periods of decadence are almost always accounted for by great political upheavals—which China was spared until relatively recent times.

3.1.2 Assimilation

> *During the past two thousand years, in a vertical fashion, Chinese architecture has developed a tradition of continuity, expressing little change, whilst horizontally it has absorbed Western culture, integrating it with an inherent style, creating many new forms. This architecture, infused with the spirit of both the Chinese and the West, which neither copies nor rejects other cultural concepts, belongs to the whole world and all mankind.(Liu, Laurence, Chinese Architecture, p.25)*

Assimilation was not only an architectural phenomenon, but also a characteristic of the nation's ability to absorb ethnic minorities and conquerors. During its long history China has been invaded and occupied by diverse foreign forces. Yet, in the end, it not only assimilated the conquerors, but also maintained its own unique cultural tradition. This assimilation is perhaps most apparent in regard to architectural types and forms, and the decorative arts. For example, in the many Buddhist pagodas and

carvings, direct influences originating in Western art were not simply copied, but adapted, altered absorbed finally assimilated, gradually becoming integral features of Chinese architecture. In this manner classical Chinese architecture maintained its individual integrity, changing very little during several millennia.

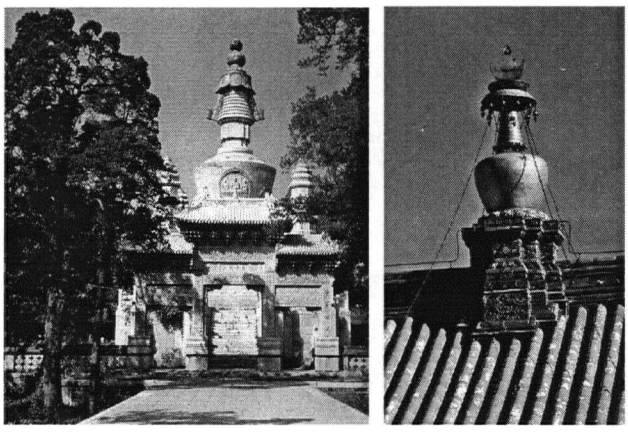


Figure 14. Assimilation: the combination of foreign elements with Chinese roof (from Liu, Laurence, Chinese Architecture)

3.2 Political Philosophies and Religious Concepts: Harmony, Rite or Reason (Hierarchy and Order)

> *"The characteristic spirit of Chinese architecture is a religious conception. Once we recognize this we are also able to understand the buildings themselves. And the finest convictions of the Chinese were expressed in the religious spirit. Here is the root of all activity. The resultant inner forces should move us when looking at the external picture of the Chinese landscape, at the nature that made this people what it is, and at the works of architecture by means of which the Chinese breathed life into their country".(Boerschmann, Ernst, 1941, Picturesque China, Architecture and Landscape, p.15-16)*

China has three great religious, Confucianism and Taoism, which are indigenous, and Buddhism, which was introduced from India. These three religious are mutually tolerant.

Traditional Chinese culture was dominated by Confucian philosophy, complemented by Laozi, the originator of Taoism. Both philosophies represented the organization of two great systems of thought. The one tried to reconcile individualism with institutionalism, and the second demanded a complete reversal of the existing order and a return to the natural state. These two attitudes were represented by what came to be known as Positivism and Negativism. Both philosophies emphasize calmness of mind, quietude, and the notion of world order.

When Buddhism fused with the two it stated that mere outward laboring is useless and emphasized cultivation of the inner self. Thus, together with Confucius and Laozi, traditional Chinese philosophy formed.

3.2.1 Confucius

Living during the later part of the East Zhou, 552-479B.C, Confucius of the Kingdom of Lu, was respected as a sage even during his lifetime, as well as during the entire 2,500 feudalistic years to follow. Confucianism adapted to the needs of both the controlling clan and the common people. "Never overpowered by other schools and always dominating Chinese culture, was Confucian thought, undoubtedly, the epitome of ancient Chinese philosophical development." (Liu, Laurence, 1989, Chinese Architecture, pp.58-62)

Figure 15. Portrait of Confucius, from Martin, William, 1932. Understand the Chinese, p.32

Confucius' theory was that those in power should practice an autocratic benevolence to the common people, while those at the bottom should respect, and be obedient to, the kings and emperors. His fundamental teachings consisted of a moral code centered on adherence to the Will of Heaven, harmony with nature, and behaving according to De (Virtues). Like Jesus, he never wrote any books but accumulated a huge following of disciples who recorded his teachings in, among other works, "the Classic of History", the "Analects" and the "Zhou Ritual". One document, the "Book of Songs", has traditionally been attributed to Confucius. In all of the Chapters accepted as authentic, the focus is on "Tian (Heaven), obedience to the will of Heaven". Since Heaven was represented by Tianzi (Son of Heaven) or the emperor, it followed that everyone should obey the Emperor. Heaven also had a mystic power called "Qi" (breath) on which the prosperity of the nation depended and everyone, from the Emperor to the common people, should be in harmony with this Qi, since nature provided both food and health, the followers of Confucius worshiped heaven, earth, sun, moon, stars, hills, rivers—indeed, all discernible elements of the natural world.

In ancient China, the guiding factor of attuning to nature in the siting and planning of cities, buildings, and tombs was a major reason why Chinese architecture experienced very little change. Nature consisted of predictable cycles, and from year to year differed very little, a principle expressed in the arts and architecture of the nation. It was an accepted fact that obedience to the will of Heaven and

attuning to nature world eventually lead to the achievement of both personal and dynastic harmony. Confucius firmly believed that Harmony within the court would result in a prosperous and powerful reign. Harmony within the family and with nature would bring good fortune and health to the household. Inner harmony and moderation of one's self could bring a well-balanced character, and it is the aim of self-cultivation. Attuning to Heaven came from harmony with nature, obedience to elders brought harmony to the family, therefore, it could be said that the most important of Confucius's teachings, which also influenced architecture was ***harmony***.

Confucius related every aspect of human activity to the word "***Rite***" or "***Reason***" (in Chinese, both are pronounced "Li") which represented his moral ideas governing the categories of daily life, regulating court ritual and directing art, literature and architecture. A scholar's responsibility was to abide by reason or observe rites, producing a rational philosophy with political implications. While "De" was interpreted as benevolence and righteousness, rite produced order. Confucius taught the people with De but put them in order with rite, establishing a hierarchy of love, respect and filial piety. Confucianism established the rules and regulations to provide order in the complicated relations between men, thereby creating a stable social order. Achieved through education, the goal was to be faithful and obedient to nature and rulers, but his true aim was fundamentally ethical – spiritual, concern for spiritual health in the inner man, the fullness internal life of the spirit.

Confucius' teachings maintained an influence over the people's mind for 2,500 years, disseminated through books as well as by verbal transmission of his quotations. Within architecture his influence can be seen either in the harmony with the site or in the building hierarchy, which required the use of an imposing building to express the dignity inherent in the concept of the state.

Harmony has roots in classical Chinese architecture, which includes the harmonious relationship between the parts and the whole, with emphasis on the feel of the materials and the unity between

materials and structure. The effort to create a place for the coexistence of people also exerts sympathy with nature and conveys symbolic meanings. The environment is organized to be attuned to nature and achieve a harmony among people.

Hierarchy and protocol were strongly reflected in the strict observance of a code that determined the use of materials and craftsmanship in accordance with the official status of the user.

3.2.2Taoism and Buddhism

(1) Taoism

The other great philosopher of the period, Laozi (Laotzu), whose family name was Li, was believed to be a little older than Confucius. His book, the Dao De Jing, or Laozi, expressed a philosophy which was the complete antithesis of Confucianism. Whereas, Confucianism was conservative, rational and adapted to the support of the state; Taoism was anti-rational mystical and taught the veneration of nature. Both philosophies exercised complementary influences upon Chinese thought, especially as expressed in the arts. Although Laozi became known as the founder of Taoism, it should be noted that he was the type of sage who, in keeping with his philosophy, avoided public recognition, preferring the life of a minor court official and finally that of a hermit.

Figure 16. The paradise of Taoists (from Keswick, Maggie, the Chinese Garden, 1986)

(2) Buddhism

In the Han Dynasty (67A.D.), Buddhism was first introduced into China. About this time Chinese thought became pessimistic, and an eclectic tendency appeared in Chinese philosophy. Confucianism, Taoism, and Buddhism began to borrow from one another until a new synthesis was reached in what is called Spiritual Institutionalism. The rise of this new system marks the beginning of the Modern Period in the history of Chinese thought (960 A.D. to this day). An excessive subjectivism and emphasis upon inwardness was characteristic of this period. (Liu, Laurence, 1989, Chinese Architecture, pp.62-64)

Taoism and the Chan Sect, which is one of the Buddhism Schools, had a deep influence on the concept of Chinese arts, including poetry, painting, and classical Chinese gardens. Through water, rocks, trees and flowers, buildings and spaces, and the utilization of the effects of natural phenomena—the change of seasons, light, color, shadow and sound, traditional garden design aimed at to create a poetic atmosphere, that offers repose, harmony, serenity and elegance.

3.3 Cultural Symbolism

> *Classical Chinese architecture was a true reflection of the life and culture of the Chinese people, fulfilling physical needs while simultaneously expressing meaning through its unique symbolic vocabulary. This marriage of the physical and the symbolic is the foundation of all great architecture, and became the metaphysical resource for each advancing stage of development. (Liu, Laurence, 1989, Chinese Architecture, p.15)*

Symbolism was developed to express the deeper meanings of daily life. It was the basic characteristic of traditional Chinese art and architecture as well as site planning. A series of specific symbolic architecture and environmental languages have been developed to represent the character, spirit, feelings and ideas of both the builder and beholder. Axial and symmetrical planning expressed ethics and ritual orientation while Feng Shui depicted deeper religious meaning and the private garden expressed philosophical content. Thus the Chinese world view was embodied in the symbolism of both architecture and site planning.

3.3.1 "Heaven is round, the earth is square"

It is believed in ancient China that "heaven is round, the earth is square". "The earth is square" became the basis for the most fundamental design symbol and built form in the traditional political iconography and social landscapes of China, and rectilinearity became the most fundamental spatial element in the classical and medieval design tradition of China.

Traditional Chinese cities, buildings, and houses, whatever their scale or execution, are—with one important exception, that is the classical Chinese garden,—figuratively or actually squares, rectangles,

or rectilinear modular boxes. The square and the rectangle implied the man-made environment and its social-order, because in a Chinese version of 'nature knows no straight lines'. The 'squareness' symbolized all the works of man-in-society and man-in-nature.

3.3.2 Worshipping both man and nature

The people of ancient China worshipped both man and nature. The ancient Chinese had a primitive concept of religion. They worshipped all that could lessen their troubles and provide spiritual compensation for life's difficulties. The elements of nature, manifestations of the infinite order of the universe, were viewed as spirits which assured life's necessary circles. Hills, trees, rocks, rivers, sun, moon and wind all had spirits or were looked on as gods. The sun and sky, responsible for growth, production and good health, were especially worshipped. Gratitude was also expressed to the spirits of departed ancestors, without whom successive generations could not exist, while the emperor, self-proclaimed 'Son of Heaven', was worshiped in the belief that he could pray to the gods on the people's behalf.

3.4 Characteristics of Chinese Architecture

> *In ancient China, religion and myth, philosophy and politics, science and superstition, humanity and ritual were constantly confronting and complementing each other. These phenomena eventually formed a unique architecture which was, and is, both imposing and humane, fully expressing the thoughts of the people. (Liu, Laurence, 1989, Chinese Architecture, p.15)*

3.4.1 Urban Planning

Chinese city planning was closely linked with ideas of real and ideal social order, and a structured vision of the universe. Builders aimed at making the city a true image of the universe as an ordered whole, a symbol of power and order attuned to nature.

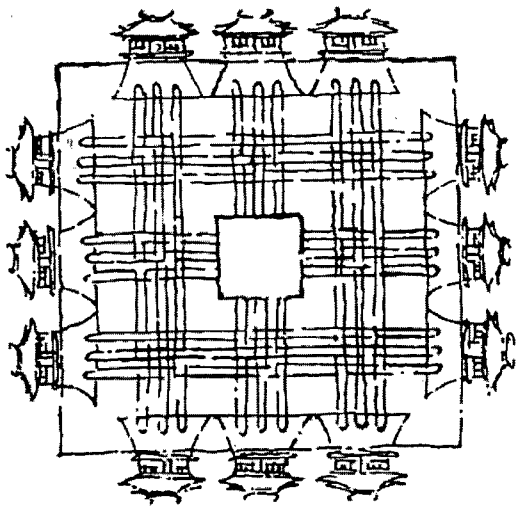


Figure 17. Chessboard City (from Kao Gong Ji, a model of capital city)

The typical Chinese city was two-dimensional and the layout was axial, symmetrical, and formal. The streets ran north, east, south and west in a grid-pattern or "chessboard" and created square grid residential blocks, with the palace or office at the center.

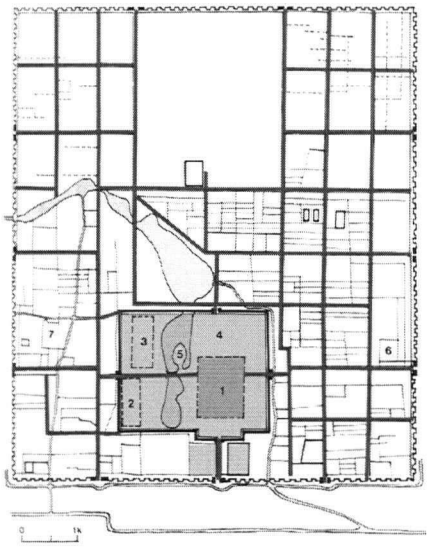


Figure 18. Dadu (now Beijing), city plan, capital of Yuan Dynasty, reconstructed Dynasty (both from Liu, Laurence, 1989, Chinese Architecture)

Key: 1. Inner court 2. Longfusi 3. Sinsheng Palace 4. Imperial garden 5. Qionghua Isle 6. Ancestral Hall 7. Altar of Society

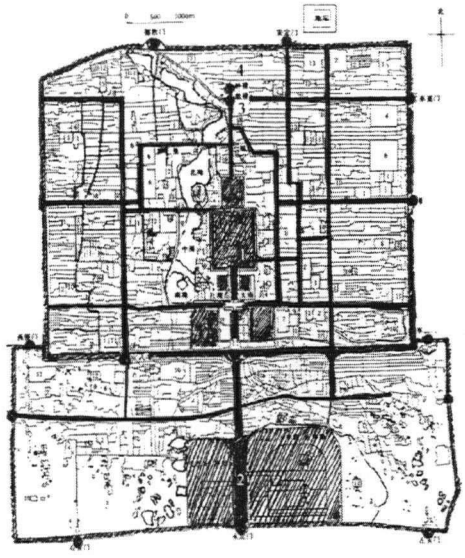


Figure 19. Beijing, city plan, capital of Ming and Qing

1. Forbidden City 2. Heaven Temple 3. Drum Tower 4. Bell Tower

In contrast to the formal geometric city planning and buildings, however, Chinese classic gardens were an "informal, asymmetrical, playful, romantic and ingenious reproduction" of the beauties of nature. (Peng, YiGang, 1996, The Analysis of Classical Chinese Garden, p.66) This asymmetrical informality of the pleasure-garden was calculated to balance the symmetrical and austere planning of the formal buildings.

Stern and formal though the Chinese cities and buildings were, even the monumental buildings or environments on a big scale, retained an intimate feeling. The buildings in the Forbidden City are of great size, however, they still retain a human scale. The residential streets and lanes corresponded to human scale and a feeling of intimacy and neighborliness can be felt when walking along such a street.

When comparing Chinese city plans with their European counterparts, one of the great difference lies in the European city center of the agora, forum or squares for the circulation and exchange of ideas of the

people. In ancient China, according to Confucius, subordination and obedience were the basis of the harmony, from the state to the family. Common people were never encouraged to participate in state affairs: 'I work after sunrise; I rest after sunset, why do I care about the emperor and politics?' Therefore, there was a lack of public places in Chinese city planning for people to communicate and express their political opinions. The open spaces in front of government buildings were usually used to draw attention to their status of power and wealth, and never for political gatherings.

In conclusion, the characteristic features of ancient cities were as follows:

a) All cities were enclosed by walls;

b) Cities exhibit axial symmetry, with the palace located at the center;

c) All major buildings faced south. The roads were laid out running north-south and east-west, forming a checker-board grid;

d) Cities were designed with a square plan, and gateways opened to all four directions;

e) There was a lack of open spaces for people to communicate and express their political opinions;

f) All buildings and streets expressed a human scale.

Closely linked with ideas of real and ideal social order, and a structured vision of the universe, Chinese urban planning effectively expressed order, subordination and obedience, and an embodied symbolism, the aim of which was simply to create a harmonious whole.

3.4.2 Building

3.4.2.1 Hierarchical Buildings

Hierarchy and Protocol were strongly reflected in the strict observance of a code that determined the use of materials and craftsmanship in accordance with the official status of the user. Hierarchy demanded

that materials, workmanship and construction of every single courtyard and home be strictly controlled in accordance with the rank and position of its chief occupants. The use of color, decoration and also the height and proportions of the buildings and the depths of the roof trusses were regulated. The commoner's buildings were characterized by a large expanse of grey brick walls and roofing tiles, as the use of such elements was restricted to the gracious and splendid archetypical places, temples and residences.

Hierarchy and Protocol also influenced the layout of building groups. One of the traditional rules of laying out building groups was to depress the front and elevate the back, lowering the surrounding and raising the central part, so that buildings on the north-south axes were imposing. The sizes and heights of the surrounding structures gradually increased as the main building was approached and at the same time an interesting silhouette with an up-and-down rhythm was created. The courtyard was proportionally enlarged as the climax of the plan was reached. This usually means that every building group is built around the court, and each court is raised higher than the one in front and joined by the longitudinal axis.

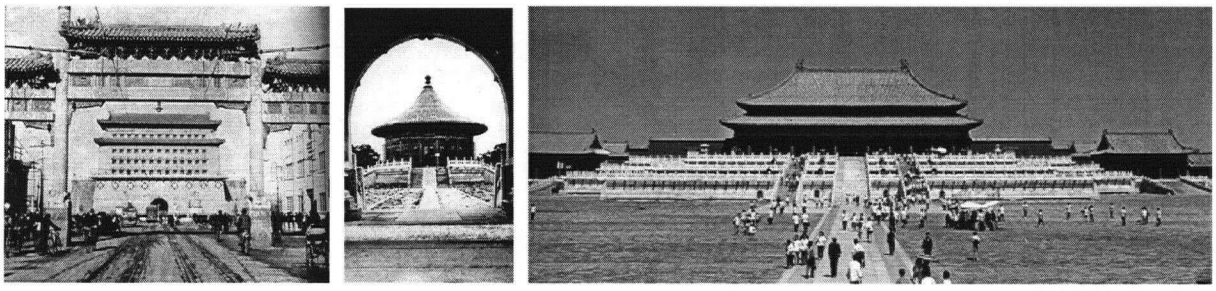


Figure 20, 21, 22 Main building in traditional Chinese architecture, the first two picture(from Dun, J. Li, 1971, The Ageless Chinese)

Within each court, the main building was the highest, most exquisitely decorated building. It was planned to sit in the center facing south and stood on a platform. The minor rooms were lower and were less decorated. There are three ways to layout building groups:

A. The first and most common arrangement placed the main building at the center of the major axis. Minor rooms were planned to sit to the east and west of the court, facing each other over a courtyard. The rooms opposite the main building were reversed (since it faced the north over the courtyard). There, four quarters were connected to each other by a covered path with a verandah to link them into one courtyard, thereby making one unit.

This composition has been widely used in China and is the basic Chinese courtyard form.

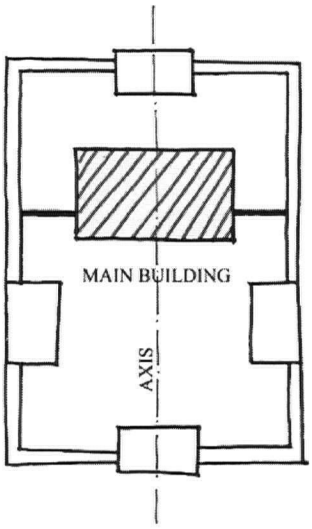


Figure 23, 24. Type A: Axial layout

(drawing by author, image by Shen, Yantai, Wang, Changqing, 1997, Life in Huntongs, Through Intricate Alleyways in Beijing)

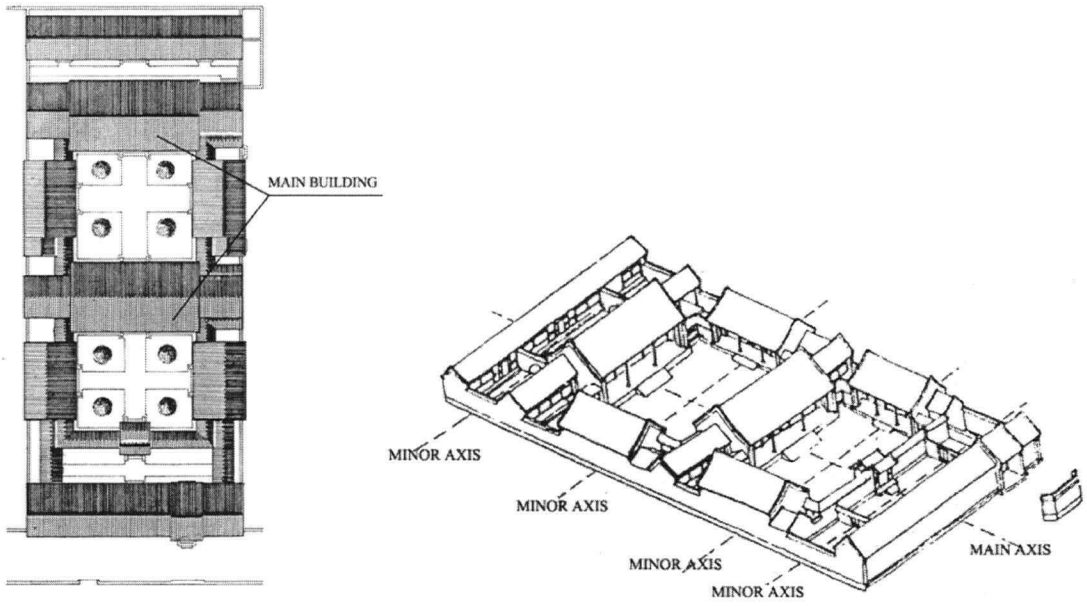


Figure 25, 26. Example of type A: Beijing courtyard house

(from Lu, Xiang, 1996, Beijing Courtyard)

B. The second arrangement is called the central building layout. This composition, based upon perpendicular axes, placed the main building at the intersection of the two axes. The whole group was surrounded on all sides by minor halls, verandahs, and other buildings. In this way, a building complex, which was symmetrical along both longitudinal and horizontal axes was achieved. This composition was often used in monumental buildings, such as the Han Ritual Building, Altars of Heaven of Ming, and Pule Temple of Qing.

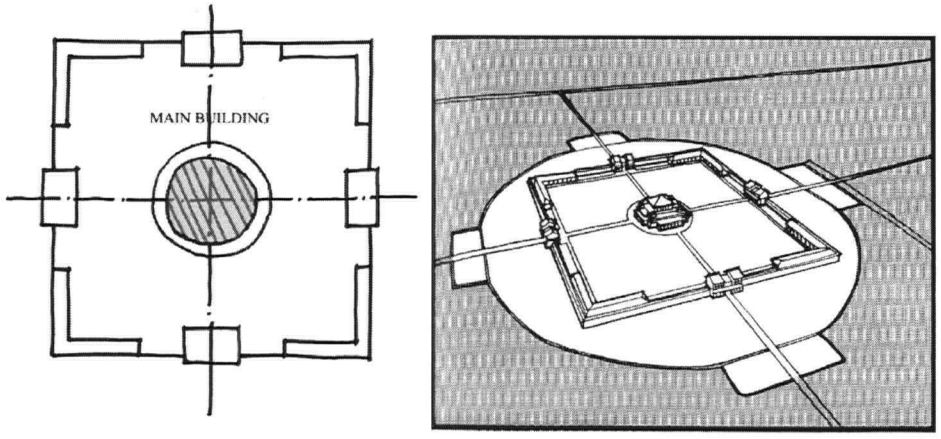


Figure 27, 28. Pattern B Central layout (left by author, right from Liu, Laurence, 1989, Chinese Architecture.)

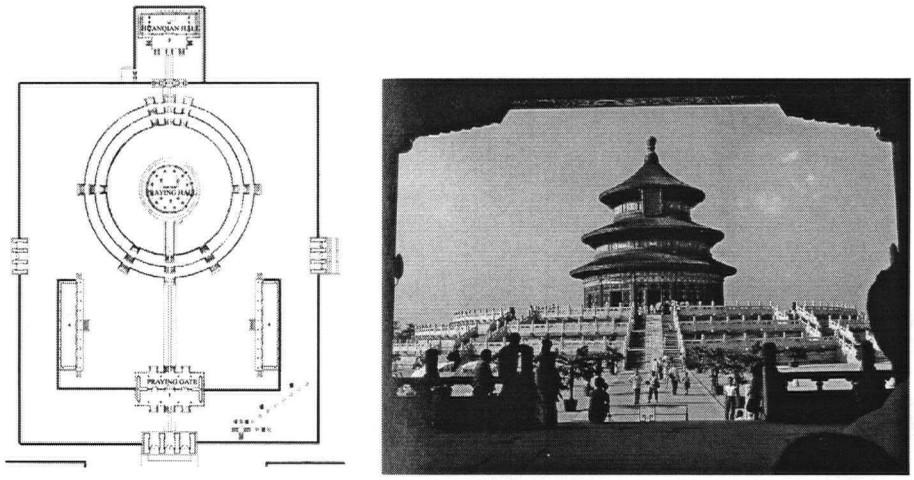


Figure 29, 30. Example of Pattern B: Praying Hall of Heaven Temple, Beijing (from Liu Laurence, 1989, Chinese Architecture)

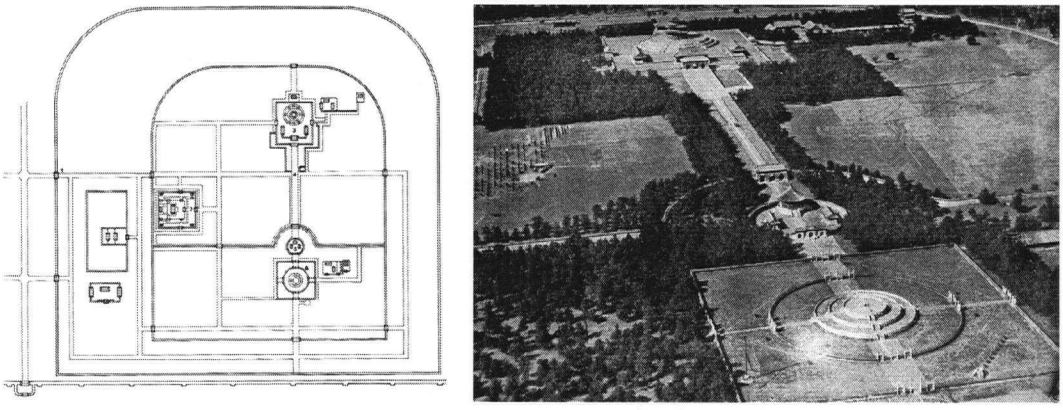


Figure 31. Example of Pattern B: Heaven Temple, Beijing (from Mirams, D.G. 1940, A Brief of Chinese Architecture)

C. Combined both pattern A and B, the composite building layout form, which was specially used in large important building groups, such as imperial palaces.

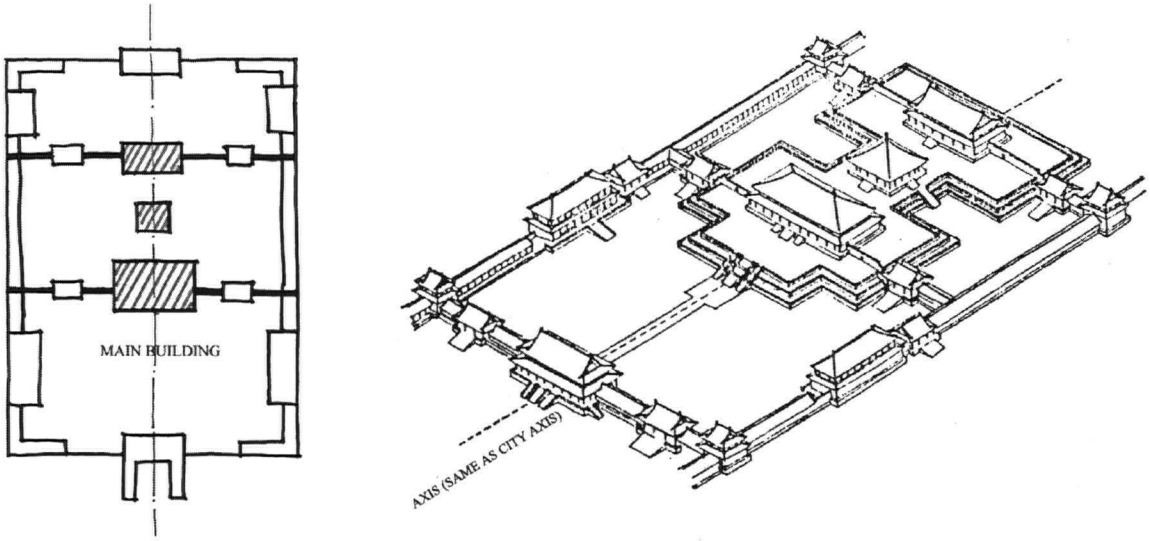


Figure 32. Pattern C Composite layout

(left by author, right from Lu, Xian;, Wang, Qiming, 1996, Beijing Courtyard)

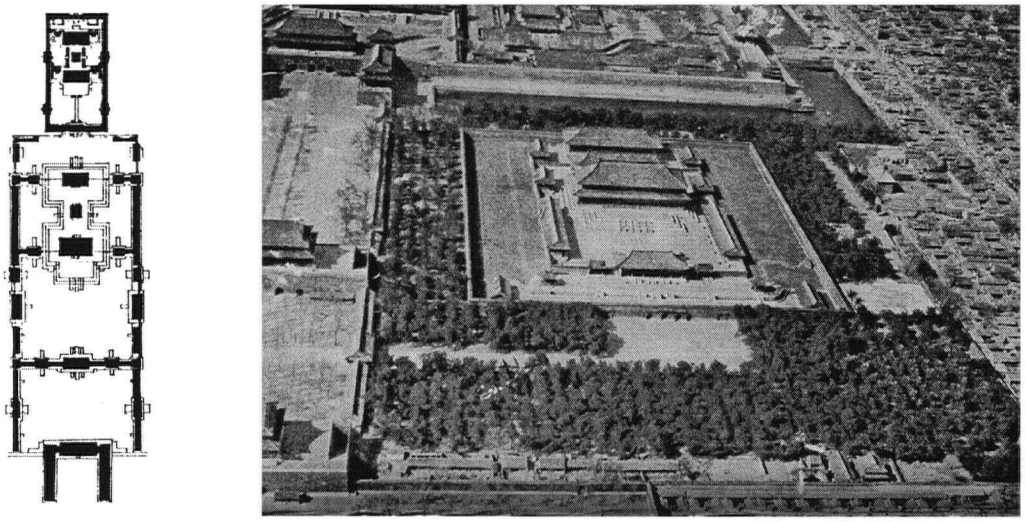


Figure 33. Example of Pattern C: Forbidden City, Beijing (from Mirams, D.G. 1940, A Brief of Chinese Architecture

The composition and subordination of Chinese buildings made the city uniform and coherent.

3.4.2.2 Symmetrical and Balanced Composition

Symmetry and balance were the prevailing keynotes of Chinese planning, whether in individual buildings or a group of palaces. The most important room or building was always planned to sit in the center facing south. Rooms to its east and west were of identical size and shape; as are buildings or halls on the left and right of the central building, facing each other over a courtyard. The earlier belief of "dualism" was deeply engraved on Chinese minds, so that in their design, whether in form, image, quantity, dimension, disposition and contrasts of light and shadow, they instinctively followed the principle of symmetry. This was particularly so in the planning of buildings. The asymmetrical informality of the pleasure-garden was calculated to be an integral informal unit in balancing the symmetrical mode of the austere planning of their formal buildings.

Symmetry gave Chinese buildings an orderly and distinguished look, and the people a peaceful and protected feeling.

3.4.3 Space

> *Chinese architecture is distinguished for its great uniformity. In one sense it is standardized, in another it is imitative, in yet another it is a system depending upon spacious layouts rather than on ostentatious detail. In a word it is an art subjective to the landscape, and one which makes use of local materials.(Mirams, D.G., 1940, A Brief History of Chinese Architecture, pvii)*

3.4.3.1 Modular Space System

Spatial organization in classical Chinese architecture was based on both the daily needs and aesthetic requirements of the people and was controlled by geometry and order. It is a modular space system,

which expanded from a cell to a group, and from microcosm to macrocosm, adapting itself to different climatic regions. The same organizational concepts could be used for both public and private buildings. By varying the size of the hall or courtyard, the number of units, or the form and decoration, a building could be adapted to different functional requirements.

The courtyard was the basic modular unit of space for all traditional Chinese residential, palace, and office building design.

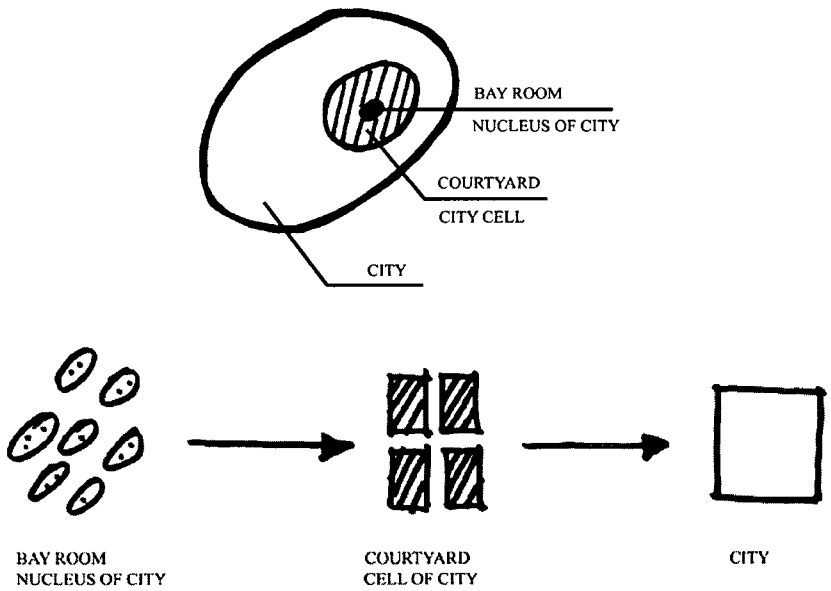


Figure 34. Structure pattern of traditional Chinese city (by author)

Bay room—nucleus of city

The bay room was a rectangular room or space defined by walls or columns, which was the standard unit of spatial organization and was expanded or repeated to form both individual buildings and courtyards.

With few exceptions, most halls had an odd number of bays, and the center tended to have a larger span between columns to emphasize the longitudinal axis. The axis was usually introduced by a frontal flight of stairs leading up to a big podium. Bays were grouped around a courtyard to form different types of building combinations.

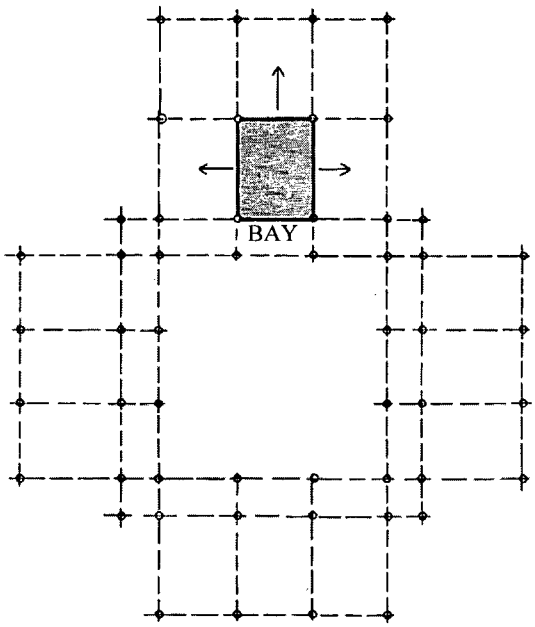


Figure 35. The development pattern from bay room to courtyard (by author)

Courtyard—cell of city

The unit of the Chinese palace, temple, or house design was approximately the same. The courtyard building was the quintessential microcosm of the city—and the reverse also holds true. From microcosm to macrocosm, a city consists of combinations of courtyards.

To arrange a number of courtyards in a complex, the longitudinal axis was considered the major axis and the horizontal axis the minor. All courts were symmetrically arranged and rectangular in plan along the axes; however, at times, both orientations may function as major axes. Occasionally in a

composition, there was only a partial axis, or the axis was lacking entirely. The last two arrangements were primarily in landscape gardening.

a. Longitudinal extension: when one group of buildings and one courtyard provided insufficient space to fulfill the functions required, the axis was extended further to form a larger building complex. Palace halls and courtyards were placed alternately along an axis, eventually forming a series of halls and courtyards.

Figure 36. Longitudinal extension pattern (by author)

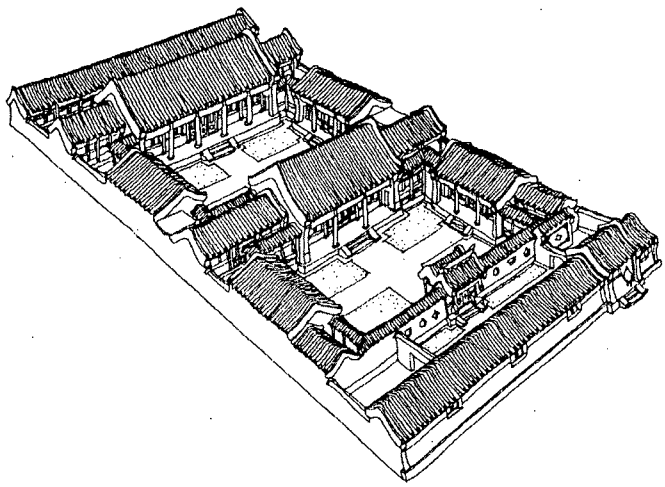


Figure 37. Example of longitudinal extension: Beijing courtyard, (from Wang, Qiming, 1999, Beijing Courtyard Dwelling.)

b. Parallel extension: under this plan, when more room was needed, minor longitudinal axes were established parallel to the main axis. Thus, instead of one longitudinal extension, more than two groups of building elements were established, each of which had its own specific function and size.

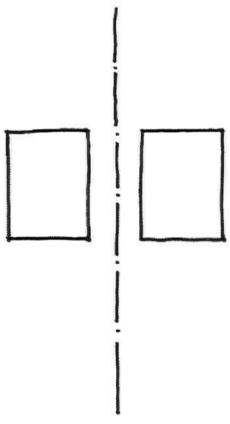


Figure 38. Parallel extension pattern (by author)

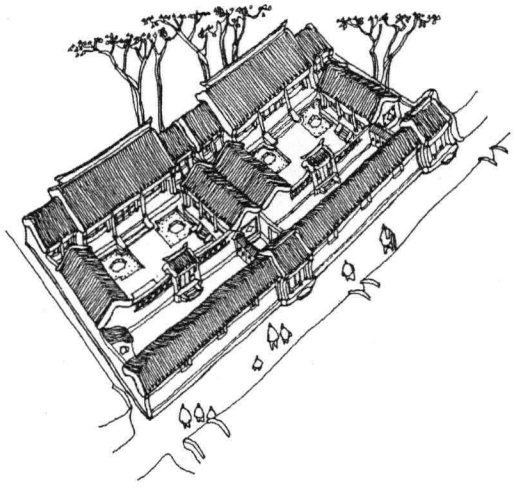


Figure 39. Example of parallel extension: Beijing courtyard. (from Wang, Qiming, 1999, Beijing Courtyard Dwelling.)

c. Cross extension: examples of this type were extended along both the horizontal and vertical axes. It was an appropriate form for larger building ensembles.

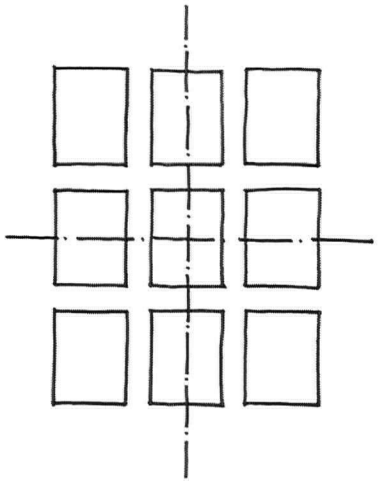


Figure 40. Cross extension pattern (by author)

Figure 41. Example of cross extension pattern: a temple in Hongdong, Shanxi.(image from Liu, Laurence, 1989, Chinese Architecture)

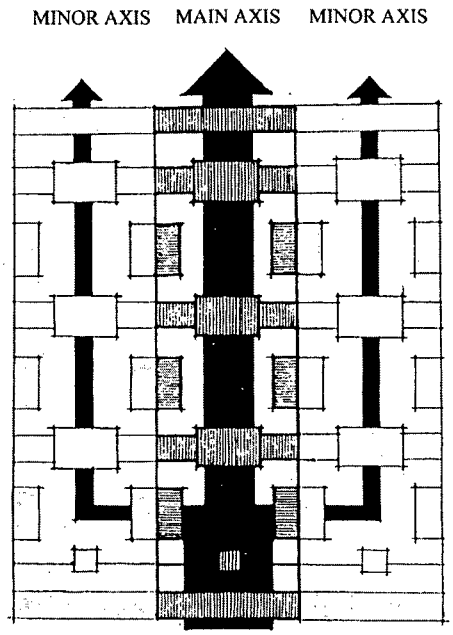


Figure 42. The development of building groups: longitudinal first and then horizontal (by author)

3.4.3.2 The Structure and Composition of Traditional Chinese Architecture and Landscape Environment

Regardless of scale the enclosed, rectilinear open space of the courtyard was the basic unit of human environment.

From macrocosm to microcosm, the traditional Chinese landscape environment consisted of both man-made cities and natural elements, such as mountain, trees, and rivers. The cities were characterized by the enclosed square space, which always implied the man-made environment and the strict social-order. The traditional Chinese city was axial, symmetrical and formal, with the roads running from north to south and from west to east. It was in a grid-pattern or "chessboard" pattern and created square grid residential blocks, with the palace or office at the center.

The residential block consisted of courtyard housing, with lanes and alleys connecting the city main roads and secondary streets. The courtyard was the basic unit of the city. In the courtyard house, bay room was a cell of the courtyard. By repetition, a large courtyard space was formed.

The relationship among the environment, cities, residential blocks, courtyard and bay room is illustrated as follows:

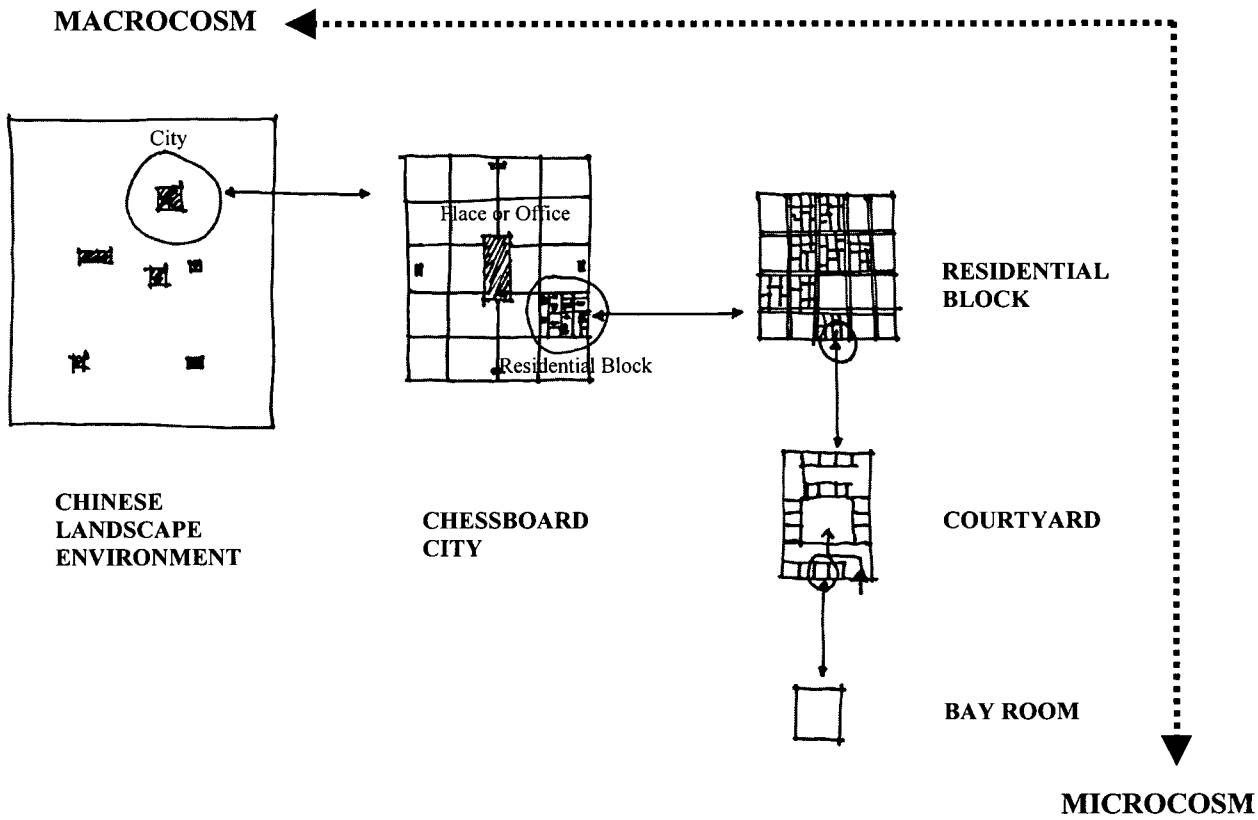


Figure 43. The composition and structure of Chinese architecture and landscape architecture. (by author)

3.4.3.3 Axial Space Sequence

Axial planning provided the Chinese with a means of manipulating architectural space. The use of space and minor halls to form contrasts with the final, culminating element—the main hall—was unique to Chinese architecture. In Chinese architecture, as one entered the main gate and stepped into the

courtyard (considered a transitional space) one could see that the entire building complex was composed of alternating courtyards and halls. From the entrance court to the main hall, one would experience a series of spatial sequences. The axis in a Chinese building complex acted as a path. One followed the path into a building, experienced its interior, and then stepped through the door to a courtyard. The Chinese courtyard was the centre of all kinds of activities. One could view the scenery and look at the other buildings, or join in the activities before following the path into the second building. By following the path, one experienced the continual contrast between solid (for example, a gateway) and void throughout the building. In a rather long sequence, one might bypass a building to step into another courtyard, but the sequence always tended to induce one to enter and explore each building along the axis, so that interior and exterior spaces might be experienced as a harmonious whole.

This modular layout and spatial organization of Chinese building groups and in city planning was the product of long experimentation and had been evolved into a mature prototype, which made the city develop as an organic whole.

3.4.4Color Systems

"The study of Chinese architecture cannot be carried very far without special consideration being given to color." (Mirams, D.G. 1940, A Brief of Chinese Architecture, p.120) Red, blue, yellow, gold, black and white were most commonly applied in Chinese buildings. On significant occasions, together with the streets flags, the colorful buildings gave the gay and cheerful feeling.

Wood has been used in Chinese architecture predominately for thousands of years. The ancient Chinese invented oil paints in order to prevent wood from deteriorating. Along with the use of paint, a color system was devised. The selection of colors was based on the principle of harmony and composition, which would enrich and beautify architecture.

Colors, the ancient Chinese believed, had an intimate connection with the Five Elements or Forces, which are metal, wood, water, fire and earth. Certain seasons, positions, colors etc. belonging to one of these Five Elements and would, by some calculations, have certain effects on the well-being and future of an individual.

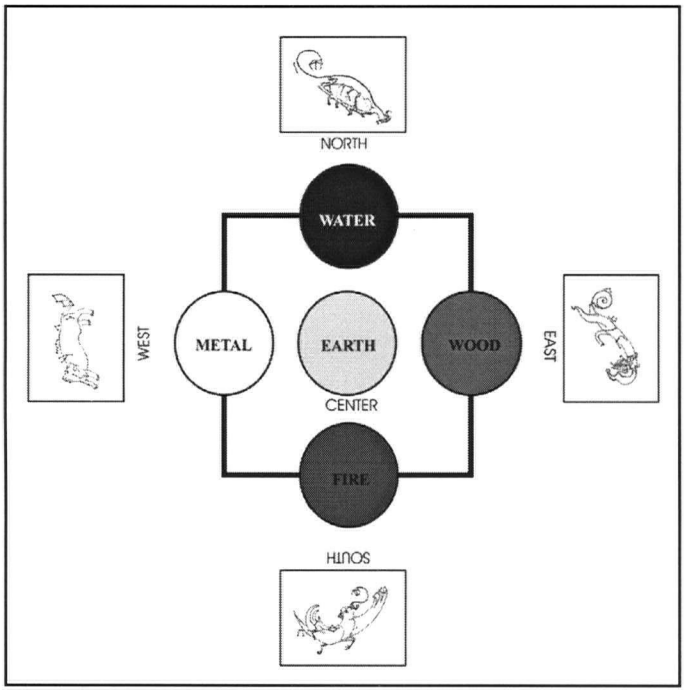


Figure 44. The relationship among direction, color and symbolism. (by author)

The five colors corresponding to the Five Elements are: White for metal, Blue for wood, Black for water, Red for fire, and Yellow for earth.

Blue, together with its secondary colors, such as green, is the color of spring and of the leaves of trees. It has its position in the east, and denotes the time of sunrise. It is also a sign of permanency and peace.

Red is the color of heat and of summer, and of burning fire. It has its position in the south; denotes the noon time of the day. It is a sign of good fortune and happiness. The red color, usually toned to various shades of pink by the weather, is familiar to all who know China.

With the changing of the seasons these red buildings take on an individual character with the variations of the natural surroundings. In the spring and summer the red walls are bright in contrast to the green trees and grass, in the autumn they are in harmony with the russet hues of the leaves, and in winter a cheerful sight in the bleak landscape.

White is the color of autumn and of metal. It has its position in the west, and denotes the time of sunset. It is a sign of sorrow and peace.

Black is the color of severe winter and the depth of water. It has its position in the north, and denotes the time of midnight. It is a sign of destruction.

Yellow is the color of earth, and has its position in the center. It is a sign of power, wealth and sovereignty.

Yellow glazed tiles were used for the palaces of Emperors, and gold foil and leaves were also employed for decoration. The robes of the Emperor were made of yellow silk embroidered with the dragon pattern. This is because yellow denotes the center, and the Emperor is the 'center' to his people.

As the low-lying houses of the common people surrounding the palace could only use grayish tile roofs and walls, the visual effect produced by this constrained use of color allowed the palace to stand out from the houses, symbolizing the status of emperor and his control over the common people.

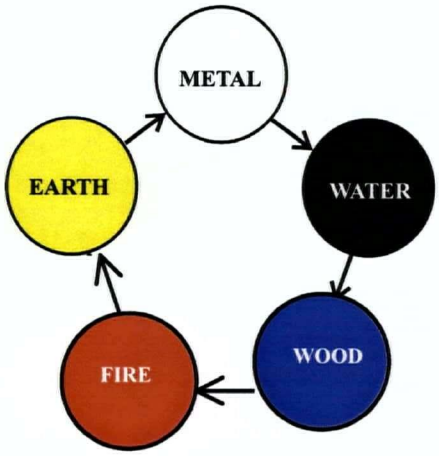


Figure 45. The productive color combinationse: (by author)

Water with Wood=Black + Blue

Wood with Fire=Blue + Red

Fire with Earth=Red + Yellow

Earth with Metal=Yellow + White

Metal with Water=White + Black

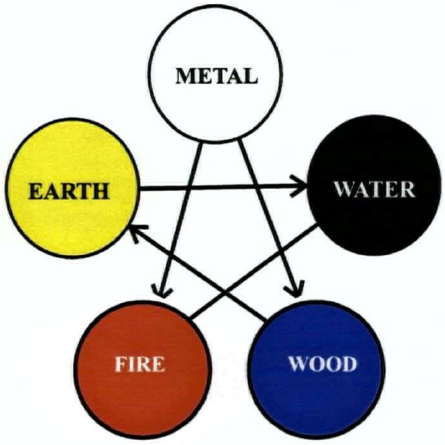


Figure 46. The counter-productive color combination::(by author)

Earth with Water

Water with Fire

Fire with Metal

Metal with Wood

Wood with Earth

Each type of the building and each part of the structure had their designated colors.

PALACE

(1) Walls of structures—red. 

Figure 47. Example: red walls of structures (from Liu, Laurence, 1989, Chinese Architecture)

*(2) **Pillars***—vermilion or red, green and black.

*(3) **Beams and brackets***— blue, green, white and gold. It is the most spectacular feature and beautiful designs were painted on.

Figure 48. Example of pillar and beams colors and patterns (from Liu, Laurence, Chinese Architecture)

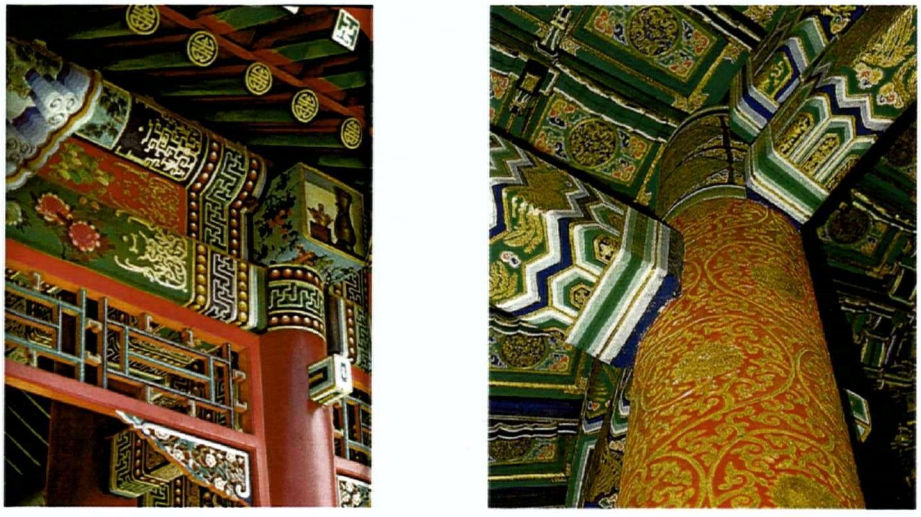


Figure 49. Example of pillar and beams colors and patterns (from Liu, Laurence, Chinese Architecture)

*(4) **Roofs***—glazed tiles yellow, blue, green, purple or black.

The chrome yellow glazed tile roof, the colorful beams and red columns, and the window and door sash make the elevation of a building into a magnificent color composition.

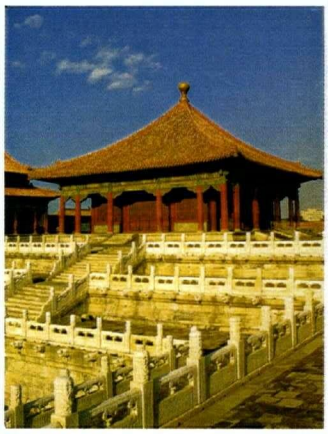


Figure 50. Example: glazed tiles yellow roof

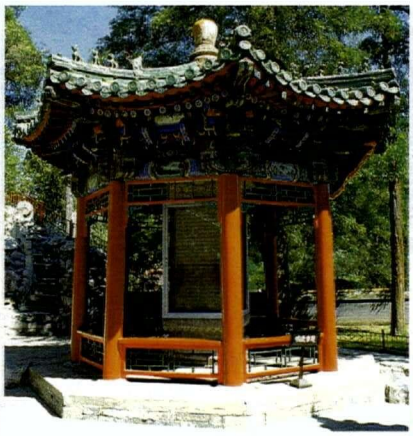


Figure 51. glazed tiles green roof

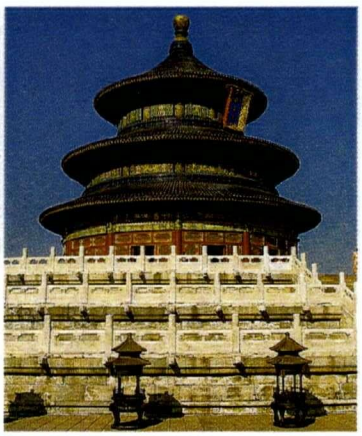
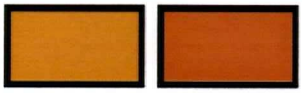


Figure 52. glazed tiles blue roof

(images from Lip, Evelyn, 1997, What is Feng Shui?)

TEMPLE

*(1) **Walls of structures***—yellow, vermilion. 

*(2) **Pillars***—vermilion or red. 

*(3) **Roof***—blue-grey. 

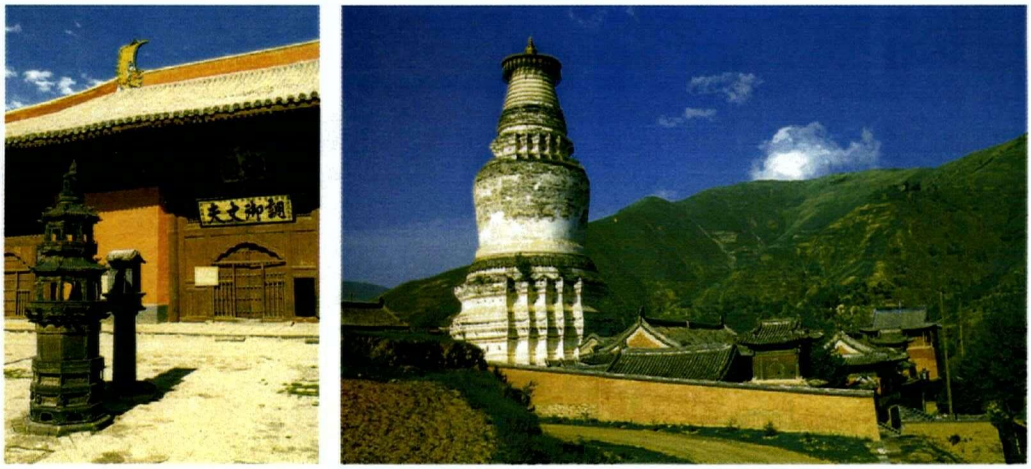


Figure 53. Example of the temple color design (image from Liu, Laurence, 1989, Chinese Architecture)

HOUSE*

(1) Walls of structures— Chestnut color, black and white.

(2) Pillars—vermilion or red, green, purple and black.

(3) Roof—blue-grey.

**Note: this rich and heavy color system was used for the residence houses in north China, which is represented by the Beijing courtyard. In the south, more subdued or quieter colors are used, such as white, black and green.*

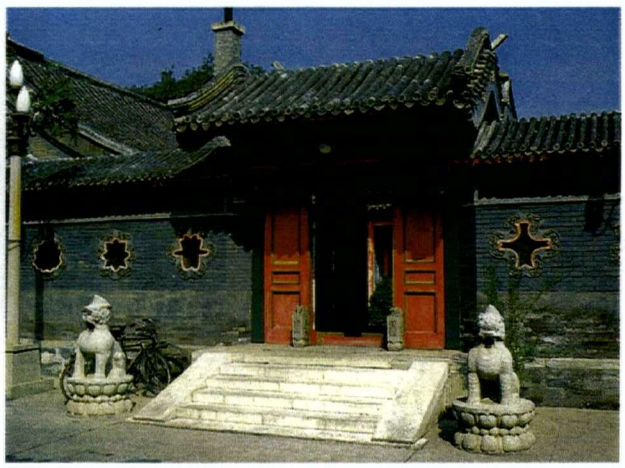


Figure 54 and 55. Example of Beijing courtyard color design

Figure 56. Example of Beijing courtyard color design

(all images from Liu, Laurence, 1989, Chinese Architecture)

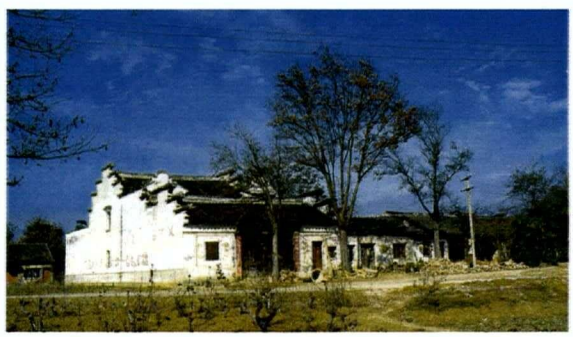


Figure 57. Example of south China residence color design

Chinese environmental design was the expression of one great and strictly observed ordering system. Thus, many of the same attributes that organized cities were used as organizing principles at every scale.

3.5 Summary of Characteristics of Chinese Architecture and Urban Planning:

(1) Enclosed space was the basic characteristics of traditional Chinese cities and building groups;

(2) All buildings and cities were designed to express a human scale;

(3) All major buildings faced south;

(4) Hierarchy and protocol were strongly reflected in the strict code that determined the use of materials, colors, styles and craftsmanship in accordance with the official status of the user;

(4) Hierarchy and protocol were strongly reflected in the strict code that determined the use of materials, colors, styles and craftsmanship in accordance with the official status of the user;

(5) Symmetry and balance were the keynotes of Chinese architecture and urban planning design;

(6) A standardized modular space system contributes a great deal to Chinese architecture's great uniformity;

(7) There was a lack of open spaces for people to communicate and express their political opinions;

(8) Bright colors: red, blue, yellow, gold, black and white were most commonly applied in Chinese buildings, which gave the effect that the buildings were always in gay apparel and expressed the symbolism of good fortune and happiness.

Confucianism, Taoism and Buddhism, the three religious of ancient China, dominated almost every aspect of culture, including fine art, architecture and landscape architecture. Together with the social economic factors, they generated the basic characteristics of Chinese architecture and landscapes. Based on these essential characteristics, the unique layout and form of Chinese architecture and landscape was developed. Some of these characteristics can be distilled as archetypal patterns and still are valid in contemporary Chinese architecture and urban planning. Therefore, these essential characteristics provide a "platform" to study and develop unique Chinese architectural and landscape architectural patterns. The relationship among the basic philosophical foundation and the physical characteristics of Chinese architecture and urban planning as well as the unique Chinese architectural and landscape architectural patterns will be as follows: .

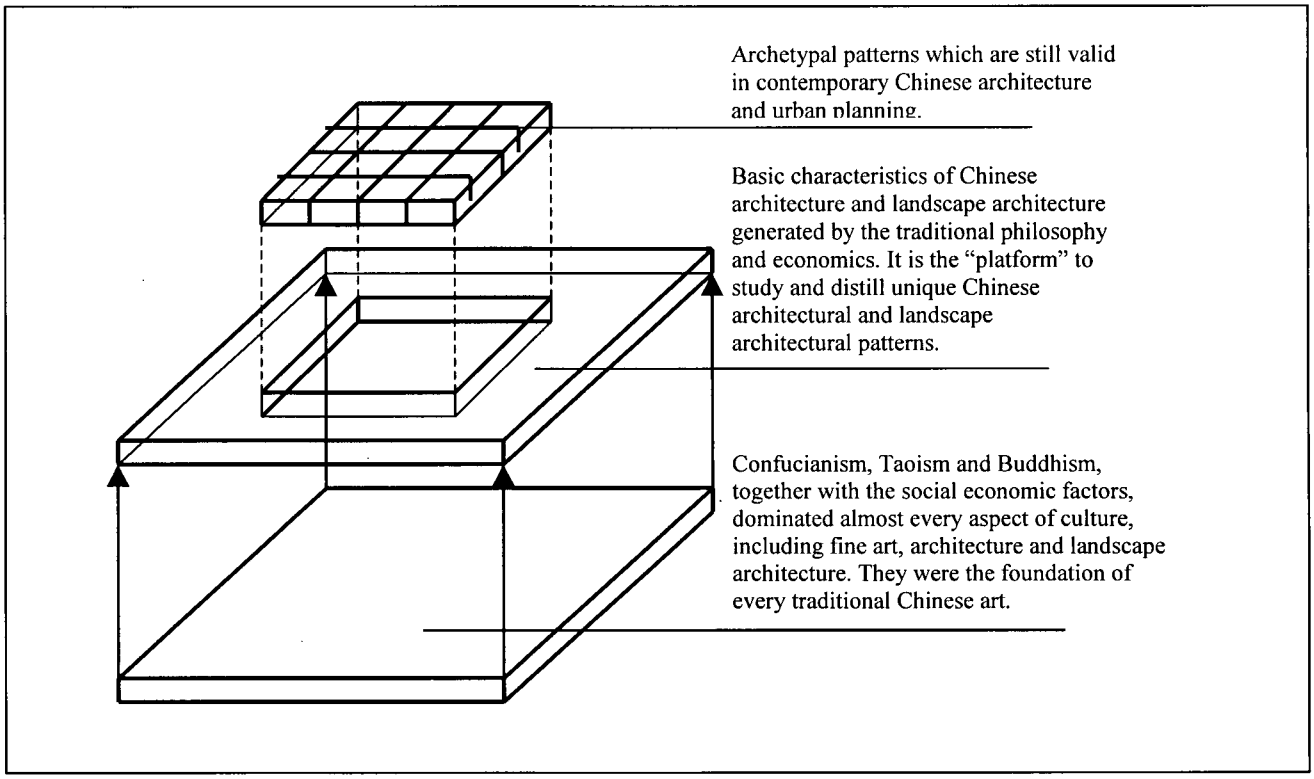


Figure 58. The relationship among the basic philosophical foundation and the physical characteristics of Chinese architecture and urban planning as well as the unique Chinese architectural and landscape architectural patterns. (by author)

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Chapter 4 The Characteristics of Beijing Courtyard

> *Just as the city itself is laid out in a cardinal grid, so the courtyard house is the quintessential microcosm of the larger city—and the reverse also holds true. (Chang, Chao-Kang, 1987, China, Tao in Architecture, p.50)*

China is a country of many nationalities and of various climatic conditions. However, the courtyard house is the typical residential house form throughout China. From north to south, it was used by the majority of the population and in the different climates. In places where buildings were high, the courtyards were made smaller, the surrounding buildings could reach two stories, but their design concept and meaning were unanimously the same. The Beijing courtyard house is the archetype of traditional house in northern China.

The traditional Chinese courtyard house embodied the ethical thought of Confucius and represented physical and spiritual life. During long years of feudalistic society, this kind of house facilitated the control of the elders over the young and all the members of the family lived harmoniously together. "Harmony and ritual generated the layout and form of the courtyard house. Spiritually, a house like this has another meaning, that of a retreat which embodied an eternal meaning." (Liu, Laurence, 1989, Chinese Architecture, p.164)

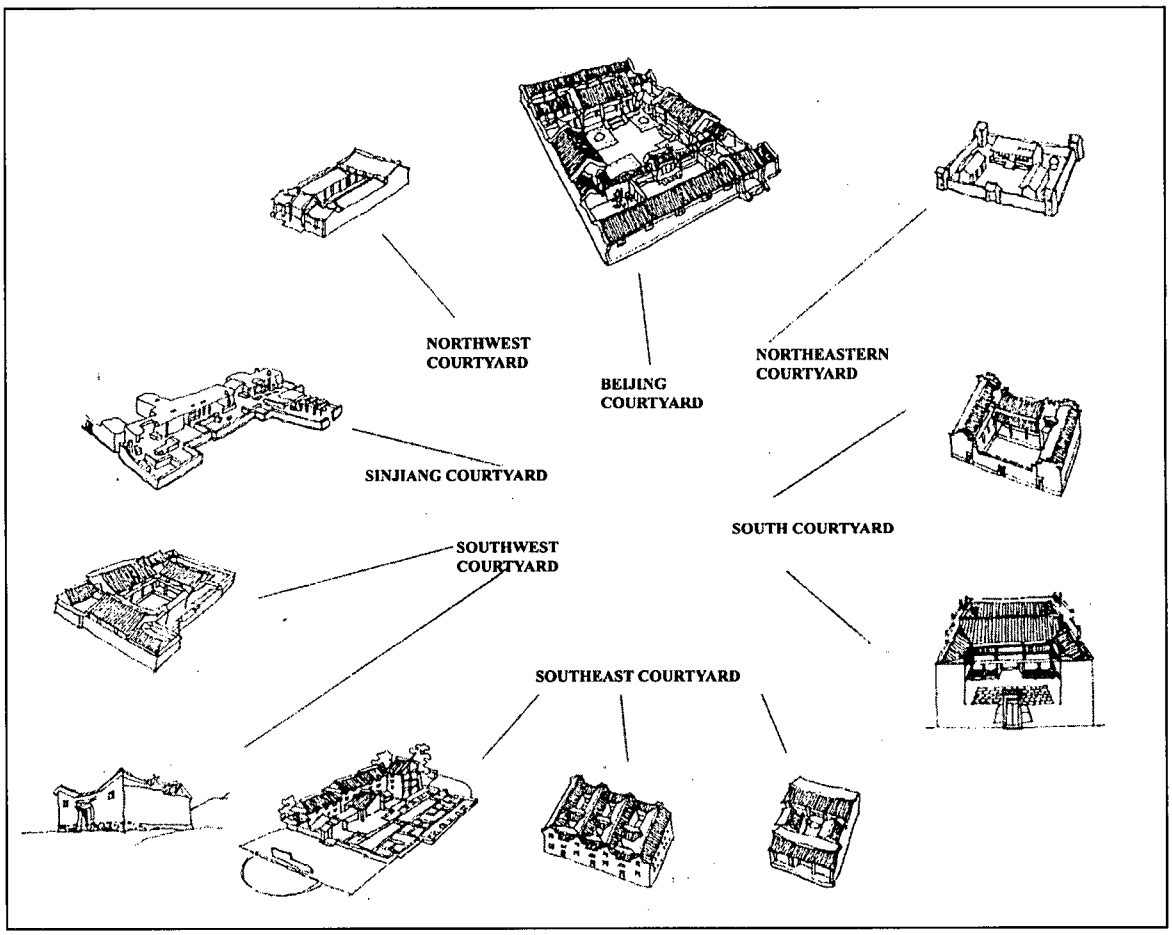


Figure 59. Courtyard is a common traditional house type in China (from Lu, Xiang, 1996. Beijing Courtyard)

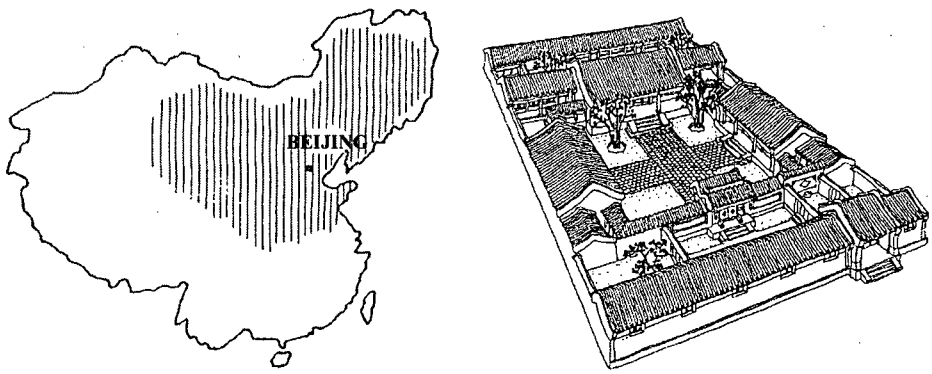


Figure 60. The scope of Beijing courtyard house type in China, (from Lu, Xiang, 1996. Beijing Courtyard)

The Beijing Courtyard house consisted of a main hall with a wall built around the site, forming a courtyard on the south side of the hall. The house was entered from the little-frequented side street by way of an off-centre main gate which gave access to a narrow outside court, the visitor passing in front

of a spirit wall, which guarded the entrance against spirits. This first courtyard served for the reception of guests. A main courtyard stood in the centre open space of the unit. It was not only the key-point of communication, sunshine and ventilation, but also a resting or meeting place for the family. In the front part—the outer court—the kitchen and the service and storage rooms were located backing onto the street.

A large house consisted of a number of these courtyards, approached through axial gateways leading from one court to the rest. All courts were symmetrically arranged and rectangular in plan.
This building layout perfectly suited the Chinese idea of family life. When the sons married they brought their wives with them and lived in a separate courtyard; when a new concubine was wanted, another courtyard was added, all without spoiling the design of the house, for each court was self-contained and enclosed in a wall.

Large courtyard houses usually had a garden which was located at the rear or the side of house. Intercommunication was made possible through a gate in the wall that separated the house from the garden. Owing to the fact that the topography of Beijing is flat, (and that generally it is not permissible to branch a stream into a private house), no natural elevations could be utilized, and no large surface of water could be found in the gardens. Thus the panorama of a garden could only be seen as a nice composition of structure of various heights, and skillful arrangement of tiered stones and zigzag corridors.

The traditional communities in Beijing consisted of a number of house units assembled together, facing south and laid out in parallel rows on streets running north to south and east to west. Usually these communities were surrounded by commercial shops, which faced towards the city main roads and secondary streets.

4.1 Reflection of the Chinese desire for protection, both from evil sprits and robbers

Walls played a significant role in the Beijing courtyard form. High, solid walls enclosed the entire house with only one or two doors leading to the street outside. This plan served as protection against fire and theft, and also gave the occupants an immediate feeling of privacy and seclusion, making the house the domain of one family. Spirit walls at the entrance were believed to help ward off the evil spirits and kept the privacy of inner courtyard. These walls functioned physically, spiritually and aesthetically.

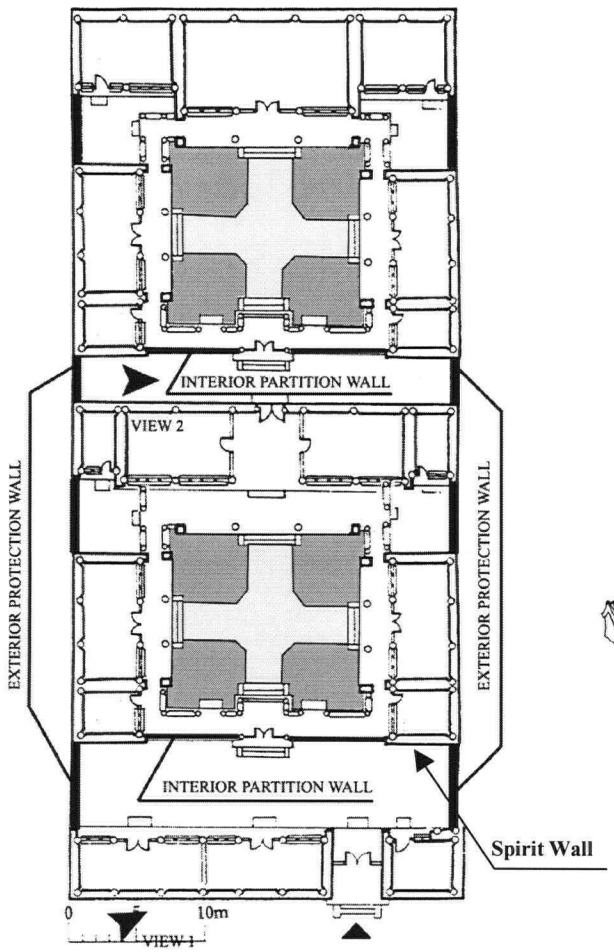


Figure 61. Location of Beijing courtyard walls (exterior protection wall/interior partition wall)

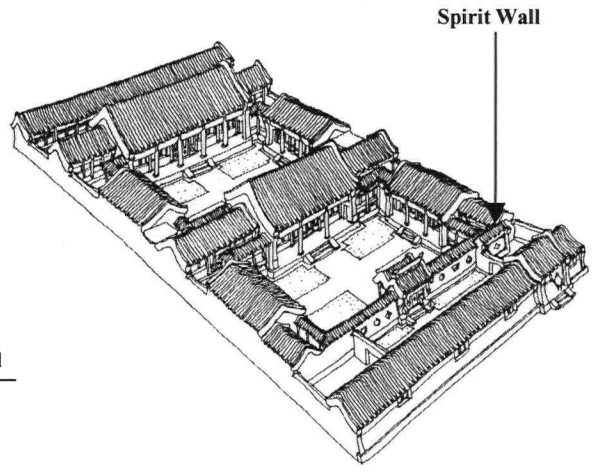
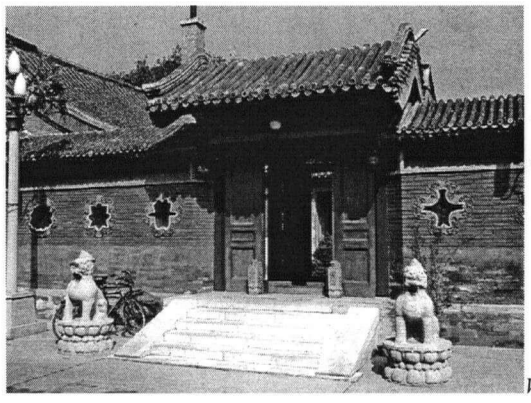
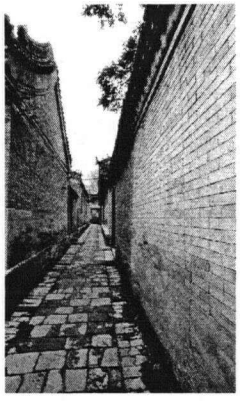


Figure 62. Beijing courtyard house (from Wang, Qiming, 1999, Beijing Courtyard Dwelling.)



View 1



View 2

Figure 63. view 1 image from Liu, Laurence, 1989, Chinese Architecture, Figure 64. view 2 image from author

Enclosed as they were, the spatial sequences in the Beijing courtyard were still rich and full of contrasts: solid/void, big/small, enclosed/open, inward/extrovert. "These rich spaces made the Beijing courtyard an ideal place to live in and satisfied people's needs both physically and spiritually, which has been lost in contemporary Chinese communities." (Zhang, Weigeng, 1999, "Developing Chinese Classical Architecture, Architectural Journal, v374, Oct. 1999, p.17)

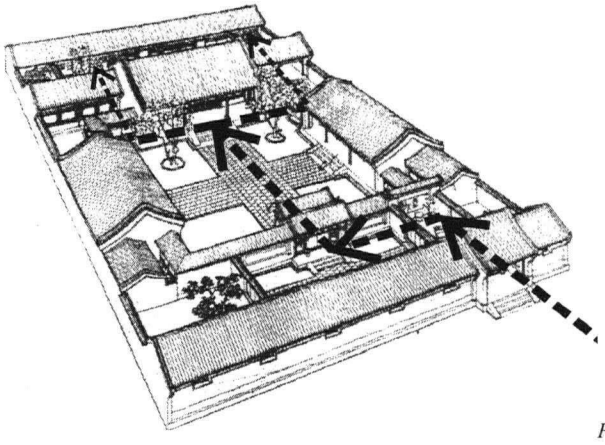


Figure 65. Space sequence of Beijing courtyard

(by author, image from Lu, Xiang, 1996. Beijing Courtyard)

The traditional Beijing courtyard was composed of a series of enclosed courtyard spaces in a unique, spatial sequence; transitional entrance courtyard, to open-air main courtyard and several inner

courtyards. These spaces alternated in size and contrasted in openness and enclosure, void and solid, inward and extrovert. The house axis acted as a path, threading them together.

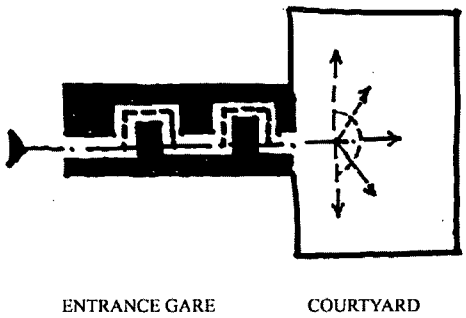


Figure 66. Alternating spaces in the Beijing courtyard house (by author)

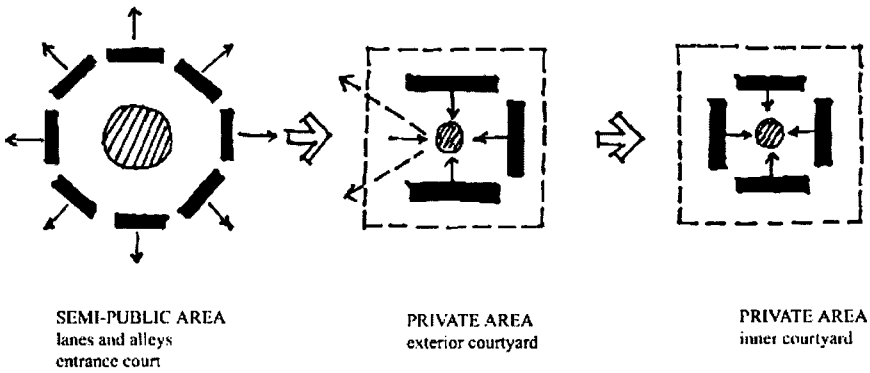


Figure 67. Alternating spaces in the Beijing courtyard house (by author)

4.2 Significant Meaning of Beijing Courtyard House: It is not a castle, but a retreat from the real world outside

One of the essentials of Confucianism that was represented in the Beijing courtyard house was "Harmony" in the family. This emphasized not only upon filial piety, deference to elders, respect for institutions, and kindred virtues, but also individual ethico-spiritual interest.

Due to the unique conditions of Chinese political history, people's inward feelings depended entirely upon their own inward state and withdrew from outside influences.

The course of historical development in China has not remained static, but has been full of changes of greater or less proportions. More than 20 dynasties have come and gone. Invasions of barbarous or semi-civilized tribes swept though now and then to disturb the established order. Adding to the confusion, internal dissent and factional strife broke out periodically. Now, this state of affairs could not fail to impress upon the minds of the thoughtful a sense of the transience of life, the lack of permanence in human affairs, and a consciousness of human suffering, even though the Chinese believed that Tian (Heaven) and Dao (Way) do not change. Reality, however, proved that people actually lived in an unstable transient world. As a result, the thoughtful came to withdraw themselves, becoming entrenched within the safe barrier of the inner life against outward misfortunes, making true happiness depend entirely upon their own inward state. Thus the communistic character of the family system, the inward feeling of withdrawal from the outside world, and the idea of plain living did not stimulate the people to improve their abode and so contribute to the formation of the courtyard house. The house is not a castle in the minds of the Chinese, but a retreat from the real world outside, a place where all the members of the family could gain peace of mind and a symbol of eternal stability in the transitional world.

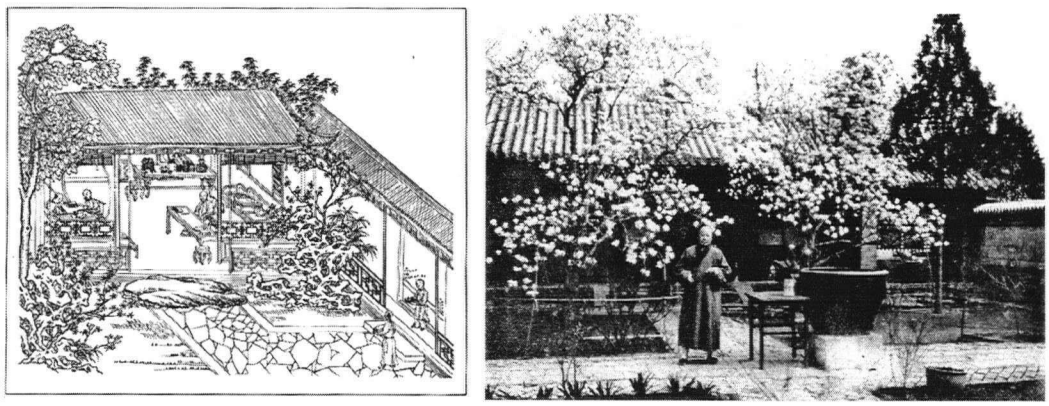


Figure 68. A house is a retreat from the outside of the world (from Mirams, D.G. 1940, A Brief of Chinese Architecture)

As halls were built around, and faced into a courtyard, a heavy masonry wall at the back of the halls separated them from the outside world. Because the centre of all activities was the courtyard, there was no privacy concerning the movement and activities of all family members. But as the house was

completely cut off from the outside, it was an organization which had the distinction of seclusion. Furthermore, it created a layout and a form which rallied all the members of a family psychologically to live in a spiritual refuge together. During the feudalistic era, the family was a well-knit social unit, with the members of the family closely linked. Only through unity of thought and the force of a family were they able to confront and survive the misfortunes of life.

The significant meaning of the courtyard house was thus manifested. Ethico-spiritual harmony and a ritual mode of living were the main forced created in the courtyard house. Conversely, this pattern influenced and reinforced the life-style and thought of all the family members.

Physically, a courtyard was used chiefly for pedestrian circulation between halls. There patios and fish ponds gave life to the space. Large deciduous trees were planted for the placing of tables and chairs underneath. Altogether, it was an ideal space for relaxation, circulation and recreation.

4.3 Symbolism of Rigidly Patriarchal Hierarchy and Protocol

The moral code of Chinese feudalistic society was rigidly patriarchal. In the hierarchy of the family, the older generation had precedence over the younger, and the head of the family was always the male of the oldest generation. Confucianism encourages 'parents' kindness and filial piety, meaning the parents should be kind to their children and the children should be obedient to their parents. Just as the emperor was personally responsible to heaven for the misdeeds or misfortunes of China, a Chinese father was responsible for his family in the same way. There are many moral codes, but the highest is obedience, especially to the father, followed by the eldest son. Of course, there were examples where, after the father of the oldest generation departed, the wife became the head of the family.

Figure 69. Hierarchy and Protocol in family and social structure in China (from Mirams, D.G. 1940, A Brief of Chinese Architecture)

The Beijing courtyard was arranged in strict accordance with this Chinese feudalistic moral code. This produced a pattern with a progressive sequence that formed a transition, from a place with public character to a place with private character.

Entrance court

The entrance court was usually reserved for guests or was used for storage, served as a study, or provided living quarters for male servants. Sometimes the kitchen and the storage rooms were located backing onto the street.

Semi-public Space: Main Courtyard

The main courtyard was accessed from the entrance courtyard by the floral-pendant gate. It was a semipublic space and much more spacious than the entrance court. The main courtyard was the living area of the master of the house and was oriented to the south. The buildings to its east and west were meant for his married sons. This courtyard was the focus and center of all household activities. Also it was an indispensable place for interpersonal contact. The halls around the central courtyard were

'private' with verandahs playing the role of a transitional space. Without invitation, the guests were not allowed to enter into these spaces.

Private Space: inner courtyards

The inner courtyards were intended as accommodation for the women and girls of the family as well as the servants. The general status of women in the Confucian social hierarchy was that of a special kind of 'outcast within'. Women were fundamentally a subordinate chattel with few, if any, privileges and no 'rights' of their own. This status was clearly reflected in the layout of Beijing courtyard. Women were confined within the inner courtyards. Guests were unable to enter there without special permission.

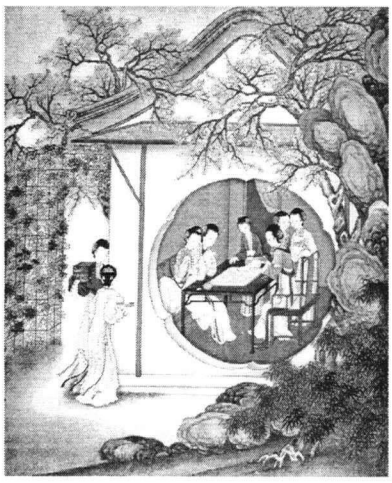


Figure 70. "outcast within" of ancient Chinese women, (from Keswick, Maggie, 1986, The Chinese Garden)

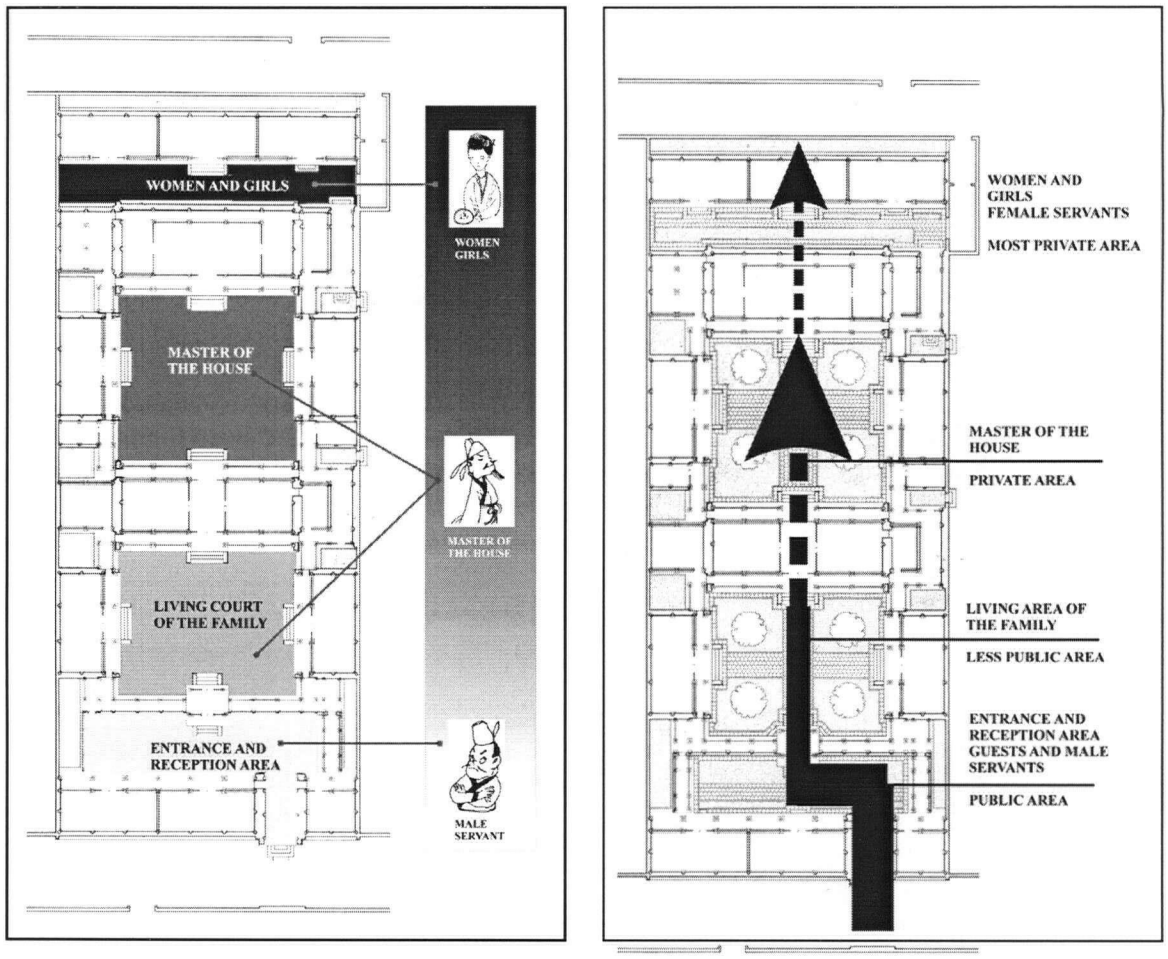


Figure 71. Intimacy gradient of Beijing courtyard

4.4 Fitting into ordered social structure frame

The hierarchy and protocols of Chinese courtyard housing reflected not only the rigidly patriarchal family, but also the strict social structure. All the components of the buildings reflected the status of their occupants economically, socially and aesthetically. It was an art subservient to the dictates of the state and intended to ensure a framewok for the social structure and to fit into the ordered system of the surrounding universe.

Like other types of buildings, social hierarchy and protocol were strongly reflected in the strict observance of a code that determined the use of materials, craftsmanship and construction in accordance with the official status of the chief occupant. The hierarchy of the social pattern can be read from the structural design of the courtyard house—say, in the accent placed on the situation and the roof shape of the main building in relation to the subsidiary buildings, and also in the arrangement of the building material. The use of color, decoration and also the height and proportions of the buildings and the depths of the roof trusses were regulated, with the humble courtyard house of the commoner being limited to buff grey roofing tiles and low, non-axial gate ways, as the use of *dougons* and color ornamentation was restricted to the imperial residence and institutional buildings, such as temples.

4.5 Summary of Characteristics of the Beijing Courtyard House:

(1) Enclosed space expresses the Chinese desire for protection, both from evil spirits and robbers;
(2) The courtyard is the center of all the activities and landscapes of whole building groups, which makes the house not a castle, but a retreat from the real world outside.
(3) Surrounding hierarchical space provides visible status and order and refuge within the house compound.
(4) Spatial intimacy gradients symbolized the rigidly hierarchy and protocol, and increased the residents sense of existential security.

By following the basic principles of Chinese architecture and landscape architecture, traditional dwellings had their own characteristics, which are an indispensable aspect of the study and development of unique Chinese community patterns. For example, the organization of the entrance/transition space of the Beijing Courtyard house was different from that of other types of buildings, such as palaces or a temples. Instead of grandeur or open publicness, these entrance spaces were designed to provide the occupants a quiet, private, enclosed environment in which to live.

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Chapter 5 Community Pattern Language in China

Based on both Alexander's A Pattern Language and the characteristics and essence of both classical Chinese architecture and Beijing courtyard, a series of unique Chinese patterns were distilled and are presented in this chapter. These patterns focus on the traditional community patterns and would help to make the contemporary Chinese community environment "New and Chinese".

The patterns in this chapter are divided into two categories: the patterns modified from Alexander's A Pattern Language and the patterns distilled from unique Chinese circumstances, which are not covered by Alexander's A Pattern language.

As with Alexander's A Pattern Language, each pattern in this thesis has the format:

(1) Title

(2) Pictures

A set of pictures that show the archetypal examples of that pattern;

(3) Introductory paragraph, which sets the context for the pattern;

(4) There are three diamonds to mark the beginning of the problem and the statement of problem (bold type character);

(5) Statement of the pattern or pattern instruction;

It will describe the physical and social relationships that are required to solve the stated problem;

(6) The heart of the pattern, which describes the field of physical and social relationships which are required to solve the stated problem (bold type character).

Following are the patterns that will be discussed in this chapter.

TOWN

5.1 Feng Shui—For Urban Planning*

5.2 Positive Enclosed space—Alexander, A Pattern Language Pattern 36, "Degree of publicness" (Amended)

5.3 Function of lanes and alleys — Alexander, A Pattern Language Pattern 69, "Public outdoor room" (Amended)

BUILDING

5.4 Feng Shui—For House Orientation and Building Relationships*

5.5 Transition Space— Alexander, A Pattern Language Pattern 112, "Entrance transition" (Amended)

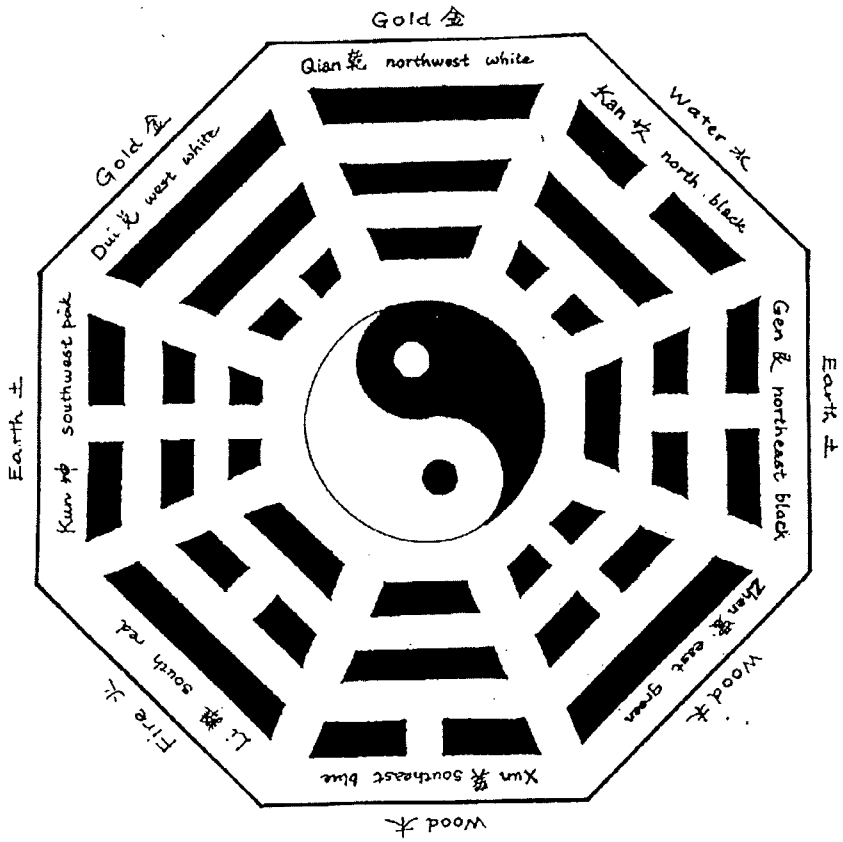
5.6 Spirit wall*

5.7 "Courtyards which live", Alexander, A Pattern Language Pattern 115 Amended

5.8 The use of the characteristics of Chinese architecture and urban planning in applying a pattern language in China

Notes: "*" are the newly uniquely Chinese patterns.

5.1 Feng Shui—for Urban Planning



(image from Lip, Evelyn, 1997, What is Feng Shui?)

... the related Chinese unique pattern POSITIVE ENCLOSED SPACE—Alexander, A Pattern Language Pattern 36 Amended, "DEGREE OF PUBLICNESS" (2).

Feng Shui was first practiced in China thousands of years ago. Since then, it has been firmly incorporated into traditional Chinese architecture and culture. It is the art of placing a habitat, a house, a commercial complex, a factory or a multi-story office block on a site so that it is in harmony with other man-made structures and in balance with nature. Feng Shui is foremost the art of siting, the skill of design with reference to the physical land form, climatic conditions, geographical location, and so on. It is a discipline deeply rooted in Chinese cosmology and embedded in Oriental culture. It is a complex subject involving many disciplines, ranging from site planning to psychology. Therefore, understanding Feng Shui helps to understand many facets of Chinese beliefs and culture, such as the application of the theory of yin and yang, Chinese philosophy, the significance of Chinese symbolism and the theory of magnetism.

* * *

The concept of ancient Chinese urban planning is of great significance today. The greenhouse effect, deforestation and increasing global pollution must encourage man to adopt a more proactive attitude towards the preservation of the natural as well as built environment. Feng Shui, practiced in the correct manner, certainly helps man to focus on achieving harmony and balance in nature, to respect site constraints and live harmoniously with natural forces.

Feng Shui had great impacts on ancient Chinese urban planning. For a city, residential community, or tomb, an ideal site should be surrounded on three sides by higher land, like the crook of the elbow in a curved arm, to provide protection from weather or an enemy. The lay of the land should be gently sloping and, if possible, there should be a river or valley nearby to allow surface water to drain easily. This principle is similar to the concept that a typical Chinese building group has all of the buildings tending to face a void rather than the public street.

For a community site, "The running water should pass by the left side of the house, which is called Blue Dragon. The road should be laid out the right side of the house, which is called White Tiger. A pond should be located in front of the house, which is called Red Bird, and a mountain should be at the back of the house, which is called Xuanwu." (Feng Shui Classic, from Lu, Xiang, Beijing Courtyard, 1996, page134). However, as it is hard to find such an ideal site in reality, a range of site criteria have been provided by the Forefathers to identify whether the site auspicious or not. In the Beijing region, the rectangular site is regarded as the most auspicious site. Besides, other factors need to be considered, such as the location of the road, the height and type of the surrounding buildings, etc.

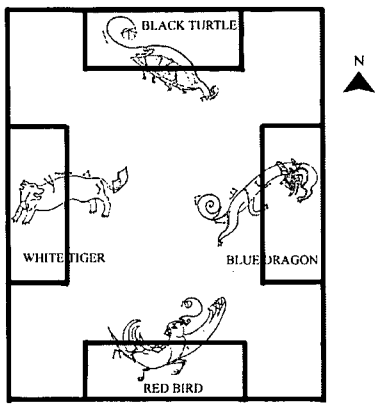
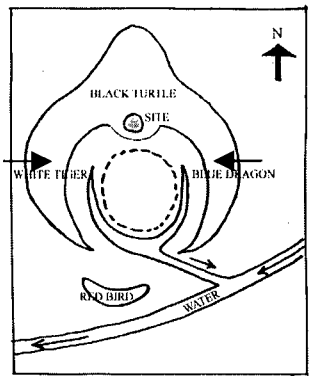
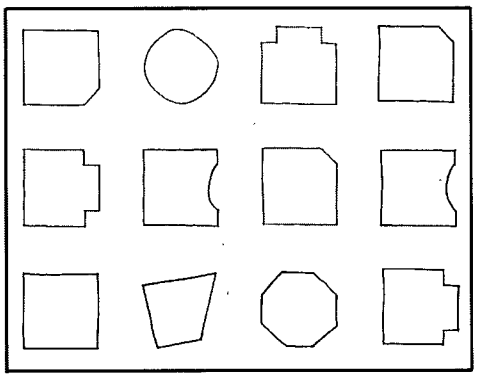


Figure 72. Symbolism of directions

Auspicious sites could be obtained by activities that achieved site repair. However, the owner tried to get as auspicious a site as possible to build their house.

In order to be auspicious, the newly built community should follow the urban planning principles of Feng Shui. The ideal auspicious site pattern is as follows. If it is difficult to meet these requirements, try to repair the site as an auspicious form.





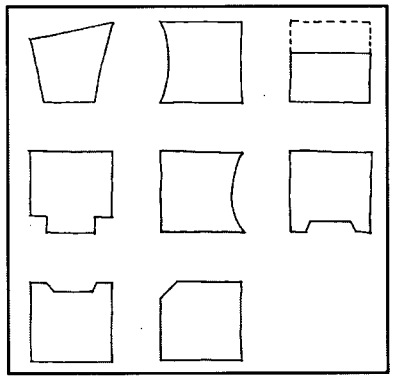


Figure 73. Site selection: an ideal auspicious site (From Lip, Evelyn, 1997, What is Feng Shui)

Figure 74. site repair: auspicious courtyard form site repair: ominous courtyard form (From Lu, Xiang; Wang, Qiming, 1996. Beijing Courtyard)

5.2 Positive Enclosed Space

—Alexander, A Pattern Language Pattern 36: 'Degree of Publicness' (Amended)

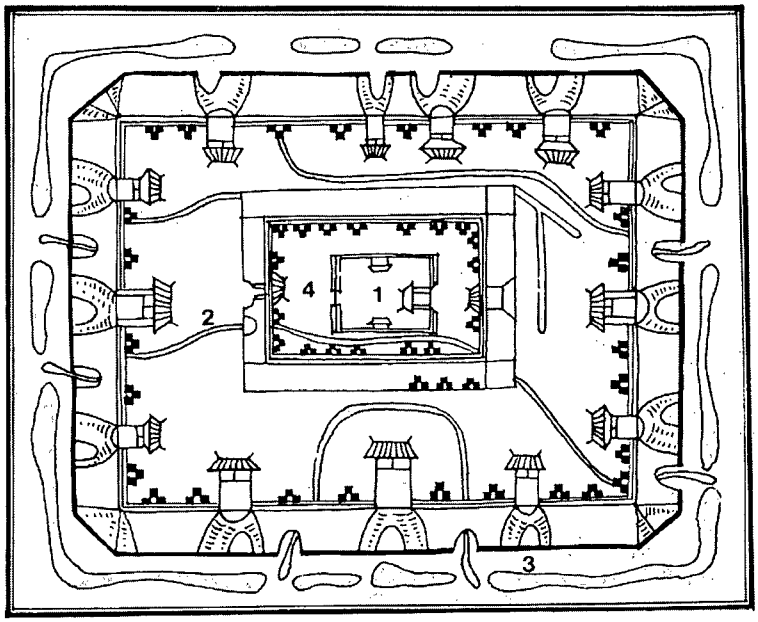


Figure 75. Archetypal example of this pattern. (From Liu, Laurence, 1989, Chinese Architecture)

... the related Chinese unique pattern COURTYARDS WHICH LIVE— Alexander, A Pattern Language Pattern 115 Amended (7), SPIRIT WALL (6).

"People are different, and the way they want to place their houses in a neighborhood is one of the most basic kinds of difference. Some people want to live where the action is. Others want more isolation. This corresponds to a basic human personality dimension, which could be called the 'extrovert-introvert' dimension, or the 'community loving-privacy loving' dimension." (Alexander, 1977, A Pattern Language, p. 193)

* * *

The concept that the house provides a seclusion and refuge, both physically and spiritually, is deeply rooted in Chinese social culture. Today, people still need an "enclosed" space to separate them from the hustle and bustle urban life and provide a setting, which supports inward peacefulness and harmony.

Occupied, ordered, disciplined and therefore controlled space was the dominant characteristic of Chinese cities, palaces and residences. The desire for protection seemed to be the first need to all-Chinese cities and buildings in the past.

During the first dynasty in Chinese history, the Xia Dynasty, there was a saying: 'To build city to protect the emperor, to build wall to watch the people'. (From Liu, Laurence, 1989, Chinese Architecture, p. 46) Chinese cities were a walled enclosure, which consisted of a number of courtyard units assemble together, facing south and laid out in parallel rows on streets running north to south and east to west. A walled enclosure was a fundamental feature of all Chinese cities.

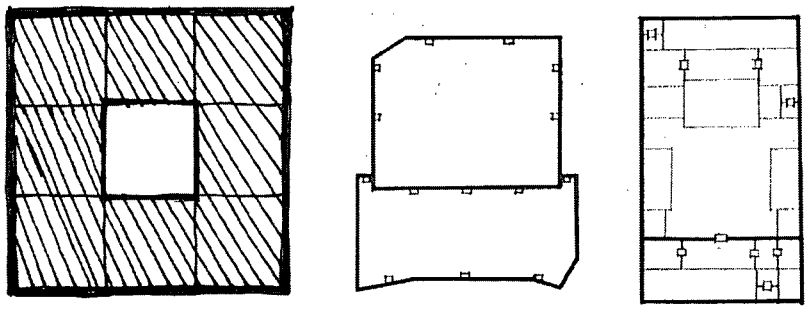


Figure 76. Chinese pattern of enclosed space (by author) Enclosed space—city and buildings (by author)

The traditional Chinese planning of palaces, temples and houses had always featured the enclosed courtyard type. These enclosed courtyard spaces provided safety and peace for the occupants and this became the basic function of traditional Chinese buildings.

The Imperial palace and court were placed on the city axis, with other buildings surrounding it and high walls and moats built around it. This enclosed space served to symbolize security and protection as well as represent control over the people.

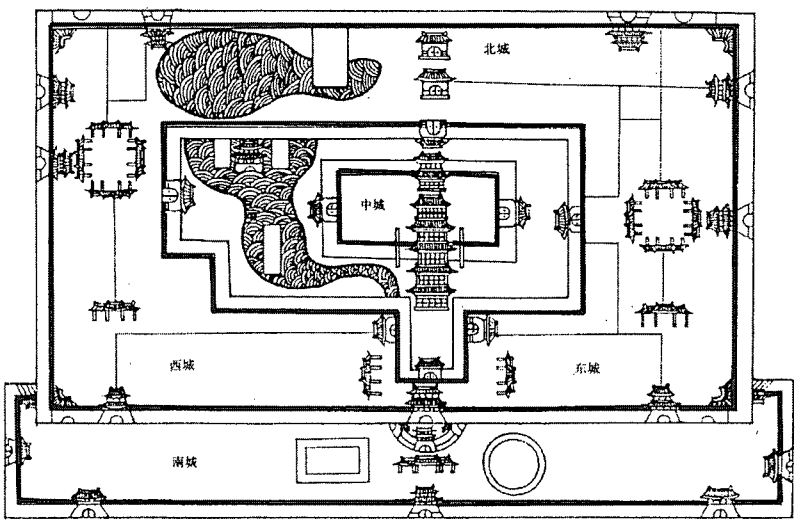


Figure 77. Enclosed pattern of Beijing, Capital of Ming and Qing Dynasty(1368-1911)

(from Su, Gin-Djih, 1964, Chinese Architecture, Past and Contemporary)

For common people, the enclosed courtyard, served as protection against fire and theft and also gave the occupants an immediate feeling of privacy and seclusion to make the house the domain of one family.

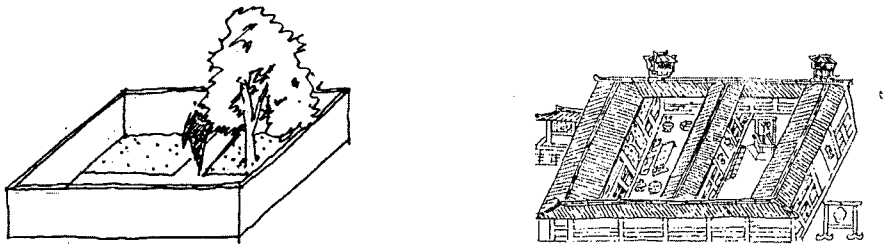


Figure 78. Enclosed residential space: spiritual refuge from outside world

(left image by author, right image from Li, Dun, 1971, The ageless Chinese)

However, the enclosed space did not mean a castle in the minds of most Chinese, but a retreat from the real world outside, a positive place where occupants could gain peace of mind, and a symbol of eternal stability in the transitional world. To this end, the enclosed courtyard functioned as a center of almost all activities. Landscape was important in this space. Parterres and fish ponds gave life to the space and large deciduous trees provided shade to tables and chairs beneath... Altogether, it provided an ideal space for relaxation, circulation and recreation.

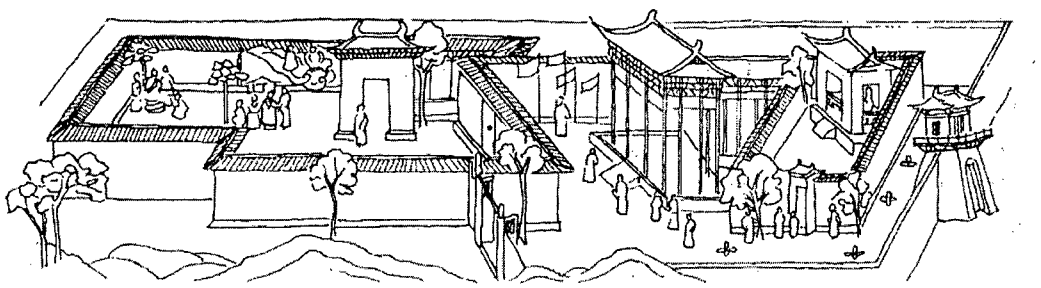


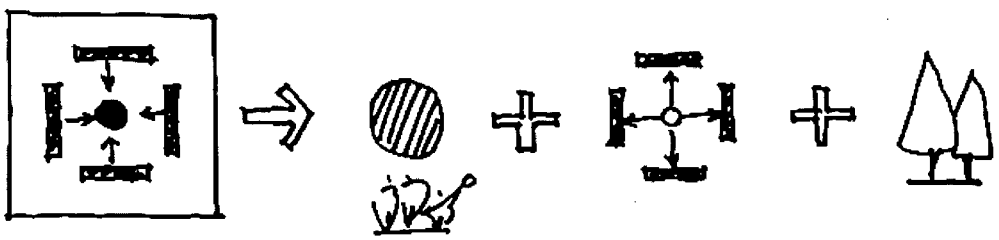
Figure 79. The enclosed courtyard was the center of almost all actives (from Dun, J. Li, 1971, The Ageless Chinese)

Enclosed space is the dominant characteristic of Chinese cities, palaces and residences. It supports people's deep need for security and protection. In order to be a cozy enclosed place for relaxation, circulation and recreation, this space should:

(1) provide a center of the activities in the building grouping. This space should be considerately programmed and try to meet a range of people's different needs.

(2) be landscaped to make it a pleasant place to pause. Landscape elements are indispensable in this space, which function both to increase the desirability of the space and organize the different spaces.

(3) Although secluded from the outside world, within the residential complex, interpenetrate between indoor and outdoor space. People inside buildings surrounding this enclosed space should easily view or take part in the activity in the outside courtyard. This will also give the people outside an interesting changing landscape view all the time. On the reverse, it is same. To do this, face each residential unit into a main or secondary courtyard. Provide visual and physical access to this courtyard.



POSITIVE ENCLOSDE SPACE | CENTER OF ACTIVITIES | INDOOR AND OUTDOOR INTERPENETRATING | LANDSCAPING/ GARDENING

(by author)

5.3 The Function of Lanes and Alleys

—Alexander, A Pattern Language Pattern 69: 'Public Outdoor Room' (Amended)

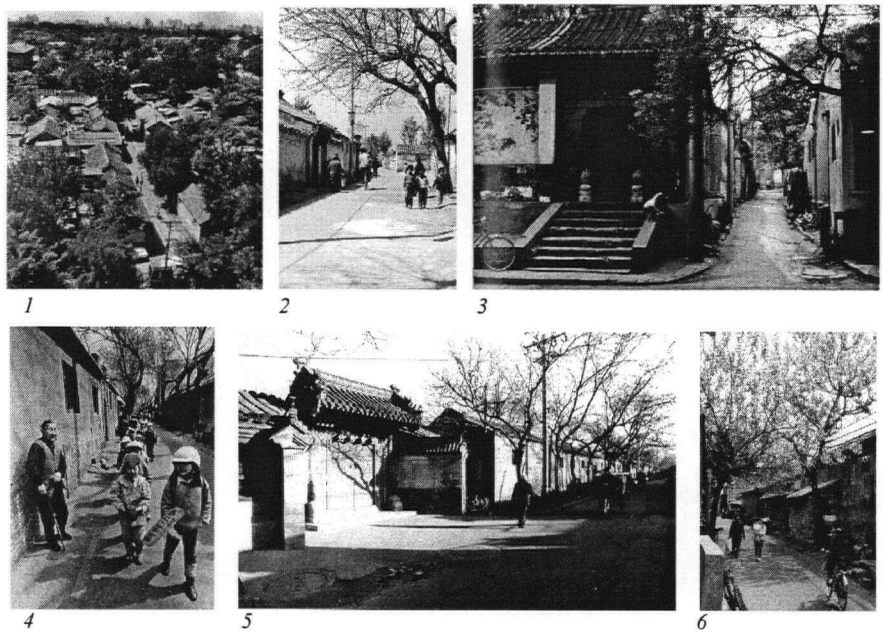


Figure 80. Archetypal example of this pattern

(image source: image 1 from Liu, Laurence, 1989, Chinese Architecture;

image 2 from Wang, Qiming, Beijing Courtyard Dwelling;

image 2-4 from Shen, Yantai; Wang, Changqing, 1997, Life in Hutong, Through Intricate Alleyways in Beijing)

... the related Chinese unique pattern POSITIVE ENCLOSED SPACE—Alexander, A Pattern Language Pattern 36 Amended, 'DEGREE OF PUBLICNESS' (2), TRANSITION SPACE—Alexander, A Pattern Language Pattern 112 Amended, "ENTRANCE TRANSITION" (5).

"There are very few spots along the streets of modern towns and neighborhoods where people can hang out, comfortably, for hours at a time". (Alexander, 1977, A Pattern Language, p. 349)

* * *

Circulation seems to be the only function of the streets and roads in contemporary communities. The original functions both physical and spiritual have been lost. However, in traditional Chinese communities, these streets and roads provided important meeting places, in addition to circulation. They helped to shut out the noise outside and provided the occupants with a unique atmosphere of peace and tranquility, a feeling of intimacy and neighborliness.

The structuring principle of lane and alley was one of the most important achievements in the planning of Beijing and was then followed in most town and cities in Northern China.

Based on different functions, the city roads and streets in Beijing were divided into three types:

City main roads, which connected each city gate, were twenty-five meters wide.

Secondary streets, which joined those main roads, were half of the width of a main road—12.5 meters wide.

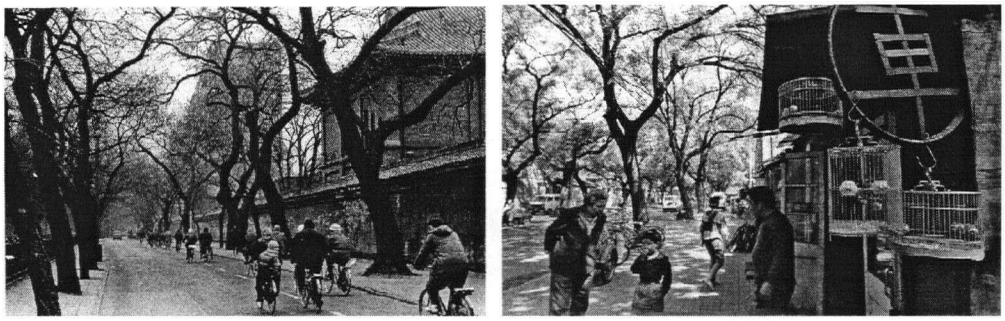


Figure 81. City secondary streets (from Shen, Yantai; Wang, Changqing, 1997, Life in Hutong, Through Intricate Alleyways in Beijing)

Lanes and alleys were rows of passageways, which were on both sides of those main and secondary streets. They can be divided into two types: main lanes and alleys and minor ones. Connected city roads and streets, main lanes and alleys were about six to seven meters wide and hundreds of meters long. However, in order to admit light and facilitate communication, lanes and alleys could be as wide as nine to ten meters. Therefore, even in winter, these lanes and alleys were filled up with sunlight as long as the weather was fine. The ratio of width to height of the section of lane and alley was between 1:1 to 1:2. Minor lanes and alleys were passageways connecting main lanes and courtyard gateways. These were less than six meters, commonly two to three meters. Compared with that of the main ones, minor lanes and alleys are more narrow and enclosed spaces.

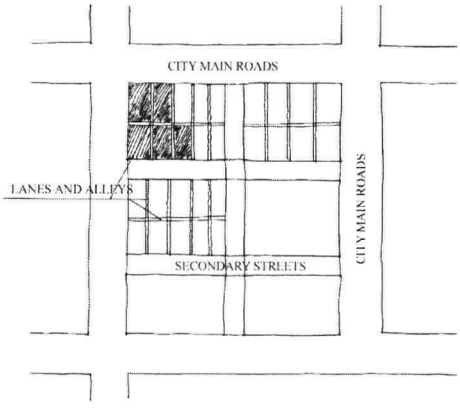


Figure 82. Chessboard City Pattern in China (by author)

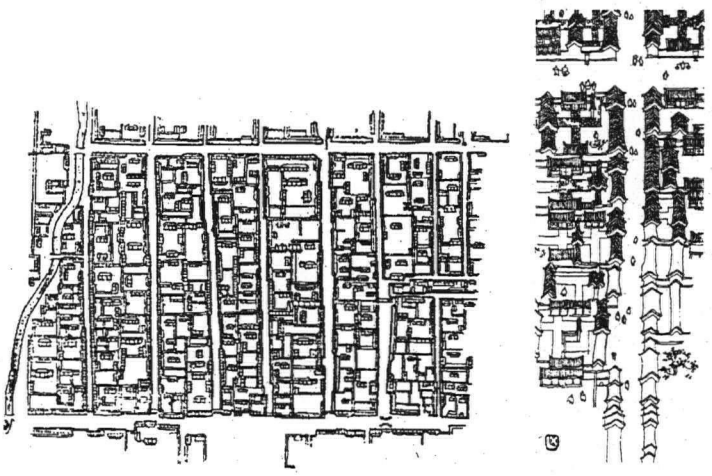


Figure 83.Lane and alley in Beijing (from Lu, Xiang; Wang, Qiming, 1996. Beijing Courtyard)

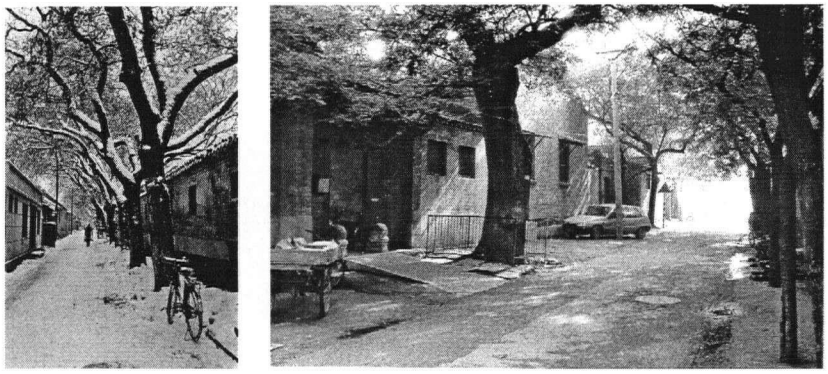


Figure 84. Main lanes and alleys (from Shen, Yantai; Wang, Changqing, 1997, Life in Hutong, Through Intricate Alleyways in Beijing)

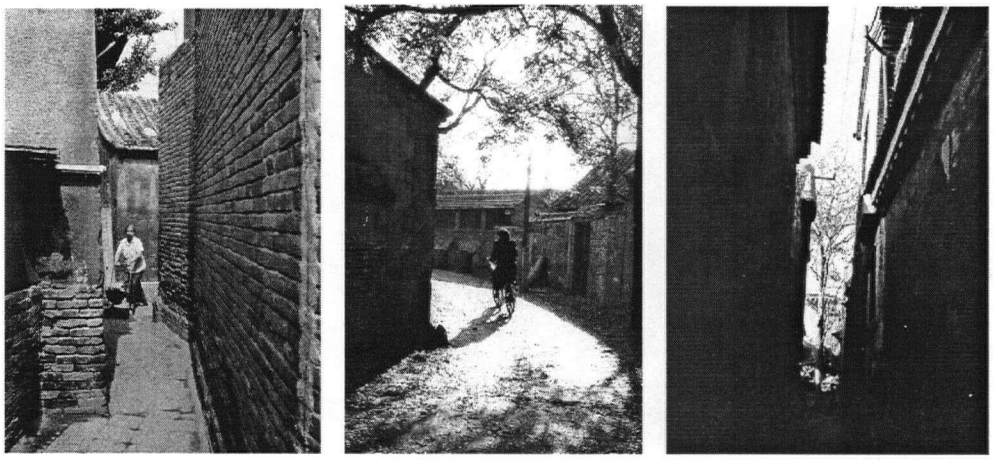


Figure 85. Minor lanes and alleys

(from Shen, Yantai; Wang, Changqing, 1997. Life in Hutongs, Through Intricate Alleyways in Beijing)

Together with the other city roads and streets, interconnecting alleys and lanes of different widths and lengths eventually join with the main streets, constituting a well scaled transportation network in city.

On both sides of the lanes and alleys were courtyard houses with entrances opening to the lane. The gates opened only when necessary. Windows on the back wall of the house tended to be small, indicating the inward-looking and closed-off architectural style of the houses. Except for the entries to houses and small windows, the lane was enclosed on both sides by heavy masonry walls. Walking along such a street, a unique atmosphere of peace and tranquility, a feeling of intimacy and neighborliness could be found, even it was just steps away from the hustle and bustle of the urban center.

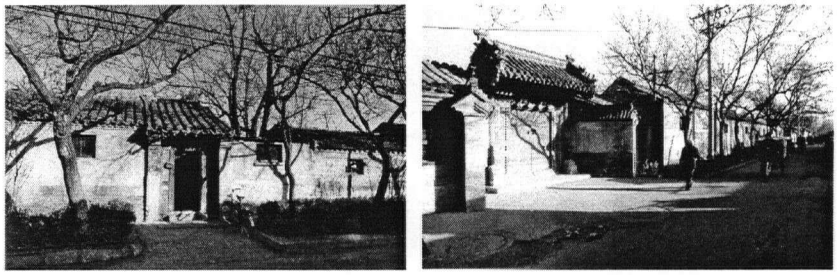


Figure 86. Quiet lanes and alleys

(from Shen, Yantai; Wang, Changqing, 1997. Life in Hutongs, Through Intricate Alleyways in Beijing)

Lanes and alleys were the last public spaces experienced by people from the city before they entered their own private dwellings. They played an important role in people's social life, especially as there was a lack of city open spaces in ancient China. Neighbors could "hang out" in such lanes and alleys to share their pleasure and experience the hardships in life with others; kids could play and elders would not feel lonely and secluded as well. They were integrated with people's daily life and helped to build amenity and friendship among neighbors.

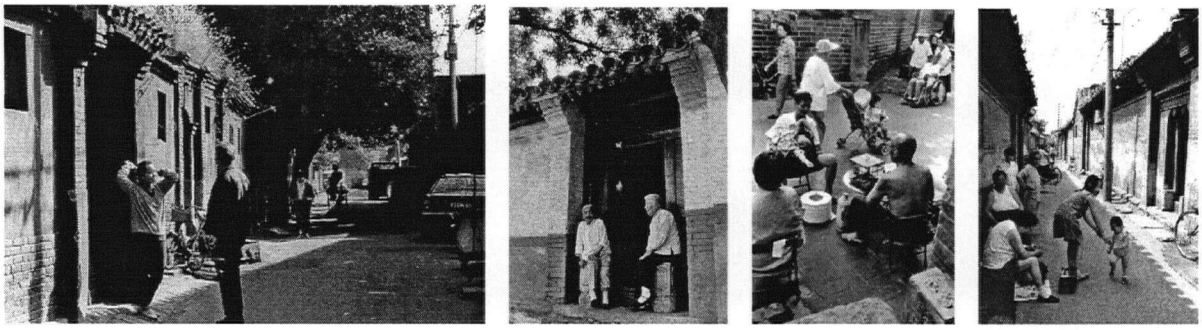
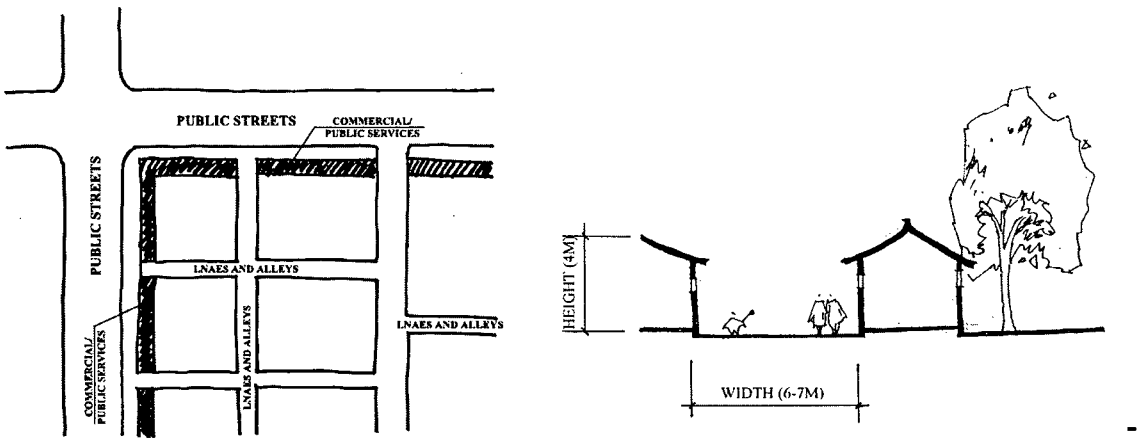


Figure 87. Social life in lanes and alleys

(from Shen, Yantai; Wang, Changqing, 1997. Life in Hutongs, Through Intricate Alleyways in Beijing)

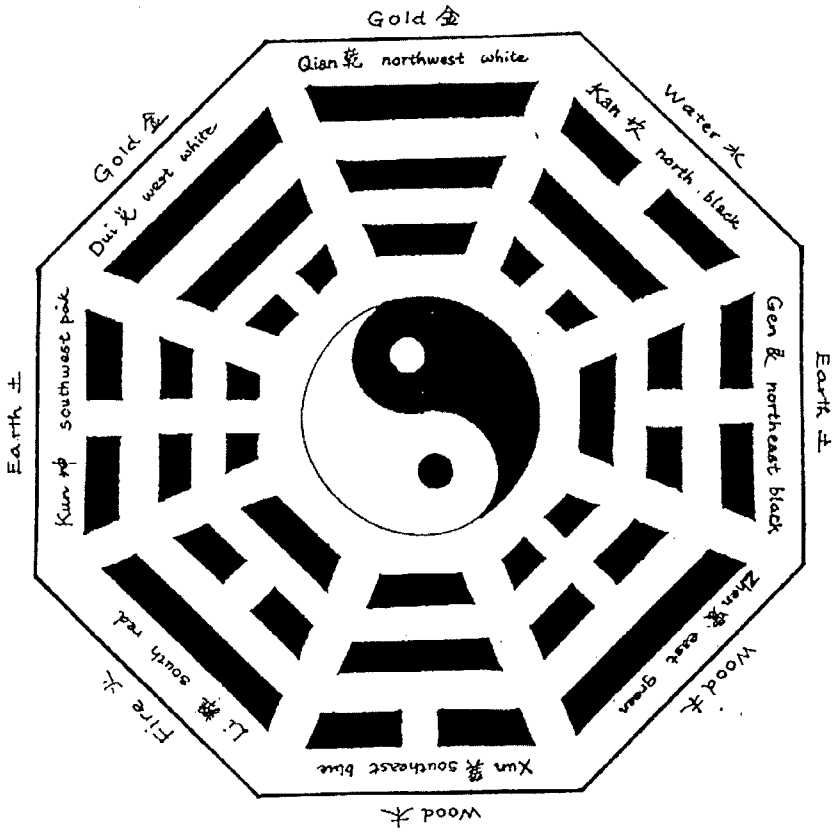
The streets and roads in communities should help to shut out the noise outside and provide the occupants a unique atmosphere of peace and tranquility, a feeling of intimacy and neighborliness. To this end, try to make the streets and roads in communities semi-public spaces, which are most accessible to neighbors living nearby, and surrounded by commercial shops facing towards the

city main roads and secondary streets. The comfortable dimension of the community streets and roads is six to seven meters with a ratio of road width to building height 1:1 to 1:2.



(by author)

5.4 Feng Shui—For House Orientation and Building Relationships



(image from Lip, Evelyn, 1997, What is Feng Shui?)

... the related Chinese unique pattern POSITIVE ENCLOSED SPACE—Alexander, A Pattern Language Pattern 36 Amended, "DEGREE OF PUBLICNESS" (2); COURTYARD WHICH LIVE—Alexander, A Pattern language Pattern 115 Amended, (7).

* * *

Feng Shui is still an important factor for people to choose their community and house. In the Beijing Courtyard house, the impacts of Feng Shui mainly focused on the orientation of the courtyard, building relationships and the location of entrance gate.

1.) Orientation:

The first and important step for a courtyard house design was to determine the courtyard longitude axis. The auspicious orientation of the house is that make the angle between the axis and the south to be 7^0, southeast.

2.) Building relationships and entrance doors

According to orientation requirements and Feng Shui, not only buildings faced south, but cities and tombs should also face south. Because China is situated north of the equator and the climate is, for the most part, cold in the winter and warm in the summer, with a south easterly prevailing wind, this north-south orientation took advantage of the southeasterly winds and sunshine to provide the people living in the halls and courtyards with a pleasant microclimate. A house is different from that of palace and temple (layout), so the door should not be placed to the south and on the axis. From innate Eight Diagrams (see the diagram at the first page), the northwestern is Qian (male) and Southeastern the Kun (female), both are the luckiest directions, so they were used as the principles and bases to decide the location of the entry. Thus, when the

house is located on the north side of a street, the entrance is located on the southeastern corner, and for those on the south side, the entrance is placed at the northwestern corner.

The northeastern corner, as the second best location, was used for locating the well and the kitchen. If need be, a door could be opened there too. Only the southwestern corner is ominous, thus washroom and storage rooms were usually built there.

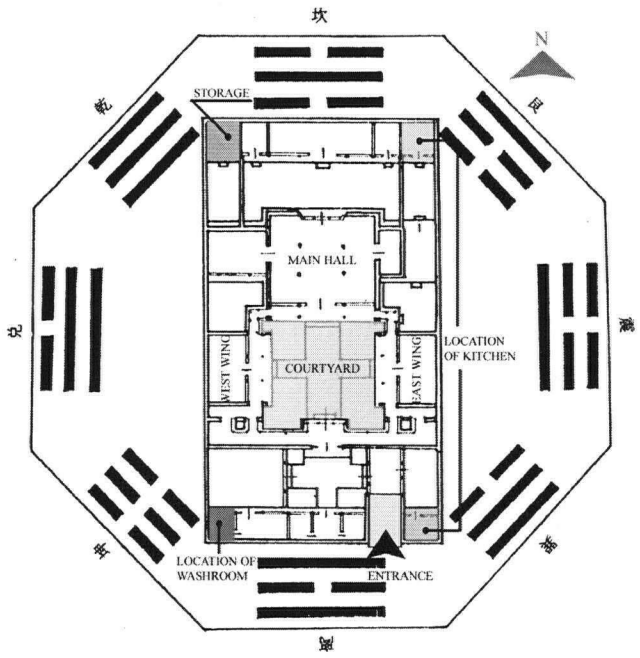


Figure 88. Auspicious location of buildings in the Beijing Courtyard (by author)

3.) The location of the courtyard drainage:

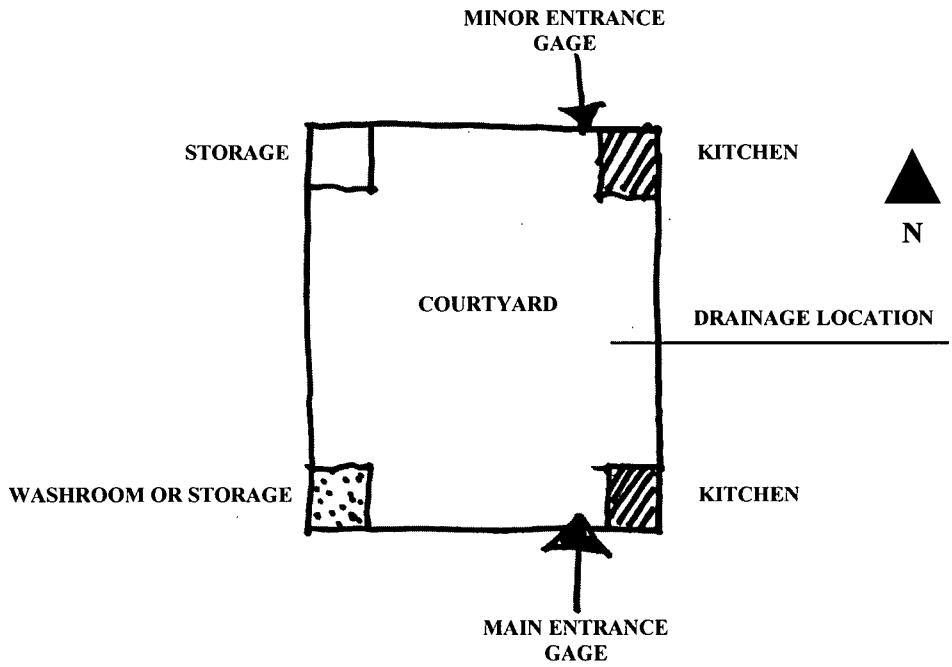
The drainage should be located at the east of the courtyard, because the Blue Dragon likes water.

In order to be auspicious, the newly built community should follow the principles of Feng Shui, which decide the siting, orientation, the location of the entrance, and the drainage of the house.

(1) The entrance gate should be located at the southeast or northwest of the site.

(2) Inside a housing unit, kitchen should be located at either southeast corner of the site or that of northeast. As the southwestern corner of the site is ominous, the washroom or storage should be placed there.

(3) The drainage should be located at the east of the courtyard.



(by author)

5.5 Transition Space

—Alexander, A Pattern Language Pattern 112: 'Entrance Transition' (Amended)

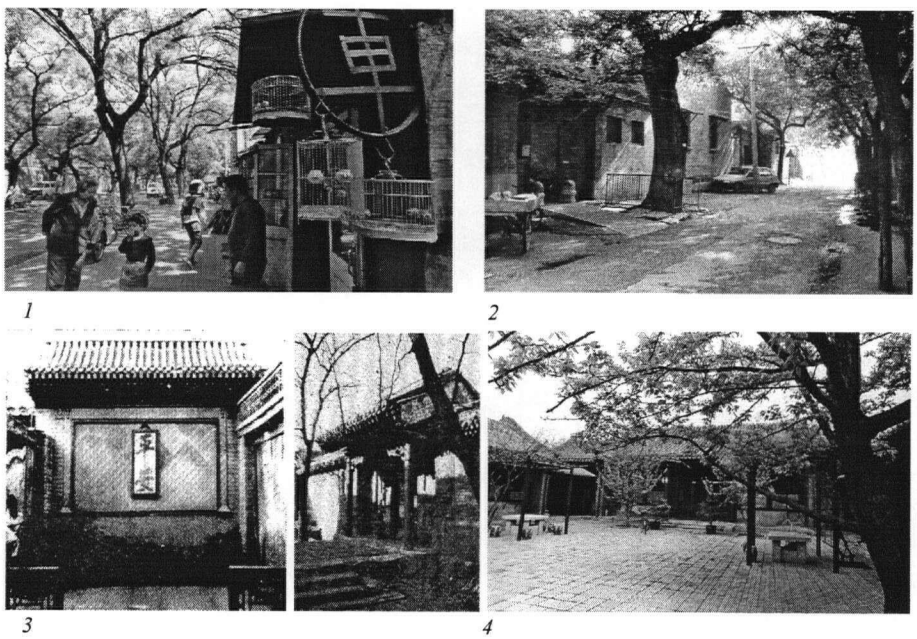


Figure 89. Archetypal example of this pattern.

(image source: image 1 and 2 from Shen, Yantai, Wang Changqing, 1997, Life in Hutongs, Through Intricate Alleyways in Beijing;

image 3 an d from Lu, Xiang, 1996, Beijing Courtyard)

... the related Chinese unique pattern FUNCTION OF LANES AND ALLEYS—Alexander, A Pattern Language Pattern 69 Amended, "PUBLIC OUTDOOR ROOM" (3), SPIRIT WALL (6), POSITIVE ENCLOSED SPACE—Alexander, A Pattern Language Pattern 36 Amended, "DEGREE OF PUBLICNESS" (2).

"Buildings, and especially houses, with a graceful transition between the street and the inside, are more tranquil than those which open directly off the street." (Alexander, 1977, A Pattern Language, page 548)

* * *

In contemporary Chinese communities, the transition spaces from the public street space to semi-public community space and from the semi-public to the private space are often lacking. However, in the Beijing courtyard house, people experienced two transition spaces from the public street to the private courtyard: semi-public transition space and entrance transition spaces, both of which effectively shut out the hustle and bustle of the street outside and provided privacy and seclusion to the occupants. These entrance spaces made the inner courtyard living environment much more comfortable and tranquil.

Semi-public Transition Space: Lanes and alleys.

Traditionally, lanes and alleys were the last public space for people entering from the street to their courtyard house and the first transition space. Like the entries to houses, the lane and alley was enclosed on both sides by heavy masonry walls, which shut out the noise outside and made it a relatively quiet place.

Entrance Transition Space

Unlike the gate of the estate of Western gentry which leads to a large shaded garden and then to a big manor and country house, gates were only part of the group of structures that gave access to the outside world and had some specific significance.

First, together with other components, the gates composed the transition space: from public to private space and made the living courtyard an inward and secluded area.

Generally speaking, this transition space could be divided into two sub-spaces:

Entrance Transition Space 1:

The first transition space was composed of the entrance gate, spirit wall and screen gates on both sides of the entrance gate. With the exception of the imperial palaces, an entrance gate was never in the center of the courtyard because only the Emperor had a destiny strong enough to withstand the evil spirits. Therefore, the entrance gate into a Beijing courtyard was usually located at the southeastern corner of its lot. This off-axis location worked effectively against all intruding forces, including the neighbors "prying eyes" as well as the evil spirits, who traveled in straight lines and would be bounced back by the spirit Wall. The privacy of the family was fully guarded. Even when the two leaves of the inner gate were removed, no one in the street could have seen into any but this entrance space or seen anything but the spirit wall. This space also provided the visitors just entering the courtyard a place to straighten out their outfit or make mental preparation for the meeting with the hosts.

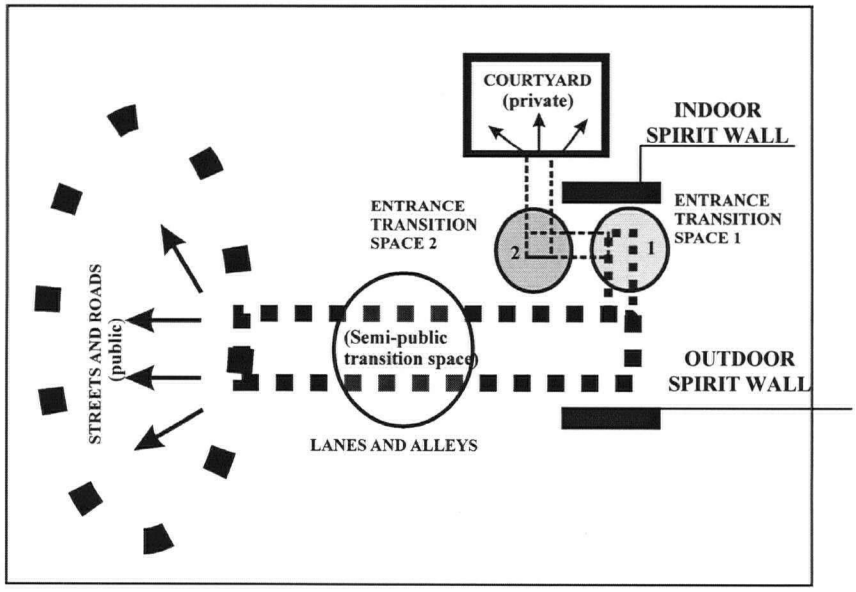


Figure 90. Entrance space transitions: from streets to courtyard

Entrance Transition Space 2:

The second entrance transition space was a small courtyard, composed of the floral-pendant gate, which was one of most exquisite buildings in the courtyard and was located on the axis of the courtyard, screen gate and north-facing rooms. It served as a place for the reception of the guests, who were not invited into the inner courtyard.

In order to make these transition spaces imposing, gates were the objects of much painstaking attention and effort on the part of the architects. They made them decorative and of a proper depth in accordance with the official status of the chief occupants. The gate style, scale, roof, color and decoration provided the first impression of the owner's social position, economic status and aesthetic taste. Therefore, these entrance spaces not only provided seclusion to the house, but also gave identity to the house.

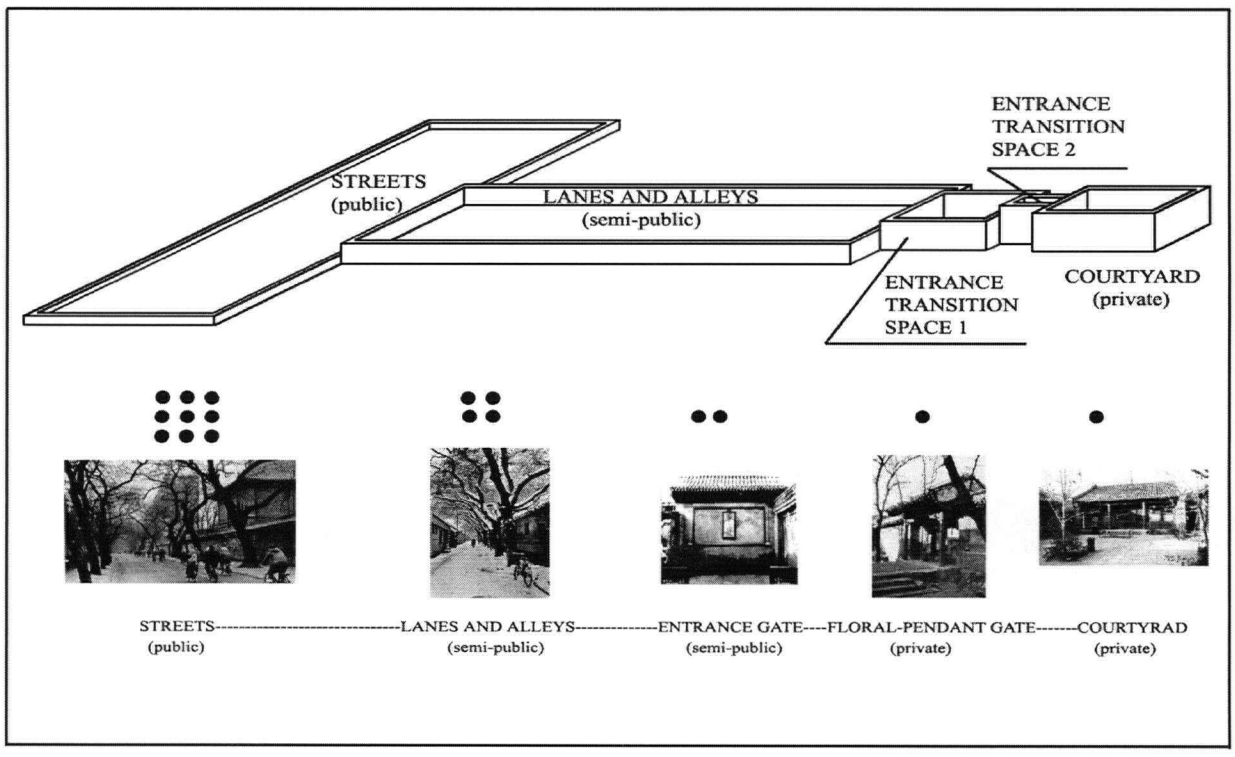
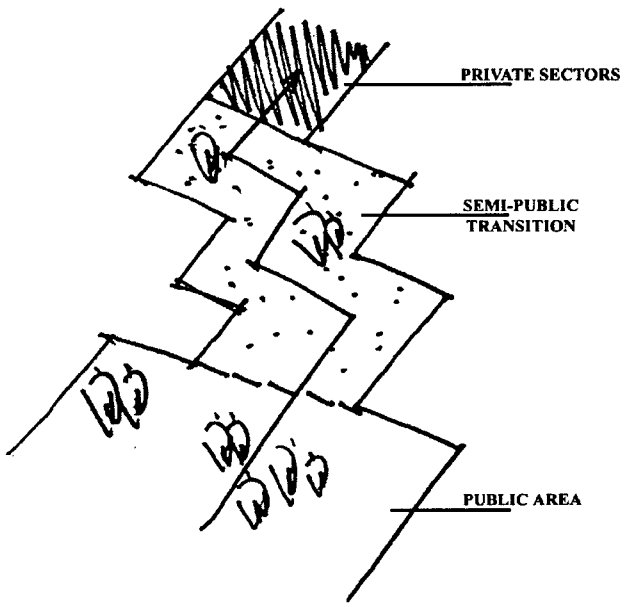


Figure 91. Transition space pattern of Beijing courtyard

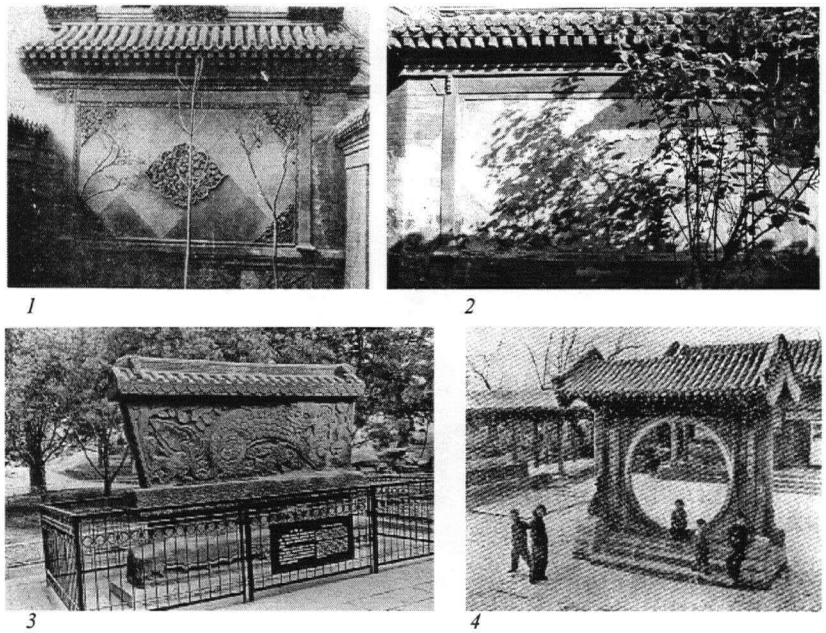
(by author, images from Shen, Yantai; Wang, Changqing, 1997, Life in Hutongs, Through Intricate Alleyways in Beijing; Wang Qiming, 1999, Beijing Courtyard Dwelling; Lu, Xiang,1996, Beijing Courtyard.)

Several transition spaces are needed before entering into the private living areas, which will not only shut out the hustle and bustle of the street outside, but also provide the privacy to the occupants. These transition spaces should be arranged with a contrast of size, dimension, orientation, enclosure and opening, so that they make an interesting spatial sequence.



(by author)

5.6 Spirit Walls



1 *2* *3* *4*

Figure 92. Archetypal example of this pattern.

(image source: image 1 and 4 from Wang, Qiming, 1999, Beijing Courtyard, Dwelling;

image 2 from Shen, Yantai; Wang, Changqing, 1997, Life in Hutongs, Through Intricate Alleyways in Beijing;

image 3 from Li, Dun, The Ageless Chinese)

... the related Chinese unique pattern POSITIVE ENCLOSED SPACE, Alexander, A Pattern Language 36 Amended, 'DEGREE OF PUBLICNESS' (2), TRANSITION SPACE, Alexander, A Pattern Language 112 Amended (5).

* * *

Although protection from devil spirits and demons is not important today, the spirit wall is still extensively used in contemporary planning and buildings for its function of screening the view of passers-by, and providing space privacy, and for its aesthetic value, which reflects the occupant's aesthetic taste.

Spirit walls were built at the entrance of a courtyard of temples, palaces and houses. The most important function of the spirit walls is their "screen" effect. First, they "screen" the view of passers-by and provide a good view for outsiders. Second, in ancient times, these walls were believed to have the ability to ward off the evil spirits and demons, those beings who traveled only in straight lines. When they encountered the screen, they were bound to turn back and not enter the courtyard. In addition, spirit walls also have the aesthetic and symbolic functions. They decorate the courtyards and, based on the use of materials, craftsmanship and constructions, reflected the status of its owner economically, socially and aesthetically. The so called "Nine dragons" at the north end of Beihai (North Sea) Park in Beijing, is a famous example of the spirit wall for its bright and varied colors. It is the spirit wall of the Imperial Palace.

Spirit walls in houses are plain and simple compared with those in institutional buildings, which are brick structures with rich decoration and symbolism and are an auxiliary part of gateway buildings. They are divided into two types: inside spirit walls and outside spirit walls.

a. Outside Spirit Walls

Outside spirit walls were located opposite of main entrance gates outside the courtyard and were built specially for residences of imperial family and officials with higher rank and position. There are of two kinds of shapes: " — " and "⌐¬". The outside spirit walls were built close next to the wall of the lane and alley. However, under some circumstances, such as facing to a plaza or wide lane, they were built independently.

The function of these walls exists in their symbolism and aesthetic aspects. On one hand, together with other embellishments, the outside screen wall reflected the social position of the main occupants; on the other hand, it provided an integrated view for people walking out from the courtyard.

Figure 93. Outside spirit walls (from Wang, Qiming, 1999, Beijing Courtyard Dwelling)

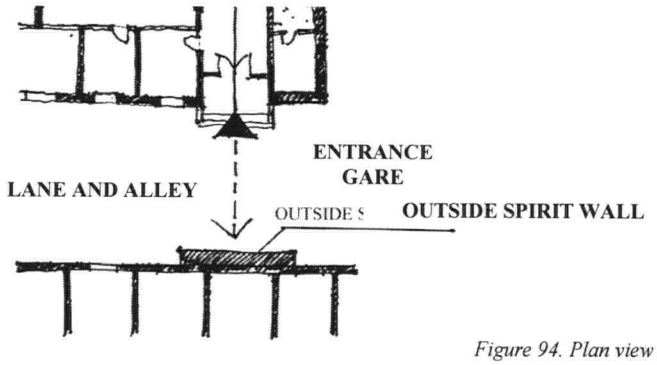


Figure 94. Plan view of outside spirit wall (by author)

b. Inside Sprit Walls

Inside spirit walls were built opposite the gateway inside the courtyard and, together with the screen gates, provided the first entrance transition space. They were the first view for people entering the courtyard. Therefore, the style, the quality and the taste of these walls provided the first impression of the owner's social position, economic status, aesthetic standards even the personalities. Based on the size of the courtyard, there are two shapes: independent spirit walls in a spacious courtyard house and composite spirit walls, which were combined with the gable of the east wing-room in a small courtyard house.

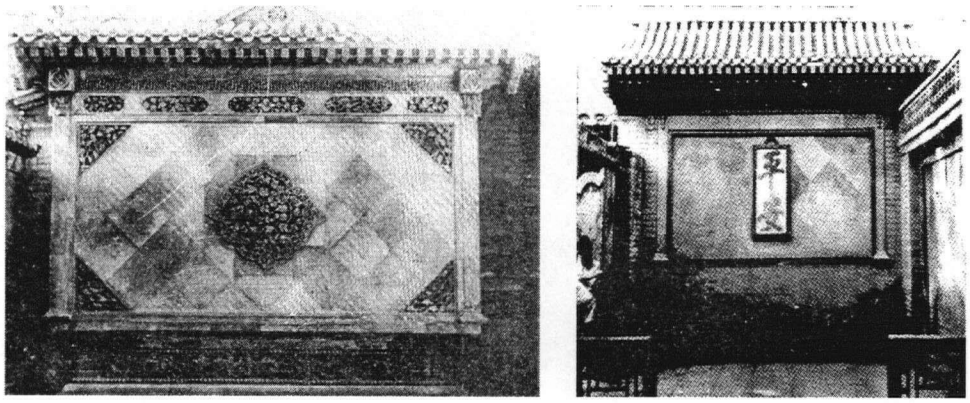


Figure 95. Inside spirit walls (from Wang, Qiming, 1999, Beijing Courtyard Dwelling)

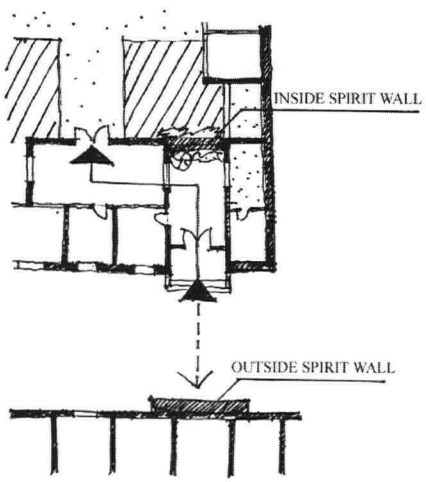


Figure 96. Inside spirit wall—independent spirit wall (by author)

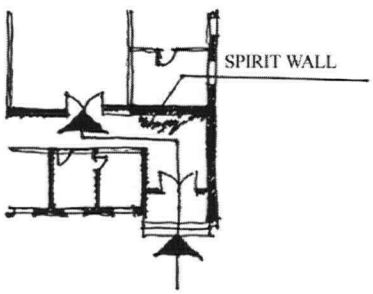


Figure 97. Inside spirit wall—composite spirit wall (combined with gable)(by author)

With the spirit walls at the entrance of the courtyard house, the privacy of the courtyard life has been kept. As Ida Pruitt described the gateway of an upper middle class compound in Beijing: "The privacy of the family was fully guarded. Even when the two leaves of the inner gate were removed, no one in the street could have seen into any but the Entrance Court or seen anything but the Spirit Screen." (Carmencita Mariano Samuels, Cultural Ideology and the Landscape of Confucian China: The Traditional Si He Yuan, 1986, p. 150)

Visitors just entering the courtyard could also make use of the privacy the screen provided to compose themselves before the meeting with their hosts. The combination of the entrance and the screen wall not only provides the visitor with a feeling of seclusion, but also gives identity to the house.

Based on the owner's aesthetic tastes and social status, there are beautifully carved patterns or Chinese characters on the spirit walls, such as "great happiness" "good luck" and "peace", symbolizing happiness and peace. Standing either opposite to the gate or somewhere behind the gate, the spirit wall acts as the decorative wall at the entrance.

Plants and perforated stones were often placed on the both sides of the screen wall to bring a decorative effect to this area. Trees and flowers cast shadows on the walls, and illustrate the change of light and shade. This gave the house a sense of peace and serenity and induced people into the courtyard and rooms.

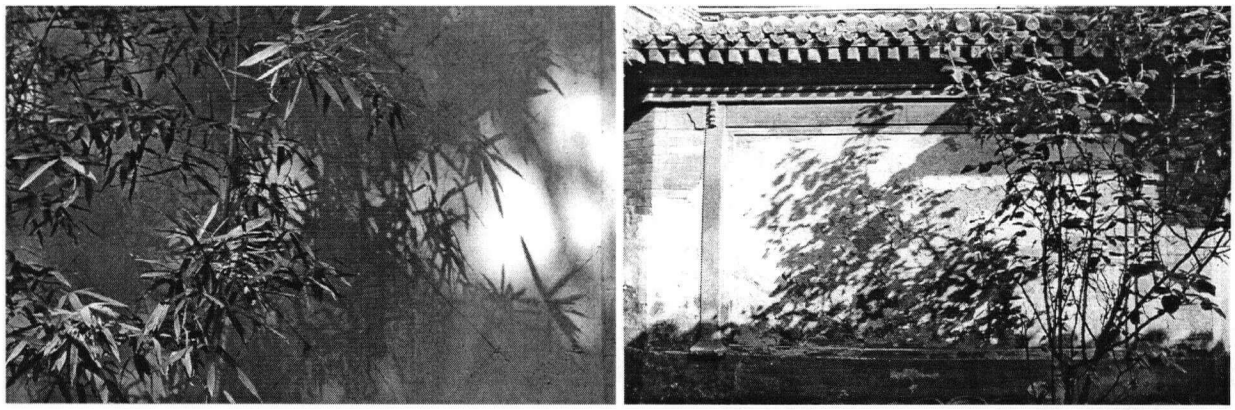
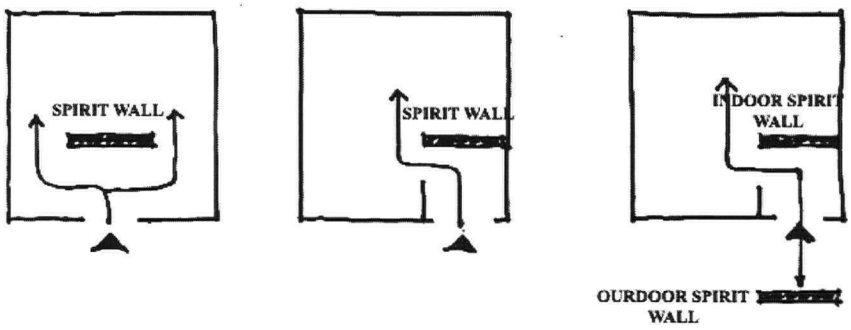


Figure 98. The light and shadow on the spirit walls,

(from Shen, Yantai; Wang, Changqing, 1997. Life in Hutongs, Through Intricate Alleyways in Beijing.)

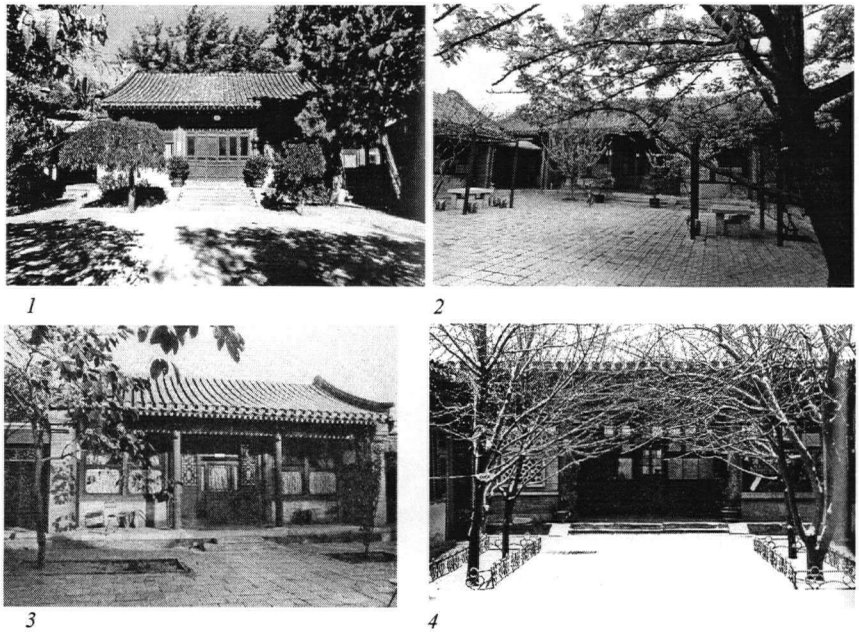
At the entrance to each housing unit provide a small entry courtyard with spirit wall opposite the entry gate. The entry into the residence will be at right angles to the spirit wall.



(by author)

5.7 "Courtyards Which live"

—Alexander, A Pattern Language Pattern 115 (Amended)



1 *2*

3 *4*

Figure 99. Archetypal example of this pattern

(image sources: image 1-4 from Shen, Yantai; Wang, Changqing, 1997, Life in Hutongs, Through Intricate Alleyways in Beijing)

... the related Chinese unique pattern POSITIVE ENCLOSED SPACE—Alexander, A Pattern Language Pattern 36 Amended, "DEGREE OF PUBLICNESS" (2), FENG SHUI—for House Orientation and Building Relationships (4).

"The courtyards built in modern buildings are very often dead. They are intended to be private open spaces for people to use—but they end up unused, full of gravel and abstract sculptures." (Alexander, 1977, A Pattern Language, page 563)

* * *

In the Beijing Courtyard House the courtyard was the center of activity. Now although courtyards are built in contemporary communities, they always end up unused and are not places to linger.

The concept of the courtyard had its roots in Confucianism and in the rather rigidly feudalistic family tradition, which was 'harmony'—harmony within a family, inner harmony of one's self, and the ethical concept of deference to elders. This ethical-spiritual 'harmony' and a ritual mode of living were the main forces that created the courtyard pattern. Conversely, this pattern influenced and reinforced the life-style and thought of all the family members.

Enclosed as it was by the walls or buildings around it, the courtyard took on a special introverted quality. The seclusion of the courtyard, separated from the outside world, was the focus and center of all activities, an indispensable place for the circulation of ideas and for contact. With a lack of public gathering areas in the cities, the courtyard was also a place for each family to use for weddings, birthdays, funerals, festivals and other celebrations.

The characteristics of this pattern are as follows:

1. **Indoors and outdoors interpenetrating**

Manipulation of enclosure and openings was the fundamental principle of the courtyard. The courtyard was a walled space approximately square in shape and overlooked by continuous rows of windows. It was completely cut off from the outside. However, inside the courtyard, indoor and outdoors interpenetrated and it was open to the occupants of the house. The purpose of the design principle was to allow a large number of people to live together in civilized harmony in a very small space.

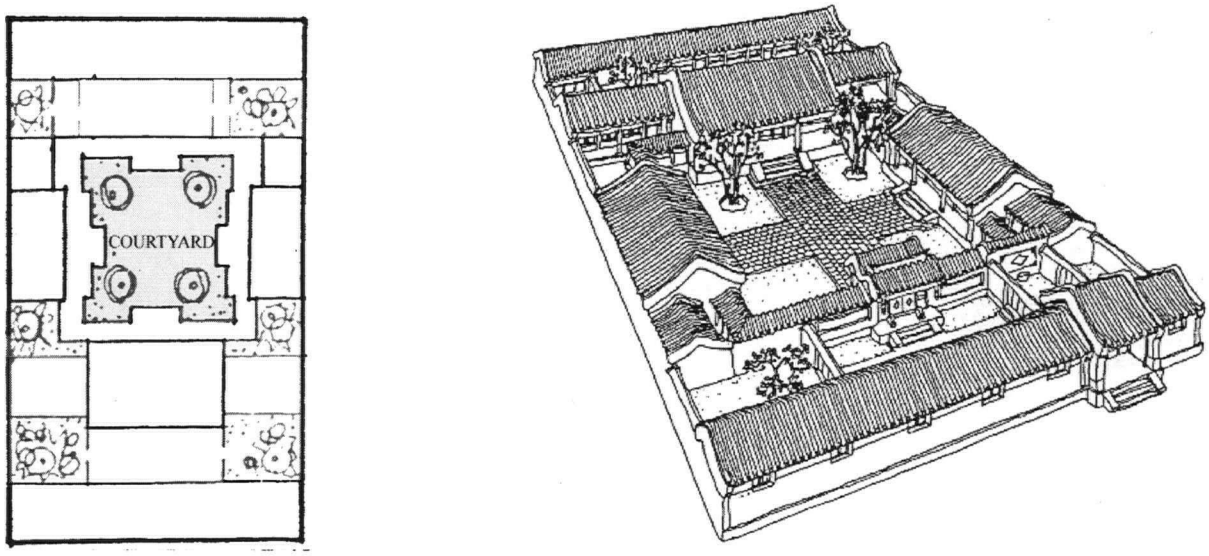


Figure 100. Beijing courtyard, from ***Wang, Qiming****, 1999, Beijing Courtyard Dwelling*

2. **The center of the house**

For the Middle Kingdom the stone on the altar of heaven was the center of the world. The courtyard had the same significance for individual families. The 'world' was, as it were, concentrated at the center of the house.

The courtyard was the center of all activities, there was no privacy concerning the movement and activities of all family members. Furthermore, it created a layout and a form, which rallied all the members of a family psychologically to live in a spiritual refuge together. During the feudalistic era, the family was a well-knit social unit, with the members of the family closely linked. Only through unity of thought and the force of a family were they able to confront and survive the misfortunes of life.

It was also a pleasant place to enjoy the beauty of life. Plants were planted and animals cultivated in the courtyard. There were different scenes in different seasons. In spring, the flying pigeons gave people a feeling of peace and harmony. In summer, people could taste the fruit of their courtyard trees and watch the golden fish. In autumn, people could appreciate the beautiful moon in their courtyard and in winter, the plum trees provided beauty in the snowy courtyard.

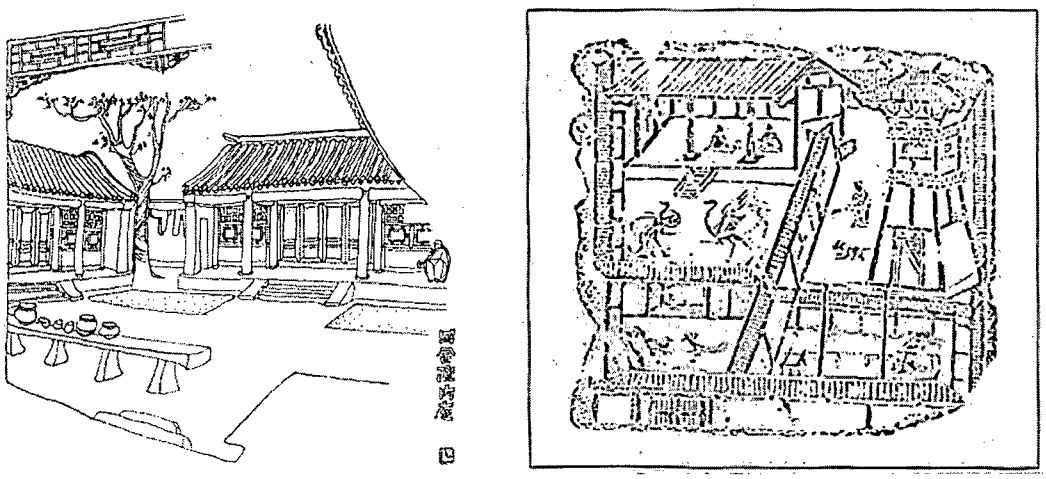


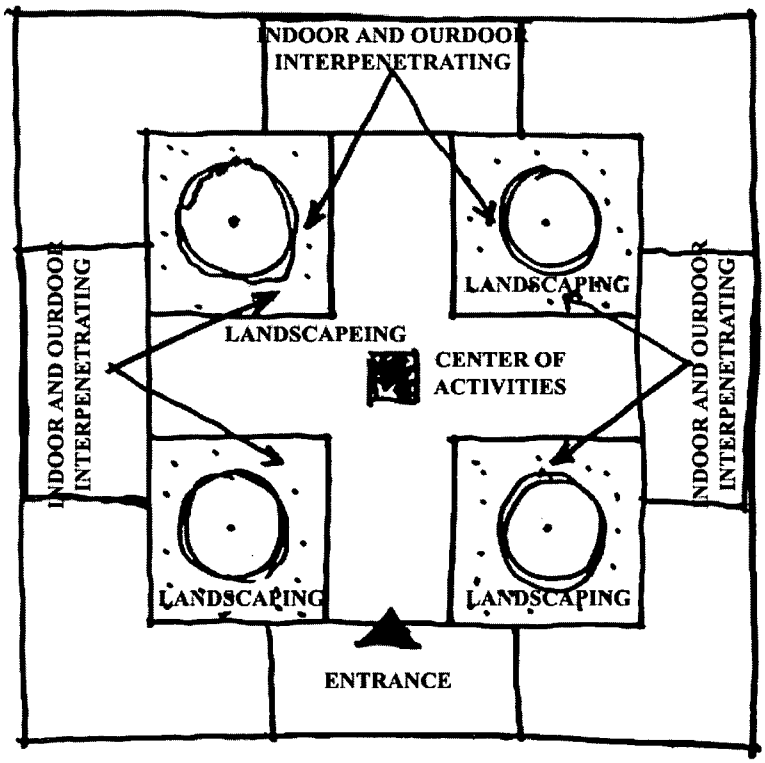
Figure 101. Courtyard is the center of the house, from ***Lu, Xiang; Wang, Qiming, 1996. Beijing Courtyard***

3. Balance and Symmetry

The layout of the courtyard was axially symmetrical, which was the most suitable means of expressing the Confucian's rigidly hierarchical family system. All physical features in the courtyard were

symmetrical, such as parterres, fishponds, and large deciduous trees. Spiritually, the courtyard like this had another meaning, that of a retreat which embodied an eternal meaning.

In order to make the courtyards to be a positive open space for people to use, make the courtyard the center of the activities. Indoor and outdoor interpenetrating is the key requirement for the space design, while balance and symmetry make the place much more "Chinese".



5.8 The use of characteristic of Chinese architecture and urban planning in applying a pattern language in China

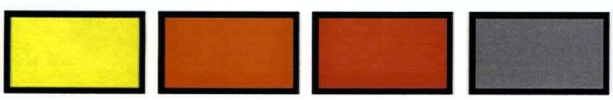
The reader will have noted that some of the characteristics discussed in Chapter 3 and 4 did not appear as patterns in Chapter 5, e.g., the use of colors in Chinese architecture and landscape architecture.

In ancient China, different types of buildings had their own color design system, which strongly reflected the hierarchy and protocol of the time. Generally speaking, there were three different types of traditional buildings: Palaces, temples, and commoner's houses.

Although colors no longer symbolize the occupant's social status in contemporary Chinese architecture and landscape architecture, these color systems provide the buildings and its surrounding environment distinct characteristics and identification.

The colors used for palaces mainly were: red, gold, green, blue, black, white, purple.

The colors used for temples mainly were: yellow, vermilion, red, blue-grey.



The colors used for houses mainly were: chestnut color, black and white, red, green, purple, blue-grey.

The colors used in Chinese architecture were also based on the traditional and psychological belief in the ultimate power of these colors to influence the destiny and fortunes of the occupant. If one hopes for happiness and wealth, one selects more red. If one wishes to have peace, blue is the choice of color. Yellow is the color of Emperors, and so not commonly used. Black is used occasionally for outlining or background. Red is then the predominant color for Chinese buildings. Blue, green and other complementary colors are used in detailed decorations.

Although color is no longer used to convey social status, both the historical use of color and its symbolic meaning are well understood in contemporary Chinese society. Thus an architect or landscape architect can use color in a variety of ways in community design. For example, the very use of the chestnut color is suggestive of home. Restricting blues and green to accent colors would also be a traditional and understood way of using color in a residential setting to establish the meaning of 'home'. In a symbolic way, the large use of blue in a traditional scholar garden might tell the user that this is the contemplative setting or the use of red on an entry gate would suggest that this community would be a setting of prosperity and peace. Color therefore is not a pattern in itself but is part of the context in which the pattern language is used and understood in China.

In the same way, the grid of the "Chessboard City" and symmetry and balance can provide a useful tool for modern designers to work within a cultural context. However, the use of the grid and bilateral symmetry in community design need not be ubiquitous and thus it provides informing context rather than a pattern.

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CONCLUSION

Every country has its own particular national forms of architecture and landscape architecture, which reflect its culture, history, customs, political and social systems, religious beliefs, and other natural conditions. In each nation, people retain a strong affection for their own traditions. "Thus, preserving the traditions of their own national style is, in fact, the same as maintaining the prestige of their nation." (Su Gin-Djih, 1964, Chinese Architecture, Past and Contemporary, p.241) However, the development of a national style should also keep pace with the age and other contemporary architectural materials and methods. During its, history, China has achieved brilliant results that made Chinese architecture a unique, excellent and independent system in the world. The essence of Chinese architecture is 'harmony' and 'unity'. Harmony, one of the teachings of Confucius, refers to balance between heaven and man, between man and man, and between man and land. Unity is found in Chinese architecture in the appearances of buildings—in the unity of materials, construction methods, regularity and hierarchy of dominance. To design and build harmonious physical environments is believed to engender harmonious relationships between men. The effort to create a place for the coexistence of people also exerts sympathy with nature and conveys symbolic meanings.

Since past principles were faithfully followed, the environment was organized to be attuned to nature and achieved harmony among people. The 19th and 20th centuries in China were periods of drastic change, from a lingering feudalistic society to a modern industrial culture. It was taken for granted that traditional building types and landscape architecture could no longer serve a country with an emerging role in the world, faced with the challenges of new aims and technologies. The influence of International Style, which maintained that modern building materials and construction methods are universal and the appearances of buildings should also be universal, (Lawton, Powell, 1974, "The Human Being and the

Institutional Building", Design for Human Behavior, p61) lead many to believe that the great buildings, gardens and towns of the past have no meaning or use for the creation of a new architecture and landscape architecture today. "A regard for harmony and unity is generally lacking in contemporary Chinese architecture and landscape architectural practice, which could be an inspiration to contemporary practice and resource for the creation of new architecture and landscape architecture. (Liu, Laurence, 1989, Chinese Architecture, p.274) To date, there has been little research into Chinese town planning, city spaces and buildings, and the basic principles and rules that contribute to today's thinking, most of which focus on history, other than the basic principles of structure and style. The aim of this thesis has been to begin to address this situation through the study and application of pattern language.

In this thesis:

(1) A new research and design model is proposed demonstrating how contemporary Chinese architecture and landscape architecture could be created under the new economic program but based on both old and new cultural foundations. This model is to apply Alexander's "A Pattern Language" to China and to distill and build a unique Chinese pattern language for contemporary Chinese architecture and landscape architecture. Although Alexander's "A Pattern Language" is written especially for the Western world, the humanistic philosophy and approach is very congruent with that of traditional Chinese architecture and landscape architecture. The aim of both is to make a harmonious and unified environment, which is lacking in 20th century architecture and environmental design, in both the Western world and China. In North America, Alexander stated that "The cities and buildings we live in today, do not meet human needs. The environment does not form an organic whole; nor does the urban life within it." (Alexander, Christopher, 1970, "An Early Summary of 'The Timeless Way of Building'", Designing for Human Behavior, p. 5) And in China, a regard for harmony and unity is generally lacking in contemporary Chinese architectural practice. (Liu, Laurence G, 1989, Chinese Architecture, p.274) The desire to rectify this situation has become the basis of applying Alexander's

"A Pattern Language" in China. The goal of this research and design model has been to create a "New and Chinese" architecture and environment so that newly-built environments will support the physical and spiritual needs of the people who use them. It hopes to encourage the creation of a feeling of belonging, to eliminate discord among people, to heighten spiritual life and make people proud of the place in which they live. Finally, it is intended to attain harmony, which does not seek to transform or to change the appearance but to express the original landscape, fabric and form of the city and to express a quality of existential humility rather than arrogance. This thesis covers a large area, including architecture, landscape architecture, planning, and other related fields. A pattern language is by definition, "a composite of theoretical models from a widely divergent set of fields: systems theory, natural science methodology, linguistics, cognitive psychology, biology, genetics". (Turner, Tom, 1996, City As Landscape, A post-postmodern view of design and planning. p.56) The work of this thesis only covers a small portion of this research area, since it would be an extraordinarily complex theoretical structure and need contributions from each related field to be complete.

(2) Based on the archetypical residence in North China, the Beijing courtyard house, seven patterns have been distilled and built in this thesis, which focus on the community landscape patterns in North China. They are either "the" pattern of the essential nature of Chinese traditional residential environment, or "a" pattern of it. However, these physical forms are the crystallization of unique traditional Chinese philosophy, culture, life-style and natural resources, which still have great influence in China today. Use of these patterns is intended to make the environment "alive" and "whole", as well as rich in Chinese spirit.

Use of these patterns:

The Beijing Courtyard house is the archetypal dwelling in Northern China, which dealt well with the living problem in China: the large population and the shortage of the land. It is a high-density single house. The patterns developed from the Beijing Courtyard house in this thesis focus on the contemporary

high-density multi-family community design in Northern China. However, some of them could be applied to a broader context. They could be applied in either in another type of community design, such as high-rise apartments, or could be used as a basic pattern for various architectural and environmental designs throughout in China. For example: Pattern 6, Spirit Wall. The most important function in contemporary architectural and environmental design is the "screen" function, which could provide privacy for a large space. So in addition to the multi-family residence, it also could be applied at the entrance of the high-rise apartment communities, or that of an apartment building. It could be also applied in the indoor decoration design. The spirit wall could be placed at the entrance of a unit to provide both good view and privacy to the occupants and visitors. The contemporary spirit wall could be made of a variety of materials: metal, lumber, fabric, concrete, plants and so on.

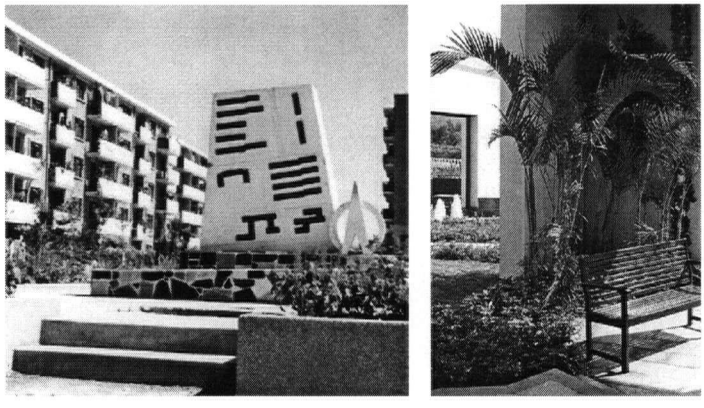

Figure 102. Application of Spirit Wall in contemporary multi-family communities
Left: Spirit Wall at main entry of multi-family communities. (images from Zhang, Junhua, 2001, Community Landscape Architecture Design)
Right: Spirit wall directs circulation at entry to a community garden. (by author)

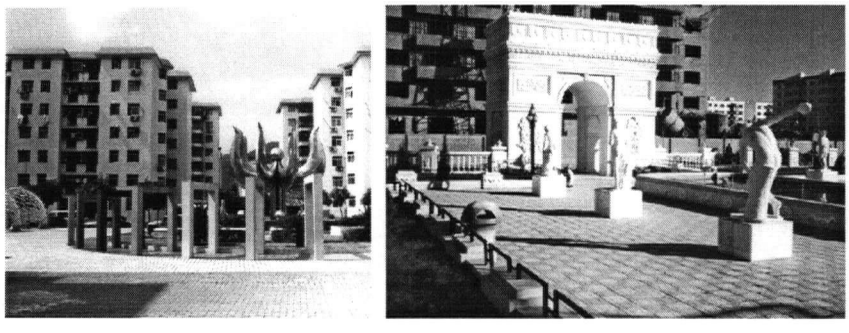

Figure 103. Application of Spirit Wall in contemporary Chinese communities.
Left: Artistic Stature functions as Spirit Wall. (image from Fang, Xianfu, 2001, The Forestation Mode of the Residential Districts)
Right: Pseudo 'L'arc du Triophe', function as a Spirit wall. (image from Zhang, Junhua, 2001, Community Landscape Architecture Design)

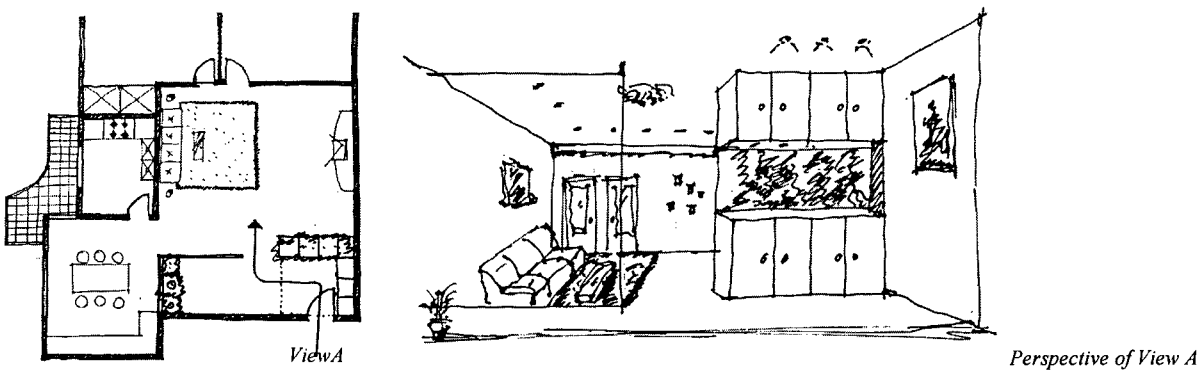

Figure 104. Application of Spirit Wall in Contemporary Indoor Decoration Design (by author)

Based on the structure of a "New and Chinese" environmental design proposed in this thesis, (See 1.0 Introduction), future research and study could focus on the following aspects:

(1) To complete Chinese community pattern language in northern China and other parts of China;

(2) To distill and build a Chinese pattern language for other types of buildings, such as universities and schools, hotels and recreational facilities, institutional buildings, open spaces, and so on;

(3) To fill the void for the emerging fields such as transportation planning;

(4) To focus future research on the area of urban planning. With current social-economic development in China, the living environment is becoming worse and worse with events, such as sand storms and flooding in southern China and drought in northern China. People are unable to exist harmoniously with nature as they did in the past. Harmony and unity that have been the essence of Chinese architecture and urban planning, are now lacking in contemporary architecture and urban planning. The traditional Chinese design approach should be reviewed and studied. A series of urban planning patterns could be distilled to help to solve the environmental problems of today.

To rehabilitate Chinese architecture and landscape architecture and to create a new national style for China are the responsibilities of the architects and landscape architects not only for this generation but also for all future generations. The research and design model proposed and unique Chinese patterns built

in this thesis are only an expression of a method. Several hundred, if not thousands, of patterns for a "New and Chinese" environmental design are waiting to be recognized, expressed and applied. Whether or not this goal is reached and the duty entrusted by the age accomplished, depends on the utmost efforts of every one in this field and the close co-operation of all.

APPENDIX:

REVIEW OF ALEXANDER'S A PATTERN LANGUAGE, THE APPLICATION AND ADAPTATION IN NORTH CHINA

The traditional Chinese architecture and environmental design is the valuable heritage in the treasury of world architectural and landscape architectural world. The rich design experience accumulated in the thousands of years of the history of civilization. The essence of Chinese architecture and landscape architecture is 'harmony' and 'unity', which is losing in the contemporary Chinese architecture and landscape architecture. This humanistic approach is in an urgent need today.

Although from the viewpoint of a Westerner, Alexander's A Pattern Language can be borrowed to rebuild the harmonious and whole environment in China, as it used to be, because:

1.) The goal of Alexander's A Pattern Language is to make the city and environment whole and real and "make people feel alive and human". (Alexander, Christopher, 1977, A Pattern Language, p.xvii) The patterns distilled and built are those physical archetypal forms, which meet people's needs both physically and mentally. As human beings, these patterns could serve well people everywhere, including the people in China. This is the basis that most patterns in A Pattern Language could be applied in China.

2.) Just as Alexander stated that "A Pattern Language is, in short, a picture of culture." (Alexander, Christopher, 1970, "An Early Summary of 'The Timeless Way of Building'", Designing for Human Behavior, p. 59), and "Every society which is alive and whole, will have its own unique and distinct pattern language;" (Alexander, Christopher, 1977, A Pattern

Language, p.xvi), some of the patterns in A Pattern Language might not be suitable in China or should be modified to some extent to meet the needs in China. Therefore, it is necessary to review them before application in China.

This thesis focuses on the community landscape architecture and site planning. Others are notated as applicable. The criteria of this thesis are that a pattern must be respond to:

1.) Specific contemporary social, economic situation in China, such as population and land limitation, economic development and technology conditions.

2.) Social cultural tradition: focus on the traditional community culture of the Beijing Courtyard house.

3.) Different natural conditions, such as climate, topography, geographic situation;

4.) Related government codes, regulation and standard required on community development in northern China.

Based on above criteria, the relationship among applicable patterns, modified patterns and non-applicable patterns are as follows:

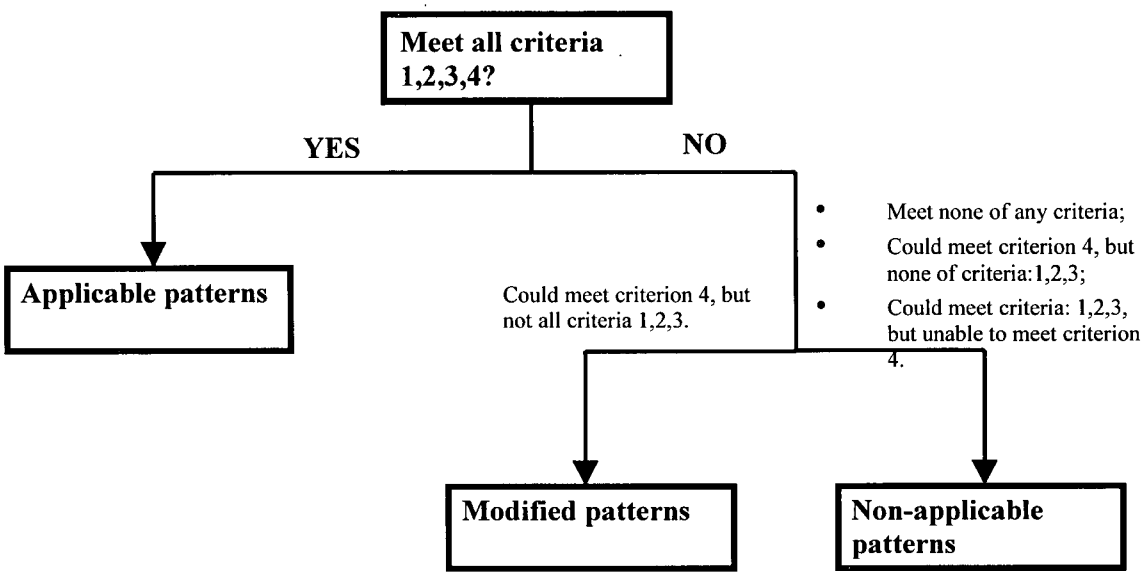

Figure 105. Review method of Alexander's " A Pattern Language".

It has to be noted that this review result will evolve with any change of the society. The application, non-application and modification of Alexander's patterns are temporary. It is a dynamic process and will change from time to time. Therefore, it should be reviewed before continue further research work.

For example, Alexander's Pattern 12: "Community of 7000" is reviewed as one of the non-applicable patterns because it is beyond the criteria 3: "contemporary community development in Northern China" and criteria 1: "specific contemporary social economic situation in China".

Alexander's Pattern 36: "Degree of Publicness" is reviewed as one of the modified patterns in China because, based on the social cultural tradition in China (criteria 2), the physical form is different, although the "degree of publicness" is required by both.

APPENDIX

Table 2. Review of Alexander's A Pattern Language the application and Adaptation in China

		CHRISTOPHER ALEXANDER'S A PATTERN LANGUAGE	Applicable Pattern Language	Modified Pattern Language	Non-applicable Pattern Language
TOWNS	1	Independent regions	X		
	2	The distribution of towns	X		
	3	City country fingers	X		
	4	Agricultural valleys	X		
	5	Lace of country streets	X		
	6	Country towns	X		
	7	The countryside	X		
	8	Mosaic of subcultures	X		
	9	Scattered work	X		
	10	Magic of the city	X		
	11	Local transport areas	X		
	12	Community of 7000			X
	13	Subculture boundary	X		
	14	Indentifiable neighborhood	X		
	15	Neighborhood boundary	X		
	16	Web of public transportation	X		
	17	Ring roads	X		
	18	Network of learning	X		
	19	Web of shopping	X		
	20	Mini-buses	X		
	21	Four-story limit			X
	22	Nine per cent parking	X		
	23	Parallel roads	X		
	24	Scared sites	X		
	25	Access to water	X		
	26	Life cycle	X		
	27	Men and women	X		
	28	Ecceentric nucleus	X		
	29	Density rings	X		
	30	Actitity nodes	X		
	31	Promenade	X		
	32	Shopping street	X		
	33	Night life	X		
	34	Interchange	X		
	35	Household mix	X		
	36	Degrees of publicness		XX	

		CHRISTOPHER ALEXANDER'S A PATTERN LANGUAGE	Applicable Pattern Language	Modified Pattern Language	Non-applicable Pattern Language
TOWNS	37	House of cluster		X	
	38	Row house		X	
	39	Housing Hill	X		
	40	Old people everywhere		X	
	41	Work community	X		
	42	Industry ribbon	X		
	43	University as a marketplace	X		
	44	Local town hall	X		
	45	Necklace of community projects	X		
	46	Maket of many shops	X		
	47	Health center		X	
	48	Housing in between	X		
	49	Looped local roads	X		
	50	T junctions	X		
	51	Green streets	X		
	52	Network of paths and cars	X		
	53	Main gateways		X	
	54	Road crossing	X		
	55	Raised walk	X		
	56	Bike paths and racks		X	
	57	Children in the city	X		
	58	Carnival	X		
	59	Quiet backs		X	
	60	Accessible green	X		
	61	Small public squares	X		
	62	High places	X		
	63	Dancing in the street	X		
	64	Pools and streams	X		
	65	Birth places		X	
	66	Holy ground	X		
	67	Common land	X		
	68	Connected play	X		
	69	Public outdoor room		XX	
	70	Grave sites		X	
	71	Still water	X		
	72	Local sports	X		

		CHRISTOPHER ALEXANDER'S A PATTERN LANGUAGE	Applicable Pattern Language	Modified Pattern Language	Non-applicable Pattern Language
TOWNS	73	Adventure playground	X		
	74	Animals		X	
	75	The family	X		
	76	House for a small family	X		
	77	House for a couple	X		
	78	House for one person	X		
	79	Your own home	X		
	80	Self-governing workshops and offices	X		
	81	Small services without red tape	X		
	82	Office connections	X		
	83	Master and apprentices	X		
	84	Teenage society	X		
	85	Shopfront schools	X		
	86	Children's home	X		
	87	Individually owned shops	X		
	88	Street café		X	
	89	Corner grocery	X		
	90	Beer hall	X		
	91	Traverler's inn	X		
	92	But stop	X		
	93	Food stands		X	
	94	Sleeping in public	X		
BUILDINGS	95	Building complex	X		
	96	Number of stories	X		
	97	Shielded parking	X		
	98	Circulation Realms	X		
	99	Main building		X	
	100	Pedestrian street	X		
	101	Building thoroughfare	X		
	102	Family of entrances		X	
	103	Small parking lots	X		
	104	Site repair	X		
	105	South facing outdoors	X		
	106	Positive outdoor space	X		
	107	Wings of light		X	
	108	Connected buildings	X		
	109	Long thin house	X		
	110	Main entrance		X	
	111	Half-hidden garden		X	
	112	Entrace transition		XX	
	113	Car connection	X		
	114	Hierarchy of open space	X		
	115	Courtyards which live		XX	

		CHRISTOPHER ALEXANDER'S A PATTERN LANGUAGE	Applicable Pattern Language	Modified Pattern Language	Non-applicable Pattern Language
BUILDINGS	116	Cascade of roofs		X	
	117	Sheltering of roof		X	
	118	Roof garden	X		
	119	Arcades	X		
	120	Paths and goals	X		
	121	Path shape	X		
	122	Building fronts		X	
	123	Pedestrian density	X		
	124	Activity pockets	X		
	125	Stair seats	X		
	126	Something roughly in the middle	X		
	127	Intimacy gradient		X	
	128	Indoor sunlight	X		
	129	Common areas at the heart	X		
	130	Entrance room	X		
	131	The flow through rooms	X		
	132	Short passages	X		
	133	Staircase as a stage	X		
	134	Zen view	X		
	135	Tapestry of light and dark	X		
	136	Couple's realm	X		
	137	Children's realm	X		
	138	Sleeping to the east	X		
	139	Farmhouse kitchen	X		
	140	Private terrace on the street	X		
	141	A room of one's own	X		
	142	Sequence of sitting spaces	X		
	143	Bed cluster	X		
	144	Bathing room	X		
	145	Bulk storage	X		
	146	Flexible office space	X		
	147	Communal eating	X		
	148	Small work groups	X		
	149	Reception welcomes you	X		
	150	A place to wait	X		
	151	Small meeting rooms	X		
	152	Half-private office	X		
	153	Rooms to rent	X		
	154	Teenager's cottage	X		
	155	Old age cottage	X		
	156	Settled work	X		
	157	Home workshop	X		
	158	Open stairs	X		

	CHRISTOPHER ALEXANDER'S A PATTERN LANGUAGE		Applicable Pattern Language	Modified Pattern Language	Non-applicable Pattern Language
BUILDINGS	159	Light on two sides of every room	X		
	160	Building edge	X		
	161	Sunny place	X		
	162	North face	X		
	163	Outdoor room		X	
	164	Street windows		X	
	165	Opening to the street	X		
	166	Gallery surround	X		
	167	Six-foot balcony	X		
	168	Connection to the earth	X		
	169	Terraced slope	X		
	170	Fruit trees		X	
	171	Tree places		X	
	172	Garden growing wild		X	
	173	Garden wall		X	
	174	Trellised walk		X	
	175	Greenhouse	X		
	176	Garden seat		X	
	177	Vegetable garden	X		
	178	Compost	X		
	179	Alcoves	X		
	180	Window place	X		
	181	The fire	X		
	182	Eating atmosphere	X		
	183	Workspace enclosure	X		
	184	Cooking layout	X		
	185	Sitiing circle	X		
	186	Communal sleeping	X		
	187	Marriage bed	X		
	188	Bed alcove	X		
	189	Dressing room	X		
	190	Ceiling height variety	X		
	191	The shape of indoor space	X		
	192	Windows overlooking life	X		
	193	Half-open wall	X		
	194	Interior windows	X		
	195	Staircase volume	X		
	196	Corner doors	X		
	197	Thick walls	X		
	198	Closets between rooms	X		
	199	Sunny counter	X		
	200	Open shelves	X		
	201	Waist-high shelf	X		

	CHRISTOPHER ALEXANDER'S A PATTERN LANGUAGE		Applicable Pattern Language	Modified Pattern Language	Non-applicable Pattern Language
	202	Built-in seats	X		
	203	Child caves	X		
	204	Secret place	X		
CONSTRUCTION	205	Structure follows social spaces	X		
	206	Efficient structure	X		
	207	Good materials	X		
	208	Gradual stiffening	X		
	209	Roof layout	X		
	210	Floor and ceiling layout	X		
	211	Thickening the outer walls	X		
	212	Columns at the corners	X		
	213	Final column distribution	X		
	214	Root foundations	X		
	215	Ground floor slab	X		
	216	Box columns	X		
	217	Perimeter beams	X		
	218	Wall membranes	X		
	219	Floor-ceiling vaults	X		
	220	Roof vaults	X		
	221	Natual doors and windows	X		
	222	Low sill	X		
	223	Deep reveals	X		
	224	Low doorway	X		
	225	Frames as thickened edges	X		
	226	Column place	X		
	227	Column connection	X		
	228	Stair vault	X		
	229	Duct space	X		
	230	Radiant heat	X		
	231	Dormer windows	X		
	232	Roof caps	X		
	233	Floor surface	X		
	234	Lapped outside walls	X		
	235	Soft inside walls	X		
	236	Windows which open wide	X		
	237	Solid doors with glass	X		
	238	Filtered light	X		
	239	Small panes	X		
	240	Half-inch trim	X		
	241	Seat spots		X	
	242	Front door bench	X		
	243	Sitting wall	X		
	244	Canvas roofs	X		

	CHRISTOPHER ALEXANDER'S A PATTERN LANGUAGE		Applicable Pattern Language	Modified Pattern Language	Non-applicable Pattern Language
CONSTRUCTION	245	Raised flowers	X		
	246	Climbing plants	X		
	247	Paving with cracks between the stones	X		
	248	Soft tile and brick	X		
	249	Ornament		X	
	250	Warm colors	X		
	251	Different chairs	X		
	252	Pools of light	X		
	253	Things from your life	X		

Notes:

The review the application and adaptability of Alexander's A Pattern Language is the based on the following aspects:

1. Specific cotemporary social, economic situation in China, such as population and land limitation, economic development and technology conditions.

2. Social culture and customs: focus on the traditional community culture of the Beijing Courtyard house.

3. Different natural conditions, such as climate, topography, geographic situation.

4. Related government codes, regulation and standard required on community development in Nothern China.

Legend:

X	Applicable Pattern Language in China Modified Pattern Language in China Non-applicable Pattern Language in China
XX	Modified Pattern Language in this thesis