CONTENTS

PART II

301 CITIES

FOREWORD

The Grid as urban constitutive element

How have cities developed into their current status?
How has urban planning - meant as one of the oldest cradles of civilization – gone through the centuries?
This book, brilliantly developed, focuses on one of the main tools of urban planning – the grid – deepening its historical origins, its geopolitical meaning and in its development along Chinese urban growth.

From the simplest cave to the richest Royal City in the tides of civilizations courses, ideology and methods of urban planning developed and have varied according to local condition, each time mirroring and embodying the power of governors in its physical dimension.
At the same time, the urban layout changed or remain unchanged along with the political riots, military operations and group migrations.

The book investigates the relation between Chinese cities development and their political, social, economic and geographical context, exploring inheritance and variations in type and forms of the urban tissue. Through 301 case studies of prefecture cities in Ming and Qing dynasties, the book links the grid with the aims of governance and establish a deep connection between the rules of a city and their physical expression: the grid becomes not only a spatial tool but a generative element for urban development in all its aspects.
Edge, focus, partition, direction and geo-conditions are some of the defining elements that articulate the grid's variation, showing an overview over the infinite declinations, both in the definition and in the modification of the grid, that a city can come across.

With pictures, maps and diagrams, the author uses urban planning as an original pretext to tell about the complexity of Chinese history, of urban culture, of Chinese politics, of military habits and popular beliefs. As well as the richness in regions, cultures and ideologies across China.
An atlas of urban experiences that helps us reading the past and the present of contemporary cities and, therefore, help us imaging their future perspectives.

Stefano Boeri

INTRODUCTION

This book concerns the grid history of cities. It is written for people who love cities, for professional or amateur historians and for connoisseurs of Chinese culture.

When we talk about a grid, we may think about webs or graphs presented on a map. Clearly, a grid is much more than that. Under this book's definition, it is a rational tool used for city planning. Previous studies of city grids have not covered the subject in enough depth or context; therefore, this book reaches all the way back to the ideas of the ancient Greeks on 'first planning'. A discussion of the grid was initiated by Hippodamus of Miletus in his orthogonal plan[1]. Hippodamus first used the idea of a grid to serve his political aims. He argued that the grid represents the coexistence of both a spatial model and the ability to regulate society; this idea enriched the initial purpose of the grid, which, before that, was simply an aesthetic and geometric tool. From that point on, grids became an important part of the symbolic identities of cities. They provide visible two-dimensional uniqueness and reflect the hidden power of specific cultures.

The book's case studies are grids from throughout Chinese history that have been formed, modified, destroyed and revived through socioeconomic and political rises and declines, unions and separations. To put it more frankly, China has a long history of brutal wars and conflicts over resources and power. When a dynasty has a prosperous economy and culture, the population tends to grow and the need to expand becomes inevitable. When a war breaks out, there is much bloodshed and the population is weakened by its losses. Territories are monopolized by another leader, and a new cycle[2] of the loss and renaissance of a culture begins; this is the story behind Confucianism, Taoism, Buddhism and Islam.

The advent and elimination of grids and the continuity and discontinuity of Chinese culture are bound together. Our book begins by exploring the stories of primitive settlers who dwelt in caves and made stone tools, and discusses how physical boundaries appeared as the first social-spatial divisions in the caves of these settlers. Step by step, they built their own houses and accumulated practical knowledge in grid planning and construction in the context of primitive tribes. Later, tribes merged, military power and worship became indispensable for people living in groups. Military kings' houses and religious institutions were integral to cities and influenced the grid type,

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1. Luigi Mazza, "Centenary Paper: Plan and Constitution – Aristotle's Hippodamus: Towards an 'Ostensive' Definition of Spatial Planning", *Town Planning Review* 80, no. 2 (2009), 113-141.

2. This cycle is called a "historical loop", which was a concept in ancient China, originating from Chinese observation and reflection on the natural phenomenon of recurrence. The understanding of the cyclicality of time and history can be seen in *Zhouyi (The Book of Changes)* and in *The Analects of Confucius*. We can use the metaphor of a sine function wave with its repeated high tides and low tides to represent the history of China. As it is said in the opening sentence of one of the four great Chinese classical novels, *Romance of Three Kingdoms*: «Domains under heaven, after a long period of division, tend to unite; after a long period of union, tend to divide. This has been so since antiquity». From the Spring and Autumn and Warring States Periods to the Opium War, China has experienced three major divisions and three unifications: from the division of the Warring States Period to the unification of the Qin and Han Dynasties; from the splitting of the Three Kingdoms to the union of the Sui and Tang Dynasties; and from the splitting of the Five Dynasties and Ten Kingdoms to the Yuan, Ming and Qing Dynasties.

leading to foundation of various capital cities during the feudal period within the regional kingdoms. Then, Qing Shi Huang unified China and established the first empire, at which point grids became a political tool replicated across the vast territories. Most of the grid types emerged during this period, and they were passed on to each successive dynasty, until the later Qing Empire in the 19th century. Various grid types appeared during this era in history, and this book categorizes their characteristics based on several key elements: focus, direction, edge, partition and geo-conditions, also considering the socioeconomic and political aims behind the grid planning. A systematic cosmology of Fengshui and Wuxing (Five elements) was developed and spread during the Han Dynasty, and it had a profound impact on the classical cosmology of later eras, helping to regulate grid planning.

Finally, the book adopts the typology methodology, along with multivariate analysis and historical tools of statistical evaluation, allowing us to build a collection of 301 grids of Chinese prefecture cities of the Later Qing Empire. We use this collection to review the above key elements by examining empirical cases. The phenomenon of the grid, and each of its superficial features and variants as they manifested themselves in different times and places in the course of Chinese history[3], may provide evidence showing that a grid is a not only a spatial tool, but may be conducive to governance as well. The upshot of the analysis is that history of the categories of grids that have been most effective for governance may provide inspiration for contemporary urban planning solutions.

The individual chapters may be summarized as follows: *Chapter 1* traces the grid back to its very beginning, with the cave representing its precursor and the divisions made inside caves as its origin. *Chapter 2* posits that grids may be categorized on the basis of four components and examines grid forms in early settlements. *Chapter 3* poses the question of how the idea and implementation of the grid was passed on over time and puts forth dichotomies of form and type, together with legacies and innovations. *Chapter 4* continues to analyse the typological process of grid construction by examining other imperial dynasties and employing ancient written records, along with archaeological evidence, to cross-analyse the findings. *Chapter 5* examines the purpose/s that grids serve, which amount to either functional or ideological aims. *Chapter 6* classifies all forms of grid types in detail, as a way of arriving at a list of conclusions. *Chapter 7* assesses the effectiveness of the grid in achieving different aims, based on statistics collected from 301 prefecture cities of the Ming and Qing Dynasties. A database consisting of 301 maps of Chinese cities and towns with prefectures, plus information on construction from the Ming and Qing dynasties, is included in the *Appendix*. Key words appear in italics when mentioned in the text.

3. Here, Chinese domain is the land under the continuous Chinese cultural sovereignty. The start of it covers the main parts of Chinese mainland today, originating from the beginning of Chinese civilization. The end of the domain is the moment when the culture is replaced or eliminated by other cultures. In Chinese history, this moment arrived with the first Anglo-Sino War, when China was forced to open ports to occidental colonists and their cultures with different thoughts pouring in.

I. THE ORIGIN OF THE GRID

Where does a 'grid' come from? Some say it is from the lines on a map. Some argue that it emerges as a physical manifestation of a set of decisions regarding functions. Others would say that it is a screen provided by nature. To explore this question, we travel through time to the very beginning of Chinese civilization – to the prehistoric era when the first Chinese *Homo Erectus* lived in caves[1] and Chinese legends and myths were born. In Chinese literature, this period is called a time 'before history' or a time of 'primitive inhabitants'[2].

THE CAVE AS A PRECURSOR TO THE GRID

Human fossils of *Australopithecus* and *Homo Habilis* have not yet been found in China[3]. The earliest human fossils to be found there are *Homo Erectus*[4]. We might identify the first spatial divisions, namely the prototype of the grid, in the form od the *Homo Erectus*' earliest dwellings. Chinese history is continuous, and so is the idea of the grid. It may seem that a cave and a grid (the plan of a city) have little in common; howewer we might be surprised to learn that the spatial types behind a cave and a city remain unchanged in terms of their basic rules through time.

The earliest caves in which *Homo Erectus* and *Homo Sapiens* chose to dwell provided them with natural shelter, demonstrating the empirical wisdom of these early settlers. Archaeological evidence shows that they could make stone tools, whereas no traces of houses built above ground

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[1] The cave age ranges from c. 2000,000 BP to c. 10,000 BP, which in archaeological terms is the Palaeolithic period.

[2] Rukang Wu et al., *Chinese Homo Sapiens Remains* [吴汝康;吴新智;黄慰文;祁国琴; 中国古人类遗址; 上海科技教育出版社] Shanghai Technical Education Press, 1999).

[3] Generally, human history is divided into four stages: *Australopithecus*, *Homo Habilis*, *Homo Erectus* and *Homo Sapiens*. There are two stages of *Homo Sapiens*: archaic *Homo Sapiens* and anatomically modern humans. Archaic *Homo Sapiens* saw the appearance of 'anatomically modern humans', covering the period from c. 100,000 till c. 10,000 BP.

[4] Rukang Wu et al., *Chinese Homo Sapiens Remains* [吴汝康;吴新智;黄慰文;祁国琴; 中国古人类遗址; 上海科技教育出版社] Shanghai Technical Education Press, 1999), p.4.

II. THE COMPONENTS OF THE GRID

The 'boundary' discussed in the previous chapter may be considered to be in a *'foetus'* status. When *Homo Sapiens* stepped out of their caves, they gradually acquired the skills to build shelters on the ground – i.e., out in the open, rather than in caves. In archaeology, this era is described as the Early Neolithic period; in Chinese literature, it is considered the 'Legendary Era'. It was an era in which each cultural region exhibited independent development and characteristics[1].

During this period, the awareness of the 'subject' and the 'object' came into being. *Homo Sapiens* became the active **subject** that could change the environment intentionally, which represents a milestone in human evolution. They no longer relied solely on what they could find in the natural world, but rather began to craft the things they needed by manipulating and changing natural substances. The objects created by their efforts are things that we would call the **object**.

Philosophically, we know that the subject and the object do not exist independently. They coexist and interact with each other. The detailed meaning of each term is explained below.

SUBJECT *The agent that changes the natural and/or manmade environment. The subject does not exist before it encounters what is manifested; it is manifested and gradually defined through the particular means of such encounters. As a result, the Subject's 'intentions' and 'tools' are always active, because they imply an 'agent' – i.e., a subject that is 'doing'. A subject exists as a concept irrespective of its relationship with its environment – i.e., a project is 'abstracted' and 'extracted' from the particular context in which an interaction takes place.*

OBJECT *The result of changes made to the natural and/or manmade environment carried out by human hands. An Object does not exist before an encounter with the 'subject' (i.e., independently of it). Instead, it manifests itself through the specific conditions of the meeting and is gradually defined by it. As a result, the Object's 'vocations' and 'codes' are constantly changing, as they imply the presence and activity of an 'agent' – i.e. a subject that is 'doing'. An object exists as a concept irrespective of its interaction with a subject if it is a project that is 'abstracted' and 'extracted' from the particular context in which an interaction between Subject and Object takes place.*

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[1] On China's vast territory, many small cultures germinated from the lives of local cave inhabitants. According to archaeologists' divisions, there are six cultural regions: they are in the Central, the Northern, the Eastern, the Southeast, the Southwest, and the Southern **[Map 03]**. This era ranges from c. 8,000 BP to c. 5,000 BP.

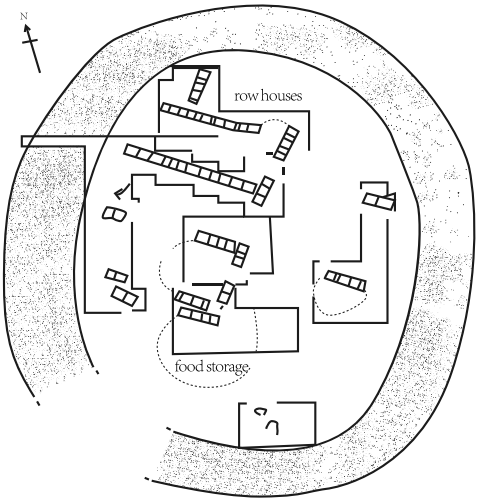
III. THE MEMORABILITY OF THE GRID

The first human settlements witness the first steps of human beings moving their dwellings above ground, and we see boundaries evolving from the simple separation between humans and nature to more complex kinds of spatial/social meanings inside settlements. Now, our focus turns to questions such as: what forms and types of grid components would evolve in the following years?; how did grids in settlements keep up with the pace of social economic progress?; and how were they passed along over a long history? Then, we will use the concept 'memorability' to explore the mystery of the development of the grid. This development was a dynamic process with several stages, which we will explore in this chapter.

THE TYPE AND THE FORM

According to Rafael Moneo's foundational article, 'On Typology', «'type' is a concept which describes a group of objects characterized by the same formal structure […] It is fundamentally based on the possibility of grouping objects by certain inherent structural similarities […] the type means the act of thinking in groups»[1]. Thus, here we adopt two useful expressions, the **type** and the **form**, to track changes in the grid components that I introduce in the chart in the previous chapter. These components exist on two different levels. The 'form' is the more concrete and apparent level, while the 'type' represents a group of forms on a more abstract and inherent level. The 'edge' may be a moat, a fence, or a piled mud wall; however, to make an abstract diagram, these external components are simple physical rings. The 'focus' may be a totem, a worship altar or a large house, but the type is just a point symbolizing the centre of group life. The 'direction' may be southward, southeast, or southwest, but these are simply types of directions. 'Partitions' may be roads, spatial gaps, or height differences but, as types, partitions are reduced to lines. First, we will look at the type and the form separately, and then we will view

[1] Rafael Moneo, "On Typology", *Oppositions*, MIT Press (Summer 1978:13), p.23.



3.1. Plan of Yuchisi Settlement (Xu, 2000).

them together in a whole picture and consider 'whether there are more changes in type or in form'. The settlements of six cultural regions that directly inherited forms and types from the legendary era will be presented as case studies in section A[2].

— *Inheritance and Innovation*

In the vast area of Shandong Province and the northern part of Anhui Province, civilization appeared at a relatively late stage. Cultures did not develop in these eastern regions during the previous cave and settlements era, because this territory was a shallow sea. Over many centuries, the Huang River continuously deposited sands to finally form an alluvial plain. Once this occurred, inhabitants from other regions migrated to these regions and established settlements[3]. Not all of these cultures can be traced directly back to the age of inhabited caves and first settlements; however, these later developed cultures show us how the new settlements originated as a mix of cultural migrants, and how the dichotomy of structure and form came into existence.

Among the settlements in the eastern region, I will focus on the Yu-Chi-Si Settlement (c. 4,800 – 4,600 BP) of the Dawenkou Culture (c. 7,000 – 5,000 BP). This settlement has four special characters: a hierarchy of groups of settlements, food storage as its centre, barrack-like residences, and a wide moat[4] **[Fig.3.1]**.

First, unlike previous cultures in other regions, the tribe was not alone. The territory consisted of small settlements, and Yu-Chi-Si was at the center. This shows a hierarchical social system expanding into a territory. Second, a large food storage area in the center of the village served as the focus. Groups of very large storage cellars were found together, with enough space to store an amount of food that significantly exceeded the needs of that individual village. These

[2] They cover the period from c. 7,000 – c. 4,500 BP. In archaeology, thisit is the later Neolithic period, and in Chinese literature it this is the 'Thousands of States Era'. Su, *A New Approach to the Origin of Chinese Civilization* [苏秉琦;中国文明起源新探, 辽宁人民出版社] Liaoning People Press, 2009.

[3] Su, *A New Approach to the Origin of Chinese Civilization* [苏秉琦;中国文明起源新探, 辽宁人民出版社] Liaoning People Press, 2009.

[4] Jihuai Wang, "Preliminary Study of Yuchisi Sites", *Archaeology and Cultural Relics*, i.4 (2001), 002.

cellars may have served as the food storage for surrounding sub-level settlements, and they may have been used to store provisions for troops. Third, the residence zone was located in the north-western part of the settlement, where groupings of houses were well organized, rather than scattered. A row house type appeared, which was typically 60m long and 3.5m in depth and faced southwest. Between each row, there were 1-2m empty spatial gaps. The side longitudinal buildings were relatively shorter. Together, they surrounded a 280m^2 plaza in the south. The final character of this settlement is the edge that developed into a moat with a width of 29.5m to 31.1m. The entire oval edge covered an area of 100,000 m^2. The dimensions of the moat surely exceeded the need for flood protection and served more for military defense.

— *Is this the inheritance?*

The focus of this settlement was still a simple single center and periphery. However, the form changed from large houses or a totem plaza to the large food storage area. The edge also retained the same structure – an oval shape in a single ring – while the form was extended from 2-3m wide to 30m wide. The partition was a mixture, likely of semi-underground houses in the north and long-row lifted houses in the south, which formed linear orthogonal divisions. The direction, as in previous cultures, had the same orientation toward the southwest.

Residents here were immigrants from the west. The settlement was built with military intentions, and likely served as a base for a large number of troops. The evidence for this may be found in the settlement's clan symbol. In this era, the symbols of many cultures found incised on pottery included a sun, a cross, a circle or various animals; however, this culture's symbol was an axe. In Chinese characters, the 'King' is '王', which originated from the character for 'Axes' as '斧'[5] **[Fig.3.2]**. This proves these tribes worshipped the power of warriors, instead of that of nature or of myth. If we return to the forms of this settlement's simple boundaries, we find the wide moat being used for defense against other humans rather than for protection against nature (floods). Further, the military leader resided near the food storage area in order to control the surrounding troops, and the barrack-like rows of houses provided equal space and similar quality of housing for both clansmen and warriors.

This defensive attitude may have arisen due to the lack of natural defenses on the vast fluvial plain. The ease with which migrants could travel to the plan and settle brought an influx of new populations, which eventually resulted in conflicts. Without natural barriers like hills and cliffs, inhabitants in the plain had to create new methods of defense. The original structure of boundaries remained the same, as did the centric focus, unified orientation, single ring edge and linear parallel partitions. However, due to the contextual changes, the original forms of the boundaries were adapted. The adjustments in type and form may have been the result of migrants' adaptation to the local natural conditions **[Chart 3.1]**.

3.2. The Chinese Character 'King' (left) evolved from the Symbol of 'Ax' (right).

[5] Shandong Province Cultural Relics Management Office and Jinan City Museum, *Dawenkou: Excavation Report of Neolithic Burial* [山东省文物管理处;济南市博物馆;大汶口: 新石器时代墓葬发掘报告, 文物出版社] Cultural Relics Press, 1974.

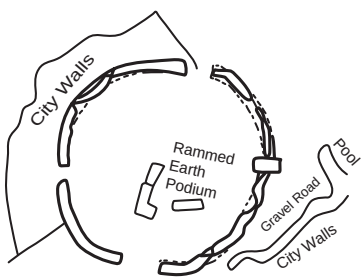
[6] Su, *A New Approach to the Origin of Chinese Civilization* [苏秉琦;中国文明起源新探, 辽宁人民出版社] Liaoning People Press, 2009.

CHART 3.1 – INHERITANCE AND INNOVATION IN FORMS

	FOCUS	EDGE	DIRECTION	PARTITION	GEO	AIM
Yu Chi Si from Dawenkou Culture	Food Storage	Water Moat	Southwest	Parallel Route	Flooded Plain	Military
Pengtoushan Culture (earlier)	High Platform Big House	Water Moat	/	/	Flooded Basin Plain	/

— *Changes in Forms*

In the southwest region, Chengtoushan Village (c. 6,000 – c. 4,800 BP) in Feng County, Hunan Province, of the Daxi Culture (c. 7,000 – 5,000 BP) received legacy from the Pengtoushan Culture. Resembling their ancestors, the inhabitants developed certain components to better defend against floods, and they incorporated the strategic use of water[6] **[Fig.3.3]**.



3.3. Plan of Chengtoushan Settlement (Xu, 2000).

The village was in a circle, 325m in diameter. It had three water-related facilities: water gates, piled mud walls and high-platform buildings. Alongside the moat, piled mud walls were found[7]. The bottom of the southwest wall exceeded 30m in width. In addition, the village had a water gate to incorporate the river and the moats. The water gate was in the north, while the three other gates were on land. Along the east gate, there was a paved road. The final characteristic was the use of high platforms for important houses. In the southwest, there was a large house on a high mud platform. It had the shape of the Chinese character '凹' oriented to the east, and measured 30m in width and 60m in length[8]. This platform was a spatial-social tool that emphasized the hierarchy of the large house in relation to other dwellings, and it was also a functional innovation that protected the house from floods.

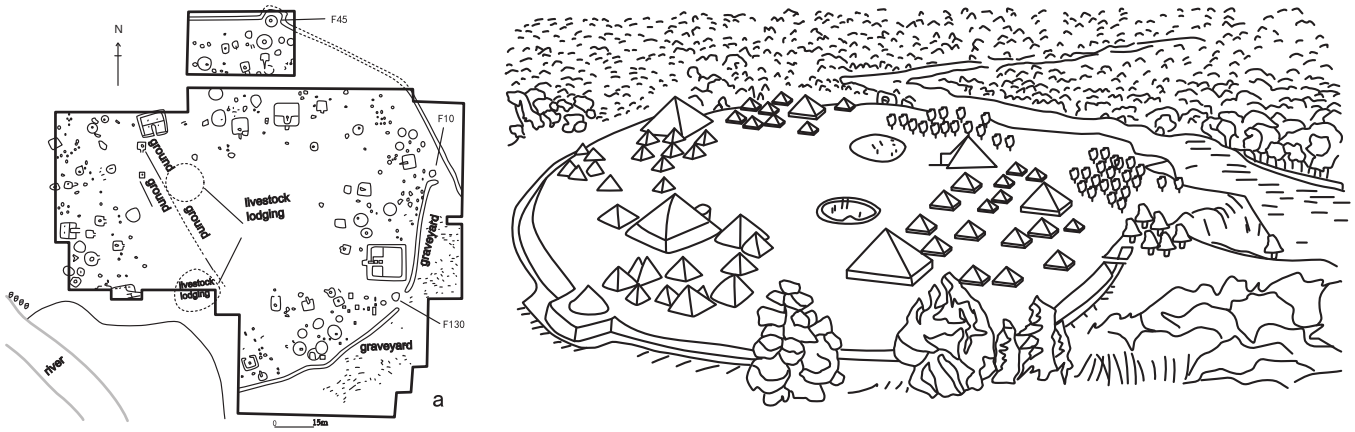
If we compare this with the previous settlement, we can clearly identify the inheritance of the focus on a high place, the use of paving and a moat with a piled wall. The new elements include the water gate and the large house as the centric focus. These represent advancements in form, while the types – focus, edge, direction and partition – do not vary **[Chart 3.2]**.

CHART 3.2 – CHANGES IN FORMS

	FOCUS	EDGE	DIRECTION	PARTITION	GEO	AIM
Chengtoushan from Daxi Culture	Big House on the High Platform	Moat with Piled Mud Walls	Facing East	/	Plain	Military
Pengtoushan Culture (earlier)	High Platform Big House	Water Moat	/	/	Flooded Basin Plain	/

[7] This was the first time a surrounding mud wall was found in a settlement. However, according to many historians, this could not be taken as the appearance of the City Wall. Its sudden presence was probably due to local flood defenses. Yinchun Jiang, "Chengtoushan Site is China's Earliest Ancient City Remain", *Cultural Relics*, no.8 (1997).

[8] Weimin Guo, "New Finding in Chengtoushan Archaeological Site", *Cultural Relics* (1999), 3-3.



3.4a-b. Settlement Plan of Jiangzhai (left) and Imaginative View of Jiangzhai (right) (Xu, 2000).

— *Changes in Types*

Jiangzhai and Banpo Villages of the Yangshao Culture (c. 6,700 – c. 4,800 BP)[9] were direct heirs from the Laoguantai and Peiligang Cultures. As discussed in the previous section, the settlements of cultures in the central region had the unified direction of houses, the central large house as the focus, the partially incomplete moat as the edge, and separated tombs located outside residential zones.

Jiangzhai Village (c. 6,700 BP)[10] inherited the geo-conditional selection: located on a small hilltop in a delta area shaped by the Wei River and the Lin River. It had discontinuous moats with an oval shape, covering an area of c. 18,000m^2, a large house in the center of each clan and separated cemeteries[11] **[Fig.3.4a-b]**. However, innovation occurred, in that its centric plaza was surrounded by five equal clans. This new village had a radial centric direction, with a 4,000 m^2 plaza as the focus, circled by five groups of clans. Meanwhile, each group had a large house in the center that served as a space for clan meetings as the sub-focus at the clan level. Further, all houses, including the large ones, faced the central plaza, symbolizing the equal status of the five clans, each of which had the responsibility to defend its side of the place and share resources with the entire village.

Considering the forms of grid components, the settlement did not change much from the previous examples. The innovation may be found in the type of focus, direction and partition. The enlargement of the settlement, from previously one or two clans to five clans, possibly resulted in the new spatial/social hierarchy of five equal clans facing the centric plaza.

Our next case study is Banpo Village (c. 6,800 – c. 5,300 BP). It is 6 km east of Xi'an, Shaanxi Province, and I introduce it here to illustrate the changes in type[12]. It covers an area of c. 50,000, approximately three times the size of Jiangzhai.

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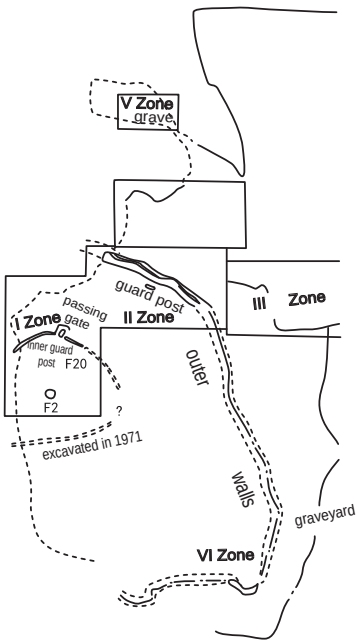
[9] The villages found in Yangshao Culture are numerous, such as Banpo Tribe in Xi'an, Jiangzhai Tribe in Lintong, Dadiwan Tribe in Qin'an, Wayagou Tribe in Tongchuan, Xishuipo Tribe in Puyang, Anban Tribe in Fufeng, Xiawanggang Tribe in Zhechuan, etc. Wenming Yan, *Yangshao Culture Study* [严文明;仰韶文化研究, 文物出版社] Cultural Relics Press, 1989.

[10] Qiming Gong and Wenming Yan, "Explore the Type of Jiangzhai Village from its Layout", *Archaeology and Cultural Relics*, no.1 (1981), pp.23-27.

[11] There was one cemetery in the center of the residence zone, probably for those of high ranks in the tribe. Another three cemeteries were in the east outside the moat, probably for the normal class. There, researchers found kilns, cemeteries and scattered livestock and cellars. Kilns consumed water, and were therefore situated along the Lin river bank to the west of the tribe. Qiming Gong and Wenming Yan, "Explore the Type of Jiangzhai Village from its Layout", *Archaeology and Cultural Relics*, i.1 (1981), pp.23-27.

[12] Yaopeng Qian, "The Moat and Posts of Banpo Settlement – One of the Banpo Settlement Forms", *Archaeology*, i. 2 (1998).



3.5a-b. Imaginative View (left) and Settlement Plan (right) of Banpo (Xu, 2000).

The heritage from previous cultures[13] may be seen in the divisions of the locations of kilns, residences and the cemetery; the unified southward direction; the central large house as the symbol of the highest social rank; and the usage of partial piled mud walls **[Fig.3.5a-b]**.

Its innovation is obvious, with the appearance of double moats as the edge that supported a centric spatial/social hierarchy. The settlement was separated by two moats, inner and outer. The inner moat circled and protected the residential zone, while the outer moat surrounded all facilities for living, except the cemetery. In the northern ends of both inner and outer moats, there were outposts that served as the surveillance point of gates. This spatial layout was probably the result of a hierarchical matriarchal society, with higher social ranks in the inner residence. It is possible that the increasing size and population of prehistoric settlements gradually converted the social hierarchy from one of equality to one of centrality and periphery, due to the increasing difficulty of social organization and maintenance of a larger population. This may explain the transformation from the equal spatial layout in Jiangzhai to the centric layout of Banpo. Another innovation in Banpo is the appearance of primitive worship rituals inside individual houses **[Chart 3.3]**.

CHART 3.3 – CHANGES IN TYPES

	FOCUS	EDGE	DIRECTION	PARTITION	GEO	AIM
Jangzhai from Yangshao Culture	Two Levels of Focus	More Rings	Radial Centric	/	Delta Area	Military
Banpo from Yangshao Culture	One Focus	Double Rings	Unified	/	Delta Area	/
Peiligang Culture (earlier)	One Focus	Single Ring	Unified	/	Delta Area	/

[13] The residence was in the center, around 30,000m² big. There were houses and scattered livestock and storage. Cemeteries were in the north and southeast outside the moat. Kilns were in the east outside the moat. This showed that people already intentionally divided death and life, and built a moat as the boundary in-between. Taking their-heritage from previous cultures, the inner residence zone had a large house in the center, oriented to the south, and measuring 1.05m east-west and 1.08m north-south. This was the center of the higher class as well as the whole tribe. Yan, *Yangshao Culture Study* [严文明:仰韶文化研究, 文物出版社] Cultural Relics Press, 1989.

IV. THE GRID TYPES

In the previous chapter, we came across the intimate relationship of the form and the type of the grid for the first time. And we traced the development process of them from early settlements to first kingdoms, witnessing more variations of the four components of the grid, the edge, focus, direction, and partition. Grids were gradually taking more concrete shapes in both people's tribal life and mental world. In those illiterate ages, grids got passed on by real life examples and elder people's experience. Not until royal settlements did we see planned grids, during which time grids were embedded with social and moreover cultural meanings, allowing it to spread to more places. With the progression of human development and successions in ruling dynasties, grids began to be recorded in the literature, from which we could summarize more types.

In this chapter, the cases of the Zhou dynasty (c. 1045 – 256 BC) are selected.. Following the previous Xia and Shang dynasties, the Zhou period represents the moment when the orthodoxy of king and the Son of Heaven was formed. The Zhou dynasty had two periods: the earlier was the Western Zhou period (1046 – 771 BC), and the later was the Eastern Zhou period (770 – 256 BC). The Eastern Zhou was further divided into the Spring and Autumn period (771 – 476 BC) and the Warring States period (475 – 403 BC)[1]. Finally, we come to the Qin Empire (221 – 206 BC) and the Han Empire (206 BC – 220 AD), the first golden age of Chinese civilization, to examine the relationships among different scales of grids[2].

FROM TRIBES TO FEUDAL KINGDOMS

'Type' means a group of objects with similar structural characteristics. As discussed in the last chapter, the type and the form are two perspectives that help us understand the memorability of grid components. The type can be the 'pool' that holds all knowledge of the experience of

[1] Michael Loewe and Edward L. Shaughnessy, *The Cambridge History of Ancient China: From the Origins of Civilization to 221 BC*, Cambridge University Press, 1999.

[2] Michael Loewe and Denis Twitchett, *The Cambridge History of China: Volume 1: The Ch'in and Han Empires, 221 BC-AD 220*, Cambridge University Press, 1986.

constructing a grid, as well as of the methods used. The type is also the 'seed' that contains information about the building methods of grids; this information can be spread and reapplied in future usage.

TYPE *Type*[3] *refers to the conventionally accepted system of rules adopted as a principle that legitimizes civil work. Type is believed to be historically founded on common experiences of 'doing/making', and these experiences are gradually acquired by the members of a community over time and in a particular place, through the process of altering the natural and/or built environment. Type allows us to approach a problem by referring to a heritage of unified and consistent knowledge, in keeping with what has already been tried in similar circumstances.*

The advent of the grid type began in the Zhou dynasty, which was the foundation of Chinese civilization. Zhou clansmen conquered the Shang dynasty and established the first hereditary dynasty in Chinese history, Zhou Dynasty. After this conquest, however, many inhabitants in the territory still regarded themselves as Shang clansmen and refused to accept the new king from the Zhou clan. In order to discharge rebellions, the king of the Zhou clan forced the Shang clans to move to various regions. This reshuffled the clan composition of the entire territory, and the places to which the clans were scattered had mixed cultures. These population migrations caused a blending of cultures.

As these blended cultures had different types of worship, conflicts over the worship arose which caused the disappearance of the ancestral worship. In order to re-establish common belief, and to become recognized as the supreme leader[4], the Zhou king began to call himself 'the Son of the Heaven', declaring his power was bestowed on him from the 'Heaven'. This ideology successfully removed belief differences and united people. Thus, the worship of ancestors was replaced by the worship of the heaven. The right to worship the heaven was monopolized by the Zhou king, the son of the heaven. In this way, all territories, people, and resources under the 'Heaven' were under control of the Zhou king, and the capital Chengzhou was made the center of the 'Heaven'. From that point on, we find the use of the name 'China', which literally means 'Central Country', and from which originated the idea of centrality.

As intended by the Zhou king, the massive migration of different clans weakened the power of local clans. The local governors were substituted by the relatives and noble families of the Zhou clan sent by the Zhou king. 'Chinese Feudalism' in history was founded[5].

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[3] Gianfranco Caniggia, Gian Luigi Maffei, *Interpreting Basic Buildings*, Global Print, 2017, p.223.

[4] It is necessary to explain a basic knowledge of the worship method in ancient China. The ancients understood that there were unpredicted natural conditions such as thunders, tempest, floods and earthquake. In order to predict them, they used priests to contact the gods. In this sense, the priests are the medium between people and gods. There are two types of foretelling methods, by appearance and by number. By appearance means the ancestors observed the appearance of some objects, such as stars' movements, patterns on tortoise shells, and changes of clouds, and related them empirically with certain outcomes. By number means they counted the number of some medium such as yarrows, which would relate to certain meanings. The mediums of tortoise shell and yarrow are most frequent. They are called 'Foretelling Tortoise' and 'Foretelling Yarrows'. According to *Shi Ji*, ancient people found that tortoises can live for hundreds of years, therefore it may know everything and be closest to god. The patterns on the tortoise shell are related to some empirical outcomes of natural phenomena. This is foretelling by appearance. As hundreds of branches of yarrow all grew from one single root, therefore it is considered to be of high spirits. The ancients bent the yarrow and counted the number, and each number may be related to a certain symbol that represents the natural phenomena. This is the foretelling by number. This worship technique is a privilege of kings. When there is a big national decision, the king is willing to do foretelling before making that decision. *Shi Ji* recorded that the King should consider five aspects before making decisions: his own idea, the suggestions of chancellors, the will of the people, the appearance of foretelling tortoise and the number of foretelling yarrow. Therefore, the priest is a crucial aspect in decision making. Kuan Yang, *Fengshui and Ancient Shanshui City Construction Study*, Phd, ed. Chongqing University, 2005, pp.79-80.

[5] Kuan Yang, *History of Constitution on Chinese Ancient Capitals* [杨宽, 中国古代都城制度史研究, 上海古籍出版社]Shanghai Guji Press, 1993, pp.52-55.

CHART 4.1 – GRID OF ZHOUYUAN IN RECORDS AND REALITY

	FOCUS	EDGE	DIRECTION	PARTITION	GEO	AIM
'Kaogongji'; *Shijing*	One Focus: The Royal Palace	Walled Square built with Banzhu Technique; Moat	/	Land divided into Squares with the Central Axis and Orthogonal and Symmetrical Roads	/	/
Archaeological Evidence	Royal Palace and Clan Temple	Walls and Moats	/		On the Mountain, face the River Valley	Political

■ Fengshui Ideas

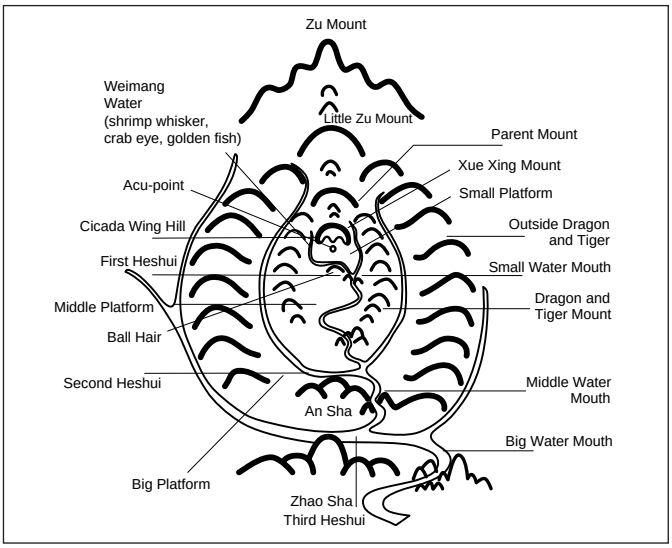
In addition to 'Kaogongji', Fengshui was another tool used for planning, which was so prevalent that not only city officials but also secular families applied it and even today Chinese people still believe it.

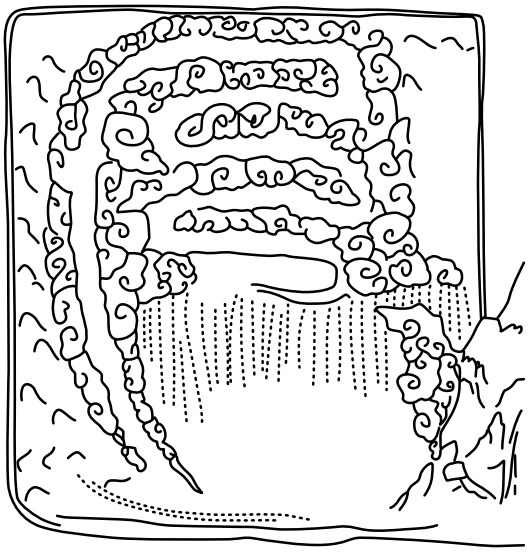
At the end of the Warring States era, Zhou Yan from the state of Qi combined 'Yin Yang'(阴阳) and 'Wu Xing' (五行), and created a new thread of thought to explain the world. This philosophy explained the universe, people, and nature as being different components of a single system that worked with the positive and the negative, and was interrelated by five elements.

In this era, the idea of 'Yang' and 'Yin' grew as an ideology in Chinese epistemology. The words 'Yang' and 'Yin' had appeared in the oracle of the Shang dynasty. The 'Yang' means the beams from the sun, and the 'Yin' means the shadow of the sun. Yang means a positive face, southward, exterior, warmth. The shape of Yang in Chinese, '阳', is a flag waving under the sun. The Yin means a cloudy sky, coverage, and shadows. Its character in Chinese, '阴', shows a flag waving under the moon. Laozi in the *Dao De Jing* (《道德经》) used this dichotomy and created this dialectical thinking. He raised the idea that all nature is made from the merging of Yang and Yin, positive and negative, and that nature is assimilated into the neutral, and that this was the origin of all the elements. He described over a hundred pairs of Yang and Yin. In the Taoist ideology, this dichotomy is a universal rule. If we compare this ideology with that of Confucius, we find that Laozi emphasized the importance of Yin, the negative and a principle of moderation in life, while Confucius emphasized Yang, the positive and an inspiration for a person to work to change society and improve himself.

Another ancient ideology, Wu Xing, also took hold in the Spring and Autumn period. Wu Xing means that nature consists of five basic elements: Metal, Wood, Water, Fire, and Earth. These elements are inter-supportive and inter-contradictory. Through their relationships, everything in the world is constructed. This idea originated with the Xia and Shang dynasties; it has been used for various disparate purposes, such as in Chinese medicine, as well as in support of warfare according to the Sun Zi.

Emperors converted the idea of Wu Xing into political liturgies. *Li Ji* and *Lü Shi Chun Qiu*, two ancient books, recorded the liturgies and orders issued by kings in certain Chinese lunar months, which have relations with the five elements. January to March were 'Wood' months; therefore,





4.3. (left) Ideogram of Fengshui (Yang, 2005).

4.4. (right) The Symbol of Qi in Fengshui (Yang, 2005).

in these months, the emperor should wear cyan clothes, ride cyan horses, wear cyan jades, erect cyan flags, eat wheat and mutton, play wood instruments, and fight with the spear. If he did not, the natural balance would break, and divine punishment would descend upon the state. There were different rules for the other months. This idea gradually defined customs in all aspects of Chinese life, from politics to social life[10].

After centuries of development, Fengshui became a combination of five ideologies: the Eight Trigrams, astrology, totems, Yin and Yang, and the Five Elements. Fengshui represented a pragmatic method for containing most ancient ideologies **[Fig.4.3]**. Rooted in Taoism, Fengshui asserted that everything in the world had its 'Qi', literally 'Spirits' **[Fig.4.4]**. From observing the objective world, we may find clues to help us understand the 'Spirits' of everything. 'Qi' could modify the destiny of a human being, or even that of a dynasty. Thus, Fengshui was used to find the right 'Spirit' of all things, from a house to a city, from governance to secular life[11].

There were many specific Fengshui books used to guide house planning in the Tang dynasty. Normally, a family followed a prototype of a courtyard: a temple in the center surrounded by houses; the center point was also called the 'Nest' or the 'Bright Hall'. As was mentioned in the city scale, the surrounding buildings were given names and meanings according to the ancient ideologies, such as Wuxing, Eight Trigrams, etc. Each function had its own orientation related to the center[12].

In the Ming and Qing dynasties, Fengshui was used as a serious technique by the government and by secular society. The official books *Yong Le Da Dian*, *Si Ku Quan Shu*, and *Gu Jin Tu Shu Ji Cheng* were masterpieces of Fengshui. Professional Fengshui masters appeared in secular

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[10] Liu Yang, *Fengshui and Ancient Shanshui City Construction Study*, Phd, ed. Chongqing University, 2005, pp.85-86.

[11] Xiaoxin He, *The Origin of Fengshui* [何晓昕; 风水探源, 东南大学出版社] Southeast University Press, 1990, pp.6-27.

[12] Id., pp.35-40.

society. They were welcomed and invited by the rich and by the city governors to guide the planning of home and city, as well as to provide other foretelling activities. In the Qing dynasty, the social professions were divided into 18 ranks, nine upper ranks and nine lower ranks. A Fengshui master was ranked fourth in the upper nine, placing this profession above the rank of accountant, doctor, and painter[13].

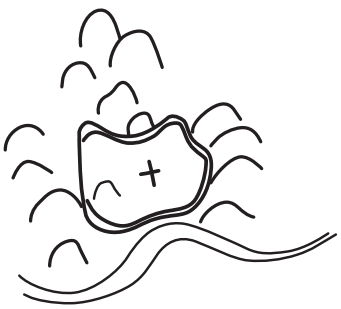
How was Fengshui applied to guide a city construction? According to the Fengshui book[14], sequences are as follows: first, a Fengshui master picked a site in the wild. An auspicious geographical site should possess «a mountain at the back, a river in the front plus a mountain at the far end and side hills on both right and left». These mountains were named after four ancient totems: Tortoise, Suzaku, Dragon, and Tiger. In a plains area, large rivers and lakes could substitute for mountains. With these elements, a site could be said to embrace the right 'Spirit'. This ideology originated from the worship of Reproduction. A site surrounded by mountains (or rivers/lakes) resembled the position of a woman giving birth. The position of the city was called the 'Nest', representing the female vagina. The mountains in the back represented the breasts, the side hills were the legs, and the river in front was the blood from the uterus. So a place with 'Spirit' was a place carrying the symbolic meaning of the place in which human beings could reproduce and multiply.

4.5. The Selection of Nest Point According to Geo-condition (by Author).

Second, after the selection of the site, the Fengshui master would find the exact 'Nest Point' of a city, the real starting point of the construction **[Fig.4.5]**. This gesture (the start of construction) was called the 'Dian Xue', literally 'Acupuncture'. Luopan, the ancient compass, would help to find the right position and orientation that could integrate, link, and reflect all the rivers, mountains, hills, forests, etc. If all natural elements could fit into the rules set by Fengshui, then this position would become the 'Nest Point'.

Third, a crossroad was stretched from the 'Nest Point' **[Fig.4.6]**. The land would then have two directions. The crossroad was called the 'Tian Xin Shi Zi', literally the 'Cross of the Heaven's Heart'. Normally, the crossroad was not oriented simply north-south and east-west. It rotated according to different 'Spirits'.

4.6. From the Nest Point to Develop into City (by Author).



Fourth, the walls and gates were elements that might disturb or absorb the 'Spirits', and thus they should avoid interrupting nature and should face the set orientations. This resulted in many orthogonal grids with a topographical adapted wall.

Finally, with the doctrines of *Zhou Li* and Fengshui, temples, facilities and other buildings were placed in relation to the 'Nest Point'. Each had its rightful position. Families' courtyards also adopted the Fengshui process for their selection of location and for the formation of residential blocks, the sub-levels of the grid type.

In addition to the planning method of a city, the ideas of Fengshui also influenced the positions and numeric logic of many city elements, such as the perimeter, dimension, direction, etc. I will use Beijing as a case to show the appearance of Fengshui in each aspect.

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[13] Id., pp.42-59.

[14] Liu Yang, *Fengshui and Ancient Shanshui City Construction Study*, Phd, ed. Chongqing University, 2005, pp.261-274.

BEIJING, A CASE OF FENGSHUI

As for the site selection, Beijing has always been praised by Fengshui masters as a great location for the imperial capital. Mount Kunlun runs from the west and merges with Mount Yan, which embraces the plain from the north-west side. The Huang River came from the south and created Yong Ding river, running east into the Huang Sea. All the essential elements of Fengshui ideas are included.

Fengshui was used for focus selection. When Liu Bing Zhong planned Dadu, he studied the underground water system that started from Mount Yu Quan. The water represented the sustainability of imperial Qi. Therefore, he put the royal palace at the position where underground water was stored. The well Da Pao was excavated, which had the same clarity and taste as the mountain fountain[15].

However, when the emperor of Ming moved the capital from Nanjing to Beijing, in order to keep the merits of site and suppress Yuan's 'Qi', the palatial city of Yuan was destroyed. At the position of the original palace of Yuan, an artificial mountain was built, named Cheng Mei, known in the Qing dynasty as Jing Mount. This is a Fengshui idea, to conquer the remaining imperial Qi of the Yuan, and therefore it was also called Zhen Mount, literally the Suppressing Mount. Mount Jing became the back Basalt Mount, and the southern Yan Dun Hill was the counter-part view[16].

The size, scale and position of the Forbidden City all followed the Fengshui theories, keeping the strong courtyard feature as well as inspiring awe in the visitors.

The number and names of Beijing city assumed astrological meanings. The Zi Wei star in the heaven is the prominent star, it represents the emperor. The emperor's living place, the Forbidden City, also took its name from this star; the Forbidden City is called Zi Jin City in Chinese. The three halls in the front court, Tai He, Zhong He, and Bao He, represented the three stars correspondingly in the heaven. The backcourt has 15 halls, which symbolized the 15 stars around the Zi Wei star.

The divine numbers 9 and 5 were used in every scale. In Ba Gua theory as described in Yi Jing, Qian Gua means nine, which is the top. The fifth Bo means the Dragon Flying in the Heaven. Therefore, 9 and 5 became the numbers of the emperor, who was addressed respectfully as 'The Master of Nine and Five'. In the Ming dynasty, the palace hall in the capital on the centric axis has 9 partitions in width and 5 partitions in depth, while the secular house cannot be 9 or 5 partition rooms in width, as 9 and 5 are a privilege of the emperor. The number of rooms in the Forbidden City is 9999.5. There are also the Nine Dragons Wall, the Nine Dragons Chair, and 81 decorative metal balls on the door (9x9). The tower has 9 beams and 18 pillars.

The ratio of the high platform of the three palace halls is 9 by 5. Furthermore, the ratio of the area of the Forbidden City to that of Beijing is 1/49.5, while the ratio of the area of the Palace to that of the Forbidden City is 1/49. This proportion is recorded in Zhou Yi as the meaning of coherence[17].

According to the Yin Yang thought, the odd number is Yang and even number is Yin. The frontcourt has three halls, which means Yang, the positive. The backcourt has 6 halls, which means Yin, the negative. The Wu Xing, or Five elements, were used in the layout and decoration of architecture, which was painted in the colors of the five elements.

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[15] Id., p.13.

[16] Id., p.140.

[17] Xinian Fu, *The Study of Chinese Ancient City Planning, Layout of Architecture Group and Architectural Design Method* [傅熹年; 中国古代城市规划, 建筑群布局及建筑设计方法研究, 中国建筑工业出版社], Vol.1, China Architecture & Building Press, 2001.

V. THE AIMS OF THE GRID

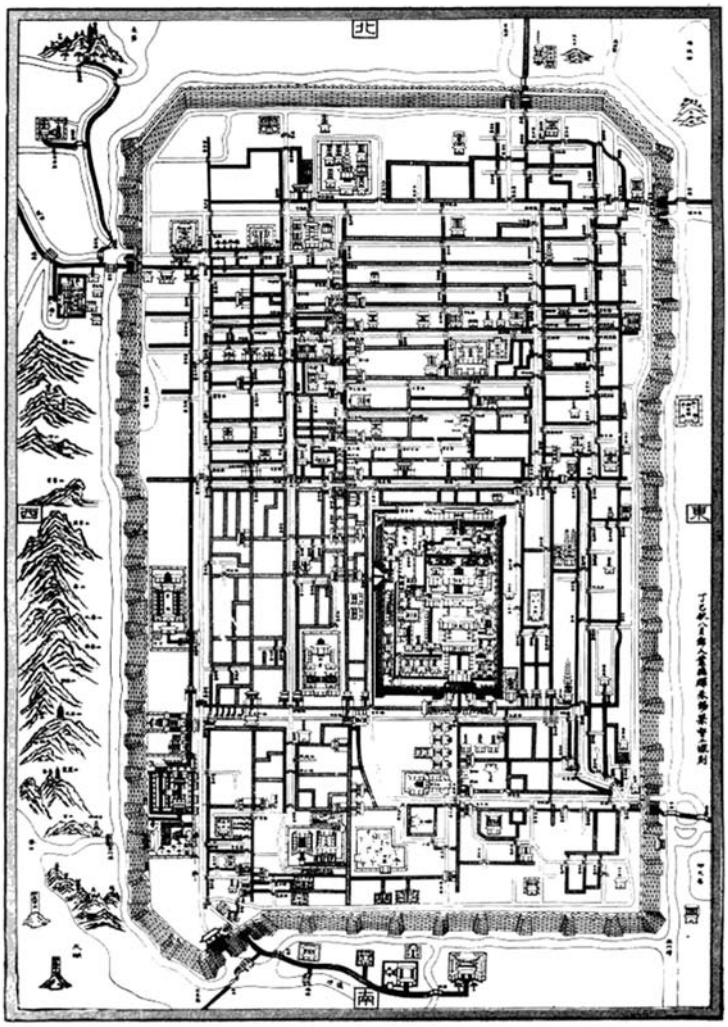
Grid types and forms are the ultimate physical outcomes of urban planning, each with a different impetus hidden behind it. Considering that massive engineering and organizing power is necessary for the construction of any large project in a city, it is usually city leaders that are able to propel such construction to meet their aims, whether for survival, economics, or politics, etc.

If we trace the history of the grid back to the cave age again, when the '*Homo Sapiens*' selected their caves, we find that their aims were simple – a need for protection and greater hunting advantages. When the first settlements appeared, expansion provided a way to claim more resources and sustain increasing populations. This (latter) kind of aim is closely related to basic survival needs; i.e., ensuring the continuity of a human group's existence. Then, people built cities and began to trade with each other, so was a need for commercial activities. In case other clans invaded, greater defensive construction was needed. We call this kind of aim a functional aim. Within the functional category, there are two essential functions: the military function to defend and attack, and the commercial function to trade and thrive.

With the emergence of clan worship and the amalgamation of different cultures, military expansions were conducted not mainly for survival but rather for the clans to gain their cultural influence. To unify people's beliefs in order to better control the country was the emperor's aim. In the first settlements, the common belief system was symbolic natural worship. In the Zhou dynasty, it was the idea of the 'Son of Heaven'; and in the Qin and Han Empires, it was the centralized power and sovereignty over all Chinese territory. In this sense, the aim of building certain structures went beyond sustaining existence and promoting prosperity; it included as well the spread of cultural identity and influence over more territories. We consider this type of aim ideological. In this chapter, we discuss the attributes of various aims against the background of (the distinction between) functional and ideological goals.

THE CONTENT OF AIMS

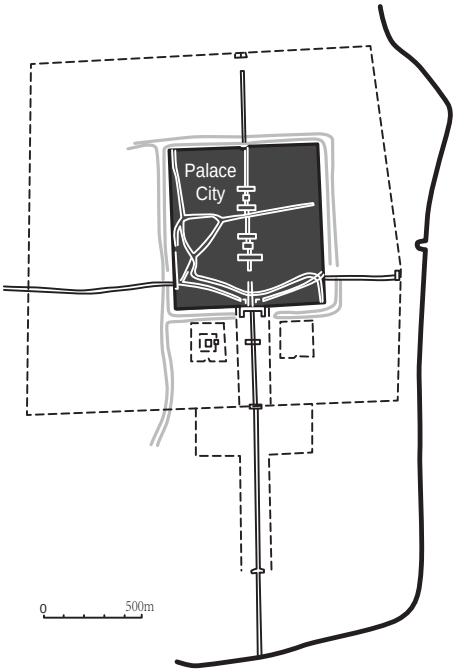
Grids were not ancestors' casual production, like a diagram or works of art, but had both physical and cultural reasons behind. We delve into the after-Han Empire period to seek out the various aims that determined the development of grids. This period consisted of three phases of disunion and lasts for 360 years: the Three Kingdoms (220 – 280), the Jin dynasty (265 – 420),

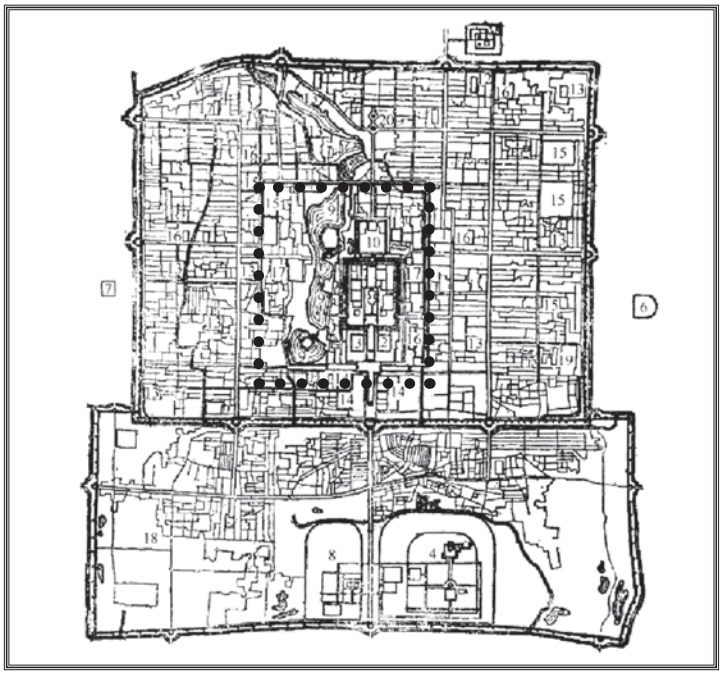


5.13. The Incised Plan of Pingjiang Fu (Suzhou City).

The city was initially constructed before the Tang Dynasty and was a prosperous port. In 1130, it was totally destroyed by Jurchen troops; however, within 100 years, it developed again into a flourishing city in the Southern Song dynasty. 'Pingjiang' was its name at that time. The planning of Pingjiang can be found in a city map carved in a stone, dated 800 years ago **[Fig.5.13]**. The edge of the city was a rectangle measuring 4km north-south and 3km east-west. There were five gates, and beside each was a water gate. The inner rivers, moat, and outer river constituted a system of waterways. The palace city was in the center and to the southwest. Most artificial inner rivers were straight; there were three main rivers running east-west and four running north-south. The blocks were normally rectangular, and the roads crossed perpendicularly. The main streets linked with the gates, mainly running east-west[56].

[56] Jianhong Dong, *The History of Chinese City Construction* [董鉴泓, 中国城市建设史, 中国建筑工业出版社] China Architecture & Building Press, 2004, p.87.





5.20a-b. Palatial City of Nanjing in Ming (left) and Plan of Beijing in Ming and Qing Dynasties (right) (Yang, 1993).

Beijing was an "all-in-one type" capital, mostly inheriting previous valuable experiences from other dynasties. It represents the final evolved type of ancient Chinese capital. In the Yuan dynasty, the imperial and royal cities, such as Dadu, were nested types. The royal city followed the Xanadu style, having royal gardens and lakes inside. In the civilian city, the waterways were developed for transportation. It was a combination of a liberal civilian city created from the Double-ringed and Chessboard types. Later in the Ming dynasty, the emperor copied the hierarchical palaces system from Nanjing and applied it to Beijing. To do so, the southern wall was moved southward. A mountain was built in the background, and other elements were moved, and this created a central axis like the one in Nanjing. The market streets outside the southern gates grew spontaneously into a large, lively area.

At the end of the Ming dynasty, the war between the Chinese and the Manchu destroyed most lands and cities in China. The new emperor of the Qing started to recruit the farmers who had lost land and provided them with tools and houses to rebuild the farms. The individual farmers were again assigned lands. At the end of the Qing dynasty, the large landowners were powerful enough to buy lands, and the free trade of land was approved[76].

As for society, the major change was the transformation from a clans-based society into a family-based society. In ancient dynasties, society was organized in clans. In the Qin and Han dynasties, society was organized by local families and clans. However, in the Ming and Qing dynasties, society was made up of large families. Therefore, the basic social element was the household. The father or grandfather was the leader of the unit. Under the neo Confucian philosophy, the hierarchy inside a family represented the same structure as the whole of society.

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[76] Tingyu Wu, *History of Chinese Ancient Land Regulation. Volume II* [乌廷玉; 中国历代土地制度史纲 下册, 吉林大学出版社] Jilin University Press, 1987b, pp.243-258.

VI. THE FORMS OF THE GRID

The *grid* is a spatial-social order that integrates four boundaries into an organized system that guides the construction of a city. As is the case with knowledge handed down from memory, the experience and knowledge of grids are extracted into *types* that may be repeated and implemented across a territory or country. Types take on specific forms according to actual local conditions and/or to the need or desire to accomplish certain aims (political, economic, military, cultural, etc.).

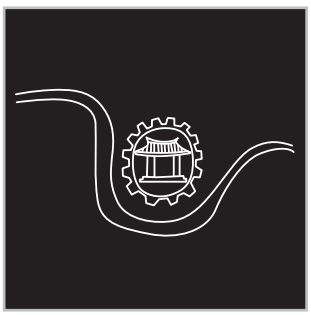
In this chapter, the grid forms and their components – the focus, edge, direction and partition – and also the external circumstances that affect the grid form are listed, supported by empirical statistics. This database investigates 301 prefecture cities from the Ming and Qing Dynasties. Full description of each is contained in the Appendix. They have index from **|1|** to **|301|** for easy reference. So here for example, I will use '**Beijing |294|**' as an indication of Beijing city/case, and the reader may find detailed maps and information about Beijing in item 294 in the Appendix.

These prefectures give us very complete information of grid forms thanks to gazetteers, conceptual ancient maps and the technically surveyed maps produced by American and Japanese armies in the later 19th and early 20th centuries.

— *"Canvas" of a Grid: Geo-conditions*

Before we discuss the forms of the grid and its four components, we introduce the external limits of the grid; namely, the geo-conditions. The geo-condition is the "canvas" of a grid. It sets the initial physical limits of a grid and influences the selections and variations of its forms. Further growth of the grid's external borders, such as walls and moats, would be constrained by geo-conditions, especially in hilly areas. These limitations also affect the development of other boundaries, which took forms such as roads, and reflect the need to negotiate the topography of the area. I have extracted seven basic geo-conditional forms from the 301 cases, and these forms, and their combinations, constitute diversified environments for the grid.

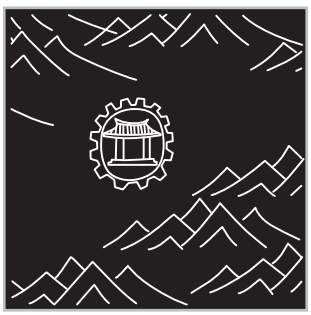
RIVER BANK [Fig.6.3]



6.3. Along Riversides (by Author)

Infrastructure such as aqueducts for sewage and water supply were still underdeveloped in ancient capitals and regional cities. With the growth of water transportation and trading, cities were built along or near rivers. There are three kinds of the River Bank city. One is surrounded by the river, which can be seen in **Xunzhou Fu |65|** on a peninsula, and this was common in south-western hilly areas, where the river valleys were carved into the mountains with turns and curves. A second kind is the Negative Position, which was in the outer bank of the river bend, for example, **Lu'An Fu |6|**. This position was convenient for drawing water resources, as well as loading and embarking ships. However, the Negative Position included the rise of severe flooding, since the bank was directly facing the water current. The third is the Positive Position, which can be seen in **Yichang Fu |111|**. As opposed to the Negative Position, the Positive Position was located in the inner bank of the river bend, protecting a city from possible floods; Positive Position cities may be found in hilly river valleys where water currents were harsh.

VALLEY [Fig.6.4]



6.4. In the Valley (by Author)

The valley is a corridor between two mountain ridges and works in symbiosis with the rivers. It was common in the southern, south-western, and north-western hilly borders. The cities were situated in valleys and had special facilities, such as trading posts or military fortresses. For example, the city of **Zunyi Fu |83|** is a case in which the external shape, the focus and the orientation were adapted to the valley terrain.

HILL SLOPE [Fig.6.5]

6.5. On the Hilly Slope (by Author)

On some kinds of slopes, a grid could be established, and this grid tended to be also along the riverbank. However, Chinese cities were not normally situated on slopes, except in cases of an area with overwhelming floods or an area important for specific military purposes. There are three variations: Along Steep Slope-side, Upon Hilly Plateau and On Top of the Hill.

The **Along Steep Slope-side** variation was typical in the southern mountainous area. Such a city was located on the slope and faced a river. It mostly served military purposes in the beginning, and later would grow into a new economic focus on the riverbank. It can be seen in **Longyan Zhou |17|**.

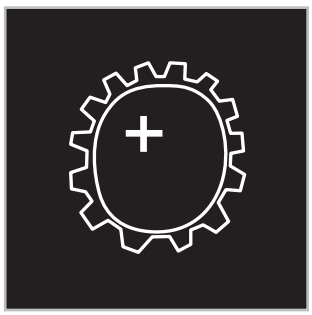
The **Upon Hilly Plateau** variation is the grid built on a small platform in a hilly area. It can be seen at **Anking Fu |1|** as a military fort against Nordic invasion. The hill would not limit the possible growth of the city and would provide adequate defense against enemies and floods.

The last variation, **On Top of the Hill**, is comparatively rare in prefecture cities, but we can look at one example in **Baode Zhou |173|**. It consisted of two parts: the governmental focus was on the hilltop, and the commercial focus was at the foot of the mountain along the river. It was clearly designed for military defense, but any prefecture city also had to consider trading and commerce for sustainability.

■ Three Forms of Foci

From the statistics from the prefectures of the Qing Dynasty, three kinds of forms may be found according to the spatial allocations and number of foci inside the grid form: Unique-Focus, Multi-Foci, Separated-Foci.

UNIQUE FOCUS [Fig.6.8]

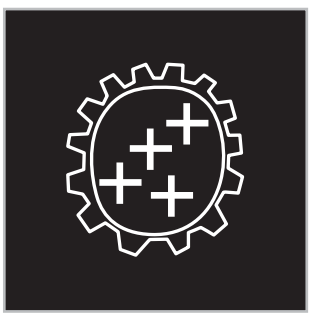


6.8. Unique Focus (by Author)

In this form, there is only one centric point inside a grid form, and it would merge both secular and political interests in the best geographical location, as well as the most strategic integral functional and political position. For example, the city of **Tianjin Fu |295|** had a unique focus as its central point.

In certain grids, the Unique Focus is not a point but a linear focus. This focus usually existed in cities with special topographies, such as valleys and riverbanks, with limited plain areas. Therefore, the Unique Focus had to be shaped as a linear main street for commerce and bureaus, as may be found in **Jiujiang Fu |147|**, where the density of plots was equally weighted along the major east-west avenue.

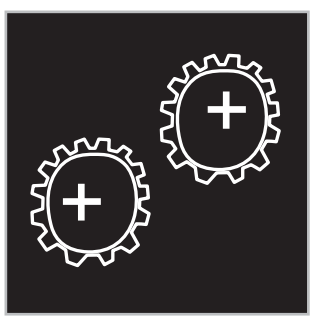
MULTI-FOCI [Fig.6.9]



6.9. Multi-Foci (by Author)

The Multi-Foci form consists of two or more foci in one grid. One focus is political. The political one could be in the center or along the borders, depending on the socio-economic-political background of the city, and would comprise bureaucratic facilities surrounded by aristocratic families' homes, in the most advantageous positions. The other focus/foci was/were free, located in positions beneficial for economic activities. Cases of cities with one political focus and one commercial focus occurred especially in ancient cities with continuous layers of construction; the ancient focus would remain as the political center, while the new focus would grow near the river or surrounding the old focus and would serve as the commercial center. The city **Changzhou Fu |130|** had a typical bi-focal grid with one political focus and the other commercial. The second form had One Political Center and Multiple Commercial Centers, with one major bureau focus and several minor commercial foci. This occurred in large cities with a chessboard grid form, especially in the southern and south-eastern flourishing commercial cities, where political functions were not of priority; for example, in the city of **Suzhou Fu |136|**. In **Guangzhou Fu |44|**, multiple foci merged into one city and grew as independent zones. This situation occurred in port and border cities that were open to overseas traders.

SEPARATED-FOCI [Fig.6.10]

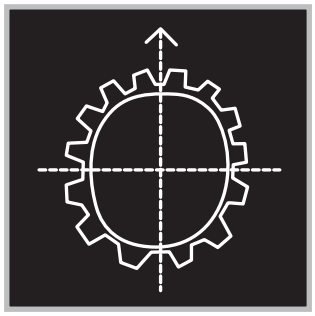


6.10. Separated Foci (by Author)

The Separated-Foci indicated spatial separation as well as social separation. In Multi-Foci cases, the political and secular centers were merged inside one intact city, while in Separated-Foci cases, these foci were separated and segregated. The Separated-Foci case was a city with two centers in two grids that created political/ethnic divisions.

For example, the city **Balikun |236|** was separated into two grids for two ethnic groups, one for Manchu people and the other for Chinese people. It had two ethnic centers: one in the west for the Chinese people, and the other in the east for the Manchu families and warriors. The city **Lijiang Fu |260|** had three separated foci: the Tusi city from the Ming dynasty, the Liuguang new political focus from the Qing dynasty and the local commercial focus, Sifang Street. The city of **Fengyang Fu |4|** had two grids: one for the abandoned capital, and the other was a commercial secular city. The city of **Xing' An Fu |200|** also had two grids: one along the river for normal usage and the other in the higher terrain for refuge during flooding.

CARDINAL DIRECTION [Fig.6.11]



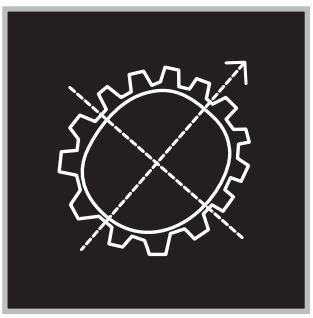
6.11. Cardinal Direction (by Author)

The Cardinal Direction form was a grid that faced the four major directions that are: due north, due south, due east and due west. These cities were mostly situated in the plains. There were two kinds of Cardinal Direction form: Southward and East/Westward.

For the Southward Cardinal Direction, one typical case is **Zhengding Fu |300|**, located in the plains area. It shows a positive selection of southward as the political and cultural orthodoxy. However, in some difficult geo-conditions, some strategic political cities still faced southward, such as **Ru'Ning Fu |97|**, which was located in a fluvial area. In some cases, the southward cardinal system seems to have been a passive reaction to the geo-conditions; for example, in an east-west valley corridor like **Tianshui Fu |36|**.

For the East/Westward Cardinal Direction, the cases are fewer, and we can only speculate this direction by means of looking at the location of gates, buildings and main administrative halls; it cannot be seen from the grid map. The city of **Yuezhou Fu |129|** was a strategic port city that controlled the water transportation from west China to east China and faced the western lake and river. Its direction toward the west is of political significance. The city **Hengzhou Fu |120|** faced eastward. This direction was a functional tactic to facilitate the water commerce and port economy. Streets, buildings and facilities were all aligned along the riverbank. The east/westward form was frequently seen in port cities along rivers. Their main directions were not necessarily ideological – to show respect to the supreme south – but were rather pragmatic and strategic.

INCLINED DIRECTION [Fig.6.12]



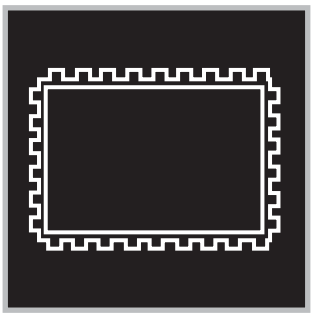
6.12. Inclined Direction (by Author)

The Inclined Direction form means that the grid faced southwest or southeast. In cities built along the river as trading posts, the direction was adjusted according to the riverbank. The city of **Xianyang Fu |110|** is a good example. Its main avenue that linked to the waterfront shaped the orientation. It is possible that cities with no rivers may still have had an inclined direction, such as **Dali Fu |254|**. This remote city was oriented to the southeast, probably to show respect to the northeastern imperial territory. For cities located in a hilly valley area, the Inclined Direction is not a choice, but is rather a natural reaction to the local topography, as in the case of the city of **Jiezhou |30|**.

LABYRINTHINE DIRECTION

The Labyrinthine Direction form means that the grid had no clearly identifiable orientation. These cities were mostly situated in hilly terrain or along a web of creeks, so the roads had to follow the contours of the land, and a Labyrinthine Direction was formed. One example is **Chongqing Fu |208|**. Another is **Nan'Ning Fu |58|**, a remote port city that grew spontaneously from a fishing village into a prefecture. The city of **Ganzhou Fu |143|** presents a different logic of spontaneous growth, with the direction being 'perpendicular' to the local contours. The roads and subdivisions surrounding the central mountain followed these contours.

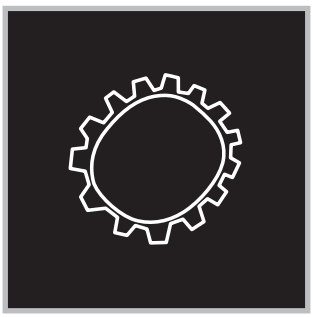
RECTANGULAR SHAPE [Fig.6.14]



6.14. Rectangular Shape (by Author)

The Rectangular Shape was the second most frequent shape that appeared in the plains area. The city of **Hejian Fu |290|** had a perfect Rectangular Shape with right angled corners. Other cities like **Baoding Fu |285|** displayed minor modifications to the Rectangular Shape, which developed as adaptations to natural conditions. In cities beside rivers, the right angle corners were not suitable for flood defenses, so many rectangular shapes evolved with round corners, like the edge in the city of **Wuchang Fu |109|**.

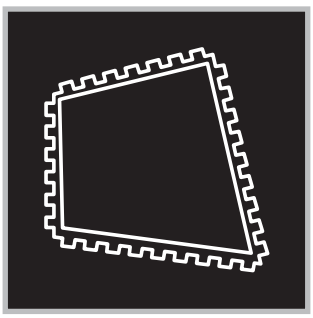
OVAL SHAPE [Fig.6.15]



6.15. Oval Shape (by Author)

In the hilly and plains areas with many creeks, a rectangular wall was hard to create. In those areas, the most common shape was an Oval. The Oval was a more natural and adaptive shape than squares and rectangles. In the city of **Liuzhou Fu |57|**, we see that a complete Oval Shape was the edge. The shape may vary according to the growth of the city, such as in the case of **Huzhou Fu |276|**, and or to natural limitations, such as in the case of **Duyun Fu |71|**.

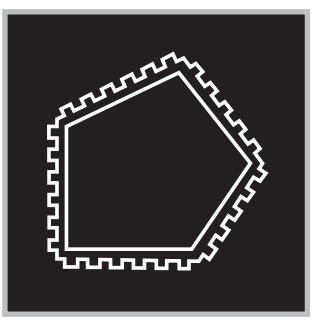
QUADRANGULAR SHAPE [Fig.6.16]



6.16. Quadrangular Shape (by Author)

Many cities had an irregular Quadrangular Shape. Some quadrangles were mutations from rectangular cities, which were impacted by natural conditions, such as in **Fengxiang Fu |177|**, while others were gradual formations derived from a rectangular city, such as the case of **Hepu Fu |50|**. Most quadrangular shapes were reactions to the geo-conditions, set along the riverside and restrained by topography, such as the city of **Wenzhou Fu |283|**.

POLYGONAL SHAPE [Fig.6.17]



6.17. Polygonal Shape (by Author)

The polygon I refer to here excludes quadrangular shapes. It can be a triangle or pentagon in shape. For instance, **Jiujiang Fu |147|** had a triangular shape. Normally, in Chinese ancient cities, the Polygonal Shape did not work because of the Fengshui taboo. The city of **Ganzhou Fu |143|**, however, was a pentagon situated along the river, as an adaptation to natural conditions. Other pentagonal shapes, such as the city of **Urumqi |246|**, were the result of the gradual expansion of the city.

T-SHAPE FORM [Fig.6.27]

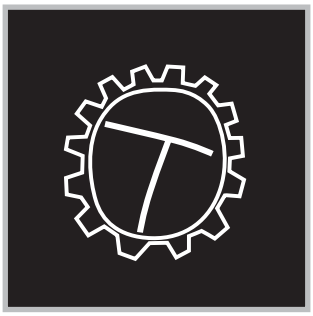
The T-shape form was a diagram with one road across the grid and the other perpendicular to it, creating the letter 'T' in the plan. It was a grid form between the one-road and cross forms. The T-shape could be located anywhere. The orientation varied. Its distinguishing characteristic was the position of the centric point, which was located at the end of an avenue.

The T-shape separated the three zones inside the grid and did not use different street forms, as in **Hanyang Fu |104|** with its straight lines and **Yan'An Fu |201|** with its curved lines.

The focus of the T-shape was the joint at the end of the form. There were bureaucratic facilities and economic centers along these main roads. The administrative buildings faced the branch. Other facilities were situated in the surrounding areas, such as in **Liaozhou |184|**.

The edge of the T-shape had three openings—two opposite each other and one at the other side. Their dimension and shapes varied according to the site conditions. The internal border typically cohered with the T-shape and the rectangular and square plot shapes and intervals.

In addition, the T-shape could transfer to cross, one-road and chessboard forms. Also, the one-road form could become T-shapes. The city of **Taizhou Fu |282|** was transformed into a chessboard, and the city of **Jizhou |291|** transformed from a cross shape to a T-shape.

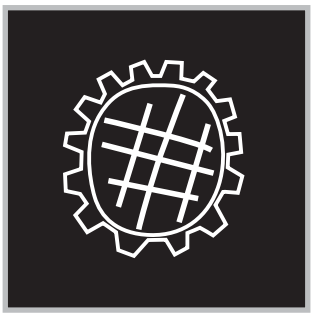


6.27. T-Shape Grid Form (by Author)

CHESSBOARD FORM [Fig.6.28]

The Chessboard form was a diagram with an orthogonal lattice of lines, like the patterns on a chessboard. It appeared frequently in large and highly populated cities. The site of the Chessboard form was always on a plain. A Chessboard required ample empty space for planning, and the orientation normally faced southward.

For the focus, as compared with other grid forms, the Chessboard was relatively decentralized. It provided more equal facilities and accessibility for each part of the grid. Politics and economy were distributed in center, the external border or outside of the grid. Also, there could be more than two centric points in a Chessboard, one that was political and one or more that were secular, as in **Suzhou Fu |136|**. The spread of secular centers was common in Chessboard cities due to their prosperity and large size. The edge of the Chessboard form was a regular oval or rectangular shape, thanks to the ample space in the plains regions. The dimensions were larger than those of other grid forms. The openings of the Chessboard were numerous. Since there were many avenues, it was possible for Chessboard grids to have many gates, as in **Yichang Fu |111|**. The sublevel partition shape of the Chessboard was rectangular or square, and they were part of the regulated grid system, which was coherent with the main orientation of the grid form. The composition of partition was related to the use of the land and the local customs. The Chessboard may be seen as the ultimate stage of the grid form. It could evolve from any other grid form.

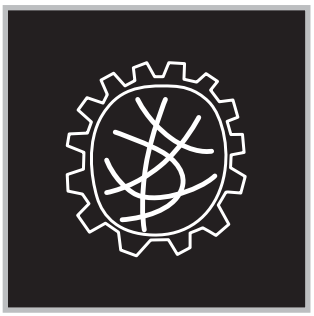


6.28. Chessboard Grid Form (by Author)

LABYRINTHINE FORM [Fig.6.29]

The labyrinth indicates grids with no clearly identifiable form. The focus of the Labyrinthine form was normally the most regular part of the city, with a relatively flat surface and a high altitude. The site selection of this form was usually in a hilly area where it was impossible to place a regulated form. As for the orientation, there was no uniformity, and all directions developed spontaneously, as in **Chongqing Fu |208|**.

The edge of the labyrinth was not decided at the beginning. Normally, they were established around the settlements afterward. Therefore, the shape, dimension and opening of this form were as labyrinthine as the form itself: unidentifiable, with no standard. The sublevel partition was perpendicular to the major streets; however, it was labyrinthine, according to functional rationalities. There was no standard for the plot shape, interval or coherence.



6.29. Labyrinthine Grid Form (by Author)

VIII. THE CONCLUSION

This book takes a small step toward exploring the effects of the grid on social organization. The seven basic points below summarize the knowledge of grid that we have studied so far:

1. ITS ORIGIN *answers the question 'what does the grid come from'. In the beginning, the grid appeared as the inner divisions in the cave with both spatial function and social meaning. In early settlements, they created separation for clan life in simple ways.*

2. ITS COMPONENT *explains 'what the grid consists of''. The grid has four components: focus, direction, edge and partition. Each element is a spatial regulation working toward certain aims. Besides, a grid exists only if all four elements are present.*

3. ITS MEMORABILITY *means the DNA of a type. This means that the grid and its components can be repeated within the domain. The knowledge of the grid is recorded inside the collective knowledge.*

4. ITS TYPES *are a grouping of similar grids. They have distinct characteristics and were repetitively implemented due to cultural identity and pragmatic aims.*

5. ITS AIMS *identify what grids work for: the grid aims to organize society ideologically and functionally. Aims can include both internal hierarchy and external growth. While ensuring a city's survival, the grid satisfies certain military and commercial usage/growth needs.*

6. ITS FORMS *comprise the outside appearances of grid types. We know that all the forms once existed in history and many forms persist for centuries, similar to 'types'. They developed with the advancement of techniques and aims.*

7. ITS EFFECT *is the target of this thesis; this work attempts to answer the question of 'which grids are most effective in social organization' toward political, military and commercial aims.*

EFFECTIVE GRIDS TOWARD AIMS

	geo condition	grid form	focus	direction	edge	partition	IDEAL FORM
MILITARY CITIES 1	on plains	crossroad	unique focus	little-inclined	rectangular	rectangular with additional strip plots	46.8%
	46.1%	44.9%	70.8%	42.7%	32.6%	43.8%	
MILITARY CITIES 2	in mountain valleys	T-shape	double foci	cardinal	square	labyrinthine	
	22.5%	21.3%	27.0%	40.4%	20.2%	21.3%	
MILITARY CITIES 3	on mountain slopes	one-road	three foci	middle-inclined	oval	strip	
	9.0%	20.2%	2.2%	14.6%	14.6%	18.0%	

Frequency of Grid Components among 89 Military Cities

COMMERCIAL CITIES 1	on plains	one-road	unique focus	little-inclined	rectangular	quadrangular	41.6%
	26.7%	43.8%	62.9%	52.4%	24.8%	39.0%	
COMMERCIAL CITIES 2	on mountain slopes	chessboard	double foci	cardinal	oval	rectangular	
	24.8%	27.6%	21.9%	34.3%	21.0%	31.4%	
COMMERCIAL CITIES 3	along rivershores	crossroad	several foci	middle-inclined	trapezoidal	labyrinthine	
	22.9%	12.4%	14.3%	10.5%	10.5%	18.1%	
COMMERCIAL CITIES 4	at mountain foot	labyrinthine	three foci	liberal	semi-circle	strip	
	16.2%	10.5%	1.0%	2.9%	7.6%	11.4%	

Frequency of Grid Components among 105 Commercial Cities

POLITICAL CITIES

	geo condition	grid form	focus	direction	edge	partition	IDEAL FORM
1	on plains	chessboard	unique focus	cardinal	rectangular	rectangular	56.4%
	64.5%	44.9%	74.8%	45.8%	40.2%	68.2%	
2	at mountain foot	one-road	double foci	little-inclined	quadrangular	quadrangular	
	15.9%	24.3%	21.5%	44.9%	22.4%	16.8%	
3	along rivershores	crossroad	three foci	middle-inclined	labyrinthine	labyrinthine	
	5.6%	23.4%	3.7%	15.9%	6.5%	7.5%	

Frequency of Grid Components among 107 Political Cities

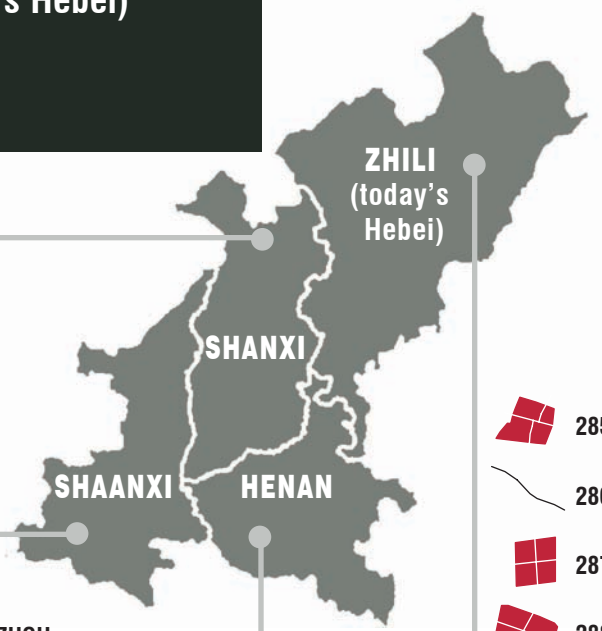
IDEAL FORM

	geo condition	grid form	focus	direction	edge	partition	IDEAL FORM
Military	on plains	crossroad	unique focus	little-inclined	rectangular	rectangular	46.8%
Commercial	on plains	one-road	unique focus	little-inclined	rectangular	quadrangular	41.6%
Political	on plains	chessboard	unique focus	cardinal	rectangular	rectangular	56.4%
Average	on plains	chessboard	unique focus	little-inclined	rectangular	rectangular	48.4%

Ideal Grid Forms of Cities

PROVINCES OF CHINA IN QING PERIOD

Prefecture Cities in:
ZHILI (today's Hebei)
SHAANXI
SHANXI
HENAN



173. BAODE ZHOU
175. DAI ZHOU
176. DATONG FU
178. FENZHOU FU
181. HUO ZHOU
182. JIANG ZHOU
183. HÀI ZHOU
184. LIAO ZHOU
185. LU'AN FU
186. NINGWU FU
187. PINGDING ZHOU
188. PINGYANG FU
189. PUZHOU FU
191. QIN ZHOU
193. SHUOPING FU
195. TAIYUAN FU
197. XI ZHOU
199. XIN ZHOU
203. ZEZHOU FU

174. BIN ZHOU
177. FENGXIANG FU
179. FU ZHOU
180. HANZHONG FU
190. QIAN ZHOU
192. SHANG ZHOU
194. SUIDE ZHOU
196. TONGZHOU FU
198. XI'AN FU
200. XING'AN FU
201. YAN'AN FU
202. YULIN FU

89. CHENZHOU FU
90. GUANG ZHOU
91. GUIDE FU
92. HENAN FU
93. HUAIQING FU
94. KAIFENG FU
95. NANYANG FU
96. RU ZHOU
97. RUNING FU
98. SHAAN ZHOU
99. WEIHUI FU
100. XU ZHOU
101. ZHANGDE FU

285. BAODING FU
286. CHENGDE FU
287. DAMING FU
288. DING ZHOU
289. GUANGPING FU
290. HEJIAN FU
291. JI ZHOU
292. SHEN ZHOU
293. SHUNDE FU
294. SHUNTIAN FU
295. TIANJIN FU
296. XUANHUA FU
297. YI ZHOU
298. YONGPING FU
299. ZHAO ZHOU
300. ZHENGDING FU
301. ZUNHUA ZHOU

Prefecture Cities in:
JIANGSU
ZHEJIANG
FUJIAN

130. CHANGZHOU FU
131. HAI ZHOU
132. HAIMEN TING
133. HUAI'AN FU
134. JIANGNING FU
135. SONGJIANG FU
136. SUZHOU FU
137. TAICANG ZHOU
138. TONG ZHOU
139. XUZHOU FU
140. YANGZHOU FU
141. ZHENJIANG FU

14. FUNING FU
15. FUZHOU FU
16. JIANNING FU
17. LONGYAN ZHOU
18. QUANZHOU FU
19. SHAOWU FU
20. TAIWAN FU
21. TINGZHOU FU
22. XINGHUA FU
23. YANPING FU
24. YONGCHUN ZHOU
25. ZHANGZHOU FU

274. CHUZHOU FU
275. HANGZHOU FU
276. HUZHOU FU
277. JIAXING FU
278. JINHUA FU
279. NINGBO FU
280. QUZHOU FU
281. SHAOXING FU
282. TAIZHOU FU
283. WENZHOU FU
284. YANZHOU FU

1. ANQING FU 安庆府

SURVEYED MAP

CONCEPTUAL MAP

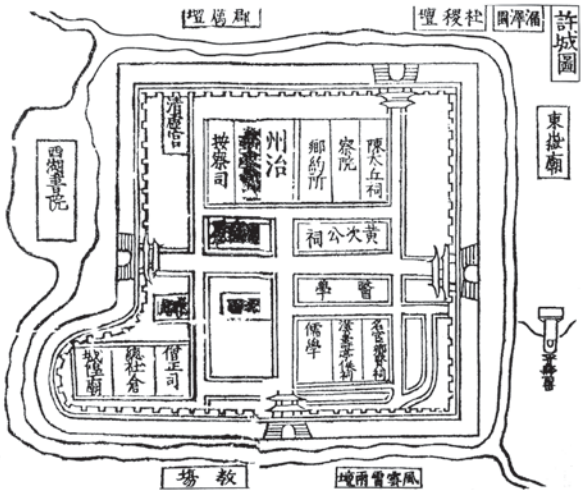
		INITIAL	1st	2nd	3rd	FINAL
DEVELOPMENT PHASES	DYNASTY	Southern Song Dynasty	Yuan Dynasty	Qing Dynasty	.....	Qing Dynasty
	CHRONOLOGY	1217	1358	1861	.....	1861
	AIMS	Built as a fort against Mongolian forces in the N bank of the Yangtze River. Later, from the hill top it grew into a commercial port city. The plot-shape presents strips, rectangular, square and quadrangular partitions. As a city born from the war, it could not have big houses.[1]				political commercial dual focus
GRID COMPONENTS	FOCUS	Southwest	Expansion towards all directions			Southwest
EDGES [WALL / MOAT]	SHAPE		Pentagon	.....	.....	Pentagon
	OPENINGS	5	5	.....	.....	5
	DIMENSIONS	9 Li 13 Bu	5,85 km	.....	.....	5,85 km
PARTITIONS	SHAPE					Quadrangular+ Labyrinthine
	SIZE					width 350-130 depth 100-40
	DIRECTIONS	Facing Southwest	.....	.....	.....	Unchanged
GRID TYPE	COMBINATION	Single	Single	Single+ Affiliation	.....	Single
	MAJOR	Cross (curved)	Cross (zigzagged)	Cross (zigzagged)	.....	Chessboard or Labyrinthine
	SUBLEVEL					Curved Line Chessboard

PROVINCE Anhui 安徽
CITY Anqing Fu
CURRENT NAME 安徽安庆市

GEO-CONDITION:
MOUNT Far from Big Mount Westward
WATER Nearby Big River Southward
LAND Hilly Terrain

100. XU ZHOU 许州

Surveyed Map

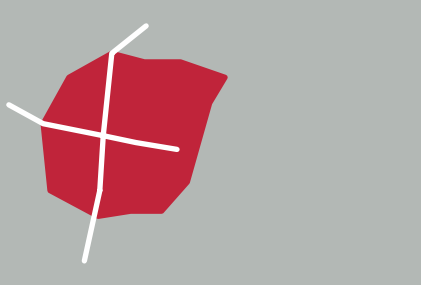


Conceptual Map

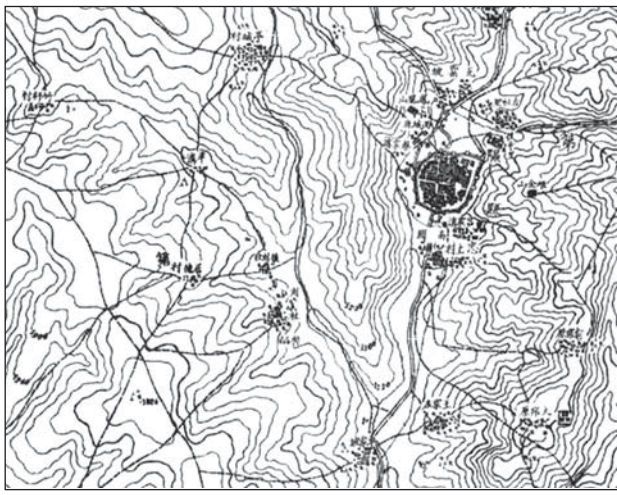
Province Henan 河南
City Xu Zhou
Current Name 河南许昌市

Geo-Condition:
Mount None
Water Nearby Small River Westward
Land On Plain

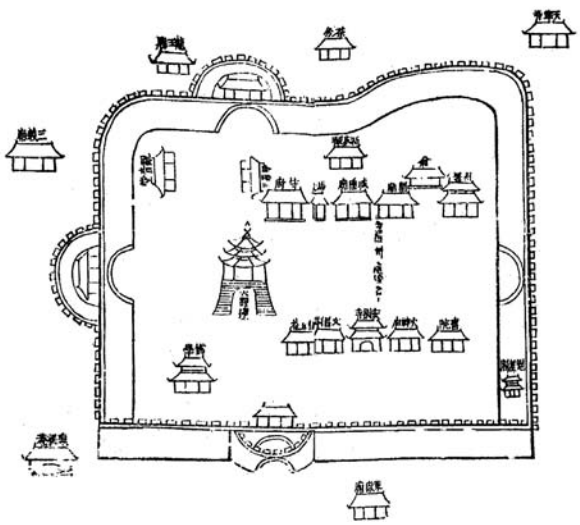
	INITIAL	1st	2nd	3rd	FINAL	
DEVELOPMENT PHASES	Tang Dynasty	Ming Dynasty	.....	.....	Ming Dynasty	DYNASTY
	618	.....	.....	.....	1566	CHRONOLOGY
	The city had been a political centre since Han dynasty. It was rebuilt in Tang dynasty into a quadrangular shape, with 4 gates. The shape had not changed till Qing dynasty and developed into a chessboard grid with a rectangular plot shape, to hold the growing population.[100]				political commercial unique focus	AIMS
GRID COMPONENTS	Center	Unchanged			at Middle	FOCUS
EDGES [WALL / MOAT]	Quadrangular	Rectangular (Protruded)	.....	.....	Rectangular	SHAPE
	4	4	.....	.....	4	OPENINGS
	9 Li 139 Bu	9 Li 139 Bu	.....	.....	9 Li 139 Bu 5,01 km	DIMENSIONS
PARTITIONS					Rectangular	SHAPE
					width 300-150 depth 100-50	SIZE
GRID COMPONENTS	Facing South	.....	.....	.....	Unchanged	DIRECTIONS
GRID TYPE	Single	Single	.....	.....	Single	COMBINATION
	1-Road 2-Branches (straight)	Chessboard (straight)	.....	.....	Chessboard	MAJOR
					Straight Line Chessboard	SUBLEVEL



197. XI ZHOU 隰州



Surveyed Map

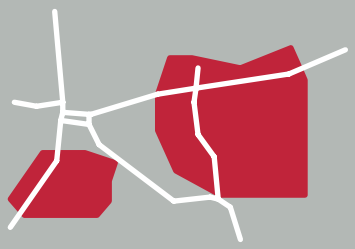


Conceptual Map

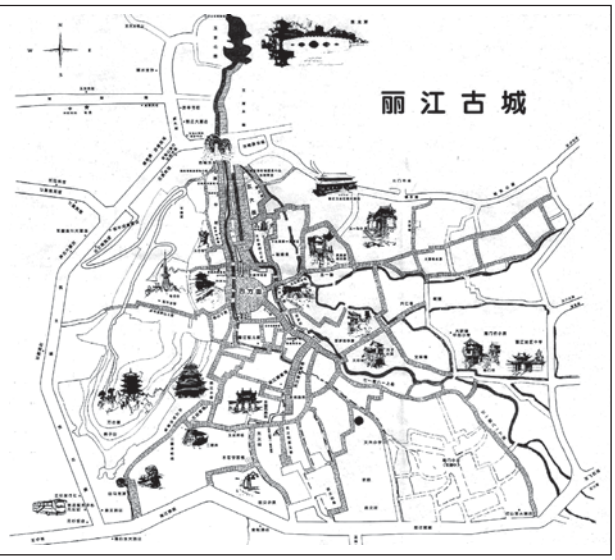
		INITIAL	1st	2nd	3rd	FINAL
DEVELOPMENT PHASES	DYNASTY	Tang Dynasty	Ming Dynasty	.....	.....	Ming Dynasty
	CHRONOLOGY	618	1575	.....	.....	1575
	AIMS	Existed since Tang dynasty with 3 gates, in Ming dynasty the city was renovated and the E gate was opened. The shape is an irregular square. A cross model links the 4 gates with 4 avenues. In the middle there is the drum tower (iconic centre and commercial focus). Along the E avenue, there are the administrative hall, schools, public facilities, temples, etc.[197]				political commercial unique focus
GRID COMPONENTS	FOCUS	Center	Unchanged			at Middle
EDGES [WALL / MOAT]	SHAPE		Square Circle	.....	.....	Square
	OPENINGS	3	4	.....	.....	4
	DIMENSIONS	7 Li 13 Bu	7 Li 13 Bu	.....	.....	7 Li 13 Bu 2,73 km
PARTITIONS	SHAPE					Rectangular
	SIZE					width 200-120 depth 100-60
	DIRECTIONS	Facing Southwest <15°	.....	.....	.....	Unchanged
GRID TYPE	COMBINATION		Single	.....	.....	Single
	MAJOR	T-shape (straight)	Cross (straight)	.....	.....	Cross
	SUBLEVEL					Straight Line Chessboard

Province ShanXi 山西
City Xi Zhou
Current Name 山西隰县

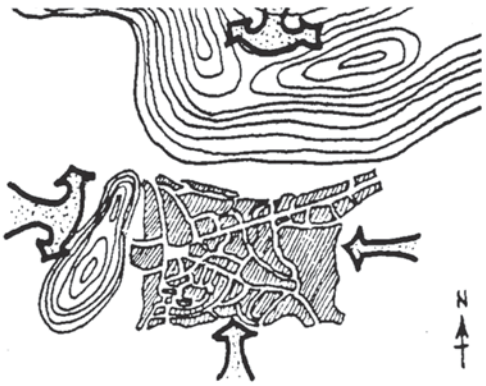
Geo-Condition:
Mount Among Hilly Terrain
Water Nearby Small River Eastward
Land Mount inside Valley River Shore



260. LIJIANG FU 丽江府



Surveyed Map



Conceptual Map

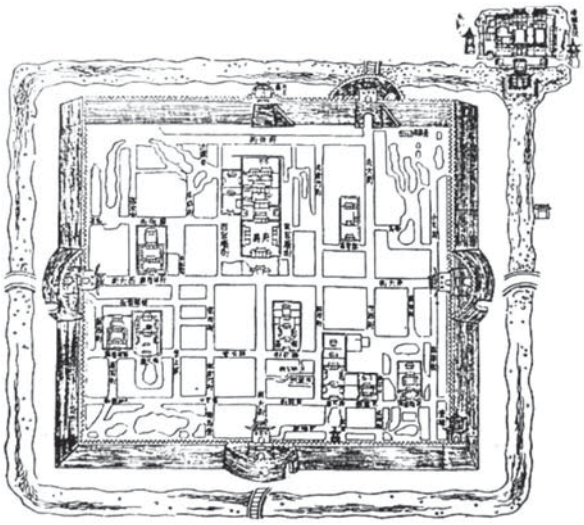
Province Yunnan 云南
City Lijiang Fu
Current Name 云南丽江

Geo-Condition:
Mount Among Hilly Terrain
Water Crossed by Small River
Land Hilly Terrain

	INITIAL	1st	2nd	3rd	FINAL	
DEVELOPMENT PHASES	Yuan Dynasty	Ming Dynasty	Qing Dynasty	.....	Qing Dynasty	DYNASTY
	1260	.....	.....	.....	1908	CHRONOLOGY
	Built as a trading pivot, the city had its secular and commercial focus in Si Fang Street, in the NW part. In Ming Dynasty a bureau city was built nearby, as a new political focus, separated from the old one. Later, in Qing dynasty, a new political centre was constructed at E. They were walled and separated from secular centres. However, the focus remained in Si Fang Street.[260]				commercial political tri-focus	AIMS
GRID COMPONENTS	Northwest	Expansion Southward, Expansion Eastward			at Northwest	FOCUS
EDGES [WALL / MOAT]	Liberal	Exp. Southwest	Exp. East	.....	Oval+Square +Liberal	SHAPE
		3	.....	.....	wk	OPENINGS
					3,4 km	DIMENSIONS
PARTITIONS					Labyrinthine	SHAPE
					width 120-80 depth 60-40	SIZE
	Facing Southeast <15°	.....	.....	.....	Unchanged	DIRECTIONS
GRID TYPE	No Wall	Single	Twin-separated	.....	Twin-separated	COMBINATION
	Radial-centric	.....	.....	.....	Radial-centric/ 1 Rd /Chessboard	MAJOR
					Curved Line Labyrinthine	SUBLEVEL

289. GUANGPING FU 广平府

SURVEYED MAP



CONCEPTUAL MAP

		INITIAL	1st	2nd	3rd	FINAL
DEVELOPMENT PHASES	DYNASTY	Tang Dynasty	Yuan Dynasty	.....	.....	Yuan Dynasty
	CHRONOLOGY	618	.....	.....	.....	1368
	AIMS	The city was built in Tang dynasty with a rectangular shape and later it was expanded into the current square with 4 gates. An E-W avenue ran across. Two N-S avenues linked the N and S gates. In Ming and Qing dynasties it became a centric trading centre. The built-up area expanded and fulfilled the whole periphery, therefore, the grid model transformed into a chessboard.[289]				political commercial unique focus
GRID COMPONENTS	FOCUS	Center		Unchanged		at Middle
	EDGES [WALL / MOAT] SHAPE	Rectangular	Square	.....	.....	Square
	EDGES [WALL / MOAT] OPENINGS		4	.....	.....	4
	EDGES [WALL / MOAT] DIMENSIONS	6 Li 240 Bu	9 Li 13 Bu	.....	.....	9 Li 13 Bu 4,18 km
	PARTITIONS SHAPE					Rectangular
	PARTITIONS SIZE					width 300-160 depth 150-80
	DIRECTIONS	Facing South	.....	.....	.....	Unchanged
GRID TYPE	COMBINATION		Single	.....	.....	Single
	MAJOR	Cross cc	1-Road 2-Branches (straight)	Cross (straight)	.....	Chessboard or 1-Road 2-Branches
	SUBLEVEL					Straight Line Chessboard

PROVINCE Zhili 直隶 (today's Hebei)
CITY Guangping Fu
CURRENT NAME 河北永年县东南永年

GEO-CONDITION:
MOUNT None
WATER Far from Small River
LAND On Plain