

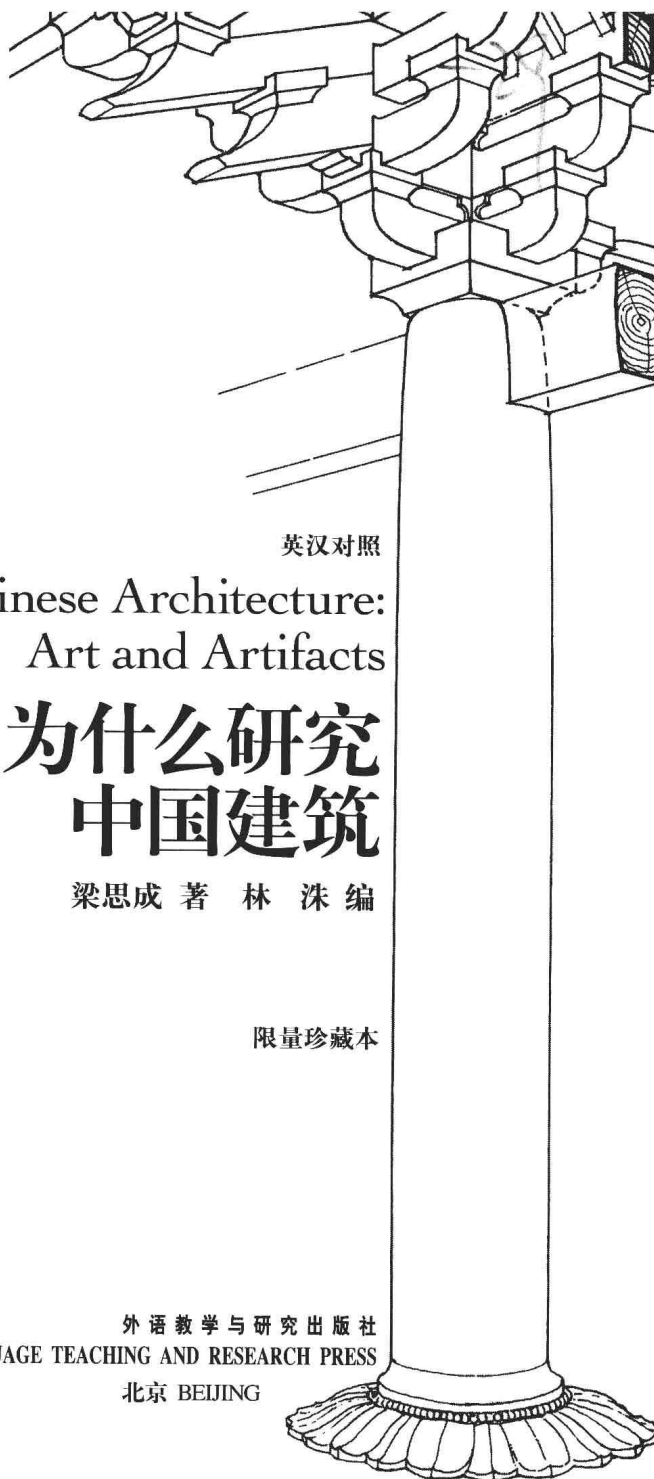
Chinese Architecture: Art and Artifacts

英汉对照

为什么研究 中国建筑

梁思成 著 林 洙 编

外语教学与研究出版社 FOREIGN LANGUAGE TEACHING AND RESEARCH PRESS



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2011年是梁思成先生（1901—1972）诞辰110周年纪念，因此外语教学与研究出版社准备将先生的古建筑英文文稿整理，以平装本和限量珍藏本两种形式出版。先生的英文文稿大多完稿于1946年以前，是在古建调研工作的空隙中完成的。他在忙于撰写调研报告的同时，为什么还要坚持用英文写中国古建筑的介绍文章呢？

他始终认为，中国古建筑史上各民族不同文化的交流濡染是极有趣的现象，也是丰富和发展本民族文化必不可少的要素。比如，印度的塔（“窣堵坡”，stupa）流传到我国，经汉民族文化的濡染演化而成为各种形式的塔，成为中国建筑文化中一个独特的标志，而窣堵坡却变成了中国式塔的塔刹。

先生在美国研习时曾对西方古建筑下过苦功夫，因而他也热衷于把中国的古建筑介绍给外国读者。这次集录的英文文稿，绝大多数是他在20世纪三四十年代发表在美国一些刊物上的。特别指出的是，《蓟县独乐寺观音阁山门考》因篇幅较长，原准备出一个小册子，但未实现，这次一并发表，虽非完全英汉对照，却呈文稿本真原貌。书中图版及照片大部分是由先生当年亲自绘制和拍摄的。外研社人文社科分社社长吴浩和编辑易璐、张昊媛为本书的出版，花费了很多心血。我再次感谢外研社的朋友们，他们完成了先生未竟的遗愿。谢谢！

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CHINESE

[年份不详]

中国建筑

ARCHITECTURE

I. GENERAL CHARACTERISTICS

A Early Origin

Among the family of architecture of the world, Chinese architecture may be considered an independent branch by itself. Its history is as long as the history of Chinese civilization.

From every source of information—literary, graphical and exemplary—there can be gathered convincing evidences testifying to the fact that the Chinese people have always employed an indigenous system of construction and a conception of planning which have retained their principal characteristics from the earliest times till the present day. Over the vast area from Xinjiang to the Northeast, from Inner Mongolia to the South Sea coast, the same system of construction and planning is prevalent. Beyond China, in Korea and Japan in the east and Vietnam in the south, the same system of construction and similar plan arrangements are much used. And these have all along been the countries whose people have established very intimate contacts with the Chinese for thousands of years. The ability of this system to perpetuate itself for over four thousand years over such a vast area and still remain a living architecture, and to retain its principal characteristics in spite of repeated and continuous foreign influences, hostile or friendly, economical, cultural or military, is a phenomenon comparable only to the continuity of the civilization of which it forms an integral part.

1. Neolithic Remains

Excavation in 1954 at the village of Banpo, near Xi'an, led to the discovery of a number of pits in the loess stratum. They were identified as remains of human habitations of the Neolithic period. Along the periphery of one of the larger pits of an oblong plan, of which only a portion now remains and estimated to have a major axis of about 20 meters long, is a low earthen wall in which are a row of holes containing charred studs of logs, evidently the lower ends of posts of a house that was later destroyed by fire. It is the remains of the earliest houses known

in China today. Of course, it would be too far-fetched to assume that any of the characteristics of the architecture that later developed in China may be traced in these primitive sites.

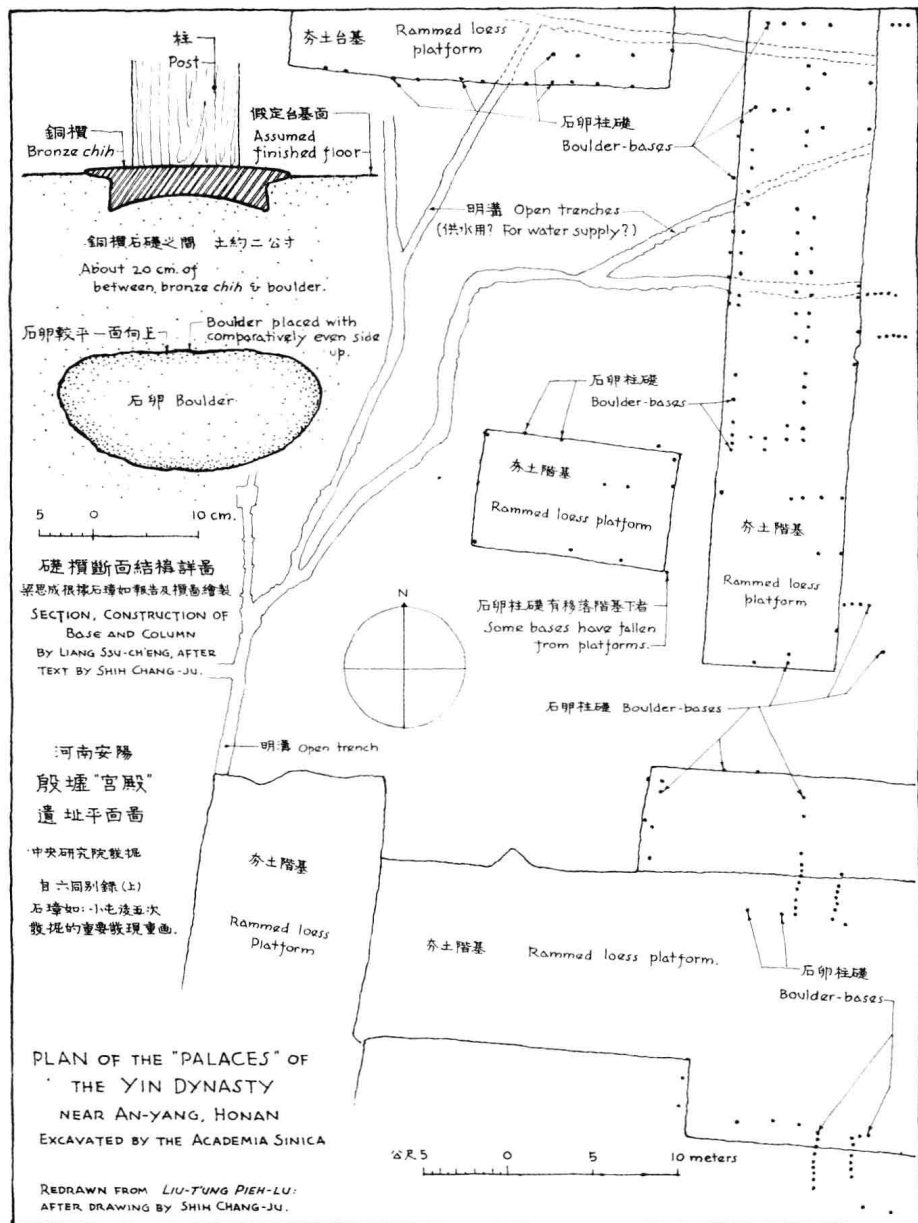
概览

① 早期溯源

中国建筑在世界建筑群体中，可谓自成一体。中国建筑的历史与中国文明史相生相伴、源远流长。

从收集到的一些遗存文字、图案和标本等实物中可以找到充分的证据证明，国人一向采用的本土营造体系 and 设计构思，其主要特征从古至今未曾改变。在广袤的大地上，从新疆到东北，从内蒙古到南海沿岸，同样的营造和设计体系被广泛采用。甚至在周边国家，如东边的朝鲜和日本，以及南边的越南，也常常采用中国的营造体系和类似的平面布局。数千年来，这些国家一直和中国保持着密切的往来。四千多年来，尽管中国接连不断地受到外界的影响，无论是敌视的或是友善的，还是在经济、文化或军事方面，但在如此广袤的土地上，中国的建筑体系依然能够持久留存，栩栩如生，从而构成了绵延不断的中华文明的一部分。

1. 新石器时代的遗存 1954年在西安附近半坡村考古挖掘时，发现了黄土地层的数个地坑，经确认是新石器时代人类聚居的穴居地遗址。^[1]其中的一个四方平面只有部分得以保存，据估算其主轴长约20米。其中的一个较大坑穴的外围是一堵低矮的土墙，上有一排洞眼，洞眼内为烧焦的木楔残物，显然是木骨泥墙房屋的柱础毁于火灾的痕迹。这是迄今所知中国最早的房屋遗址。当然，如果认为以后中国建筑发展的任何特征都可以追溯到这一原始遗址，那也未免太牵强附会了。



2. Earliest Site Suggestive of Later Chinese Characteristics

Near Anyang, Henan Province, at the site of the palaces and necropolis of the Yin emperors, circa 1400 BC–1120 BC, archaeologists found the earliest remains of buildings that suggest the possible embodiment of the basic characteristics which later evolved and matured into architecture unique to China and her neighboring countries. At the site is large rammed-earth platforms, on top of which are placed at regular intervals undressed boulders, each covered by a bronze disc. On top of these discs are found charred logs—the lower ends of wooden posts that once supported the superstructures which were burnt down at the sack of the capital circa 1120 BC. The arrangement of these bases of columns testifies to the existence of a structural system that had by this time already taken a very definite form. (Figure 1)

② Basic Characteristics

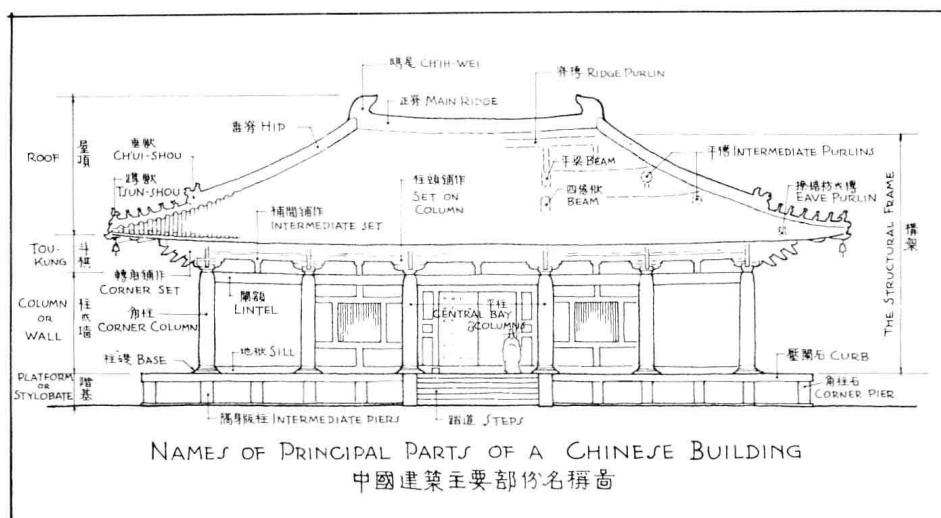
The basic characteristics of Chinese architecture may be considered from two aspects—the structural system and the plan arrangement. The structure of the individual building, as it is found today as well as more than three thousand years ago, consists of, in general parti, a raised platform or stylobate which forms the base for a structure with a timber skeleton of posts and lintels which in turn supports the roof, generally pitched and with overhanging eaves.

2. 具有中国建筑特征的最早遗址

在河南安阳附近所发现的公元前约 1400 年到公元前 1120 年殷商王宫和陵墓遗址中，考古学家找到了后来演变和发展成为中国及周边国家建筑独有的基本特征的可能例证。遗址中大型夯土台基的顶端，间隔均匀铺陈着原料石块，石块上均覆盖着青铜圆板，上置柱础，即曾经用以支撑上部结构的木柱下端。大约在公元前 1120 年，都城被攻陷，上部结构被焚。从这些柱础的排列看来，此时的结构体系已明显成型。(图 1)

② 基本特点

中国建筑的基本特点可从结构体系和平面布局两方面来考量。现今发现三千多年前的单体建筑，其结构通常包括一个垒抬提升的台基或柱座，以作为整座建筑的基础。建筑有着木结构的立柱和横梁，用以支撑屋顶；屋顶则通常带坡度，有飞檐。



This osseous construction lends complete freedom in walling and fenestration and renders a house, by merely adjusting the proportion between walls and openings, practical and comfortable in any climate varying from that of the tropical south to that of sub-artic Manchuria. (Figure 2) It is this extremely high degree of flexibility and adaptability that enables this architecture to follow the Chinese people to wherever place they chose to settle down and live without encountering any difficulty in sheltering its occupants from the elements, however diverse they may be. Perhaps nothing analogous is found in the architecture elsewhere until the invention of the reinforced concrete and the steel framing system in the nineteenth century.

这一框架结构在屋墙上开窗通风极为方便，只需调节好墙体和门洞、窗口之间的比例，即可使房屋不管是处于炎热的南方还是在寒冷的东北都既实用又舒适。(图2)正是由于这一建筑结构极高的灵活性和适应性，中国人无论走到哪里，在哪里居住，无论他们生活方式如何不同，都不会受到恶劣天气的困扰。在19世纪钢筋混凝土及钢结构出现之前，恐怕很难在其他地方找出类似的建筑。

In plan, a “house” in the Chinese sense of the word is generally composed of a number of such individual buildings which are then connected to each other by auxiliary buildings—verandas, loggias, portals, etc.—so disposed of to form one or a series of courtyards or patios. Such courtyards are generally paved and often planted with trees and flowers, forming very pleasant “out-door living rooms.” As a rule, the buildings around a courtyard are generally symmetrically arranged along a principal axis. But for gardens, or when required by the topography, informal arrangements become the rule.

1. The Structure of the Individual Building

It is necessary to analyze the Chinese frame construction in order to have a better understanding of Chinese architecture. The basic unit of the skeleton is a frame composed of two posts supporting a beam, on top of which, in turn, are one or two or even three successive tiers of beams standing on studs. As the tiers pile up, the lengths of the beams above diminish, and, on the uppermost and shortest beam stands a king post, the top of which forms the apex of a triangle thus formed. This is what one will see in a transversal section drawing of a building. Such a unit is called a *liangjia* or “beam-frame.” A pair of such *liangjia* placed side by side at certain distances, and connected to each other by lintels or tie-beams reaching from the top of the post of one *liangjia* to that of the adjacent *liangjia*, define a space called *jian* or bay.

在平面布局术语中，汉语的“房屋”一词，通常是指数座单体建筑，通过游廊、凉廊、门廊等附属建筑，将彼此连接起来，形成一个或一系列院落。这些庭院一般都经过铺设，莳花种树，形成赏心悦目的“露天客厅”。院落四周的建筑，通常沿中轴线对称排列。对于园圃，可因顺地形地势不拘一格，予以适当变通。

1. 单体建筑结构 如想更好地了解中国建筑，就有必要分析中国的框架结构。其基本框架单位是由两根柱子支撑着一根横梁的结构。横梁之上，相继依次排列着单层或两三层用直立柱支撑的横木。层层垒高的同时，横木长度向上依次缩短，最上层也就是最短的横木上架设中柱，其上端由此构成三角形稳定结构的顶点。这就是建筑剖面图中所显示的形式。这样的一个单位称为一副“梁架”。梁架组对间隔排列，由从一个梁架立柱顶端延伸到相邻梁架的横梁或系梁连接组成的空间，称作“间”或“格”。

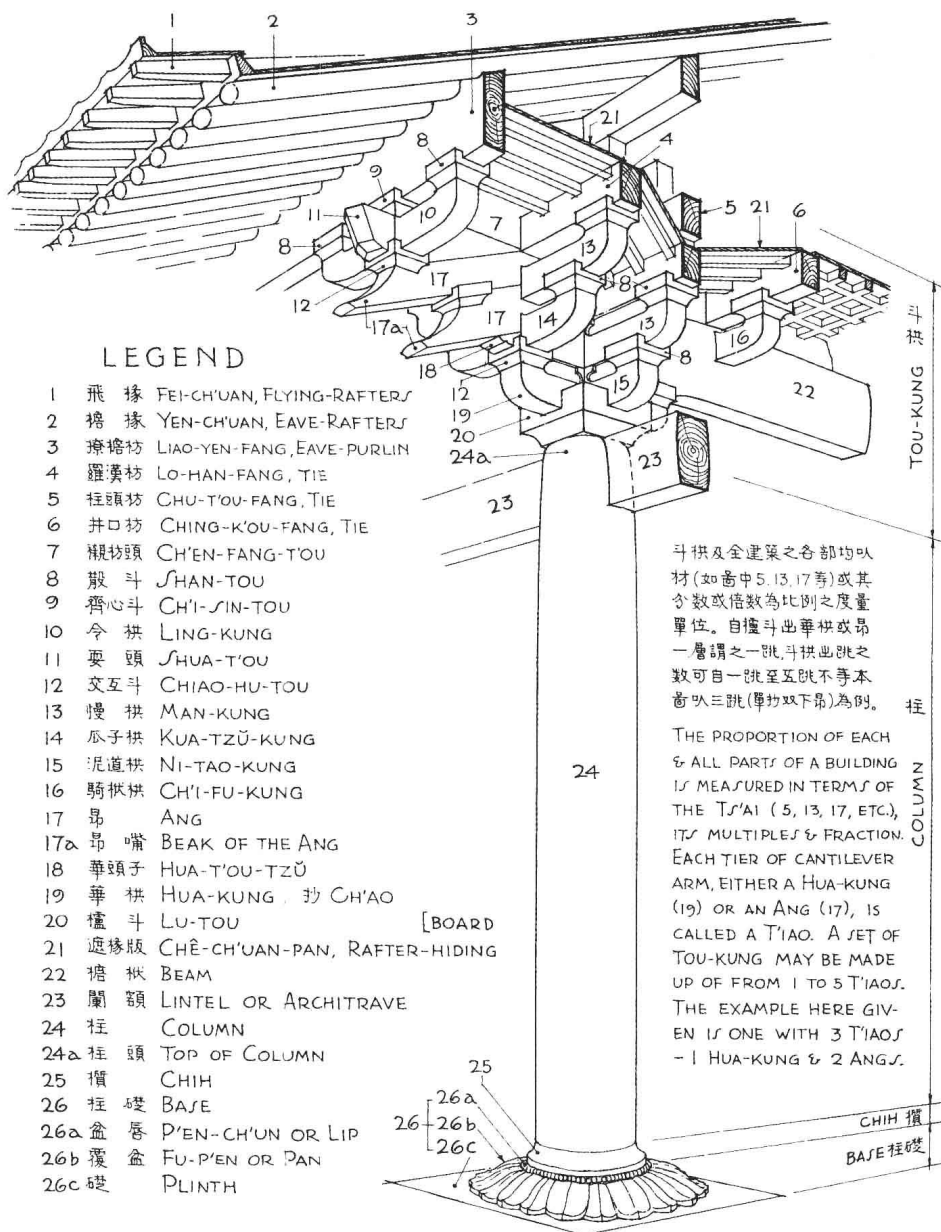
A building, usually oblong in shape, is constructed by a repetition of these jian and liangjia. On the ends of the successive tiers of beams are placed purlins on which, in turn, are placed rafters. The rafters are covered with sheathing and tiles to complete the roof. The spaces between every two posts can be filled with walls, windows, doors or light movable partitions, or as for a garden pavilion, left entirely open on all sides.

2. The Dougong

One particular feature in this structural frame deserves special attention. It is the dougong, employed generally in buildings of a monumental character. In order to counteract the shearing stress at the joints of vertical and horizontal members, particularly at the points where the beam is supported by the post, the architect of perhaps more than two thousand years ago invented the method of putting trapezoidal blocks and bow-shaped “arms” in tiers as corbels, and thus created a transitory element known as dougong. The term means simply block (dou) and “arm” (gong). The tiers of “arms,” when extending into the interior of the building, receive the ends of the principal beams, while the other half of the “arms,” extending outward, receive the overhanging eaves of the roof. The dougong was originally conceived as a structural element, but its decorative potentiality was soon discovered and exploited to the utmost degree. (Figure 3)

建筑通常呈矩形，由若干“间”和“梁架”组成。横木各层末端架设桁条，其上架椽。椽上覆盖木板，木板上铺置瓦片，构成屋顶。每两根立柱间为墙体、门窗或轻型活动隔扇，为花园亭台时四面则完全敞开。

2. 斗拱 这种框架结构的一个显著特点值得格外关注，这就是通常在大型建筑中采用的斗拱。为了平衡垂直和水平部件连接处的剪应力，尤其在立柱支撑横梁的部位，大约两千多年前的建筑师就想出了一个办法，将梯形的“斗”和弓形的“拱”作为枕梁托置于梁之间，因而创造出了斗拱这一过渡构件。这一名称包含了“斗”和“拱”两层意思。一层层的“拱”的一端延伸至建筑内部，以承托主梁末端；“拱”的另一端则向外延伸，以承托屋顶飞檐。最初，斗拱只被视为一个结构部件，但其装饰潜能很快被发现，并被发挥到极致。（图 3）



中國建築之“ORDER”·斗拱, 檐枋, 柱礎 THE CHINESE “ORDER”

3. Modular System

From a treatise on architecture, the *Ying-tsao-fa-shih*, first published in the year 1100 AD, it is known for certain that not later, and possibly even much earlier, than then, the dimension of one member of the dougong—the width of the gong or “arm”—was set as the module for determining the proportions of every structural member as well as that of the entire building. The module is classified into a certain number of “sizes” or “classes” for buildings of different sizes and functions. By employing this modular system in the process of designing, the architect’s work is much simplified and structural members could be prefabricated elsewhere and then assembled at the building site. Certainly, judging from the scientific standards of today, this rather rudimentary system could stand no comparison with the modular, prefabrication, standardization and typification of today. Nevertheless, it may justly be called an elementary prototype of the modern method.

From another point of view, the dougong, together with its column and eave, is in certain respects similar to the order in European classical architecture. The difference lies in the fact that the European order was employed essentially as an aesthetic consideration while the Chinese “order,” if it may be so called, has remained throughout structural in function and its aesthetic quality is integrally identified with the construction. The dougong was also employed as a purely decorative architectural treatment on masonry buildings, such as pagodas. The earliest example is found on some ashlar monumental piers, called qüe, of the second century AD.

4. The Roof

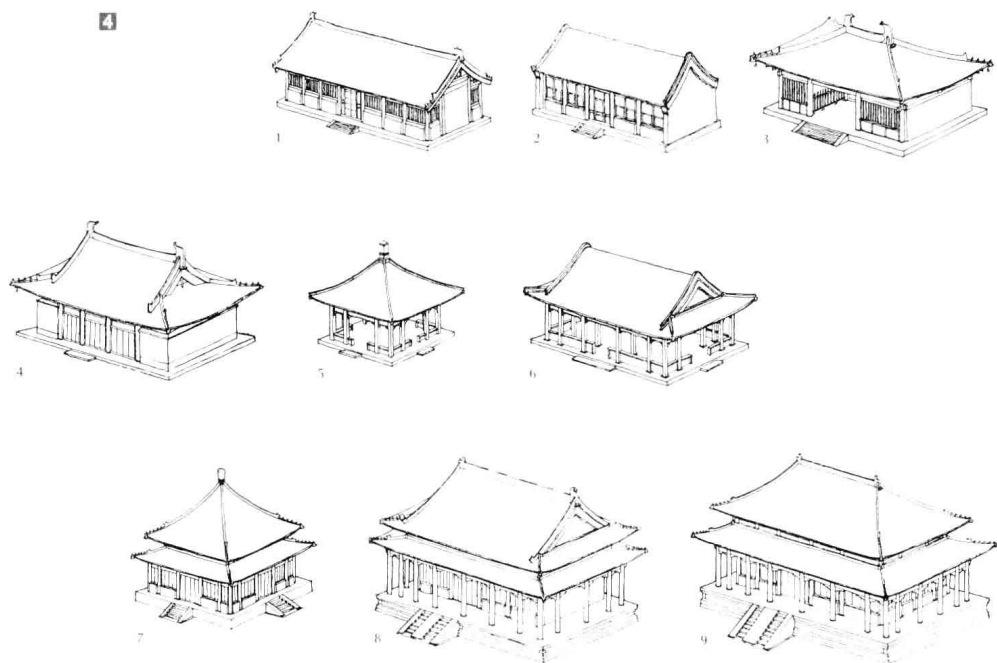
Another characteristic to be noticed is the important role played by the roof in Chinese architecture. From poems of as early as the eleventh century BC, there were already verses eulogizing the beauty of the roof. Wings of birds were used as metaphor for describing the out-stretching eaves. The typical Chinese roof is pitched and the surface is formed by a

slightly “sagged” plane. This effect is acquired by adjusting the lengths and elevation of each tier of beam of the liangjia. The ridges where two roof-planes meet are usually accentuated by raised moldings and decorated with ornaments of mythological animal motifs. Perhaps by the time not later than the eleventh century AD, colored glazed tiles, usually of yellow or green, were used on roofs. The glistening colors make the roof a glorious crowning feature of the building.

3. 模数制 从最初刊行于公元 1100 年的建筑专著《营造法式》中可以确切得知, 当时甚至是更早些时候, 就把斗拱的拱的宽度确定为决定每个结构部件乃至整个建筑比例的度量单位。这一度量单位根据建筑的不同尺寸和功能分为一定数量的“尺寸”或“级别”。这一模数体系在设计中的应用使建筑师的工作大为简化。一些建筑构件可以在别处预制, 然后在建筑工地组装。当然, 从今天的科学标准来看, 这一相当原始的建筑程式无法与今天的模件、预制、标准化和典型化相提并论。尽管如此, 将其称之为现代化建筑程式的基本原型还是当之无愧的。

从另一个角度看, 斗拱结构, 加之立柱和屋檐, 在某些方面类似于欧洲古典建筑中的“柱式”。不同之处在于, 欧洲的“柱式”的应用本质上出于审美的考虑, 而中国的“柱式”——如果可以这么表达的话——则自始至终承担着结构功能, 而其审美特性与建筑整体是融为一体的。斗拱在砖石建筑中也只是起着装饰性的作用, 比如砖石砌筑的宝塔。斗拱的这一功能, 已从公元 2 世纪遗留下来的、被称为“阙”的石碑基中找到了最早的例证。^[2]

4. 屋顶 另一个值得注意的特点是屋顶在中国建筑中扮演的重要角色。早在公元前 11 世纪的诗歌中, 就有了称颂屋顶之美的诗文, 用飞禽的双翼来比喻向外延展的屋檐。^[3] 典型的中国式屋顶, 是由稍微倾斜的斜坡平面层层组成的。这种效果是通过调整“梁架”每一层梁的长度和高度而形成的。屋顶坡面两两相交的屋脊, 通常通过加高的线脚予以强化, 并用神兽饰物点缀。或许在不晚于公元 11 世纪之时, 明黄色或碧绿色的琉璃彩瓦就已经常用于屋顶。熠熠生辉的色彩, 使得建筑物的屋顶如同灿烂的冠冕一般辉煌。



The architects of ancient China paid much attention to the depth of the overhang of the eave. Generally it is designed so that the entire south wall will be completely under the shadow of the eave during the latter part of June to assure maximum coolness in the summer and, while in the winter months, the sunlight may reach far into the back part of the room. (Figure 4)

中国古代的建筑师非常重视飞檐的进深。设计时通常要使6月的下半个月期间整面南墙都处于檐影遮蔽之下，以保证夏季最大限度的凉爽。而在冬季的岁月里，关于采光条件，又能做到让阳光可以一直照射到房屋后部。(图4)