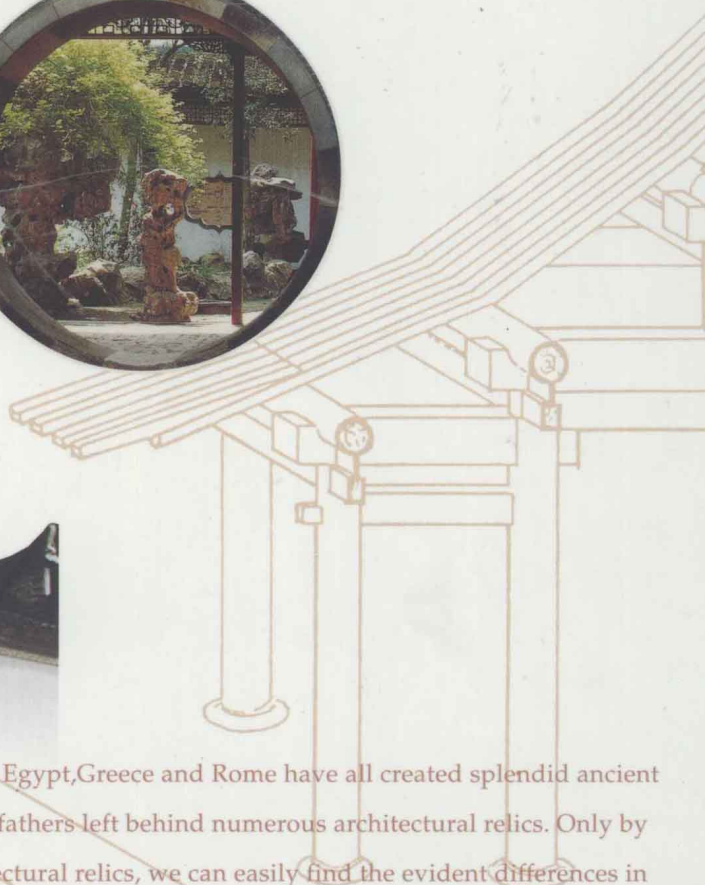


# Traditional Architectural Culture of China

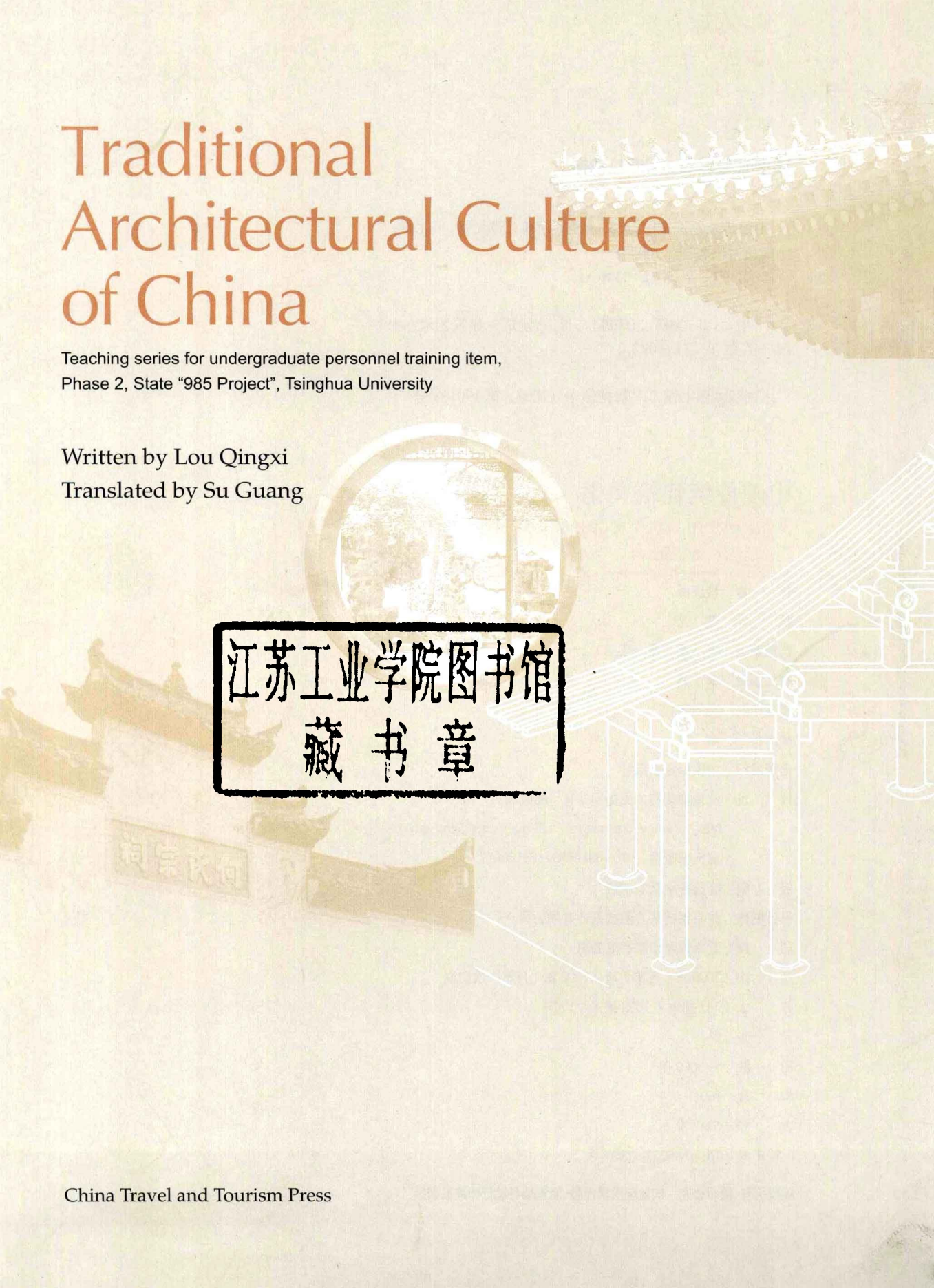
Teaching series for undergraduate personnel training item,  
Phase 2, State "985 Project", Tsinghua University

Written by Lou Qingxi  
Translated by Su Guang



In world history, China, Egypt, Greece and Rome have all created splendid ancient civilizations and their forefathers left behind numerous architectural relics. Only by glancing over these architectural relics, we can easily find the evident differences in their images between China in the east and Greece and Rome in the west.

# Traditional Architectural Culture of China

The background of the cover features a light beige and cream color palette. It includes faint, stylized illustrations of traditional Chinese architectural elements: a tiled roof with decorative finials in the upper right, a circular window or gate in the center, and a line-art drawing of a building's structural frame on the right side. A small, dark rectangular plaque with white Chinese characters is visible in the lower left area.

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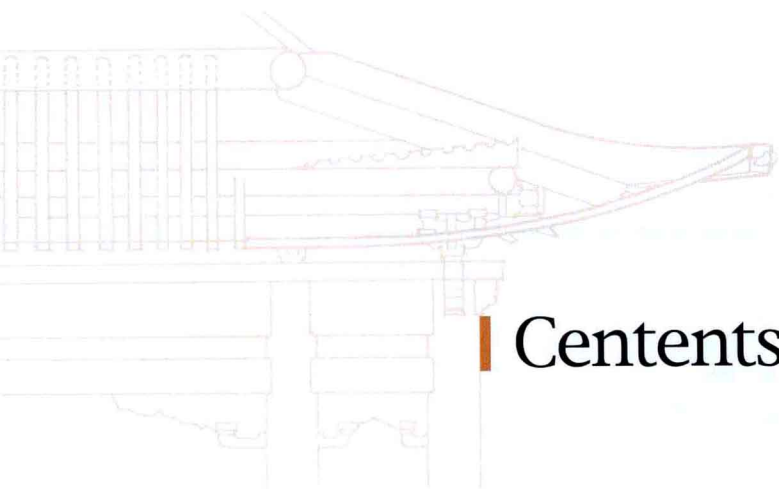
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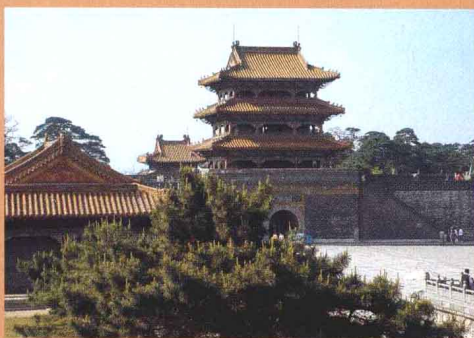


# Chapter 1

## Structure of Chinese Traditional Architecture

In world history, China, Egypt, Greece and Rome have all created splendid ancient civilizations and their forefathers left behind numerous architectural relics: emperors' palaces and tombs, temples and churches, gardens and official residences, monumental tablets and triumphant arches. These architectures, recorded with the politics and history, art and culture, science and technology of the particular countries and regions, are regarded as the symbols and landmarks of that region and time, both materially and spiritually. Only by glancing over these architectural relics, we can easily find the evident differences in their images between China in the east and Greece and Rome in the west.

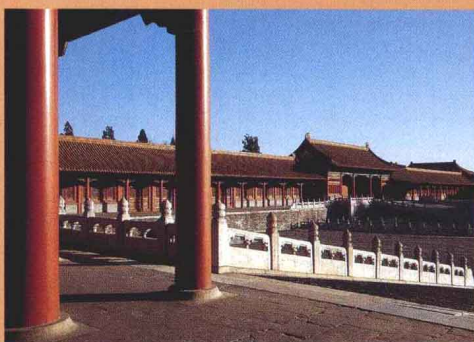




Fuling Mausoleum, Shenyang, Liaoning Province



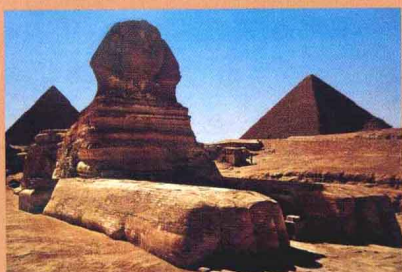
Venice Square, Italy



Gate of Supreme Harmony Square, Forbidden City, Beijing

Both China's ancient feudal emperors and Egyptian pharaohs invariably took pains in building their own tombs because they all believed in the immortality of human souls and sought to live eternally in the after-life world. The ancient Egyptian pharaohs built gigantic pyramids as their tombs by piling up big pieces of stone on the ground, while the Chinese emperors preferred to bury themselves into the underground palaces, and on top of them, groups of architectures similar to their imperial palaces were constructed on the ground. The famous Parthenon of the Athens Acropolis in ancient Greece was surrounded on all sides by colonnades of stone pillars enclosed in which was a standing statue of Athena of 12.8 meters high from base to top. In Jixian County of China's Tianjin City, there is a Buddhist temple called Dule Temple in which the main hall—the Goddess of Mercy Pavilion is a single story but double-eave structure built with timber which contains a 16 meter statue of the goddess. In the ancient city of Rome, there were many squares surrounded by the city hall, temples and shops, and in the squares, there stood the monumental pillars and obelisks, all of which were built with stone materials. What people saw





Giant Sphinx and Pyramids, Egypt



The Parthenon, Athens, Greece



Goddess of Mercy Pavilion, Dule Temple, Jixian County, Tianjin

and made contact with on the squares were stone pillars, stone terraces and stone steps, as well as all kinds of stone statues and stone carved decorations. The area inside and outside the Zhengyangmen Gate of the old Beijing was also a central area, where there were the gate-tower on top of the high platform, the official residences and shops on both sides of the streets as well as the archway standing on the street, all of which were built with timber.

From the comparisons of the buildings around the city squares, temples enshrined with gods and emperors' tombs, we may come to realize a fact that the reasons why there should be such a big difference in architectural images between the oriental China and the western civilized countries in ancient times, aside from the factors in geological environment, culture and custom, etc., the main reason is the difference in building materials and structural systems. Timber-frame structure was used in building houses in ancient China, while in the western countries, stone structure.







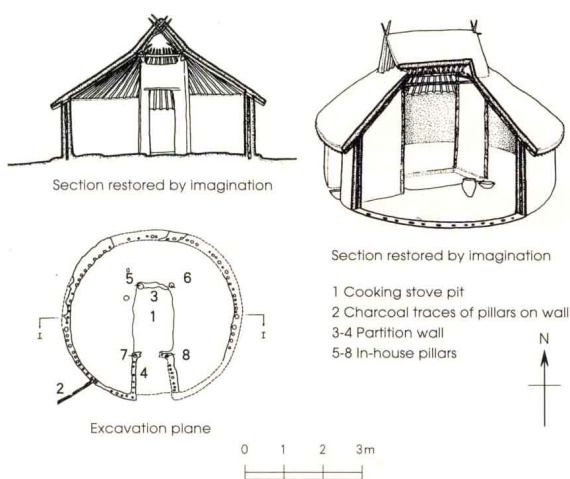
# Timber-frame Structure in Chinese Architecture

In Zhoukoudian of Beijing's Fangshan District, archaeologists discovered the mountain caves inhabited by the human beings in their early periods. Found in these caves were fossils of the Peking Men and the stone hammers and other stone tools they once used, which belonged to a time between 700 thousand to 200 thousand years from today. Such stone caves of the ancient human beings belonging to the Paleolithic Age have also been found in China's Yuanqu of Shanxi Province, Shaoguan of Guangdong Province and Changyang of Hubei Province, etc. These remains tell us that the ancients several hundred thousand years ago were not yet able to build houses for themselves, instead, they could only look for and choose suitable natural stone caves as their living quarters to keep themselves away from the attacks of the elements as well as wild animals.

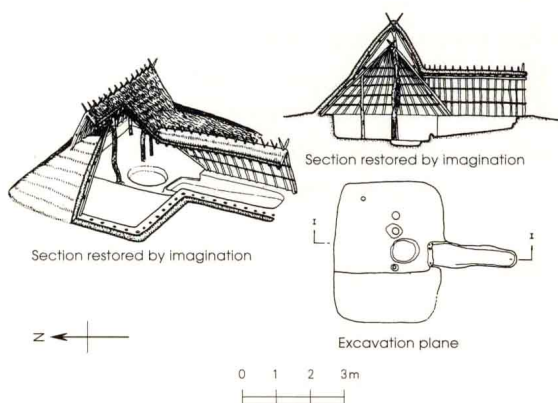
Along with the human progress and development in productive activities, the ancients began to be able to build houses for themselves. According to ancient documents and the excavation of historical remains, there were mainly two kinds of houses: one is to build the house on a tree by using tree branches just like a bird nest built with twigs, thus called "nest house". Such houses were suitable for the southern region of China where the weather was damp with lots of rains. The other was to dig into underground to make a house in order to keep away from wind and rain, which looked like a cave, thus called "cave house". Such caves were suitable for the northern regions of China—the loess plateau region, where the weather was arid with few rains.

In Banpo Village of Xi'an's suburban area, Shaanxi Province, remains of a tribe of the primitive clan society were excavated in 1954, which was built 6,000 years ago in the Neolithic Age. On the remains the area of which amounted to 50,000 square meters, 40 to 50 densely arranged houses were discovered. These houses fall into two types; one is in square shape, dug into the ground 50 to 80 centimeters deep in square form with a slant slope leading to the cave from the ground. On the ground, there are thin pillars lined closely together on four sides. In the middle of the shallow cave, there are four thicker wooden pillars. It is these four and the surrounding smaller pillars that jointly prop up the roof which is also formed by tree trunks and branches. The other type is in round shape, mostly built on ground, instead of digging into underground. On all sides are also small wooden pillars closely lined up, serving as the walls, while in the center are two to

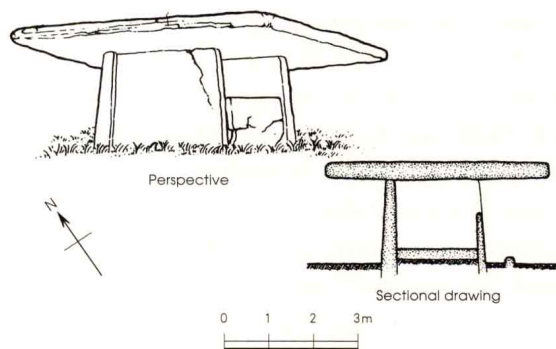




Round residence, Banpo Village, Xi'an, Shaanxi Province



Square residence, Banpo Village, Xi'an, Shaanxi Province



Big stone architecture, Haicheng, Liaoning Province

six big pillars which prop up the roof together with the surrounding smaller ones. These roofs, no matter whether for square or round houses, are all made into a ramp to help draining rain and snow. From the houses in Banpo Village remains and the other buildings, we get to know that the cave house of earlier human beings transformed gradually from deeper to shallow caves, and finally elevated to the ground, becoming houses entirely built on the ground.

In Shandong Province and the seaside area of Liaoning Province, stone sheds made of stone materials have also been discovered, among which the one in Haicheng of Liaoning is built entirely with large size stone slabs including the walls and the roof. It was made at the end of Neolithic Age, about 4,000 years from today. But such stone structures never developed in ancient China, perhaps because, as compared with stone materials, timber was both easier to collect and easier to process and fabricate. Therefore, the ancient Chinese chose timber as the building material, and through long time practice, gradually established a special system of timber-frame structure.

When we examine the remains of the early settlements at Banpo and other areas, we can see that they are usually situated on the terraces of both sides of rivers. The Banpo Village is on the terrace of the east shore

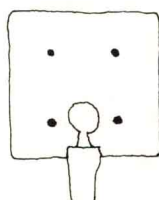
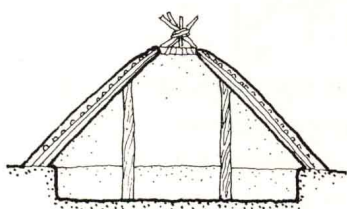
of the Wen River, the residences of which are built on a higher land close to the river, the choice of the natural environment by the ancients for the sake of their own existence. It is because, both their living and production are dependent on water, however, the houses and other structures are afraid of the humidity, and even worse, the floods, therefore, the best place for houses is the higher terrace near water. If there were no natural terrace land near by, the ancients would have to build an artificial terrace which can also play the role of resisting humidity and floods. Thus, such artificial terrace becomes the base of the house, an inseparable part of ancient construction. Now, the whole image of China's ancient architecture composed of the roof, the body and the terrace base has come into being. It's a pity that we can no longer see the whole image of the early stage constructions, but their remains on the ground. However, we can still see, indirectly, their patterns from early Chinese characters because the characters are "pictographs" created after the actual images of objects. For examples, the ancient characters of 京(capital), 高(tall), 圉(lavatory), 贮(store) are all composed of three parts: Sloping roof, erect house body and terrace base, only the terrace is either solid, or hollow formed by timber-frame.



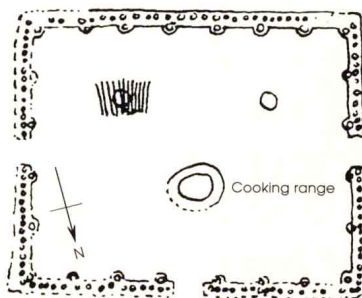
Ancient inscriptions on oracle bones concerning architecture

Among the three parts, the house body is by far the major one, for it provides living space. The house bodies of Banpo Village are all made by the surrounding walls under the roof, no matter for the square or round houses. Inside the house body, propping up the roof are several pillars whose arrangement are not made to a set rule, which indicates that there are not yet a set rule to the roof structure. In Dadiwan of Tai'an, Gansu Province, remains of a house have been excavated, belonging to the late period of Neolithic Age, some 4,000 years ago. It is in rectangular shape, with walls on four sides made up of little pillars lined together just like that in Banpo, and in addition, there is a row of well-ordered pillars clinging to the inner side of the walls. All these pillars are corresponding to each other in all directions, and together with the two standing pillars in the middle, a net of them is formed which prop up the roof above in common efforts. This fact shows that during this time, the standing pillars and the roof have formed a relatively fixed structure, while the walls only perform the role of fencing, instead of propping up the roof. In Fengchu Village, Qishan County, Baoji City, Shaanxi Province, the remains of a courtyard style building have been discovered, belonging to the Western Zhou period (11th century to 771B.C.). From it we

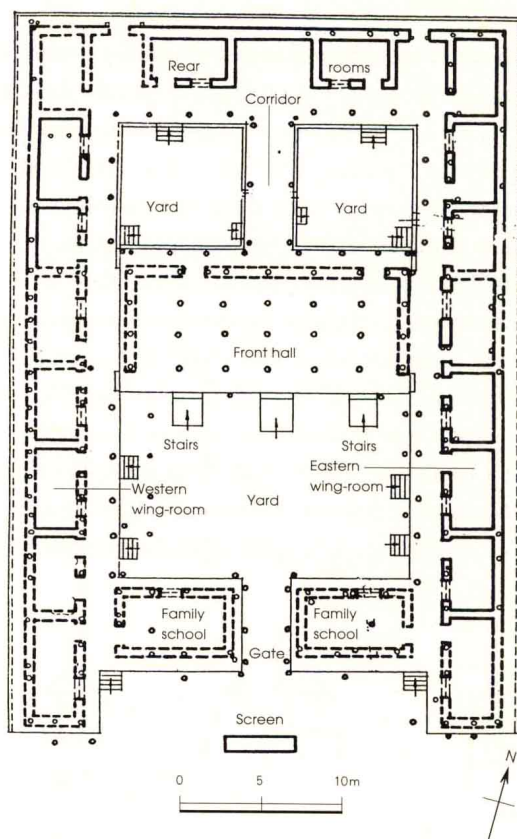




House remnants, Banpo Village, Xi'an, Shaanxi Province (one bay)



House remnants, Dadiwan of Tai'an, Gansu Province

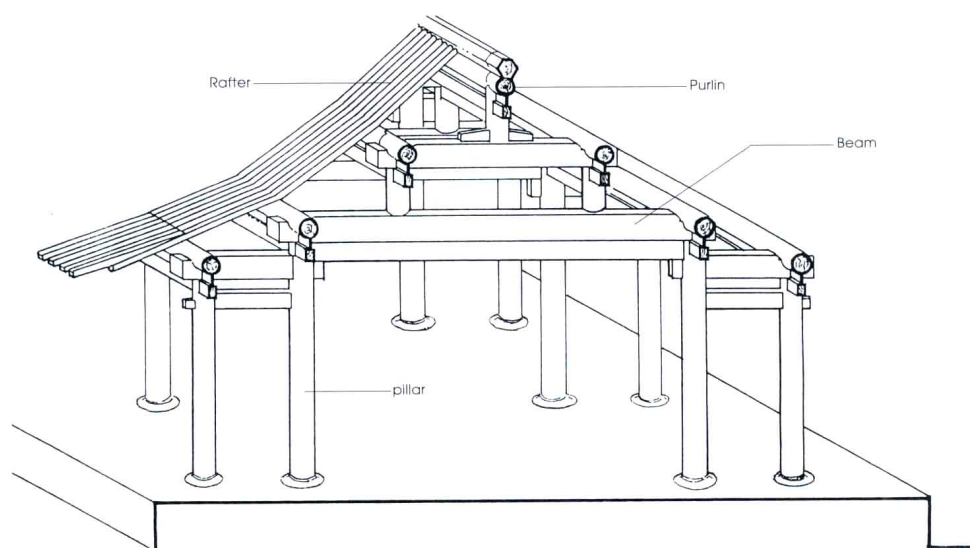


Architectural remnants, Fengchu Village of Qishan, Shaanxi Province

can see well-arranged pillar bases not only along the hall on the axis, but also the wing-rooms on the sides. Comparing to the house remains of Dadiwan, Gansu Province, this one is not only larger in scale, but the pillar bases are more regular and neat, corresponding to each other in all directions. This example testifies that the timber-frame structure in China's ancient architecture of this time has become a system with a set rule.

The remains of a large square-shaped house excavated at Banpo Village shows that in the middle of the house, there are four timber pillars propping up the roof, the area inside the four pillars we call it a "bay" which can be regarded as the basic unit of the house floor-space. In Banpo, the size of most of the half-cave houses is only a single bay. But in the courtyard style architecture in Fengchu Village, the size of houses is much larger than a bay. For example, the front hall, center of the courtyard, is six bays from left to right, three bays from front to rear, which is called, according to habit, six bays wide and three bays deep. For a single building, with more bays, the more space, naturally the bigger proportions. From this courtyard style house of the early stage, we come to know that in Chinese architecture, the bays are combined into a house, and the houses are combined into a courtyard style group of houses.

# Big Roof



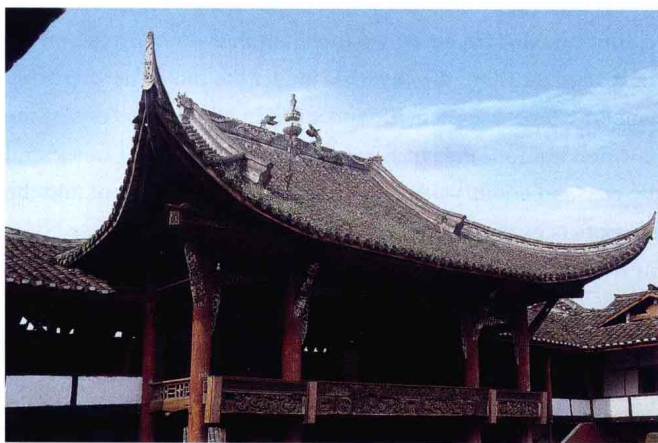
Sketch. Timber-frame structure of Chinese ancient architecture

Apart from the house body, the roof is also very important which protects the house from wind, rain and snow attacking from above. Since the roof is entirely a timber-frame structure except for the tiles on top, it is therefore big in size, and the more the bays, the bigger the roof. Therefore, big roof is the special feature of the image of Chinese ancient architecture. In many countries of the world, roofs made of timber are not uncommon, e.g. in European countries like France and Switzerland, etc. many houses in the city and countryside use timber-frame for the roof and the sizes are also big, the height of some roofs is even two to three times higher than the house body, but their images are totally different from the big roofs in China. Firstly, the eaves of a Chinese roof project out especially far from the walls on four sides, for only a big projection of eaves can protect the walls from the erosions of rain water. The walls of Chinese architectures, either built with clay in early stages, or bricks afterwards, together with the wooden doors and windows installed on them are all subject to rain water erosion. Secondly, the image of Chinese roofs has been transformed in molding.

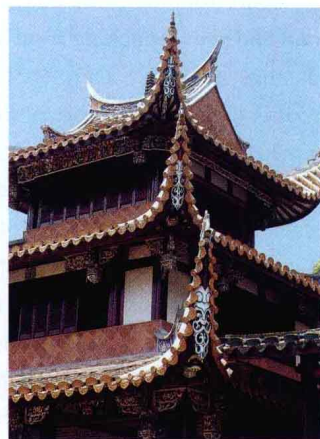


Such transformation, first of all, manifests in the creation of the overall images. We may find, after giving it only casual look, the roofs, ranging from emperors' palaces, halls, temples to the pavilions in gardens; from theatres and conference halls in the cities to Buddhist and family temples in the countryside, are curved on top, with the four corners of the roof raised upward, so that the eaves on four sides are in curved lines, flat in the middle part, but raised at the ends. As for some farmers' houses, even the ridge in the middle of the roof is also made into a curve line with both ends raised up. The reasons to the birth of such images are manifolds, among which is the reason of timber skeleton, e.g. the four corners of the roof being far from the walls, bigger pieces of timber are needed for support, which make the four corners higher. There are also reasons for functioning. The front margin of the top cover of the ancient horse chariot is purposefully raised in order to provide the rider a better view forward from within. Therefore, to make a curved roof with raised eaves would enable more light into the house and better view outside from inside. Of course, the main reason for adopting such an image is to make the house more appealing to the eye. Curved roof and curved eave lines with four raised roof corners, the house is like a bird, flying toward the clouds with head raised high. And the big house roof would seem light in weight and graceful, instead of being clumsy. Thus, the ancient people refer such house roofs to be like divine birds, flying high in full swings.

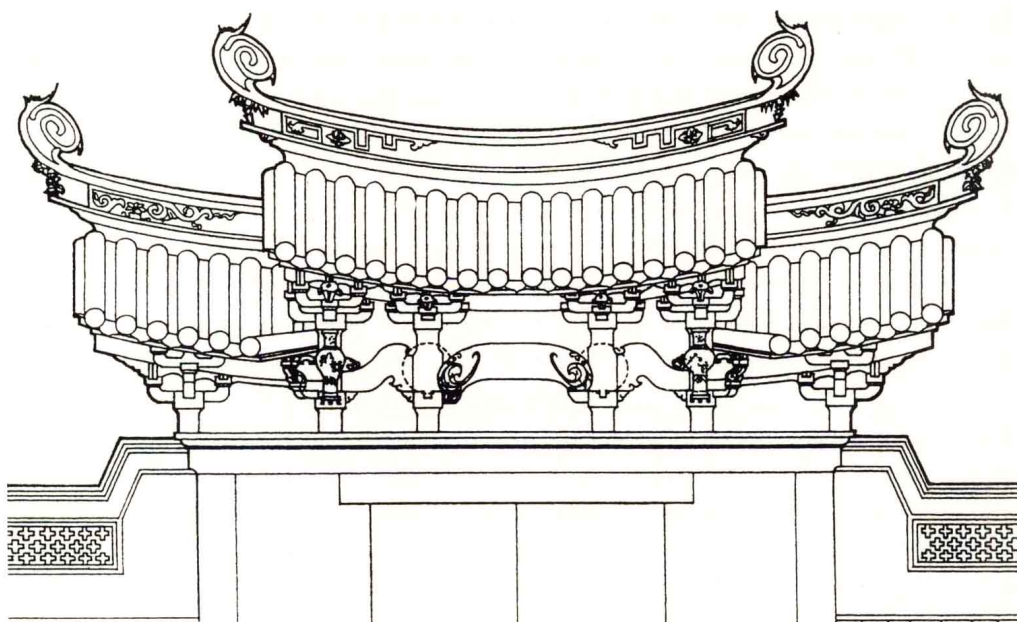
The transformation also manifests in the decoration of the parts of roof. When looking at a roof, one only sees a layer of tiles on the surface, but not the timber skeleton inside the roof, and on the surface, beside the tiles, there is the house ridge where the two slopes meet and the intersection where several ridges meet. The ancient artisans would make artistic transformations to those tiles, ridges and the intersections. The tiles, one line after another, run from the upper to lower reaches, and when they come to the eave edge, flowery decorations are added to them. The ridges are decorated either with flowery patterns formed by bricks and tiles, or images of various



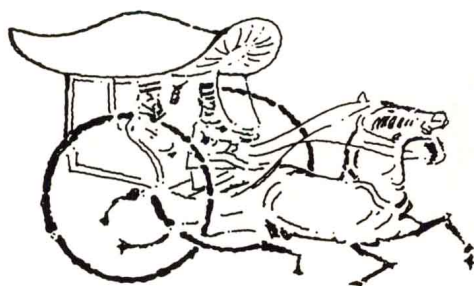
Roof of temple architecture in the countryside of Hejiang, Sichuan Province



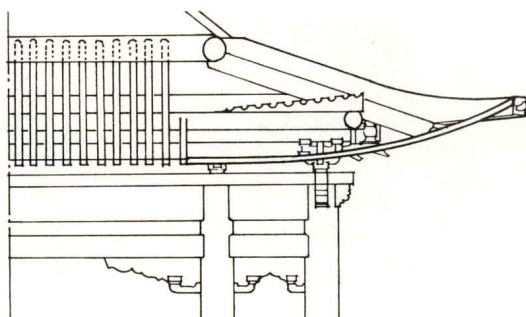
Raised eaves of roof of a temple in Fuzhou, Fujian Province



Curved house ridge, countryside residence, Zhejiang Province



Sketch. Ancient horse chariot



Elevation. Protruding eave of a roof

kinds of animals and plants. And the intersections on the roof can be transformed into the images of dragon, phoenix or pagoda, etc. Originally, these are integral parts of the roof structure, and after going through artistic transformation, they have become the objects of decorations. These decorations are not only beautiful in images, but also convey, through symbolization and analogy, certain cultural connotations, e.g. dragon represents the emperor and divinity, phoenix for affluence, tiger for divine power and strength, etc.

After such transformation and decoration from the overall image to component parts, a simple, large and clumsy roof has become lively, graceful and interesting. This is really a unique creation



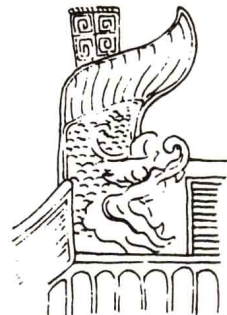
by the Chinese artisans. And furthermore, in the course of long-time practice, they have created several different types of roofs, among which there are mainly four types, namely: hip roof, gable and hip roof, overhanging gable roof and flush gable roof. Hip roof is a four-slope roof composed of five house ridges; gable and hip roof is an irregular four-slope roof composed of nine ridges; overhanging gable roof is a two-slope roof with the right and left ends projecting out of the walls; flush gable roof is a two-slope roof with the right and left roofs closely sticking to the walls. More variation types derive from these basic four, e.g. there are single and double eave roofs to the hip roof and gable and hip roof; gable and hip roof, overhanging gable roof and flush gable roof are divided into central and non-central ridge (round ridge roof) types. Besides, there are pyramidal roof with several ridges joining into one in the middle, half (pyramidal) and flat roofs. All these roofs use timber skeletons, the only difference lies in skeleton patterns which result in different kinds of roofs, being used on different buildings, big or small, and of different purposes. In the environment of ancient China where to rule the country by observing rites was practiced, and along with the images of architectures being endowed with the symbolic meaning of the ritual hierarchy, the roofs have also become the symbols to show the hierarchy. The roofs are graded, according to the sizes and differences in images, into the following: double-eave hip roof, double-eave gable and hip roof, single-eave hip roof, single-eave gable and hip roof, overhanging gable roof and flush gable roof, in the order of being high to low, big to small, important to less important.



On Dule Temple gate, Jixian, Tianjin



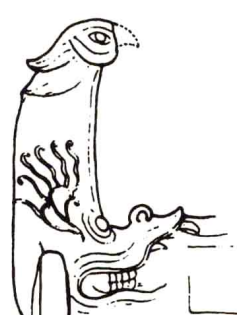
Wall ornamental piece on Lower  
Avatamsaka Temple, Datong, Shanxi



Chiwen (zoomorphic) picture  
of the Song painting



Incense-burning for high pavilion  
of the Song painting



Ornamental piece on Sweet-Dew  
Nunnery, Taining