



首届亚洲文明国际学术会议论文集

第三集

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图书在版编目 (CIP) 数据

亚洲文明 第3集/黄盛璋主编. - 合肥:安徽教育出版社,1995. 9 (1999. 9 重印)
ISBN 7-5336-1754-1

I. 亚··· Ⅱ. 黄··· Ⅲ. 亚洲 - 文化史 - 文集 Ⅳ. K303 - 53 中国版本图书馆 CIP 数据核字 (1999) 第 38144 号

责任编辑: 童本道

装帧设计:包云鸠

出版发行:安徽教育出版社(合肥市跃进路1号)

经 销:新华书店

排 版: 合肥南方激光照排部

印 刷:安徽新华印刷厂

开 本: 787×1092 1/16

印 张: 20

字 ~ 数:451 000

版 次: 1999年9月第2版 1999年9月第1次印刷

印 数: 1001-2000

定 价: 25.00元

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An Archaeological Probing into the Development and Formation of the Chinese Culture and Civilization

Shi Xingbang (Abstract)

In the present paper, on the basis of the research fruits of the Chinese ecological environment, pre-historic archaeology and anthropology, some problems in relation to the development and formation of the Chinese culture and civilization are explored.

- 1. The development of Chinese culture in accordance with the characteristics of a complicated ecological environment, a long history, a multitude of nationalities and the coming down in one continuous line, can be generalized into three systems; i.e, the millet crop farming culture with the Yellow River and loess region as its base; the paddy crop farming culture in the southeast coastal area and the collecting, hunting and animal husbandary culture of farming culture purlieus, the zigzag rule area from northeast to the southeast. These regions in history were the area of activities of the ancient tribes of Qiang, Rong, Yue, Pu, Liao and Altay.
- 2. The sequence and features of the cultural development: The Chinese culture and civilization gave rise and took form in the Twin Rivers (the Changjiang River and the Yellow River) valley of East Asia Continent. This historic characteristic of development adnated with the farming culture conditions, the stability of region of the Chinese history and culture and the inheritance of the times. With Central Plains culture as a surveyor's rod, the sequence is as follows:

1) The pre-historic age

- a. A transition from high level collecting and hunting culture towards farming culture (15, 000-10,000B.C.). The high level collecting and hunting culture with Xiachuan culture as the representative, for its various and complete collecting and hunting tools and stone making technology, they had provided the rise of farming with information and at the same time created the conditions for it.
 - b. The development and features of farming settlement culture

- (1) The pre-Yangshao culture age (10,000 8,000B.C.). The early stage of settlement culture, the clan lived together, its housing was simple and crude, arranged in scattered points, a loose clan community.
- (2)Ban Po age of the Yangshao culture (8,000 6,000B.C.). It was in the developing stage of the settlement culture. Families and family clans began to emerge, some clans or fellow clans managed the settlement jointly, the residence being arranged in the type of cohesion and a ring, strong in the action of blood relationship.
- (3) The Miaodigou age of the Yangshao culture $(6,000-5,500\mathrm{B.C.})$. It was a prosperous stage of the clan society, the size of the settlement was enlarged, there arose the central settlement, the large type district city with village town settlement as the centre was formed, in the later stage there arose the patriarchal clan and the activities of clan sacrifice.
- 2) The Proto-historic age. It was an age of the pregnancy and producing of civilization (58, 00-40,00B.C.). It was the legendary time of Chinese history, i.e, the times of Emperors Huangdi, Yao and Shun.
- a. The earlier stage, from the later stage of Yangshao to the earlier stage of Longshan, a time of transition from pregnancy of civilized factors towards the state. The ties of clan got loose. The pattern of settlement, from a cohesive type of environment extended to double roomed or multi-roomed house. The patriarchal clan arose and the ancestral temple and rituals began to germinate.
- b. The later stage. When the Longshan culture reached Liangzhu culture, the earlier state took form, there appeared the states standing in great numbers. Metallurgy, script emerged, small cities came into being and followed by the rising of ancestral temples and dwelling houses, the settlements were arranged in the pattern of courtyard and a structure of patriarchal type, they varied with the change of the social structure.
 - 3) The civilized age, the civilization of the three Dynasties. Xia, Shang, Zhou
- a. In the Yellow River valley, there first arose the unified Hua Xia Empire, its backgrounds are:
- (1) in the long-time development of the clan society, there was formed the main body, an enormous, solid, primitive Chinese cultural community Yangshao culture the prototype of Hua Xia culture (the earliest appearance of the emblem of dragon have condensed the formation and development of China's community).
- (2) The environmental factors of this cultural bulk formed were the favorable natural conditions of North China and the loess zone where the soil was fertile, fitting for developing, the terrain was flate and extensive with no natural hindrance suitable for the association and devel-

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opment of the people.

- b. The basic intension of the building-up of the three dynasties civilization is that it mingled the east witchcraft culture, worshipping heaven and sacrificing to the divinities with stone and jade as symbols with the west ritual and music culture respecting the Earth and sacrificing to the ancestors, with earth and wood as symbols and finally constituted the Hua Xia culture with unique features.
- c. The characteristics of the primitive form of Hua Xia culture are: the combination of clan power, divine power and imperial power. Religion, patriarchal clan system (organization) and political power were of the same structure with the same level. Monarchical power and the divine power were combined into one, the ancestral temple and palacial dwellings were both stressed, which made up the system of superstructure.
- d. The rise of the Chinese clan register and the process of assimilation: The founding, development and strengthening of the empires of the three Dynasties had fused the six surrounding tribes and assimilated them into the civilization of Hua Xia, for the remaining tribes, the south Baiyue clan system of the south geometric stamped pottery gradually moved to the southwest; the forbears of the northwest Qiang tribe (Siwa, Kayue culture) moved south to the transverse river valley zone, the south migration of these clan systems converged in the Erhai and Dianchi(lake), becoming the forefathers of the minority nationalities of the present day.
- 3. The formation and development of the Chinese civilization was mainly a cohesive, and steady development, it was at the same time a realistic development, in the course of development, the influence of the east seaside culture and the inland prairie culture of the surrounding tribes played important role in the promotion of it. Compared with the other nations of the world, it followed a common historical law in its development, however they had their own peculiarities: the West Asia began with farming settlement and spirit temple settlement and then developed into city civilization, whereas the Middle America with farming settlement sacrifice as centre developed to metropolis civilization.

Origin of Cultivated Plant In China And It's Primary Civilization of Agriculture

Li Fan Professor, Institute of Genetics Academia Sinica (Abstract)

China is situated in the eastern part of Asian Continent, with a vast territory, and the Huanghe River (Yellow River) and the Changjiang River (Yantze River) running through it. The Chinese climate is warm, soil is fertile, and plant resources are abundant. Under such a natural environment condition, the ancient Chinese people had collected, selected and bred multitudinous cultivars of cereal, vegetable, oil-bearing, fibre, and beverage crops and fruit tree. These were recorded in a large number of ancient Chinese literature, such as (describing phenological observations of every month of a year), Xia Xiao Zheng (夏 小 正) or tortoise shells of the Yin Dynasty (16th - 11th century B.C.), inscriptions on bones (甲 文) (殷 代) The Book of Songs, Er Ya, Shang Shu, The Book of Rites, The Book of Materia Medica (尚 书) (礼 记) (本 草 学) 经) (尔雅) (诗 as well as the agricultural literature through the ages. Through textual research, it was found that the originally planted cultivars in China mainly include millet, glutinous millet, rice, wheat, barley, sorghum, cabbage, leaf mustard, onion, garlic, chive, scallion, wild ricestem, soybean, tea-oil tree, rape, hemp, ramie, tea, peach, plum, apricot, orange and tangerine etc. And we have expounded and proved briefly these by the places of their origins, palaeoagricultural remains, historical records, diversification of plant variation and the distribution of wild species (see The Developmental History of the Cultivars of China). The archaeological date show that the agricultural cultivation and selection in China had already begun from the late Palaeolithic Period, i. e. the Mesolithic Period (corresponding to the Fu Xi Shen Nong Period of the ancient times of China). The remains of five cereals (rice, two kinds (神 农)

of millet, wheat and bean), fruits and vegetables, dating back to 4,000 - 9,000 years ago and recorded in the palaeoagricultural literature, are now shown through the unearthed carbonized seeds of agricultural plant which were preserved at the sites of Neolithic Age in China. The wild species having affinity with major cultivated plants are now widely distributed in the vast area in China, and they are of ancestral genera as proved by analyses. All of these is of great significance in demonstrating the origin and development history of Chinese cultivated plants. Because of the differentiation in geographical climate and the adaptive evolution, various kinds of cultivar are planted in tropical, subtropical, temperate and frigid zones in the vast area in China. Among them, some major cultivated plants had developed into two different directions for some 10,000-odd years of development. The Huanghe River Valley, i. e. the Loess Plateau, is the principal part for producing millet, glutinous millet, wheat, sorghum, hemp and bean, while the Changjiang River Valley, i.e. the Jianghan Plain, is the main part for growing thermophiles and hydrophiles, such as rice, rape, orange and tangerine. Furthermore, the culture of the Two River Valley in China with agriculture as its principal part, has been formed due to the continuous interchange of agricultural culture between Huanghe River and Changjiang River. So, it is believed that China is one of the greatest origins and variation centres of the world as far as the cultivated plants are concerned. And this centre with its new implication is different from the previous one.

From investigation on the various perpendicular climatic-zone of Qinghai-Tibetan Plateau, wild species of most cultivated plants were collected, and the stone-tools of Palaeolithic and Neolithic Age for production were unearthed. So we can also demonstrate that Qinghai-Tibetan Plateau and its marginal-zone is an important original centre of cultivated plants of China.

The Shang Culture's Southward and the Bronze Culture of Shang in the South

He Jiejun (Abstract)

The power of Shang has greatly gone down to the south from the Shang Age, the southerly expansionism of its power and culture influence can generally divided into three times, the east line, the middle line and the west line. The east line passed through the defence of Huaiyi district, influenced the south of AnHui, the town of Xing and the district of Tai Lake. The middle line, from Jianghan, Changjiang River to the Poyang Lake, the Gan River Plain and the westeast of the Dongting Lake. And the West Line came into Sichuan from the middle of Han or the west of Shanxi. This three lines all stored a large number of copper mineral. It could explain the southerly expansionism of Shang, its main goal was grabbing the copper which was plentiful stored in the south and the bronze were made from it. But only in the middle line, the power of Shang people was irresistible. They were not only founded a firmed base but also opened up a supply ling of copper and tin for the bronze. This base was the Panlong City. The supply range of the bronze resource was from the Panlong City to Poyang Lake, then to the Gan River Plain, Wu City, in fact, was a country which was founded for supplying the raw material - copper to Shang People. Xin'an Base is the grave of the supreme ruler. Though the implement unearthed from the Wu City and the Xin' an Base had strong character of itself, the main culture element belonged to Shang Culture. They were one of the styles of Shang Culture which plentiful influenced by present Yue Culture. The ancient copper minerals in the East Ridge, Ruichang, began to exploit early at Erligang Age. It was the earliest one in the south. It had gigantic scale and had greatly relations with the metallurgy of Shang Dynasty. Analyse the unearthed matter, from Ereligang Age of Shang to the end of West Shang, the master here was Shang People.

The Shang People gained plentiful copper resources from Mufu Mountain area, and developped a large scale of metallurgy of bronze. Within their influenced range then, the tin they

needed could only gained from the South Ridge, especially the Dupang Ridge, the Mengzhu Ridge, that is to say, southwest of Hunan and northeast of Guangxi. Therefore, the Shang People opened a way, from Panlong City along Changjiang River up to Dongting Lake. Then up to the Xiang River, to the Zi River, and then passed through the breach in the middle of Hunan and Guangxi, at last reached the north ridge. The large number of bronzes at latest Song Dynasty which unearthed from Hunan district along the lower reaches of Xiang River, the Yuan River, the Xian River to the middle and lower reaches of the Zi River and to Xin'an of Wuming in Guangxi all can prove the resistance of it.

Delta Civilization in the East of China

Li Hui Cao Liu Gao Huan Zhang Li

National Lab. of Resources and Environment Information System, C'AS, 100101 Beijing (Abstract)

This paper illustrates our views with the examples of the development of the Yellow river delta, the Yangtze delta and the Pearl river delta that in the 5,000 years period of Chinese ancient civilization, Chinese people have taken good use of the water and soil resources and cultivated the new territory, created an ancient civilization with harmonious human-nature relationship, kept alive the most largest population in the world and established great water conservancy projects, communication networks and metropolis groups. As one of the four original civilizations of the world, Chinese ancient civilization appeared approximately in the transitional period of the Stone Age to the Bronze Age. Early in the age of the Longshan Black-Pottery Culture, tools for agricultural productions took the proportion of 62.9% in the 44 pieces of unearthed artifacts and tools for fishing had the proportion of 22.85%. Studies on archaeology in the last several ten years reveals that rice planting is 7,000 years and wheat planting has a history of 5,000 years in the Yellow River basin. Cattles, sheeps, chickens and dogs were raised 8,000 years ago. Pigs became domestic animals 9,000 years ago. The four biggest rivers - the Yangtze River, the Huaihe River, the Yellow River and the Hanshui River, are the key areas of the development of Chinese ancient civilization and the growth of the population. Townbuilding and dyke-establishing are the most glorious achievements in the Chinese history. The Great Wall is known to the world for its scale and length. But it must be pointed out that dykes for rivers and lakes exceed the Great Wall either in length or in scale.

Studies on sedimentology, dating records and satellite images show that in the plains of the east China, the ancient coast line 7,000 years ago was near Bai Yangdian, which is 150 kilometers far to the west of the modern coast line. The ancient coast line of the East China Sea

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was in Qingpu which is 30 kilometers to the west of Shanghai. The ancient Guangzhou city was also a harbor near the Pearl River estuary.

The construction and the extention of the dykes in the middle and lower of the Yellow River and the Yangtze River, and the stream-diversion projects of the Pearl River have restricted migration of the river courses, and accelerated the deposit growth of the estuary deltas. Studies on sedimentology, dating records and satellite images show that the greater part of the new deltas was formed in the historical peroids. And it can be said that the process of the growth was carried on under the influences of man's activities. They are the results of man's civilization.

In the new territory, Chinese people have created regional developing models and good-cycled artificially ecological systems in the light of local conditions. In the Pearl River delta, the dyke-pond system was created here in the middle of 14th century. In 16th century it was fruit dyke-fish pond system and the mulberry dyke-fish pond became into fashion in 17th century. It then changed to sugarcane dyke in 1930s and in 1980s vegetable dyke and flower dyke appeared. This successful historical experience has already been spred to different areas (e.g. the middle reaches of the Xijiang River, the Northeast Plain, the North China Plain and the Yellow River delta, and the lower wetlands in Denmark, Italy and Brazil, etc.). Following the deposit growth of the estuary delta, people try hard to enclose tidal flats for cultivation and promote the great plans of artificial land - mading . In the south of the Yangtze delta , nearly 53.7% of the areas in the Tai Lake Plain are under the highest water level of the Lake. Houses are built near rivers; Stone bridges spread everywhere. Many famous ancient towns are located here. The Grand Canal and the irrigation system have provided a good environment for transportation and farming. The development of the Yellow River delta is been achieved with the Shengli Oilfield as the head of this region. By drawing the Yellow River water for irrigation to raise the productions of cotton and grain, the delta is marching towards the goal of oil productive base" and "crop base".

As the opening of the coastal cities in China, deltas of large rivers have become the pioneers of the reforms by virtue of their abundant resources and geographical advantages. In the Pearl River delta, a great amount of young industrial cities have appeared. Now there are 434 towns compared to 32 towns before. The non-agricultural population have rised up to 41 percent of the total population. Networks of navigation, highways and communication and investment environment have been improved greatly. The Yangtze delta takes only one percent of areas of the whole country while its social product and export takes 20 percent of the country. Country enterprises play an important role in the economic growth. With Pudong as the head of

the region and the Shanghai-Suzhou-Wuxi line as its axis, the economy of the delta will be promoted. It is planned to build a bridge over the Yangtze River in Jiangyin and railways along the river-side in order to connect the ports, factories along the river bank. The development of the Yellow River delta is fueled by the Shengli Oilfield. Water and electric power supply, roads and communication networks and airports and seaports are the precedences to be considered. Today, these deltas are full of vigor and vitality and are trying to find out a new oriental model of modern civilization.

The coordination of resources exploitation and environment protection is the main theme of the delta civilization in the future. In the last 25 years, the sea level in the Pearl River region has rised 75cm; Chuhe(滁河) floods occured in the Tai Lake basin and the lower Huaihe River in 1991 gives us a warning. The lack of water resource in the Yellow River region is obviously severer than the flooding. These are common problems attracting the world's attention. Great experiments have been in progress and historical inspirations make us thinking. The delta civilization in the east of China will be sure to make new contributions to the future of the world.

An Analysis and Prediction: The Change Tendency of Chinese Oasis Water Resources

Tang Qicheng Institute of Geography, Chinese Academy of Sciences (Abstract)

In arid land, water means oasis, without water, the land will become desert. The Silk Road of ancient China was linked with a series of oases. We can say that water is the life of oasis, the fallen and risen of oasis was decided by water.

Annual precipitation in water resources of arid regions is limited and usually lower than 200 mm. Recent researches revealed that 85% underground water in oasis areas is supplied by the seepage of surface water coming from mountainous regions. Therefore, the stream discharge coming from mountainous regions is the most important water resource to oasis. We set up a quantitative relationship between the area of oases and annual stream runoff which sustain the oasis. To analyse the tendency of the stream runoff when it runs off mountain, is very important for the survival and the development of oasis.

Ten representative hydrological stations at the mouthes of mountains have been set up and among them, 3 in Xinjiang, 3 in Hexi Corridor, 3 in Caidam Basin, and 1 is in inland drainage of Qinghai Lake.

Firstly, we used autoregressive model and considered the annual runoff as a random variable, through reiteration and t-examination, set up a regression model. At the same time, we also used a statistic method to analyse the transform rate and variation of annual runoff in high and dry years. Then, annual runoff at 10 stations from now to 2,000 A.D. was forecasted by means of two methods. And results shows the annual runoff in arid land has more changes, but has no tendency to become desert in general.

Because of green-house effection, the globe temperature increases and climate in physigeographical zones changes much, too. That the arid land become more dry or damp has a direct connection to the construction of oasis. So, we selected the streams in Tarim Basin to analyse the tendency of annual runoff.

We analysed by using the time series method connected variation coefficient of annual runoff and examined the result with Spearman rational expression test of significance. Resulted from analysis, the change tendency of annual runoff in Tarim Basin can be divided into following 3 types in recent years.

- 1. relatively steady or less changing (in Pisan He, Keriya He, etc.)
- 2. ascending (in Yarkant He, Tiznap He, etc.)
- 3. descending (in Kuqa He, Dina He, Kaidu He, etc.)

The above analysed and predicted shows that fluctuating as the amount of water resources is in Chinese oasis regions, every oasis will not become dry in recent years.

On the Origins and Migrations of the Tocharians

Xu Wenkan

The Unabridged Chinese Dictionary Compilation Office, Shanghai (Abstract)

Tocharian is the easternmost group of the Indo-European languages and contains two major dialects usually called A and B which are markedly different from one another. It has been named as Tocharian on the basis of the word twyry found in some Turkic uighur colophons of a Buddhist work, Maitrisimit (Maitreyasamitinātaka). It is possible to associate these languages with the Yüeh-Chieh(月氏) peoples in Chinese historical records. The Tocharian languages are not closely related to Indo-Iranian but show the characteristics that are being linked with European branches of the Indo-European family such as Balto-Slavic, Germanic and Italo-Celtic. Their separation from the common stock was very early and came in contacts with Non-Indo-European: Finno-Ugric, Turkic and Sino-Tibetan in Eurasia. This paper researches into the origins and migrations of the Tocharian-speaking peoples with the evidences of linguistics, philology, archaeology and anthropology especially making use the new archaeological materials of Sinkiang (Chinese Turkestan). The author has pointed out that the Tocharians originated from somewhere in Eastern or Central Europe and were forced to trek a long way to take up their historical habitations in Tarim Basin.

The thesis contains five parts: I. Introduction: the designation-problem of the Tocharian languages. II. The relationships of Tocharian with other Indo-European languages. III. The homeland of the Tocharians and their movements. In this section, the author present the new theories on the Urheimat of Indo-Europeans (Marija Gimbutas, T. V. Gamkrelidze and V. V. Ivanov, Colin Renfrew, J. P. Mallory). IV. Review of two new ideas on the origin of the Proto-Tocharians: The opinion identifying the Tocharian-Yüeh-Chieh with Ch'i-Ch'ia culture(斉家文化) suggested by A. K. Narain and the Dravidian substratum in Tocharian proposed by C. A. Winters. V. Linguistic affinities between Chinese and Indo-European and the Nostratic Hypothesis.

An Interpretation of the So-Called TLV Pattern on Bronze Mirrors and the *Liubo*-Game Board and a Study of the Problems it Concerns

Huang Mao-lin (Abstract)

What does the so-called TLV pattern on ancient Chinese mirrors and the *liubo*-game board (六博局) mean? It has been an unfathomable enigma all along in world academic circles, though various interpretations were put forward by scholars of many countries in the last nearly one century. In the present paper, the author gives it a paleographic interpretation, expounds its relation with draughts man-moving, and, finally, researches into its origin. The main points can be stated as follows:

- 1) The *liubo* board is also called the drawing of 「's (*hua* 「, 画「). The "「" was a paleoglyph equivalent to the character "曲" (*qü*, square). *Hua* 「 means drawing three forms of "「", i.e. 「(L),「(V) and T (the combination of ¬and ¬), and the paleoglyph "局" for the character "局" (*jü*, game board) resembles the pattern of a *liubo* board: both are composed of a "¬", a "「", and a "¬" with a "□" in the centre. There are two "¬'s" in this pattern, one of them must have represented "T", which verifies that "T" was also a variant of "¬". Thus the characters "局" and "曲" are close to each other in pronunciation and connected with each other in meaning, and why the *liubo* board where ¬'s were drawn was called *jü* (局) is now explained paleographically in all graphic, phonetic and semantic aspects.
- 2) The *liubo* board is also called the squared lines (曲道) for it bears four \(\text{'s}\), four \(\text{'s}\) and four T's, i. e. 12 TLV's. There 12 squared lines show the positions where the 12 draughtsmen can be put and stopped as well as the directions and ways by which they can be moved \(-\text{\cappa}\)'s mean turning to right; T's either to left or right; and \(\text{'s}\) occur at the four corners and mean turning to either of the two related sides. This character of T's and \(\text{'s}\) often caused arguments, even bitter quarrels, in *liubo* games, which affirms again the relationship of the TLV pattern with draughtsman-moving.