

# **A New Attempt of Combining Historical Time and Geographic Space Image**

## **—The Creative Design of Atlas of Chinese Historical Civilization**

**Mr. Huang Rentao    Ms. Xu Bing**

Wuhan University  
P.R.China

China is an age-old civilized country boasting of a history of 5000 years and splendid culture. Substantive historical materials and recordation such as works and researches made by historians and geographers in past dynasties had been accumulated in this age-old state. The historical research accounts the environmental and social evolvement in the long process of history with study of time as the main way while study of space as subsidiary way. The geographic research analyzes the rules of spatial distribution with study of space as main way and study of time as subsidiary way. The best way to combine the time and space studies is mapping history. The Atlas of Chinese Historical Civilization is no other than one of the best achievements on accounting China's historical culture arising and developing over past several thousands of years by means of mapping.

The Atlas of Chinese Historical Civilization is a mapping masterpiece integrating science, knowledge, practibility and artistry. The original maps of many drawings are following the viewpoints and cartographies of authoritative works so as to be greatly benefited. It is to dig out the contents of all the history from various angles and lays. The contents include the nature and humanities of various feudal dynasties of China. Every map in the atlas adopts discreet research results of contemporary China's scholars, and is compiled into this magnum opus by collecting different materials. The aim of compiling this Atlas of Chinese Historical Civilization is to account Chinese history and civilization in the form of concise and vivid maps with writing dissertation, photos and diagrams as complements, to display it to the society to be read and accepted by the general public and transfer it into a social spirit treasure. The atlas is a popular literary and historical reading not only intended for the general Chinese citizen, but intended to introduce Chinese historical and cultural development to people of other nations.

### **1. It takes change as the main clue and is one of the most informative historical atlases with the most range of contents.**

The atlas takes "change" as the main clue, which goes through its whole process. The "change" includes such aspects as nature and humanities. The natural change

takes the order from cause to effect. It starts from climate and concerns various aspects such as hydrology, vegetation, animals and deserts, etc. The change of humanities takes time as order and presents territory, administrative regions, population and its movement, moves of ancient capitals, formation of various villages and cultural areas. As for the change of climate, it combines the temperature changes in China from 3000 BC to 1950 AD with the change of height of snow line in Norway during the same time, and finds that the rules of both changes basically coincide with each other. Similarly, it finds that the rule of temperature change in China from 300 AD to 1910 AD tallies with the rule of extension and shrinkage of icecap in Greenland during the same term. The highest average annual temperature before Christ is about 3.5°C higher than today, it had dropped rapidly since 1000-500 BC, in 0 AD the temperature equals to that in the present day. Since then the temperature descended continuously and reached to the rock bottom in 1700AD, which is over 2°C lower than the average temperature nowadays. The temperature started to rise since 1700AD and equaled to the present average temperature by 1950AD. These rules of change are confirmed by the southward move of the planting areas of bamboo forests the representative plant and tropical plants such as nanmao, litchi and gomutl palm etc. The ranges of the southward move are mostly about 5°-7° (i.e. move southward about 560-780 km). Take animal distribution as example, from 5000 BC to 900 BC, Asia elephants was distributed widely in southeast China, over one third of Chinese territory. The northmost border of its distribution area had reached the vicinity of Beijing, in the area of Luanxian County, Fengrun, Jixian and Shunyi. Since then it gradually moved southward. By 1050 AD it had arrived middle reaches of Yangtze River. Now Asia elephants only distribute in small amount in the western boundary of Yunnan Province. In history, peacocks had once occupied vast areas of Sichuan Province, Hubei and Hunan Provinces in middle reaches of Yangtze River, later they are only recorded in literatures to exit in Guangxi Province, south of Guangdong Province and west of Yunnan Province. Now peacocks only distribute in west of Yunnan Province. The northmost border of discovered existence sites of pandas is Zhoukoudian, southwest of Beijing City. There is literatures record its existence in middle reaches of Yantze River and Han River valley. Now its distribution area has moved westward to the region of Qinling Mountains and Qionglai Mountains. In pre-Qin period, Yunmengze Lake once covered area of 900 square li in the west of Jianghan Plain, and was jointly affected by climate, landform, hydrology and human activities; Yunmengze Lake only remained area of 300-400 square li in the Wei, Jin, and Southern and Northern Dynasties period. In Tang and Song Dynasties, Yunmengze Lake no longer existed and was replaced by star-studded small lakes. Besides well-known Yunmengze Lake, the changes of water system include: the 10 times of changes of the river course of Yellow River into the sea within hundred years, the formation and extension of

Yellow River delta-area, many times of change of the crooked ancient river course of lower Jingjiang River in the middle reaches of Yangtze River, the extension and shrinkage of Dongting Lake and Poyang Lake, the formation of Taihu Lake, an inland freshwater lake evolved from lagoon, the shrinkage of Qinghai Lake, the change of the inland Tarim River and the disappearance of ancient cities, the seacoasts extension caused by deposition of Liao River, Bohai Sea, seacoast of north of Jiangsu Province, west seacoast of Taiwan Province, etc, the change of Maowusu Desert, Ulanbuhe Desert and Tashilamagan Desert etc, and the disappearance of ancient cities. The natural change is ended by the frequency of floods and draughts occurred in different provinces of China from 0 AD to 1900AD, out of which it can be found how climate as the main factor has influenced human activities.

The humanity change starts from the change of territory. The atlas, which begins from the recorded territory of Qin Dynasty, records the changes of China's domain of main dynasties of Han, Tang, Song, Yuan, Ming, Qing. Similarly, the change of interior administrative regions also chiefly represents the above-mentioned main dynasties. It accounts the changes of number and governed area of administrative regions from the Jun and Xian system in Qin and Han dynasties, to Dao and Lu system in Tang and Song dynasties, and to the Provincial System in Yuan, Ming, and Qing dynasties. The middle and lower reaches of Yellow River was the cradle and center of Chinese ancient dynasties in Central Plains where there was densely population in Qin and Han dynasties. However, by then the vast areas from south of Yellow River, Yangtze River valley, to the coastal areas in the southeast of China were still densely wooded, frequented by wild animals and sparsely inhabited. There were a few Juns and Xians established in this vast land. Along with the continuous southward movement of people and land exploitation since Tang Dynasty, its economy had developed gradually. More and more provinces had been established in the region, and the area of province became smaller and smaller. These represent the general trend of continuous movement from north to south of people of Han nationality. The 5 large-scale movements of Han nationality in Central Plains represented by Hakka people have reflected the trend to certain extent. The Map of the Number Change of Population in China explains the increase process of China's population from the change of quantity. The Map of Moves of Population Focus in China illustrates in a whole the movement of focus caused by the movement of people from the Western Han Dynasty, via Eastern Han Dynasty, to Jin, Sui, Tang, Song, Yuan, Ming, Qing Dynasties and the Republic of China. The rule governing the focus movement is that the fluctuation in north and south is great, and fluctuation in west and east is little, which explicates wholly that the population of China moved greatly at direction of north-south and little at direction of east-west. The reasons why large-scale

movements occurred are the escape of chaos caused by wars, development of southern areas and the invasion of alien races (especially the invasion of Mongolian and the establishment of Yuan Dynasty) as well as northward move of reigning center (after Ming Dynasty) and the increase of west population resulted from the favorable policies to western minorities. The Isoline Map of Famous Historical Personage in China explains from another angle the relationship of the movement of people and the development of culture, which indicates the process of the movement of seat of famous historical personage from the middle and lower reaches of Yellow River within Henan and Shandong Provinces to completely gathering in the coastal areas of Jiangsu and Zhejiang Provinces. The Map of the Movement of China's Ancient Capitals in Past Dynasties exhibits the process of establishment and movement of seven major Ancient Capitals of China, which explains from another angle the change of ruling center. The distribution of famous towers, bridges, temples, tombs and grottos of past dynasties in China explains the process of the humanity change and the deposit of culture by their traces and remains. Finally, the distribution of minorities, the formation of villages and cultural areas are all the final result of the process of humanity movement.

Besides displaying the overall humanity movement, the atlas emphasizes using dynasty as unit to express the territory, establishment of administrative regions, the density of population, mineral production, agriculture, handicraft industry and commerce, road transportation, distribution of famous personage, famous historical personage and great events, wars, etc. by respective dynasty. Here we cannot list one by one. Therefore, we can say the contents involved in this atlas are very rich and the information is very immense. It is incomparable with the same kind of readings published before.

## **2. The vivid and multiform graphical expressions best represent achievements of historical research.**

Historic atlases already published in China, including the authoritative "the Historic Atlas of China, mostly express territory of kingdoms, administrative regions, and areas at that time in history that have been investigated and certified by historians and geographers. It is the base for history and geography and contains very high academic value. However, from the viewpoint of expressing way of maps, it is a static, unitary, and common geographic map. It is too high to be popularized in common people. This atlas emphasizes the presentation of the historic progress and change. Therefore the manifold expressing ways in thematic maps must be adopted to make the research achievements of historians and geographers understood and interested by general public through these maps. The atlas has made some designing and compiling attempts and has reached better effect. For example, the chronology

of Chinese history as preface of atlas is like film evolving as soon as you open the atlas. Here it strictly follows the order of time and the length of “film”, illustrates the whole evolution of ancient history and contemporary history of China from Three Emperors and Five Sovereigns, through such dynasties as Xia, Shang, Zhou, Han, Tang, Song to the Republic of China. The map shows the length of ruling of each dynasty, its rise and decline, the autocephaly and fights among little kingdoms. It also exhibits to us the major events occurring in each dynasty. In order to show the changes of river course of Yellow River in its delta-areas for ten times over past one hundred years and the relationship with delta-areas of Yellow River. It uses method of generatrix and matching artfully various colors to display the ways by which course of Yellow River changes ten times at the entrance to sea, and extension and wandering of the Yellow River Delta-area again and again due to silting. The Movement Map of Ancient River Course and Oasis of Tarim Basin and Ancient Towns is a good footnote indicating the effects of the change of nature to human activities. The movement and increase of deserts in Tarim Basin cause rivers disappearing and swinging. The area of oasis has greatly been reduced because of setting-off of rivers. Many ancient towns (e.g. the well-known ancient Loulan City) in Han or pre-Han dynasties were gradually effloresced and worn down after the destruction of their original natural environments. The atlas displays 14 types of desert in Tarim Basin and finely indicates the ancient and present river courses, the ancient towns and modern oasis. The maps can show out the reason why some ancient towns disappeared through its strong expressive force. The Frequency Map of Floods and Draughts in China is very creative. The data covers the frequency of floods and draughts occurring in 24 provinces as present China's administrative regions every hundred years from 0 AD to 1900 AD. Using the principle of equivalence diagram, the map commendably shows the distribution of floods and draughts in different provinces during 1900 years. The changes of territory are displayed in other method. The main map, which gives a general impression of reigning scopes of different dynasties, is overlapping domains of many dynasties. Outside the main map, some appendix maps respectively overlap the territories of two consecutive dynasties, for instance, the territories of Qin and Han dynasties, Han and Tang, Tang and Song, Ming and Qing, which can rather concretely illustrates the expansion and decrease of territories of different dynasties. The Map of China's Population Change is also valuable. China's population had change from about 60 million in 2 AD in Western Han Dynasty to over 408 million in 1911AD, when Qing Dynasty perished, during which it experiences ups and downs four times. From the 303 annual censuses recorded by historians within 1900 years, we basically select one annual census by every 20 years, especially the statistic number of population of the two annual censuses at start and end of each dynasty. At last the number of population of 66 annual censuses are selected and showed in lists. The

census before Qing dynasty represents both number of households and population. However, in the feudal times, because people would evade taxes and escape, slaves in families of officials and wealthy and influential families were unregistered, and women were not registered in Song dynasty, the official censuses differed greatly from the nongovernmental actual censuses. The discrepancy in Song dynasty reached approximately one time. Therefore nongovernmental estimated number of population before Ming dynasty is showed in the map. The “Change of Population Focus” is a rather abstract term for general readers. To let the readers better understand the meanings of population focus and its change, we specially design a sketch map on which a weighbeam is designed to weigh the focus of China, it is indicated with characters to explain the concept. By combining diagrams and maps, the Map of Moves of Ancient Capitals uses dynamic lines to exhibit the complicated process of moves of seven major ancient capitals of Chinese dynasties. Two colors of dynamic lines are used to represent respectively the inter-dynasty move (blue line) and the move (red line) in one dynasty, which make the process of moves of ancient capitals rather transpicuous. Five Dynasties and Ten Kingdoms, which only lasted over 50 years, has rather short history in China. However, Later Liang Dynasty, the northern regime in China’s Central Area had experienced five times of changes during the period (called Five Dynasties). In the southern areas, 10 kingdoms had been established and perished, split and annexed. The complicated process is represented in the map that shows the rise and fall of Five Dynasties and Ten Kingdoms in the order of time. At the same time, taking the northern Five Dynasties as main body and using the form of 5 small maps, it represents the political and administrative patterns in the north and south during the period and combines the five small maps with background underlay, and explains simply the complicated historical process. The atlas is characterized by unique and vivid designing and expression of map through above-mentioned 11 examples.

### **3. Integration of historic spatial information opens a new way to analyze and investigate the history and geography.**

Spatial information such as territory, administration region, minerals, roads and water systems of each historic period indicates with each single map the distribution of independent spatial information. However, if integrating all these single maps in time order by means of computer, we will find that there are regularities governing the continuance and change of these phenomena (spatial information), which is sure to be a new historic and geographic analyzing methods to interpret the history and discovery the law of history.

The integration of historic spatial information in this atlas may fall into two stages, namely, the short one and the long one. Change of Dongting Lake, change of the

minerals production of two dynasties and change of the roads of two dynasties are examples of short stage. During the pre-Qin period, area of Dongting Lake was extremely less, but by the middle of the 18<sup>th</sup> Century it had been enlarged as great as over 6,000 km<sup>2</sup>. Over past one century the area atrophied to less than 3,000 km<sup>2</sup>. Its growth and decline can be seen obviously through the superposing every two lake topographic maps of seven periods. The minerals production map, through the integration of information about original mineral areas and existing mineral areas of two dynasties, shows the superposed mineral points, which existed in both dynasties and were rich and valuable. So were Roads. Through superposing information about roads of both dynasties, we can find those obsolete and new built roads due to various reasons such as landform, town and population; the superposed roads shall be most vital and valuable. The change of interior administrative region boundary of each dynasty is the example of long stage integration, which shows the integration of the boundaries of interior top-level administration regions of all the dynasties (including “Liao” in Song Dynasty) on the central plain. Since the system of many small-sized Juns and Xians were implemented in the Qin and Han Dynasties, they cannot be compared with the top-level administrative regions of later dynasties, and five dynasties of Tang, Song, Yuan, Ming and Qing of more than 1,300 years was included in this integration. Through integration we find that some provincial boundaries last for over 1,300 years, some last for over 1,000 years and some last over only 100 years. Generally speaking, southern boundaries sustained longer, the first reason for which is that since less wars occurred after Tang Dynasty, people immigrated to the south, economy developed, and there were rational ranges of administrative regions, stable political situation, the provincial boundaries in the south were steady. While since the north originally was the center of dynasties on the central plain, administrative regions had changed from small-sized to large-sized for many times; at the meantime since being invaded and governed by the northern ethnic minorities, administrative regions changed frequently. The second reason is that activating capacity of ancient people was limited, administrative regions took mountains and rivers as boundaries, the natural block greatly restrained people's activities, for example, mountains and rivers as above-mentioned boundaries were unable to change.

In addition, the above-mentioned integration and analysis of historic spatial information should be based on the fairly high accuracy of the map, this method, as a new way for historic and geographic analysis and research, shall be regarded.