

## AN ADVANCE IN CHINA'S URBAN CATOGRAPHY AS SHOWN BY THE PUBLICATION OF "ATLAS OF BEIJING"

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As early as three thousand years ago, there had been the "Map of Luoyang City"—a representative of China's ancient urban map, when King Zhao of the West Zhou had a survey performed prior to his moving the capital to Luoyang and a map drawn for the construction plans of the new city. This is the earliest city map in Chinese history. Three silk maps of West Han Dynasty (about 2100 years ago) were unearthed at Ma Wang Dui tomb in Changsha in 1973. One of them is a city map. This is China's earliest colored city map existing to date. In 1080 a map of Changan (Xi'an) was made and carved on stone in Song Dynasty. Although only a few parts of it still remain today, we can still find blocks with planimetrically, city walls and palaces with symbols in resemblance to their side views. But the "Map of Ping Jiang" stone-carved in 1229 was an even more splendid representative. It's 2 metres high and 1.5 metres wide. city walls, the inner city, official buildings inside the city were represented in traditional approach that the planimetric shapes are combined with perspective forms. Streets of primary and secondary classes were shown very clearly, and the orientations were accurate. It is of high historic value. A little advance had been made on topographic surveying and city mapping until the end of 19th century for 16 hundred years long in China, because of the feudal closed-door and conservative policy.

Since the establishment of Chinese first Capital Army Surveying Academy in 1985 (the 21st year of Emperor Guangxu of Qing Dynasty), conventional techniques have been constantly introduced into China from the West. The techniques of surveying and mapping have been progressing greatly. The urban catography starts to progress either. Together with

the compilation of county history books, smaller scale planimetric map has been compiled for each county town. Some of them were comparatively accurate, position and distance were kept rather accurately, and the symbolisation was also fixed gradually. Nevertheless, cities then were only centers of local politics and culture and were of small size, and there are not much development in exchange of commodities, so city maps were usually compiled for the use of the government and the military, not for the daily life of ordinary people. Even in the fifties and the early sixties of this century, after the founding of the People's Republic, some city maps which took city transportation maps and the dominant factor were published openly only in some big cities such as Beijing, Shanghai and Tianjin. Along with the development of tourism, city maps in single sheet began to be used in every tourist cities. At the end of the seventies, some big and medium-cities began compiling city planning atlases to meet the needs in city planning. The contents of these city maps have been enriched a lot, which means that Chinese urban thematic serial mapping has reached a new stage. The representative works of this time were the city planning atlases of Tianjin, Nanking, Wuhan and Guilin. Some big and medium comprehensive atlases have been published one after another, ever since, such as "Atlas of Shanghai City" (1984), "Atlas of Shenzhen City Natural Resources And Economic Development" (1985), "Atlas of Tianjin City Environment Quality Evaluation" (1986), "Atlas of Xi'an City" (1989) and "Atlas of Beijing City Territorial Resources" (1990) etc. These atlases contains all-round contents, most of geographic maps are exquisite and thematic maps are varied. "The Atlas of Cities in China" (published in 1994) compiled by the Ministry of construction, indicates the division of regions for different functions in over 400 cities, which shows a great advance in China urban cartography.

The "Atlas of Beijing" compiled by Beijing Academy of Surveying and Mapping and Wuhan Tech. Univ. of Surveying and Mapping ect. and published in 1994 is an excellent work. The government of Beijing City attached great importance to the atlas in preparatory stage in 1991. Mr. Chen Xi-tong, Mayor of Beijing, is the chairman of its compile committee, and some other important officials and scientists are vice-chairman or members

of the compile committee. Their participation ensured the raise of funds, the source of information and high quality.

The characteristics of the atlas are as follows:

**1. Intensive subjects and comprehensive contents.**

It first stresses the special position of Beijing—the capital of The People's Republic of China, then represents administrative division, population and people, urban construction, sciences, education, culture and medical works, tourism, society and economy, natural resources, historical changes and overall plan 10 groups in turn. It shows how a big modern Beijing city develops from an ancient city, especially, shows the recent magnificent success in city's development and construction by time and space.

Of which the historical maps are the enrichment and development of "The Historic Atlas of Beijing". They show the vicissitudes of Beijing's territory and palace in each feudal dynasty from the primitive society to 1949. They are the generalization and summation of the research of historic-geography in Beijing city and they are of great value in history.

In addition, there are some quite new subjects, such as religion, social development, architectural floors, urban roads and traffic, environmental protection, press and publication, protection of cultural relics, folkways and recreation, the best tourist attractions, goods transport, foreign economic relations and trade, finance and insurance, overall plan in city area and region. Some of them are very interesting to not only personnels in a specific field, but also general readers, because they are compiled in such atlas for the first time, and they are represented in a novel way. Thus this atlas is of great practical value.

**2. Abundant information and lively display.**

There are seventy thousand items of information which have been chosen from the original two hundred thousand items collected from more than one hundred departments. Approximate 200 maps, 160 charts, 370 pictures or image maps and seventy thousand writing are presented in 270 pages in a lively style. It is surely an encyclopedia about Beijing.

In this atlas, Maps about the city proper are arranged before the maps about the suburbs, general maps before thematic maps, social and

economic maps before physical maps. Thus the development of Beijing are stressed, that's why the traditional arrangement of maps are changed in the atlas. The stressed theme and the special arrangement raise the scientific and artistic value greatly.

### **3. Numerous Achievements and Advanced Technologies Applied.**

Some of the achievements in science and technology in China have been applied in the compilation of this atlas. E.g.

a. The Satellite Image Map of Beijing City and Its Suburban Areas is produced from the remotely sensed data of LANDSAT 5 of U.S.A. received by the China Remote Sensing Satellite Ground Station of Chinese Academy of Sciences. Various kinds of image processing techniques and digital mosaic have also been adopted. The resolving power of the TM images applies is 30 meters. They are composed of band 4, 3 and 2 and are assigned with the three prime colours red, green and blue respectively to form the false colour composite. The image is clear and exquisite so that it can be well referenced when applied in combination with topographic maps.

b. The Satellite Image Map of China comes out of received NOAA AVHRR data of U.S.A. plus a series of processing techniques and digital mosaic method. The selected bands to form the false colour composite are band 4, 2 and 1 and are assigned with the three prime colours red, green and blue. Therefore, the hues of the final image map are very similar to those of the natural landscapes of China. It has clearly represented the faces of relief, soils and vegetations of China and demonstrated new features of satellite image maps.

c. The research subjects on the social development are a new research field in China. The research achievements of the Chinese Academy of Social Sciences are utilized in the "Atlas of Beijing" for the first time and are illustrated with diagrams of novel styles into 39 indices which belong respectively to the five aspects of social structure, personal quality, economic benefit, living quality and public order. The arranged order of social development levels of 187 cities of district class are also represented.

d. The 3-D Spatial Image of Thermo-islands of Beijing is a directly perceivable image which is made through computer technology on the

basis of on-the-spot measured data. It has clearly reflected the differences of the temperature distribution of Beijing and illustrated the great influences of population and vegetation upon the city's temperature.

e.The statistic unit of the coverage rate of forested area of the city is 300 x 300 meters. Every difference of 10% in spatial distribution of the coverage rate of forested area of the city and its suburbs are expressed through computer technology.It is the finest map of the coverage of the city's vegetation so far compiled.

f.The,investigated achievements of geological tourism comes out from the investigation of the distribution of the different geological formations and landscapes in Beijing area and have displayed many newly found scenic spots for tourists.

g.The Map of Water Resources of the City is compiled on the basis of the achievements of the general investigation of the water resources by the Bureau of Water Conservancy of Beijing.It represents in detail not only the five main river basins of great Beijing and all the rivers and lakes in different sizes but also the areas of various basins and their sub-areas situated in mountain and plain areas respectively with diagrams. It reflects the features of basins of the upper, middle and lower reaches of various drainage systems and their influences on the city Beijing.

h.The investigation on the volume of traffic in the city selects and uses the on-the-spot measured results in rush hours from 8:30 to 9:30 in the morning of November 13,1992.It represents the traffic amount of the motor vehicles and non-motor vehicles on the main streets and intersections and the speeds of motor vehicles on the main streets. It is of great use for studying and improving the traffic line distribution of Beijing City and for drawing up regulations of traffic management.

i.The plan and design of the ancient city of Beijing,its construction level and artistic standard are unique in the world in the history of the capital construction of the feudal times both at home and abroad and are of the most brilliant models. There were four folds constructions in the old Beijing,namely,Palace City,Imperial City, Inner City

and Outer City, and there were totally more than 40 city gates. These city gates reflect the characteristic of grandness and magnificence which can seldom be seen in the faces of ancient cities all over the world. Due to the development of the city, the city gates, which are mostly broken and incomplete, have been gradually demolished. At present only about 10 are preserved, which locate at the Palace City, Imperial City and Inner City. In order to make it possible for the later generations to understand the features of these ancient constructs, the Beijing Institute of History has been engaged in the investigation and compiled the map of "The Ancient City Gates of Beijing". It illustrates the locations and the appearances of 23 main ancient city gates. The application of the above mentioned achievements of science and technology has greatly enhanced the scientific value of this atlas.

It is worth mentioning that the atlas is printed by four colours printing and reduced colour printing. Both the colour design and the printing quality have reached high levels.

The publication of the "Atlas of Beijing" with its high academic level will produce a great impact on the development of cartography in China, and it will be a milestone in the research and compilation of China's urban cartography.