

The physical geography background of the evolution of Chinese history and culture

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Abstract. As a fundamental backdrop to the evolution of historical culture, the topography, river systems, climate, and temperature of eastern Eurasia have consistently played an important role in the development of Chinese civilization, while also contributing to the formation of its distinctive national culture. At the same time, the natural environment itself has continually been transformed by human activities throughout this process. From this perspective, an examination of these factors and their respective roles is undoubtedly indispensable for gaining a deeper understanding of the underlying logic of the evolution of Chinese historical culture and of the long-term impact of human–nature interactions on the history of civilization.

Keywords: Chinese history and culture, historical physical geography of China, environmental history of China

1. Introduction

As the most representative form of civilization in East Asia, the evolution of Chinese historical culture is naturally inseparable from the geographical environment of eastern Eurasia. In fact, geographical environment is the most enduring and stable factor influencing the course of civilization in a given region, followed by socioeconomic conditions and cultural institutions, while specific political events rank last. Although political events are among the most dynamic factors in history, their influence is also among the most short-lived. Based on this understanding, scholars often regard political history as a field of short-term study, social, economic, and cultural history as one of medium-term study, and natural geography as one of long-term study. These constitute the three most fundamental dimensions that should be taken into consideration when examining either the historical development of a region or a particular historical event [1].

This paper therefore seeks to examine, from a *longue durée* perspective, the overall characteristics and changes of the natural geographical environment of this region, as well as their profound influence on the evolution of Chinese historical culture. The paper will primarily examine the relevant conditions of eastern Eurasia from the following perspectives: topography and river systems; climate, monsoons, and precipitation; and vegetation and temperature [2]. Particular attention will be paid to the fundamental characteristics of these natural geographical factors in the region and their influence on the evolution of Chinese historical culture. At the same time, the important reciprocal impact of human activities on natural geographical conditions should by no means be overlooked as an essential analytical perspective [3].

2. Topography and river systems in East Asia

The discussion will first focus on those natural geographical conditions that have undergone relatively little change over the course of civilizational history, followed by factors that are more prone to change. From this perspective, the topography and river systems of East Asia are the first elements to be considered.

The fundamental topographical characteristic of East Asia is that the land rises in the northwest and descends toward the southeast. Geographers generally divide the region into three major geographical steps, which can be clearly distinguished by three different colors on physical maps. Numerous mountain ranges, rivers, and deserts divide East Asia into a series of smaller geographical regions. Among these, the most prominent are the Tibetan Plateau, which separates East Asia from South Asia; the Taklimakan Desert, which separates East Asia from Central Asia; and the Qinling–Huaihe line, which traditionally serves as the geographical boundary between northern and southern China.

The conventional view holds that this topography constitutes a relatively closed geographical structure, and that such geographical isolation has consequently limited external influences. In fact, however, this interpretation captures only part of the picture. An equally important point is that, despite these geographical barriers, corridors of communication existed between the various regions of eastern Eurasia. These corridors provided the geographical foundation that enabled Chinese civilization to develop across such a vast territory while simultaneously maintaining both diversity and unity. Their historical significance was therefore particularly pronounced. At different times, they served as links for economic exchange, focal points of political conflict, and transportation hubs through which different ethnic groups moved back and forth, carrying diverse cultures with them. For example, the Hexi Corridor connected the Western Regions with North China, while the Han River linked the Guanzhong region with the middle reaches of the Yangtze River. Most prominent of all was the network of the "Silk Road" running north and south of the Tianshan Mountains, which connected East Asia with Central Asia. In fact, however, this region had already served as a channel for cultural exchange between the Central Plains and the Western Regions, as well as more distant areas, long before the Han dynasty [4].

Because of the aforementioned west-high/east-low topography, the rivers of eastern Asia generally originate in or around the Tibetan Plateau and flow in multiple directions. Several major rivers flowing eastward, together with their drainage basins, constituted the principal geographical setting in which Chinese civilization developed.

The Yellow River has come to be known as the "Mother River" only in relatively recent Chinese history. Given the extremely high sediment load of the Yellow River's main channel, its numerous tributaries, together with the development of well-digging and water-management technologies, may historically have played an even more important role in supporting irrigated agriculture. Moreover, because the Yellow River passes through the Loess Plateau before entering the plains, it carries enormous quantities of sediment downstream. This process has brought both fertile loess plains and frequent flooding to the lower reaches. Some scholars have even argued that the need to control the Yellow River was one of the important factors contributing to China's relatively early political unification. The Yangtze River experiences less soil erosion than the Yellow River, yet its enormous discharge and concentrated seasonal precipitation have caused no fewer devastating floods. At the same time, its basin enjoys a warm climate, extensive alluvial plains, and exceptional navigational capacity, making it the most important geographical stage for the later development of Chinese history. Compared with the Yellow and Yangtze Rivers, the Pearl River in southern China is relatively benign and has a smaller drainage basin, so its historical influence has been primarily regional. Nevertheless, its location at the southernmost edge of the Chinese mainland has given it a natural advantage in maritime

transportation. This advantage continued to exert a profound influence on China's economic and cultural development, particularly from the late Ming period onward and throughout the modern era.

In addition, the middle reaches of the Yellow River, as well as the Yangtze and Pearl Rivers, all became major transportation arteries linking eastern and western regions, and their historical significance was in no way inferior to that of overland routes. Their respective alluvial plains also supported large populations and consequently developed into some of the wealthiest regions in Chinese history. Meanwhile, several major north-south-flowing rivers in southwestern China, such as the Nu River and the Lancang River, became important corridors connecting China with Southeast and South Asia. Amid the high mountains and deep valleys along these waterways, distinctive cultures of numerous ethnic groups also emerged and developed.

3. Climate, monsoons, and precipitation

From the perspective of stability, although climate, monsoons, and precipitation also undergo changes across different historical periods, they remain relatively regular natural geographical factors within a given region. The following section therefore offers a brief assessment of several ways in which these factors have influenced human activities in the region.

East Asia has a complex and diverse range of climatic types, but it can broadly be divided into two major geographical zones: the monsoon region in the east and the region in the west, which is more strongly influenced by continental climatic conditions. In the eastern part of the region, where Chinese civilization first emerged, the predominant climates are temperate and subtropical monsoon climates, characterized by hot and rainy summers and cold, dry winters. Another important feature is that most precipitation is brought by the southeast monsoon when it encounters and interacts with low-pressure systems moving from west to east, with rainfall concentrated within only one or two months of the summer. This pattern makes the region highly susceptible to recurrent droughts and floods, compelling successive governments throughout Chinese history to regularly mobilize and redistribute resources from different parts of the country for emergency relief. This may have constituted one of the historical contexts in which a centralized political system developed [5]. The influence of periodic climatic variations on local agricultural activities and cycles of daily life, as well as on the collective psychology of different populations, should likewise not be underestimated.

Since precipitation in East Asia is primarily brought by the southeast monsoon, the climate naturally becomes increasingly arid toward the northwest. This can be clearly observed from maps showing the spatial distribution of precipitation. The areas traversed by the 400-mm precipitation isohyet constitute a transitional zone between agricultural and pastoral economies. Many of the historical interactions and conflicts between agricultural and pastoral populations in China unfolded around this boundary. The Great Wall, in turn, extended largely along this line determined by natural geographical conditions. Under the sustained pressure exerted by powerful rivals on either side, the political systems of the respective regimes continually underwent adjustment and adaptation. The resulting interaction between agricultural and pastoral societies thus constituted one of the central themes of Chinese history.

4. Vegetation and temperature

The next factors to be examined are those natural geographical conditions that are subject to relatively greater variation. Across different historical periods, changes in average temperature have often been among the factors exerting the most significant influence on the rise and decline of civilizations. The associated question of vegetation is, in fact, determined largely by temperature, with both regional and altitudinal variations playing a role. This is directly related to the ways in which local populations lived—for example, grasslands

gave rise to pastoral and nomadic ways of life, while forests and rivers supported hunting, fishing, and related subsistence practices. Given the limitations of space, this section focuses primarily on the impact of temperature on the history of Chinese civilization.

The first point to consider is the spatial variation in temperature. The most typical example is, of course, the north–south difference in the number of crop harvests possible within a year, which was closely associated with historical patterns of population distribution. The second is temporal variation, while annual fluctuations have already been discussed in the preceding section. From a long-term perspective, changes in temperature were an important factor contributing to conflicts between nomadic and agrarian populations, as exemplified by such periods as the Wei, Jin, and Northern and Southern Dynasties and the Ming and Qing dynasties, with the late Ming period being particularly representative [6]. Clearly, changes in temperature exerted a considerable influence on the course of civilization in China and across Eurasia as a whole. Nevertheless, it would be overly simplistic to establish a direct one-to-one correspondence between climatic change and particular historical developments. For example, the period from the Five Dynasties to the Song dynasty was, on the whole, a relatively warm period, with the notable exception of the transition between the Northern and Southern Song. The military weakness of the Northern Song and the eventual fall of the Southern Song therefore cannot be explained simply as the result of invasions by pastoral peoples triggered by a sudden decline in temperature. This may, in turn, suggest that the Central Plains dynasties were experiencing certain internal social problems during this period.

Furthermore, temperature change is perhaps the most global in scope among the factors discussed above. Because abrupt climatic changes are often global phenomena, many major events in human history exhibit a striking degree of temporal synchrony. Climate change therefore provides an important key to understanding the connections among the histories of the ancient world. For example, the global decline in temperature around 2200 BCE may have contributed simultaneously to periods of instability and even decline in such early civilizations as those of Egypt, Mesopotamia, the Harappan civilization, and the Liangzhu culture in what is now China. Its impact on the course of human history should therefore not be underestimated.

5. Conclusion

When it re-examines the geographical context in which Chinese culture emerged and developed, it can clearly recognize the significance of natural environmental factors to the course of history. In general, the topography, river systems, climate, temperature, and other natural geographical conditions of eastern Eurasia constituted the fundamental setting in which Chinese civilization took shape and developed. In explaining the long-term evolution of Chinese historical culture, it is therefore crucial to examine changes in these natural factors and their consequences.

It should likewise be emphasized that, when considering the influence of the natural environment on the development of Chinese civilization, it cannot overlook the profound transformations brought about by human activities. Among the most significant impacts of human activity are environmental degradation and its consequences. Since the historical period, population growth has been closely associated with the degradation of vegetation, particularly forests. Vast areas of farmland have replaced wilderness, while artificial structures have replaced natural ecosystems. This process has been particularly pronounced in densely populated areas within the river basins discussed above. Numerous cases demonstrate the interactive relationship between human societies and nature. Among the most famous are the decline of Loulan and the drying up of Lop Nur, as well as the persistent soil erosion in the Loess Plateau. Another example may be even more illustrative: the continuing deterioration of groundwater quality in Chang'an since the Han dynasty constituted one of the

important circumstances behind the eastward relocation of the national capital to Luoyang. Contemporary scholars have increasingly come to recognize that the environmental history of a civilization in a given region is not simply a matter of geographical conditions exerting a one-way influence on human activities; rather, it is a dynamic process of interaction between human societies and the natural environment. Only by understanding this reciprocal relationship can it perhaps fully appreciate the significance of maintaining a harmonious and well-ordered ecological environment for the long-term development of Chinese civilization in an age when modern science and technology are advancing at unprecedented speed and humanity's capacity to transform nature has increased dramatically.

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