

The Direction of Victory in Unification Wars and Differences of Geographical Environment in Ancient China

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Abstract: In the war of unifying southern China and northern China in ancient Chinese feudal dynasties, northern China's strength is often superior to that of the south. Based on the historical background of unification wars between southern China and northern China in ancient China, combined with the relevant research results, this paper primarily discusses differences in the natural geographical environment between southern China and northern China. Given the above, comparing the natural environment and combat conditions of the forces, this paper analyzes geographical elements of the northern army's constant victory and finds that climate, terrain, and the origin of warhorses have a significant impact on the outcome of the war. Under the influence of these geographical conditions, the main trend of Chinese history is that the northern ruling group fought southward and finally realized the unification of the dynasty.

1. Introduction

From the establishment of the Xia Dynasty to the overthrow of the Qing Dynasty for more than 3,000 years, China has had 12 large-scale unification wars, 11 of which ended in the victory of northern China. The Ming Dynasty which established from the south to the north has become an isolated example. Some scholars discussed the causes of the collapse of Chinese dynasties from the perspective of climate. For example, Zhu Kezhen is a pioneer in using historical documents to study ancient climate change in China. He made an in-depth exploration of Chinese climate change in recent 5000 years and established a geographical relationship model between climate and the rise and fall of dynasties (Qiu, 1990). Through the comparative analysis of war (Lai, 1995), social unrest (Dian 2005), and social revolution (Sigley, 2013), some scholars found that the number of wars was negatively correlated with temperature (Liu, 2016). Other scholars have studied the differences in strength between northern China and southern China from the political (Liu, 2007), economic (Swann, 1950), cultural (Wang, 2016) and military (Galvany, 2015). For example, Yates found the North-South strategic axis (Yates, 1988) from the historical evolution of the economic and political geographical pattern. Chen compared the economic basis, historical origin and political basis of the North-South nationalities in ancient China, and obtained the characteristics and laws of the North-South differences (Chegn, 2005). Gao studies the different ideologies of North and South based on economic gravity moved southward (Gao, 2010). However, there are few discussions on the relationship between the victory of northern China in the war of reunification and the Chinese geographical environment.

Based on a large number of historical documents and existing relevant research results, this paper selects the case of the victory of northern China over southern China in ancient Chinese unification wars, combined with the different analyses of the natural conditions between southern China and the north, makes a regular summary and cause analysis of this phenomenon, so as to explore the impact of geographical elements on the ancient South-North war. This research is of great significance to explore the war results of the Chinese cold weapon era and the natural environmental factors of dynasty change.

2. Research Methods

This article conducts an interdisciplinary analysis of historical events from the perspective of history and geography. It mainly uses the historical document method to determine the time-space scale. Then it analyzes the natural and strategic geographic factors in the northern and southern regions of ancient China through the comparative method. What's more, it selects the typical climate, terrain and the origin of military horses to explore the relationship between the results of the Civil War in ancient China and natural environmental factors. In addition, the article also uses geographic information systems to analyze the impact of climate, ecological zones and warhorses on war.

3. Results and Discussion

3.1 Impact of Climate on the Combat Effectiveness of Northern China and South Armies

3.2 Climate Change and Nomadic Southward Migration

Climate change is the driving force behind the southward migration of nomads. It can be seen from Table 1 that in the warm period, solid and unified dynasties emerged on the land of China. While in the Spring and Autumn Period, the Warring States period, the Three Kingdoms period, the end of the Yuan Dynasty and the end of the Ming Dynasty were cold periods, often with continuous wars. The cold period is consistent with the prevailing period of war and division, and it is also related to the time when ethnic minorities established the regime.

Due to the temperate continental climate of the Mongolian Plateau, the winter is cold and long, the summer is short, and the precipitation is low, so it is not suitable for large-scale farming. This caused that cattle and sheep were essential food sources and economic pillars. Therefore, humans were affected by the seasonal cold-warm and dry-wet conditions, forming a survival mode of living by the water, grass, and nomadic culture. However, as the primary food source of cattle and sheep, forage is particularly sensitive to severe cold during overwintering. Severe cold below - 20 °C can lead to a large number of their deaths, especially in areas with blizzards (Twerdoff, 1999). Therefore, according to geopolitical theory (Zhang, 2007), when encountering a frigid climate, ethnic minorities in the northern China fringe will be forced to move south to find a place suitable for survival and development.

Dynasty	Climatic conditions
Xia Western Zhou Dynasty (BC 2070-771)	Warm period
the Spring and Autumn Period - Warring States period (BC 770-221)	Cold period
Han Dynasty (BC 202-220)	Warm period
Three Kingdoms - Northern and Southern Dynasties (220-589)	Cold period
Tang Dynasty (618-907)	Warm period
Five Dynasties and Ten Kingdoms - yuan (907-1368)	Cold period
Ming Dynasty (1368-1644)	Warm period
Qing Dynasty (1644-1912)	Cold period

Table 1 Dynasty Replacement And Climate Change in Ancient China

Note: warm period means that the temperature is higher than the temperature average, and the cold period means that the temperature is lower than the temperature average. The data comes from the Journal of archaeology (Xin, 2010).

3.3 Sharpening the Combat Effectiveness of the Northern Region by the Southward Migration of Nomads

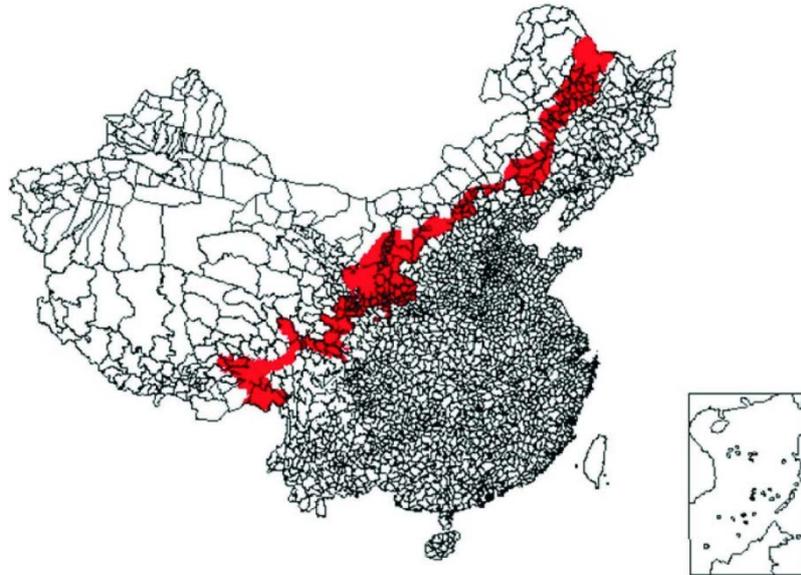


Fig.1 Chinese Agro-Pastoral Ecotone (Yang, 2004)

The southward migration of nomads affected the military strength of the northern army. On the one hand, the northern Han Army gradually took the initiative in the war with nomads. Living in the North China Plain, the Han people built the Great Wall since the Spring and Autumn Period and the Warring States period in order to resist ethnic minority's occupation of land. As shown in Figure 1, the trend of the great wall is similar to the axis of the Chinese agro-pastoral ecotone, which was tempered by the northern army in the war to defend their homeland. It has fostered the muscular physique and martial spirit of the northerners. The climate in southern China is warm and humid all-year-round, with dense rivers, which have caused difficulties for land transportation and storage. Therefore, the southern regime often had a powerful navy and a weak land force. At the same time, miasma, mosquitoes and diseases were also issues to be considered by the Southern Army. In addition, due to its location in the south, the threat of foreign aggression was relatively small, and the southern army had been lacking actual combat training for a long time. Hence, the decline of combat effectiveness was inevitable. Therefore, the northern army had a more robust military quality and military experience. The Jin border guards, who had fought with the Huns for a hundred years, finally destroyed the southern Wu state. The Sui Dynasty unified the sixteen states of ethnic minorities in the north and then destroyed the Chen state in the south. They were all affected by the climate.

On the other hand, the northern minorities directly participated in the southward migration. In genetics, intermarriage between ethnic minorities in northern China and Han people undoubtedly improved the northern army's population quality and genetic diversity, such as the reform of Emperor Xiaowen in the Northern Wei Dynasty (Heyer, 2009). Taking the Qing Dynasty and the Ming Dynasty as an example, natural disasters frequently occurred during the little ice age, and the production of agriculture and animal husbandry decreased. Hence the population was forced to migrate, which induced the change of political power and territory (Usta, 2017). When the climate was warm and suitable, ethnic groups had few worries about food and clothing. While suffering from a long-term cold climate, the pasture with a suitable climate had become an important factor in promoting the southward migration war. Throughout Chinese history, five ethnic minorities moved south led to the division of 16 countries. The construction of the Liao Dynasty in Khitay, the unification of East Asia by Mongolia, and the Ming Dynasty's extinction by Jurchens were all the nomadic southward migration influenced by climate change.

3.4 Climate Differences Affect Soldiers' Combat Effectiveness

Soldiers are the essential elements of the war. Rice is a critical food crop for southerners in the subtropical monsoon climate area. Although it is a high-yield crop, it leads to a relatively single food crop structure in the south. On the contrary, northerners living in temperate climate areas had a

variety of food crops. Wheat, millet, sorghum and other high protein foods are the staple food of northerners. Due to long-term differences in eating habits, northerners are relatively rough and tall, while southerners are relatively lean and slim (Lee, 1994). For people who eat rice for a long time, digestive enzymes in the body have inertia for digesting rice (Xiong, 2017). If the eating habits change suddenly, the vitality of the digestive system will decline, which is easily lead to flatulence and diarrhea. Even if the southern soldiers arrived in the north, it was challenging to adapt to the diet structure dominated by coarse grain. Consequently, their combat effectiveness decreased before the war, while the northern soldiers could quickly adapt to the refined diet in the south.

Northern China is dry and hot in summer and cold in winter, with less rainfall and more sunny days. Moreover, southern China is hot in summer and cool in winter, with sufficient rainfall and more cloudy and rainy days. Northern China has a significant annual temperature difference, slight rainfall, and long sunshine compared with southern China. Research shows that temperature, temperature difference, and sunshine are all environmental factors that lead to the northern Han nationality's height and body mass value being bigger than Southern Han nationality (Ruff, 1991). The high latitude climate gives the northerners the advantages of physique and strength, so the individual combat ability is more robust than the south.

After studying the development history of humankind for nearly 5000 years, British researchers found that high latitude countries have a cold climate and poor living conditions. So if local people want to survive and develop, they are likely to choose to obtain living resources through plundering, thus casting a brave and powerful national character (Makinen, 2010). In contrast, low latitude countries have a better living environment and many areas with rich products, so rulers are prone to the idea of shrink and appeasement. Climate affects the ideology of people and soldiers, and this spiritual trait can affect the future development of individuals and regions.

3.5 Strategic Significance of Terrain

3.6 Terrain and Culture

Terrain affects the unity and integration of regional culture. The northern region is dominated by plains and plateaus, with flat landforms facilitating economic and cultural exchanges. Under the centralized rule, it is easy to have unified characters and languages. The collision and blending of the Central Plains culture and the ideas of ethnic minorities significantly reduced the communication cost and improved the efficiency of information transmission. The regional cultural identity generated by information exchange strengthened the cohesion within the army. Obviously, it was instrumental in the unimpeded circulation of internal instructions, and further improving the mobilization ability. However, there are many mountains and hills in the south. The southern proverb said that people within ten miles have different customs, and it is difficult for people hundreds of miles away to communicate (Cui, 1984). Under these conditions, soldiers had cultural barriers and centrifugal force. Moreover, the terrain barrier aggravated the unbalanced development of local forces, which was easy to produce isolationism and separatism. The closed terrain surrounding mountains or basins in Yunnan, Guangdong and Sichuan met the conditions for independent operation of military groups. For example, three feudatories' rebellion against Qing was a portrayal that warlords were fighting centralization by virtue of their geographical advantages.

3.7 Topography and Food Output

Topographic conditions were the key to the difference in grain yield between southern China and northern China. First of all, the broad plains in northern China facilitate large-scale cultivation of farmland, mainly black soil and loess. In addition, the long sunshine in temperate areas was conducive to the accumulation of crop sugar and starch. The land can produce sufficient food to supply a large number of people. Many people favored the expansion of soldiers and the labor population to ensure adequate strength and logistical supplies. In southern China, plains were crumbling like a splintering mirror, and there were many low mountains. Although the hydrothermal conditions in southern China were appreciable, the hillside was only suitable for

reclamation of terraced fields, and the area for cultivating crops was minimal. Furthermore, the red soil is widely distributed in the south. Under hot and humid conditions and vigorous biological activities, there is little organic matter left after weathering. The massive leaching of soil minerals and alkaline substances leads to soil acidification, so the soil in the south is a typical low-yield soil.

Thus it can be seen, when small-scale farmers' economic productivity and technical level were maintained for a long time, the agricultural production conditions in northern China were better than those in the south. Moreover, in the verifiable historical data, the grain output in northern China was higher than that in southern China for a long time (Yun, 2014). Grain, population and soldiers formed a positive cycle. Sufficient population, gentle terrain and stable food have strengthened the willingness of the unified regime to establish the capital in the north. Furthermore, the centripetal force in the North increased and the second virtuous circle was formed again.

3.8 Terrain and War Situation

Topographic have a significant influence on the war situation. From the perspective of military geography, most of the capital cities in northern China in ancient times were between the second and third topographic steps. They were surrounded by surrounding mountains, forming a natural defense circle, which was not easy to be invaded. Many powerful dynasties originated in Guanzhong Plain in northern China, such as Qin, Han, Sui and Tang Dynasties. Therefore, it is known as the place where dragons are born. Hangu pass, Wuguan pass, Xiaoguan pass and Sanguan pass in northern China are natural passes, which were easy to defend and difficult to attack. Similarly, Beijing built a strategic defense zone in southern China by virtue of its dense river network. At the same time, the Beijing plain served as a strategic rear to provide much food. As the ancients said, the land of Beijing is surrounded by the Canghai Lake on the left, the Taihang mountain on the right, the Juyong pass on the North, the Heji river on the south (Martin, 2017). Interestingly, although there are many critical natural barriers, three of China's four most immense plains are three. The protective terrain defended the inner plains like tank armor. The relatively closed but not narrow terrain and fertile soil enable the northern regime to obtain the strategic initiative. In contrast, although Anyang, Henan Province was once the capital of the north, due to the lack of defensive terrain, only the Shang Dynasty established a ruling center here in history.

On the contrary, southern China was limited by terrain. The army's northward march was blocked by stretching mountain ranges and complex water networks. With the shortage of horses, water transportation had become the key to military operations and logistics supplies. Thus, the critical time for the southern army to march was when the water was raised in summer. At the same time, the condition that the river did not silt up had to be met. Once the water level dropped in autumn and water transportation was limited, it was difficult for southern infantry to resist the impact of flexible cavalries, such as the northern expedition of Zhuge Liang of the Three Kingdoms and the northern expedition of the Taiping Heavenly Kingdom. The hinterland of northern China was broader than that of the south, while southern China lacked geographical depth. The terrain in southern China tends to shrink, converging southward from the Yangtze River, and finally compressed into Guangdong hills, Yunnan Guizhou Plateau and Sichuan Basin. The ruling regions were separated by millions of hills and creeks, challenging to assist each other. Thus, the northern army could take advantage of the situation to concentrate its attacks on the southern army and break them one by one. Therefore, the northern army can take the opportunity to concentrate on attacking the southern army and break it one by one. For example, the Mongolian army pursued the Song army and finally forced the emperor of the Song Dynasty to jump into the sea. However, the first emperor of the Ming Dynasty Zhu Yuanzhang defeated the Yuan emperor, and the runaway emperor could continue to establish a regime on the vast Mongolian Plateau.

3.9 Geographical Advantages of Warhorses Producing Areas

3.10 Horse Breeding Environment in Northern China and South

In terms of biological characteristics (Valentina, 1990), the dry, warm and cool climate is loved by horses, and the hot and humid area is not suitable for large-scale breeding of horses. The

distribution of climate and temperature zone affects the spatial distribution of horses. In the subtropical region with ample precipitation, the number of horses remain\s at a low level. In addition, the plateau's temperature also decreases with the increase of altitude, so there are some horse populations on the plateau.

Regional precipitation and its seasonal distribution not only affect the growth of feed crops, but also affect people's choice of herd structure, breed structure, variety structure and feeding form. Therefore, the northern temperate climate zone including the 39 ° n-42 ° N latitude zone is the best breeding area for horses, and being the main distribution area of horses in China. According to statistics in 2018, the stock of horses in northwest China is 910000, 710000 in north China, 240000 in northeast China, 240000 in southern China (Bureau, 2018). As shown in Figure 2, horses are mainly distributed in the north, and there are horse breeding areas in the southwest. However, most of the southwest horse species are dwarf horses, which are not suitable for fighting. The regional differentiation of horses can be seen clearly.

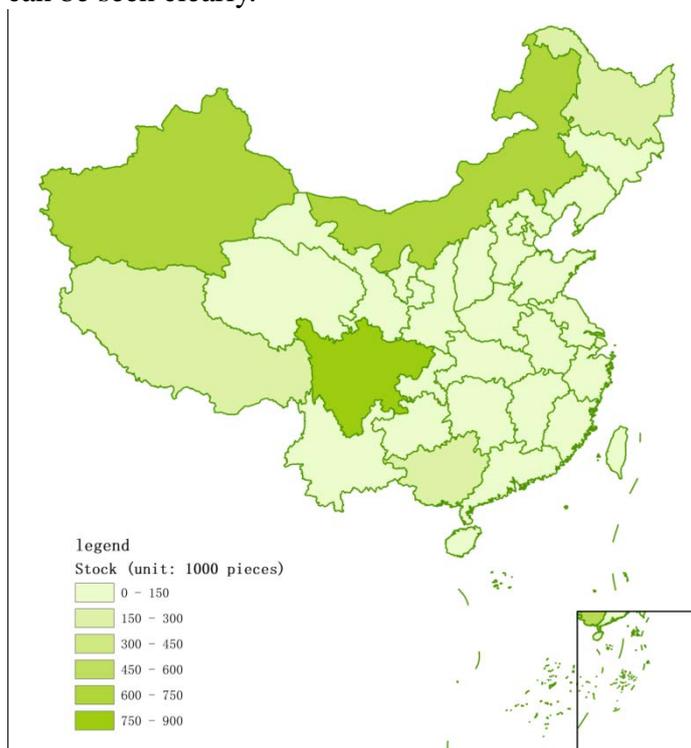


Fig.2 Regional Distribution of Horses in China

The data comes from China Statistical Yearbook (Bureau, 2018).

Environment played a decisive role in the quality of horses. In ancient China, there were three famous horses in China. They were Mongolian horses, Hequ horses and Ili horses. Mongolian horses ran fast, had strong endurance and were not picky about food. As a military horse used by the imperial court, the Hequ horse made significant achievements in the Han-Hun war. The Ili horse was called the Ferghana horse, which was a world-famous horse. The three were all produced in the north, so literature said that northern China is the hometown of warhorses (Rohsenow, 2002). Even now, the Shandan military horse farm in the north is still the second-best in the world.

3.11 The Applicability of the War between the Southern and Northern Horses

The characteristics of the horse influence the combat power. Horses bred in continental climate areas can climb snow mountains and cross swamps. They had a gentle temperament, were easy to tame and ate fast (Warmuth, 2012). For example, the Yushu horse had a well-built body, refined physique and extraordinary adaptability with the reputation of the stone horse. Thus, using the robust and enduring horses of the north as war horses, the cavalry of the northern army had a substantial combat advantage.

Southern horses were relatively undersized, about 110cm high. Moreover, they were flexible

tendons, wearable limbs, and solid hooves, suitable for riding and transportation in mountainous and hilly areas (Zhang, 2018). Due to the disadvantage of physical quality, southern horses were inferior in combat and primarily used for transportation. In southern China, the Song Dynasty tried to establish a northern horse breeding area, but horses could not adapt to the changes of feed, hydrothermal conditions and terrain. In the end, they degenerated into horses that were short, slow and good at taking rugged mountain roads, which were difficult to play a role on the battlefield.

3.12 Strategic Significance of Warhorses

Warhorses played an essential role in ancient transportation, information communication, agricultural economy, and military as strategic resources. Initially, horses were hardworking animals used for pulling carriages, carrying loads, and riding. It played a more significant role than other animals in labor, transportation and war. The horse had always been the primary animal power, so horsepower had become the basic power unit. What's more, due to speed and strength, warhorses had unique tactical advantages. The characteristics of the cavalry determined that it focused on mobile warfare and took the initiative in the volatile war. Harassing the enemy, encircling and attacking the enemy's flanks were all basic tactics related to horses.

The territory and strength of the Tang Dynasty are well known. One of the reasons for this achievement is the extensive breeding of warhorses. There were more than 700000 horses in Tang Dynasty, and even specialized management personnel were equipped (You, 2016). In the Song Dynasty, the resources of splendid warhorses were monopolized by the northern minority regime. The highest number of horses reached more than 100000, while the ministers often persuaded the emperor to reduce the expenditure on raising horses. (Stevens, 1970). The lack of warhorses was a non-negligible reason for the weak military of the Song Dynasty for 300 years. Under the trample of iron hooves, even the two emperors became prisoners.

4. Conclusion

In the war that the northern forces defeated the southern forces to unify China, in addition to human factors such as population and economic development, natural environmental conditions such as climate differences, topographic fluctuations and species distribution are also particularly important. In ancient times, people respectfully called these geographical factors the grace of heaven and the help of earth.

Based on historical documents and relevant research results, this paper studies the case that the northern forces were superior to southern forces, and analyzing the impact of differences in natural environmental conditions on comprehensive national strength. In the warm climate period, the Dynasty in Central Plains was often unified and robust, and food was abundant and economic prosperity. Importantly, nomads' military actions were dormant. During the cold climate period, the internal contradictions of the dynasty were frequent, the external nomads went southward, and the phenomenon of separatism was severe. The nomads and Han nationality in northern China often became the unifier under the periodic law of the dynasty. As far as northern China is concerned, the terrain was like a giant fortress. The circular natural barrier could safely prevent invasion, and the tremendous internal plains continuously provided war resources. In comparison, complex terrain in southern China divided the ruling area into city-states and became a hotbed of the appeasement regime. Culture and grain production also showed regional differentiation under the action of terrain and soil, which indirectly affected the army's combat effectiveness. Short and miniature southern horses were primarily suitable for transportation, while excellent warhorses were mainly produced in the north. Under the influence of these geographical conditions, the northern forces fought southern China and finally realized the unification of the dynasty, which had become the primary trend of history.

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