

The Influence of Horses and Grass on the Formation and Development of Core Cities on the Silk Road

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Abstract: The Silk Road has long attracted researchers from various fields, sparking their interest in ancient cities and the ancient route that connected civilizations. However, the role of horses and grass in the development of the Silk Road has been relatively understudied. This essay presents a novel perspective, revealing the significance of horses and grass in shaping the growth of nomadic cultures and their profound impact on the formation and development of cities along the Silk Road. Through an examination of Persepolis and Samarkand, this paper analyzes the intricate relationship between horses, grass, and the Silk Road. As a means of transportation, horses' agility and endurance allowed merchants and travelers to traverse vast distances, connecting civilizations and promoting economic and cultural exchanges. The abundant grasslands along the Silk Road corridor shaped the way of life and livelihood of nomadic tribes, providing sustenance for their horses. Nomadic tribes acted as intermediaries, facilitating trade between settled civilizations. This facilitated the establishment of trade routes and the emergence of prosperous urban centers. Therefore, the symbiotic relationship between horses, grass, and nomadic tribes played a crucial role in the development and prosperity of the Silk Road.

Keywords: silk road, natural resources, grass, horse

1. Introduction

There has been an increase in interest in the ancient silk road over the past few years as a result of China signing more than 200 agreements for B&R collaboration with 151 nations and 32 international organizations. The domestic and foreign academics are relatively active in the study of silk road, and a considerable number of published articles have been accumulated. For example, articles on silk road is mainly focused on its origins and route like stein, but ignoring the significance of resources in the development of the nations that surrounded it. Therefore, this paper has narrowed down our target of examination to the resources of grass and horses due to its playing an important role in the formation of the Silk Road.

This paper is organised as 3 sections. Section 1 discusses the background of two cities in silk road. In section 2, we analyses how these resources are linked to position of the two cities in Silk Road. And the background information of two cities—Persepolis and Samarkand will be explained in section 3. Through using historical analysis, this paper aim to contribute to the filed by filling a gap

in the studies on the resources on the Silk Road and offering fresh insights about the people who lived there.

2. Literature Review

As a bridge connecting Europe and Asia, the silk road connected several major centers of civilization in the ancient world. It has important influence on both the history of China and history of the world[1]. Therefore, it has great academic significance on the study of the silk road. Moreover, with “the Belt and Road” initiative proposed and carried out, the discussion of the ancient Chinese silk road has important practical significance for the development “the Belt and Road” nowadays. Academics have already started systematical research on the Silk Road since the 19th century. The western world started with the series of exploration of the Silk Road by Richthofen[2], Sven·Hedin[3] and Stein[4]. They carried out research on the silk road based on multiple themes, such as ancient cities, races, and ancient sites, which make the study of the Silk Road in modern history possible. Chinese scholars began to examine the Western Regions and Central Asia formally in the study of the Silk Road in the early 20th century. During this process, a series of important progress have taken place: a) The research vision has shifted from emphasizing western China to the whole of Central Asia, b) The central debate of related research has moved from analysing the silk road as a comparatively vague concept to examining resources around the silk road, c) Research methods have changed from theoretical research to empirical research. Now, experts have obtained various results in the research on the Silk Road. The concept of "Silk Road" was first proposed by German geographer Richthofen in 1877 in his book *TAGEBUCHER AUS CHINA*. He called the silk trade route connecting China and Central Asian between 114 BC and 127 BC the "Silk Road", a claim that was unanimously agreed upon by a considerable number of scholars, including Tamara Chin[5] and Yulang Wang[6]. For the silk road, the prior research as well as current works focused on the route and trade. For example, The French scholar Bolnuva described historical overview of the silk road and the route of trade. According to the book, the Silk Road is more than just a means of trade; it has a social instinctual origin, is driven by human desire, and has a direct impact on political decisions, conflicts, and wars. Its source is poverty and inequality. Furthermore, this book affirms the significance of the silk road's function by focusing on the important historical events in chronological order, rather than on any one nation or region as the research perspective. In addition, for the reference, not only did Bolnuva use the Chinese historical materials, but also collected Roman, Persian and Indian historical materials, making a number of significant contributions to this filed. For the route of the silk road, there are a lot of research papers in the academic circles. Wenbi Huang's The change of the route between Han and Western Regions[7], Taishan She's research on the relationship between Han, Wei, Jin, Southern and Northern Dynasties and the Western Regions analyse the routes in different periods, as well as the relics and monuments along the routes, from a variety of perspectives, including nature and the environment[8].

In addition, the Silk Road has been studied in the following books: Bill Porter's *The silk road*[9] ; Valerie Hansen's *The silk road: A new history*[10]; and *The Silk Roads: A New History of the World* by Peter Frankopan of the United Kingdom, which examines the religion and wars of the Silk Road[11]. These works provide a brief account of the overall history of the Silk Road from different perspectives, making a number of significant contributions to this filed. Since the beginning of the 21st century, the study of the Silk Road has taken a new leap forward, and the method of historical geography has been gradually used to research the Silk Road. The Russian historian E.E.Kuzmina looks at the history of the Eurasian Steppe before the formal establishment of the silk road trade and diplomacy. From the late Neolithic period to early Bronze age, Kuzmina traces the evolution of the material culture of the Steppe and the contact between civilizations that proved critical to the development of the widespread trade that would follow, including nomadic migrations, the

domestication and use of the horse and the camel, and the spread of wheeled transport[12]. The book published in 2017 systematically discussed the development of the Silk Road and put forward the idea that the horse and the grass played an important role in the development of the cities, which filled in the gaps in the study of the resources along the Silk Road. After reading and analyzing the previously mentioned prior research, we found that, despite the fact that these papers essentially covered most fields, particularly in the area of trade and the effects of the East-West cultural exchange, there didn't appear to be much research on the role of resources in the formation and development of the early cities until just a few years ago. The trend of systematic research in this area has been expanding during the last ten years. Our research's goal is to delve into this area and make a contribution to the Silk Road. This paper focus is on the influence of horses and grasses on the formation of cities along the route from the perspective of historical geography, and choose the contrasting method as this subject used.

3. Background of Persepolis and Samarkand

This article will focus on the horses and grass resources along the Silk Road, this paper believe that these resources are crucial in shaping the formation and development of the Silk Road. This paper will provide an explanation for this viewpoint.

Throughout the formation, development, and decline of the ancient Silk Road, the pair of complementary strategic resources, horses and grass, played important roles. In the central region of the Eurasian continent, there is an Inner Asian mountain corridor, which naturally provides abundant and sustainable grass resources. Due to the difference in altitude caused by the mountainous terrain, the grass grows in different areas according to the changing seasons. Sheep, horses, and cattle also migrate with the change of grassland. The people who rely on animal husbandry also need to migrate with the animal herds, which leads to their nomadic characteristics. Therefore, the changes in grasslands directly caused the nomadic lifestyle of the nomads. After the nomads mastered how to tame wild horses, the unparalleled mobility brought by horses allowed them to master the most advanced technology and gave them the ability to efficiently complete long-distance communication and transportation during the same period. Therefore, after gradually mastering the resources of horses and grass, there appeared production surplus and class differentiation within the nomads. This was a huge progress, and it was also the initial appearance of the merchants who traveled on the Silk Road afterwards.

This article focuses primarily on the background information of two cities, Persepolis and Samarkand. Through the study of these two cities, This paper explain why horses and grass are indispensable resources for the prosperity of a city and occupy a relatively important position on the Silk Road. This article chooses Persepolis and Samarkand because Persepolis was the ancient capital of the Achaemenid dynasty, and horses and grass made important contributions to the expansion and stability of the Achaemenid dynasty. Horses and grass owned by the Achaemenids were inseparable to the formation and development of the silk road as they rationalized all commercial activities from the empire to silk road as a whole, and achieved success in the end. While Samar Khan prospered because of the Silk Road, and the Silk Road was also inseparable from horses and grass.

Persepolis, as the second capital of the Achaemenid dynasty, was closely related to horses and grass in its formation and development. "Their sons were educated from the age of five to twenty, and they taught their children only three things: horseback riding, archery, and telling the truth." [13] This shows the importance of horses to the Persian people. It also extends to the most important contribution of horses to the establishment and empire of the Persian dynasty, which is the military purposes. As early as the invasion of the Scythians into the Mesopotamian region, the people living in that area already knew the power and disadvantages of horseback warfare. Horses, as military and transportation resources, have a disadvantage, which is the supply of grass. This is a big

problem for residents who do not live in natural grassland areas. But the Persians did not have this problem. The Persian plateau where the Persians lived had abundant grass resources. The existence of horses in the Caspian Sea also made it relatively easy for the Persians to tame horses. Therefore, the Persians mastered the advanced technology of horseback riding and shooting earlier in this region. Thus, this article considers the reason why the Persians were able to establish and conquer an empire that spanned three continents of Europe, Asia, and Africa for the first time in history was because of the correct use of horses and grass.

Persepolis, this unprecedented city, was not completely built in the 50 years of its construction. This city was built on a stone foundation. These stones were transported by horses from nearby mountains, and the resources needed for the construction and daily life of the people living in this city were transported to this city by horses along the huge road network built by the empire from all over the country. The vast territory of the Persian Empire brought another problem. The differences between different regions, different ethnic groups, and different cultures make it necessary for the empire to establish good communication routes between different regions. Therefore, under the leadership of the third generation of monarchs and the physician Liu, the Persians began to build a transportation system that spans the empire. This road is called The royal road. This road stretched from Susa, in the east, to Sardis, in the west. The post stations along the road were vital for the smooth operation of the Persian Empire. They provided fresh horses for the messengers, who could travel long distances without stopping, the messengers carried important messages, orders, and reports from the various provinces of the empire to the central government. And Merchants and traders could travel along the road, using the post stations to rest and exchange goods. This paper can discover the importance of horse changing points from the following paragraphs “There is nothing mortal that is faster than the system that the Persians have devised for sending messages. Apparently, they have horses and men posted at intervals along the route, the same number in total as the overall length in days of the journey, with a fresh horse and rider for every day of travel. Whatever the conditions—it may be snowing, raining, blazing hot, or dark—they never fail to complete their assigned journey in the fastest possible time. The first man passes his instructions on to the second, the second to the third, and so on.” The existence of this road also allows the Persian army to quickly suppress rebellions in various places. The Persian Empire's tax collection activity, known as sacrifice, is also a way for local nobles to bring local products from all corners of the empire to pay taxes through this road and its branches. This is actually an early business activity. And this paper believes that the reason why all this can be achieved is the rich grass resources on the Persian plateau and the Persians' relatively advanced horse technology. As the center of the empire, Persepolis, every political order was conveyed to various places through messengers riding horses. It can be seen that the establishment and development of the Persian Empire and the daily life of Persians are inseparable from their dependence on horses. Since the Iranian Plateau has a subtropical arid and semi-arid climate, precipitation is scarce, cold and heat changes drastically, and the annual and daily temperature ranges are large. Most areas have a subtropical continental grassland and desert climate, with large temperature differences between winter and summer, little rainfall, and most water sources come from mountain precipitation. Therefore, in mountainous terrains with high average rainfall, grass resources are very abundant. Abundant grass resources also made possible livestock farming and the use of horses.

Samarkand, this beautiful city built by the shrewd Sogdian merchants, also played an important role in the development of horses and grass. Samarkand is located in the Inner Asian mountain corridor, where there are abundant grass resources and a nomadic lifestyle. This gave Sogdian merchants the ability to trade between the East and the West. The goods circulated on the Silk Road are valuable, small in size, and easy to carry. Silk is a luxury item that is only produced in China. The widespread demand of the Romans for silk prompted the Sogdian merchants to establish a road for

transporting silk from the East to the West. This brought huge wealth to the Sogdian merchants. Driven by huge financial interests, the Sogdian merchants formed a very advanced idea, which is to seek profit. From ancient times to the present, death and taxes are the only two unavoidable things. The fundamental reason why the phenomenon of heavy agriculture and light commerce exists in agricultural civilizations is due to the stable and huge tax revenue brought about by agriculture. Therefore, having abundant wealth in ancient times would not make you respected. But the Sogdian merchants pioneered a new way. They used the demand and supply between different regions and the price differences between different regions to seek their own interests. They lent out high-interest loans in various places and engaged in slave trade. The purpose of these behaviors was to gain more wealth. This phenomenon did not become a worldwide mainstream until the modern colonialism craze. The reason why Sogdian merchants can collect wealth in a dispersed form is that they have mastered the fast and large-capacity transportation method of horses on the road. When Sogdian merchants accumulated enough wealth and knowledge, they began to build beautiful cities. The reason why cities like Samarkand can be built is the wealth accumulation of Sogdian merchants. Through the post stations between various city-states and the intercommunication of official documents between various countries, Sogdian merchants played the role of intermediaries in the ancient world. And what these intermediaries depended on for their East-West exchanges was their horses. Whether it is early nomadic tribes that have begun to tame wild horses, or brave, exceptionally capable Persians, or profit-seeking Sogdian merchants who promote multicultural exchanges among multiple ethnic groups, they all rely on two strategic resources, horses and grass.

4. How these resources are linked to position of the two cities in Silk Road

Horses were an important means of transportation on the Silk Road. If merchants organized caravans for long-distance transportation of goods, horses were the best choice. Firstly, horses were flexible and could adapt to various terrains, including mountainous areas, swamps, jungles, and high-latitude regions. Secondly, horses were relatively low-cost, and the grass needed to raise horses could be easily obtained in the Inner Asia mountain corridor. Moreover, people in this region began to interact with horses very early on. When caravans transported goods over long distances, they needed to cross many different political regions, mainly passing through different cities. Cities provided shelter for caravans and also needed to provide grass, similar to a relay station system, to enable caravans to transport goods over long distances. Therefore, places with natural grass resources were more likely to form settlements and cities. For example, Persepolis, located on the Persian plateau. The reason why ancient empires valued agriculture was because agricultural taxes were stable and large. Also, places like Samarkand, located at the intersection of nomadic and farming areas and having two types of resources, were more likely to become important cities.

In addition to transporting goods, horses have been used for other purposes. In terms of warfare, horses are one of the oldest and most mobile mounts in the world. Equestrianism, as one of the greatest inventions in human military history, whoever masters it will have an absolute advantage in military technology. The most famous equestrian in history is probably the Scythians. I call the period from the 7th century BC to the 3rd century BC the Scythian century because they were very good at equestrianism.

“Having neither cities nor forts, and carrying their dwellings with them wherever they go; accustomed, moreover, one and all of them, to shoot from horseback; and living not by husbandry but on their cattle, their waggons the only houses that they possess, how can they fail of being unconquerable, and unassailable even?”[13] This paper can get it from the above paragraph that the surrounding peoples were so afraid of equestrianism that they reached a state of fear. To master equestrianism, it takes a long time of training and a lot of grass resources, so the Scythians who lived in areas with horses and grass used equestrianism to expand their influence to the entire Eurasian

continent. So later people referred to the northern nomadic peoples as the Scythians. Horses are also active in the field of art, such as the Tang Tri-Color Glazed Ceramics of the Tang Dynasty, which has a large number of works with horses as the theme, and metal products with horses as prototypes have also been found in the Kurgan tombs in Central Asia. In summary, horses and grass have an important position for a city and civilization. Broadly speaking, horses and grass have a significant impact on people along the Silk Road and cannot be ignored for their role in promoting the development of the Silk Road.

Moreover, horses were also an important medium for cultural exchange on the Silk Road. As merchants traveled back and forth, horses were also taken to different places, and horses from different regions also interbred, gradually forming new breeds. At the same time, horses were also used for entertainment and competition, such as the famous Persian horse racing and China's horse racing culture. These activities not only promoted cultural exchange but also made horses play a more important role on the Silk Road.

In summary, horses played an important role as a means of transportation and cultural medium on the Silk Road. Their flexibility and cost advantages enabled merchants to transport goods over long distances smoothly, while also promoting cultural exchange and the formation of cities.

5. Conclusion

In conclusion, horses and grass are one of the most important factors in human history and have significant importance for human production, cultural art, and military warfare. On the Silk Road, the importance of horses and grass is self-evident. They promoted trade and cultural exchanges between various countries and also promoted the prosperity and development of the Silk Road. Through in our research, this paper found that natural resources such as horses and grass contributed to the formation of the core cities of the Silk Road. Although we have studied this project, there is still a lack of statistical data to support it. We hope that future studies can carry out further analysis and research on the natural resources of the Silk Road.

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Yao Shan and Mohan Wu contributed equally to this work and should be considered co-first authors.

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