

On Ancient Driving Techniques

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Abstract: Driving techniques are a fundamental aspect of the transportation sector, influencing both the operational efficiency of transportation systems and the broader social and cultural landscape. In ancient China, transportation systems displayed distinct characteristics shaped by the terrain and cultural diversity. The development of ancient driving techniques was not only a means of mastering space but also a reflection of social systems, technological advancements, and the progression of civilization. Through in-depth research on these techniques, researchers can gain insights into the development context of ancient society and understand the profound impact of its transportation system on cultural exchanges and social evolution. By thoroughly understanding their development and impact, it reveals the evolution trajectory of the ancient social transportation system and triggers reflections on their far-reaching influence on society, culture, and technology. Meanwhile, this paper will introduce the types of ancient transportation vehicles, the skill requirements, and the training methods of drivers.

Keywords: Ancient driving techniques; Transportation vehicles

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1. The origin and development of ancient driving techniques

1.1. Review of the development process of transportation in ancient China

The origin of ancient driving techniques can be traced back to the Neolithic Age when people mainly relied on walking and the strength of animals for movement. With the development of agriculture and population, the demand for transportation vehicles gradually increased. In the early days, people mainly relied on walking, horseback riding, and driving carriages. One of the earliest transportation vehicles was the horse-drawn carriage. Merchants were among the first to drive horse-drawn carriages. The Shang tribe was a migratory nation. During the pre-Shang period, they had migrated 8 times, and after the founding of the state, they moved the capital 5 times. The Shang people were also a nation good at doing business, and doing business required constantly traveling to places far away from their homeland for trade ^[1]. After a series of developments, the status of horse-drawn carriages continued to rise. Around the 16th century BC, large horse-drawn carriages in the Shang Dynasty gradually became a symbol of the aristocratic society. Over time, carriage driving became more and more popular,

and the structure and design of vehicles were gradually improved. By the Warring States period, more elaborate four-horse-drawn carriages emerged.

1.2. The origin and inheritance of ancient driving techniques

During the reign of Qin Shi Huang, a driving trend emerged, which developed into a series of driving traditions. The horse keeper in the Qin State wore special armor and required four years of training to drive. At the same time, the examination consisted of five driving skills, with strict requirements not only for techniques but also for their behavior and etiquette. Those who failed would pay a huge price and were not allowed to take the exam again.

The inheritance of ancient driving techniques was mainly carried out through family and master-apprentice systems. This inheritance method focused on both the techniques and education in various aspects such as culture and etiquette. There were detailed norms on chariots and horses in the *Rites of Zhou* ^[2].

1.3. The development of ancient driving techniques in vehicles and road construction

Ancient driving techniques were also developed in road construction. To adapt to vehicles, some important roads were improved and built. For example, as for the *Qinzhidao*, it “connected Jiuyuan and Yunyang. Mountains were cut through and valleys were filled in to build this straight road. The road was fifty paces wide, with trees planted every three zhang (a unit of length in ancient China). Its outer sides were thickly built up and rammed solid, and then hidden with metal awls, and pine trees were planted along it” ^[3]. In addition, the construction of some important roads and commercial routes also promoted the development of transportation and driving techniques.

Driving techniques development in ancient China largely promoted social exchanges and economic prosperity. People of different classes such as nobles, merchants, and officials all relied on drivers and vehicles for movement.

Through the continuous evolution and inheritance of driving techniques, transportation in ancient society was improved, laying the foundation for the development of economy, culture, and society. These ancient experiences and traditions have positive implications for our understanding of the evolution and development of modern transportation systems.

2. The driving techniques of ancient transportation vehicles

2.1. The types and characteristics of ancient transportation vehicles

There were various ancient vehicles, such as horse-drawn carriages, boats, sedans, etc., with unique driving techniques and characteristics. All of them played important roles in transportation and communication, and their driving techniques were of great significance in that society.

2.1.1. Horse-drawn carriage

The horse-drawn carriage was one of the important land transportation in ancient times. Its types included the four-horse-drawn carriage, the six-horse imperial carriage, and so on. The four-horse-drawn carriage was pulled by four horses and was a symbol of class. Different classes had different numbers of horses. As recorded in *Wang Du Ji*, “The emperor was drawn by six horses, the feudal lords by five, the ministers by four, the high officials by three, the scholars by two, and the common people by one” ^[4]. The horse keeper needed to be proficient in handling horses, master vehicle control skills, and understand etiquette and communication skills to adapt to the cultural requirements of the aristocratic society.

2.1.2. Boat

There were diverse rivers in ancient China, and boats played an important role in water transportation. According to *History as a Mirror*: “Wang Zhen’e led the naval forces to enter the Wei River from the Yellow River and then marched towards Chang’an...Wang Zhen’e’s troops sailed upstream along the Wei River on small warships called ‘Mengchong’. The rowers were all inside the warships. When the people of the Qin State saw the warships moving forward but could not see the rowers, they were all astonished and regarded them as divine troops”^[5]. The earliest recorded boat appeared in the Eastern Jin Dynasty and was mainly used in warfare. Its types included rowing boats, sailing boats, dragon boats, and so on.

2.1.3. Sedan

The sedan was a common transportation vehicle in the ancient aristocratic society and was used for the travel of nobles or wealthy merchants. According to *the Books of History* and *Records of the Grand Historian*, the sedan has a history of thousands of years in China. The driver was usually called a sedan-bearer, who needed to possess balance skills and good physical fitness to ensure a smooth journey.

2.2. The skill requirements and training methods of ancient drivers

Ancient drivers usually referred to those who drove horse-drawn carriages or other vehicles. The skills and training methods varied depending on the era and region. Generally speaking, they needed to master the skills related to driving the corresponding vehicles, understand road conditions, and safety knowledge. The training methods might include learning from masters, accumulating practical driving experience, and the way of oral instruction and personal demonstration.

2.2.1. Horse keeper

The horse keeper needed to have the skills to control horses, including understanding the personality characteristics of different horses and being good at taming and commanding horses. They also needed to master vehicle control skills and take correct countermeasures in emergencies. The training method was mainly through practical driving operations, and the traditional family inheritance and master-apprentice system were the main training channels.

2.2.2. Boatman

The boatman needed to understand the structure and performance of the boat, be familiar with natural environments such as water currents and tides, and possess boat handling and navigation skills. The training method included operating training in actual water areas, usually with experienced boatmen passing on their experience. In addition, boat drivers also needed to learn how to deal with unexpected situations, such as sudden wind and wave attacks or boat failures.

2.2.3. Sedan-bearer

To ensure the safety and comfort of passengers, the sedan-bearer needed to have the skills of walking steadily and a strong physique. They also needed a lot of training before taking up the job. The traditional training methods included the personal guidance and demonstration of the master and gradually becoming familiar with the technical essentials in actual driving operations.

2.3. The role and impact of ancient driving techniques in transportation

Ancient driving techniques played an important role in transportation. Excellent driving techniques could improve the utilization efficiency of vehicles and also provide feedback for their design and improvement, promoting continuous innovation and progress. The transportation system in ancient society largely depended on the technical level of drivers, and its development also laid the foundation for later transportation vehicles and systems.

2.3.1. Improving transportation efficiency

Ancient driving techniques had a significant impact on transportation efficiency. First, advancements in driving skills allowed for more precise control of vehicles, increasing transportation speed. Second, skilled drivers enhance the stability and speed of vehicles, further boosting efficiency. The improvement of these techniques facilitated the exchange of goods and movement of people and thus played a key role in promoting social development.

2.3.2. Spreading etiquette and culture

Drivers in the aristocratic society were not only the drivers of vehicles but also the spreaders of culture and etiquette. They needed to be familiar with social etiquette and understand the skills of interacting with people of different classes, contributing to the inheritance and development of the entire social civilization.

2.3.3. Maintaining traffic safety and social order

Skilled driving techniques helped reduce the occurrence of traffic accidents and maintain social order. In the Qin Dynasty, Qin Shi Huang had already promulgated traffic laws ^[6]. There were also clear traffic rules in the *T'ang Code* ^[7].

3. The role of driving techniques in ancient traffic safety

3.1. The causes and frequency of ancient traffic accidents

In ancient times, limited transportation vehicles and poor road conditions led to a high frequency of traffic accidents. The technical skill of drivers directly influences vehicle control and their ability to handle emergencies. Uneven roads and the absence of traffic signs made driving more difficult, while mechanical failures of vehicles also posed a risk of accidents.

3.2. The role of ancient driving techniques in improving traffic safety

The role of driving techniques in ancient traffic safety was mainly reflected in the following aspects.

First, good driving techniques helped reduce the occurrence of accidents. Ancient drivers needed to have a proficient grasp of transportation vehicles, be familiar with road conditions, and be sensitive to the surrounding environment, so that they could detect potential dangers in time and take effective measures.

Second, driving techniques were also crucial for dealing with accidents. Ancient society lacked modern rescue equipment, and drivers needed to have certain first aid and self-rescue skills after an accident.

3.3. The application of ancient driving techniques in traffic management and accident response

In ancient society, driving techniques also played an important role in traffic management. Traffic management involved aspects such as road planning, intersection settings, and traffic signs, and the understanding and

compliance of drivers with these rules and signs were crucial for maintaining the overall traffic order. In 1973, the dossier of a traffic accident case tried by the local government in the Tang Dynasty was unearthed from the Astana Ancient Tombs in Xinjiang, uncovering a car accident more than a thousand years ago and providing the most direct information for researchers to understand the trial procedures and punishment principles of ancient traffic accident cases^[8]. Therefore, since ancient times, drivers who did not follow traffic rules and traffic orders would be punished.

4. The impact of ancient driving techniques on modern traffic culture and techniques

The past influences the present, driving progress. The invention of gunpowder marked the shift from the era of cold weapons to gunpowder-based weapons, gradually replacing chariots and warhorses with guns and tanks. Similarly, ancient driving techniques have deeply influenced modern traffic culture and techniques.

Firstly, ancient driving culture and etiquette have shaped modern traffic rules, such as yielding to pedestrians and obeying traffic signals.

Secondly, the legacy of ancient driving techniques has laid the foundation for modern driving. Despite changes in transportation vehicles and technologies, the core principles and skills of driving remain, with ancient drivers' environmental awareness positively influencing the technical skills of modern drivers^[9].

4.1. The modernization challenges of the value of ancient driving techniques

4.1.1. The inheritance of ancient driving techniques faces modernization challenges

With technological advancements and the continuous evolution of transportation vehicles, modern driving techniques have developed new characteristics. While traditional techniques hold historical value, they must be integrated with modern technology to address the complexities of today's traffic and advanced vehicles.

The inheritance of ancient driving techniques significantly shaped the traffic culture and technology of ancient societies and continues to influence modern developments. However, the challenges of preserving and modernizing these techniques require careful attention to ensure their ongoing evolution.

4.1.2. Emphasizing the importance and traditional value of ancient driving techniques

As technology and society evolve, traditional driving techniques struggle to meet the demands of modern traffic and advanced vehicles. This paper suggests the following areas for further research.

First, researchers should investigate the inheritance issues of ancient driving techniques, analyze their relevance to modern transportation, and propose improvements.

Second, the impact of ancient driving techniques on modern driving culture and traffic norms can be studied, focusing on their practical significance and impact on driver quality in modern society.

Finally, the integration of ancient driving techniques and modern technology can be explored. With the progress of technology, modern transportation, and driving techniques are also evolving. Combining traditional techniques with modern technology to enhance transportation efficiency and safety is a key area for future research.

5. Conclusion

In summary, ancient driving techniques were crucial to the development of transportation and social civilization.

By studying their methods, characteristics, and societal impact, researchers gain a deeper understanding of ancient transportation systems. Facing modern challenges, researchers should preserve traditional values while advancing with the times, promoting the progress of both transportation technology and culture. Transportation is an important way for people to interact and is a manifestation of the spatial and temporal changes in social development ^[10]. Now, unmanned driving technology has emerged, and there will be more challenges and opportunities in the future.

Disclosure statement

The author declares no conflict of interest.

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