SYNCHRONY: AN ASPECT OF THE ABILITIES OF STEPPE HORSE ARCHERS IN EURASIAN WARFARE (525 BCE – 1350 CE)

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SYNCHRONY: AN ASPECT OF THE ABILITIES OF STEPPE HORSE ARCHERS IN EURASIAN WARFARE (525 BCE – 1350 CE)

By

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Thesis

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# Table of Contents

*Abstract* .......................................................................................................................... iv

**Maps**
- Central Asia and the Eurasian Steppe ............................................................................. v
- Steppe, Plateaus, Plains ................................................................................................. vi
- Eurasian Steppe Nomads ............................................................................................... vii
- Eurasian Sedentary Powers .......................................................................................... viii

**Chronology of Steppe Nomads** .................................................................................... ix

*Introduction* ........................................................................................................................... 1

*Chapter One: Geography: Central Asia, Eurasian Steppe, and Silk Road* ................. 0

*Chapter Two: Steppe Nomads and Horses* ...................................................................... 0

*Chapter Three: Nomadic Warfare: Horse Archers of the Steppe* .............................. 0
  - Figure 1 Scythian bow .................................................................................................. 0
  - Figure 2 Turkish style bow ......................................................................................... 0
  - Figure 3 Mongolian style bow .................................................................................. 0
  - Diagrams 1-9 ............................................................................................................. 0

*Chapter Four: Synchrony Equus ferus caballus* ............................................................ 0
  - Figure 4 Horses eyes ................................................................................................. 0

*Chapter Five: Emulation and Ethnocentrism* ................................................................. 0

*Appendix A* ....................................................................................................................... 0

*Appendix B* ....................................................................................................................... 0

*Bibliography* ..................................................................................................................... 0
Animals moving in unison as a group are quite intriguing to observe. Horses can run across terrain and change directions without jostling each other. They appear to move as if they know how to avoid crashing into others and run fluidly through their environment. This ability to maneuver without hindering herd is called synchrony and also extends to other animals including fish in schools and birds in flocks. Humans, on the other hand, need to create orderly formations in battle to move without interfering with adjacent warriors. For example, the Romans, Greeks, Persians, Chinese, and Byzantines trained their infantry and cavalry formations in order to march them over great distances and to maneuver on the battlefield in an orderly fashion. Arabic sources depict elaborate formations that the mamlūk slave soldiers utilized in their training. These armies were urbanized or centralized. They did not fight or maneuver like the nomadic horsemen of the Eurasian Steppe. The nomads did not have drilled formations. Instead, they utilized an aspect of the horse, synchrony, to maneuver on the battlefield. Scholars have attempted to explain how the horse archers were able to act in unison, yet none have examined the cultural aspect of the horse as a herd animal. The significance of synchrony has been largely ignored due to anthropocentrism: the view that the domesticated horse, *Equus ferus caballus*, lacks agency and that only humans possess intrinsic knowledge of how to maneuver within a mass while mounted, especially on the battlefield. This thesis addresses this gap by examining the human-animal mutualism enacted by Eurasian Steppe horse archers. It is important to understand how the riders trained, controlled and interacted with the horses, but it is equally important to understand how the horses influenced the action of the riders through synchrony. Understanding the interactions of the nomads and *Equus ferus caballus* will help to move beyond the anthropocentric view and further our understanding of the Eurasian Steppe horse archers and the horse which will contribute to a greater knowledge of the past.
Map 1 - Central Asia and the Eurasian Steppe. Map created by author.
Map 2 - Steppe, Plains, and Plateaus. Map created by author.
Map 3 - Eurasian Steppe Nomads. Map created by author.
Map 4 - Sedentary Powers. Map created by author.
Chronology of the major nomadic peoples of the Eurasian Steppe

**c. 4000 BCE ± 500 years**
First indication of horse domestication in the Pontic Steppe west of the Ural Mountains

**c. 3500 BCE**
First indications of chariot warfare.

**c. 1500-1200 BCE**
Development of composite bow.

**c. 1000 BCE**
Development of cavalry (horse archers) and the demise of the chariot in warfare.

**7th century BCE**
- Scythians (also called Saka) first appear in the Greek texts.
- Donghu first appear in the Chinese texts.

**6th century BCE**
Sarmatian tribes begin to move into the Pontic Steppe from the east, slowly displacing the Scythians over several centuries.

**3rd century BCE**
- Xiongnu appear in the historical records of the Chinese.
- Parthians defeat the Seleucids, a successor state of Alexander the Great and rule Central Asia.

**2nd century BCE**
- Xiongnu defeat and disperse the Donghu, many migrate westwards.
- Xiongnu also defeat the Yuezhi, some migrate west of the Altai Mountains and others south towards India forming the Kushan Empire (30-375 CE).

**1st century BCE – beginning of 3rd century CE**
Rome – Parthian Wars. In 53 BCE the Parthians defeat the Romans at the Battle of Carrhae – the battle from which the term “Parthian Shot” was coined.

**Late 2nd century – 1st century BCE**
Han – Xiongnu wars.

**3rd – 5th centuries CE**
Alans raid Parthia and move into Europe.

**4th – 5th centuries CE**
- Huns appear in Iran then and move into Europe.
- Metal stirrup slowly spreads from China.

**5th – 6th centuries CE**
Rise of the Göktürks and the establishment of the Turkish Khaganate in the Eastern Steppe.

**6th – 7th centuries CE**
Avars move westward along the Eurasian Steppe introducing the high pommel saddle and metal stirrups to Europe.

**8th – 11th centuries**
Uighur Khaganate in eastern Steppe.

**9th – 11th centuries**
Various Turkish tribes (Kirgiz, Kazakh, Oghuz, Ghuzz, Qipchaq, and Seljuq) move westward into the Central Steppe and Central Asia pushing other nomadic peoples toward the western Steppe.

**9th century CE**
Magyars invade Hungary.

**10th century CE**
Pechenegs raid Byzantine territory.

**11th century CE**
- Seljuq Turks establish their empire in Central Asia, south of the Amu Darya River from Afghanistan in the east to Anatolia in the west.
- The Qipchaq (also known as Cuman - western Qipchaqs, and Qangli - eastern Qipchaqs) Turks establish loose confederation in the Central Steppe.

**13th century CE**
The Mongols unify and erupt out of the Eastern Steppe. They conquer or defeat all of the nomads in all three Steppe zones and establish the Ilk Monggol Uls (The Great Mongol State).

**14th century CE**
Demise of the four Mongol Ulus states (Yuan Dynasty, Il-Khanate of Iran, Chagatai Khanate, Golden Horde
Introduction

The study of the Eurasian Steppe nomads has been the domain of historians; however, in the past two decades some anthropologists have begun to take interest.¹ A great deal of anthropology focusses on modern cultural groups to study their learned behavior and belief systems; this same principle is also valid when studying the Eurasian Steppe nomads of the past. By examining the cultural practices of the nomads, scholars can learn how the nomads were able to exert power over their sedentary neighbors via their interactions with their own horses, which identified them as a distinct group that had significant advantages over other cultural groups.² Conflict between the Eurasian Steppe nomads, organized as mounted horse archers, and their sedentary neighbors took place over several centuries from around 500 BCE to 1350 CE. Conflict was a cultural strategy of the nomads to extort their sedentary neighbors in order to obtain resources such as silk, tea and metals, control trade routes, and in some cases conquer territory. Conflict was also important for their cultural preservation, for themselves and for their herds of animals, especially the horse. This thesis will examine the Eurasian Steppe nomads most important commodity, the horse, and what the nomads learned from the animal to wage conflict against their sedentary neighbors.

How was it that the Eurasian Steppe nomads were able to successfully defeat their southern sedentary neighbors on the field of battle on a consistent basis? This fundamental question in this thesis is used to examine some of the most important elements of Eurasian

² “The reason why our enemies to the north and west are able to withstand China is precisely because they have many horses and their men are adept at riding; this is their strength. China has few horses, and its men are not accustomed to riding; this is China’s weakness”. Creel, H. G. "The Role of the Horse in Chinese History." The American Historical Review 70, no. 3 (1965), p.667.
Steppe warfare, especially synchrony (doing what others are doing), an aspect not explored by other scholars studying nomadic horse archers. The purpose of the thesis is to move beyond an anthropocentric view that privileges human agency by examining the horse as an agent, recognizing the human-horse interaction within the Steppe ecology, and how the Eurasian nomads were able to utilize the aspect of synchrony.

Synchrony offers the ability to move in a group as a single entity without jostling others within the group. The nomadic horse archers of the Eurasian Steppe figured out how horses can move in mass without having to learn drilled choreographed formations like those used by their sedentary agrarian neighbors to the south. Beginning with the Scythians around the 6th century BCE to the culmination of the Mongols in the 14th century CE, the Steppe nomads of Central Asia were masters at horsemanship and archery on the battlefield. The domesticated horse, Equus ferus caballus, played a major role in their life, it was a status symbol of wealth, a commodity for trade, and it allowed them to conduct raids or wage warfare on a vast scale.

Understanding how the horses interacted as a collective will help explain how the horse archers were so effective on the battlefield. This knowledge elucidates the mechanisms of a dynamic form of warfare of the nomadic of the Steppe horse archers. To develop an understanding of synchrony, this thesis will examine the collective behavior of animals, which has been studied in biology and ethology, the empirical and objective study of animal behavior in the natural environment. In addition, literature from primary sources that describe how the nomads fought as horse archers was used. Secondary sources were used to integrate current scholarship with synchrony. Furthermore, archaeological literature was explored to examine the material culture

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used by the nomadic horse archers of the Eurasian Steppe.

A great deal of effort has been put into studying how horse archers maneuvered on the battlefield. Various training methods such as the great hunt and equestrian games conducted by the nomads have been examined trying to explain why they were so successful against the seemingly better trained and well equipped armies to the south. Scholars have combed through the records of the Chinese, Byzantines, Romans, Europeans, Persians, and the Arabs looking for descriptions of horse archers in action. Denis Sinor, professor of Central Asian Studies at Indiana University, stated “Much has been written, albeit rather superficially, on the cavalry tactics used by the great nomad armies”. Several scholarly studies have attempted to explain how the horse archers were able to act in unison, yet the ethological aspect of the horse as a herd animal has been largely un-investigated. As a result, the significance of synchrony has been ignored or most likely, unknown. Because *Equus ferus caballus* was a ubiquitous element in Eurasian Steppe warfare, it is important to understand how the rider trained, controlled and interacted with the horse, but it is equally important, for those studying the Eurasian Steppe nomads, to understand how the horses influenced the action of the riders through synchrony.

The conflict between the Crusaders, the Mamlûk Sultanate of Egypt, and the Mongols has captivated my interest, especially the military conflict. Studying the warfare between the three belligerents poses a significant challenge. Reuven Amitai has pointed out there is very little study on the military history of the Mongols in Iran. Several scholars including Timothy

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7 Professor Amitai made this point during a presentation pertaining to his PhD work on the Mongol-Mamluk conflict in the late 13th and early 14th centuries.
May,David Nicolle,and Witold Świętosławski have written about the training, weaponry and tactics of the horse archers as well as the individual capability of the horse archer. Many historical studies focus on the warfare, while archaeological studies focus on the equipment, and anthropological studies emphasize the relationships between the nomads and their southern neighbors. However, when it comes to historical, archaeological, or anthropological studies very few consider the horse as an interacting agent. A key point to bear in mind is, understanding the behavior of the individual in isolation does not necessarily provide information about the properties of that fundamental unit [horse and rider] within a collective situation, where interactions may determine much of the group dynamics. There is a growing interest in including fresh ways to understand how the nomadic peoples of the Steppe integrated the horse and how it had an indirect influence on the warriors. The most significant factor the horse played in nomadic warfare was synchrony. The study of synchrony and the Mongols, as well as other Steppe nomads such as the Seljuq Turks (11th – 13th centuries CE), is a start to a greater understanding of the military history of the Crusader-Mamlük-Mongol conflict.

15 Anthropologist Pita Kelekna’s book focusses on the politico-military and economic importance of the horse
The concept of synchrony is something that I learned about when learning archery and observing those practicing mounted archery.\textsuperscript{17} Horse trainers have been using the term synchronization to emphasize to their students that they need to become one with the horse; to do what the horse is doing. Lucy Rees, the leading ethologist on the study of horses in the natural environment, uses the term synchrony to explain how the animals are able to move within a mass without jostling each other.\textsuperscript{18} After reading through her sources, I contacted Lucy for additional information. She explained that she would like to see someone write about the Steppe Nomads and how they utilized synchrony as mounted archers in warfare. Since there is no source that incorporates synchrony into nomadic warfare of the Eurasian Steppe nomads, I decided to use it as the bases of this thesis.

The methodology used for this thesis is an amalgamation of multiple disciplines. My goal was to examine the various sources and combine them into a cohesive narrative to gain a greater understanding of how it was that the nomadic horse archers of the Eurasian Steppe were able to overcome their neighbors to the south. My analysis is based on close reading of historical accounts given by contemporaries who wrote about the Steppe nomads and later observations from ethologists. With that knowledge, I used critical analysis to understand and convey how it was the Steppe Nomads were able to use the horse on the battlefield without learning drilled choreographed formations so commonly used by the Romans, Greeks, Macedonians,\textsuperscript{19}

\textsuperscript{17} Living in Montana has given me the opportunity to spend time with family members who compete in O-mok-see tournaments, those who practice and compete in horse archery, and observe Blackfeet children competing in local horse races. Many of these people explained how to control the horse when riding without using reins and the purpose of various pieces of horse tack. The experience of handling the bow and learning basic riding skills has helped to understand what it takes to become a competent archer and to understand the sources used for this thesis.


Byzantines,\textsuperscript{20} Mamlūks and Chinese.\textsuperscript{21} Quotes from various sources were used to emphasize concepts and imageries; they were not cherry picked to create a forced narrative of synchrony. To maintain a methodological balance, historical material and other sources such as archaeology, anthropology, ethology, and biology were used to assemble the framework to put everything into the anthropological and historical context.

Historical primary sources were used to examine how the horse archers of the Steppe fought. Although there is a paucity of primary historical sources and anthropological studies of Eurasian Steppe warfare for any given time period of the Steppe, there is enough information to support this thesis. The same holds true with archaeologists, such as Gala Argent who examine the relationship between horses and humans.\textsuperscript{22} The lack of material pertains to the specific information that modern scholars desire in order to understand details. Contemporary writers of the past did not take into account what future scholars would like to read. Just like authors today, they had their own agendas and wrote about what they thought was significant and important. The information is fragmented and written in many different languages including Greek, Chinese, Persian, Latin, and Arabic.

Secondary sources from other scholars who have conducted research on specific topics were also used. Their information provided historical, religious, and geographical data for chapters one and two. Scholarly work on the military history of the Steppe nomads was used to supplement the primary sources. The sources provide the reader with the necessary information to understand how the nomads utilized the horse. Many secondary sources were written by those

\begin{thebibliography}{99}
\bibitem{20} Dennis, George T. \textit{Three Byzantine Military Treatises}. Dumbarton Oaks, 2008. The Byzantines saw themselves as Romans and continued the writing of military manuals.
\end{thebibliography}
who specialize in certain topics such as religion, military history, and weaponry. Their material has made it possible to carry out further research for this thesis; they provided the sources and analysis needed to create a foundation for further exploration.

Archaeological excavations of burial mounds in Central Asia and the Eurasian Steppe provided the information for the cultural material artifacts that are ubiquitous to the Steppe horse archers. Equipment such as the bow and arrow, saddles, stirrups and bits as well as burial practices of the nomads were examined to help explain what the nomads used to enable them to utilize the horse on the battlefield. A great deal of anthropological literature prefers the theoretical framework for writing, however, this is not the case for those researching the past of the Eurasian Steppe nomads. Some of the writing from anthropology is a historical narrative account coupled with the author’s analysis, especially when it comes to Steppe warfare and emphasizes theory when it comes to explaining Steppe nomadic state building.23 Anthropological research has avoided the pitfall of viewing the nomads as nothing but a destructive invading force bent on raiding and destroying; however, there is a lack of interest towards military tactics and incorporating the horse as an agent, which is a significant weakness as a source for this thesis.

The scientific data came from various sources. Genetics examining the horse bones excavated by archaeologists provided information on dating for horse domestication. Biologists studying the movements of birds, fish and ungulates provided explanations as to how large numbers of animals can synchronize their movement without interfering with those next to them.

Computer programmers have written programs to model the movement of animals *en mass*. Their applications helped to provide a model to create synchrony in action. Ethologists, researchers of animal behavior, studying the movement of horses within a herd provide information concerning how horses learn to move in synchrony. All these sources have been used in various chapters of this thesis.

The first chapter pertains to geography and trade routes. The Eurasian continent is the largest land mass on the planet. The names of rivers, deserts, mountains, oases, lakes, and natural terrain have changed over the centuries making it confusing for anyone researching the region. In addition human-made structures such as cities, fortresses, villages, religious monuments, and regional areas have also been called by different names. For example, the city of Samarqand used to be called Marakanda by the Greeks and Afrasiyab by Sogdians. In some cases cities and villages were destroyed and abandoned due to warfare, natural disaster such as earthquakes and floods, or epidemics. Some were repopulated and renamed while others remained deserted only to be rediscovered by modern scholars such as Aurel Stein (1862-1943) and Sven Hedin (1865-1952).24 The names of places or topographical features in this thesis will be those that are more commonly used in secondary sources in order to help maintain consistency and avoid confusion.

The trade routes in the region are known by the title “Silk Road.” One of the most important factors in the development of the trade routes was the domestication of the horse, which allowed people to travel greater distances. The trade routes not only spanned an east-west direction, they also spanned a north-south direction. Many of these passages have been referred to as the Steppe Routes. Collectively the routes can be referred to as the battle roads due to

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centuries of conflict between the nomadic horsemen from the north and the agrarian peoples to the south. Without the horse, which was used for traction, transportation, and a mount for fighting, the trade routes would never have been as extensive as they were.

The second chapter pertains to the peoples of the Steppe and Central Asia. The history of these people has been explored in a variety of texts. Numerous nomadic confederations, empires, dynasties and kingdoms have risen and fallen in the past 2,500 years. Not all will be mentioned because there are simply too many. To incorporate all the peoples of the Steppe into a narrative history would result in hundreds of pages as in Empires of the Steppe by a French historian, René Grousset (d. 1952).25 That book covers several centuries spanning from approximately 1000 BCE to the late 19th century. It is extensive in terms of timeline, but the overall aspect is limited in detail due to the long time period the author covered. Grousset’s attempt to give a chronological history of the Steppe was a monumental achievement in his time. Stuart Legg wrote a shorter book titled The Barbarians of Asia: the Peoples of the Steppes from 1600 B.C.26 Legg’s work is very noteworthy, however, the title places the reader into the mode of being the outsider and viewing the people in the book as barbarians. Peter Golden has written extensively about the nomads of the Steppe, and he created a high standard for studying the people of the region. His article, “War and Warfare in the Pre-Činggisid Western Steppes of Eurasia,”27 provides a wealth of information concerning the lesser known peoples of the Steppe. Christopher Beckwith’s book, Empires of the Silk Road: A History of Central Eurasia from the Bronze Age to the Present,28 is a great addition to studying the region. The Russian scholar

Vasily Barthold wrote two important books, *Turkestan Down to the Mongol Invasion* and *Four Studies on the History of Central Asia*, that are valuable secondary sources. Barthold had the ability to combine and synthesize historical research with the archaeological data of Russian archaeologists of his era. Nicola Di Cosmo, author of *Ancient China and Its Enemies* and *Warfare in Inner Asia*, provides thought provoking information regarding the effects of climate on nomadic warfare. Other scholars, such as Morris Rossabi and David Morgan, provide historical information from multiple primary sources. Anthropologist Jack Weatherford’s *Genghis Khan and the Making of the Modern World* focusses primarily on the rise of the Mongols, and Thomas Barfield’s *The Perilous Frontier: Nomadic Empires and China, 221 BC to AD 1757* focusses on the relationships between the nomads and the sedentary peoples.

Archaeologists such as Valerii P. Nikonorov have shorter accounts focusing on the cultural material, art, and carvings to examine how the nomads conducted warfare. Other Russian archaeologists, such as Kemal Akishev, Sergei Rudenko and Natalia Polosmak, excavated nomadic burial mounds called *Kurghans*. Akishev discovered the Golden Man (also called Altyn Adam), a young nomadic ruler buried with his suit of scale armour made of gold now on display at the Kazakh National Museum. Rudenko unearthed horses and their tack as well as a body in good condition that still exhibited tattooing. Natalia’s most spectacular find

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34 Nikonorov, Valerii P. *The Armies of Bactria 700 BC - 450 AD (volume-2)*. Stockport: Montvert Publications, 1997. Professor Nikonorov presented several talks about Huns at the University of Montana. He focused on the equipment, and especially the early use of the leather stirrup.
was the ice maiden who was well preserved due to the frozen permafrost and six horses that had been buried with her. Rudenko and Polosmak’s discoveries were part of the Pazyryk tombs located in the Altai Mountains of Russia bordering Kazakhstan, China and Mongolia. Archaeological papers have been written describing the artifacts found in burial graves, however, very little theoretical writing has taken place by archaeologists. Placing the excavations into the greater historical context, anthropologist David Anthony has implemented theory into his writings, which focus on the domestication of the horse and the early nomads of the Eurasian Steppe.36

Translated primary sources came from several contemporary writers spanning from Greece to China. The Greek historian, Herodotus (c. 484 – 425 BCE) wrote about the Scythians (7th century to the 3rd century BCE) who lived along the Black Sea coast north of the Caucasus Mountains in modern day Azerbaijan and Georgia.37 The Chinese historian Sima Qian (c. 145 – 86 BC) wrote about the Xiongnu (3rd century BCE to the late 1st century CE) who lived in Inner Mongolia, now part of modern-day China, and what is now the country of Mongolia.38 In the 11th century CE Anna Komnene (b. 1083, d.1153) wrote about the nomads, such as the Pechenegs (9th through 11th centuries CE) and Seljuq Turks (11th century CE) who were at conflict with the Byzantine Empire during her lifetime.39 Several Crusader accounts, such as the Gesta Francorum (Deeds of the Franks, c. 1100 CE)40 described how the Turks fought. In the 13th century, Friar Plano di Carpini traveled to the Mongol capital of Qaraqorum as an envoy of

the papacy in Rome. During his travels he described their customs and belief systems as well as how the Mongols were equipped and their way of fighting. The famous European traveler, Marco Polo who traveled to China between 1271 and 1295, documented what he observed about the Mongols. Various Arabic sources such Ibn Fadlan (d. 960 CE), Ibn al-Athir (d. 1232/1233 CE), and Ibn Khaldūn (d. 1406) provide information about the Turks and Mongols. Two famous Persian writers, Ata Malik Juvaini (1226–1283 CE) and Rashīd al-Dīn Tabīb (1247–1318), provide valuable information about the history of the Mongols. The history of the people cannot be fully considered without full exploration of the role of horses and warfare, which is the subject of the next chapter.

Chapter three focuses on the warfare of the horse archers of the Eurasian Steppe. The study of how the Steppe nomads waged war has received some attention. Unfortunately, it hasn’t received the same detailed attention as the warfare of the Roman and Greeks. John Keegan’s famous book, A History of Warfare, gives only a brief overview of various aspects concerning nomadic warfare. The literature in the book that pertains to the nomads lacks in detailed information compared to accounts of European warfare. It is only in the past few decades that nomadic warfare has been given similar consideration. Steppe nomadic warfare

was not considered an art nor did it share the image of a drilled army equipped with elaborate weapons and armour. For years Charles Oman’s *The Art of War in the Middle Ages* was considered the standard authoritative literature on the topic of Medieval warfare. Scholars such as J. F. Verbruggen have challenged many of the misled notions seeking to have a greater and more accurate understanding of medieval warfare in Europe. In more recent years, the Crusades (1096 to 1291 CE) and the Byzantium wars against the Seljuq Turks (11th to 13th centuries CE) have become much more popular and have been examined in detail within the academic community. Scholars, including R.C. Smail, Christopher Marshall, and John France have extended our knowledge of how the Crusaders fought against the Turks, Ayyubids (1071 to 1250 CE), and the Mamlük Sultanate of Egypt (1250 to 1517 CE). Their research comes from the study of European manuscripts, artwork such as carvings, paintings, military manuals, and archaeological finds.

Warfare outside of Europe, especially the Middle East and Central Asia has drawn comparatively little attention, with the exception of the Mongol invasions of the 12th and 13th centuries CE. As mentioned above, there is very little military history research in this area with the exception of David Ayalon who focused on the non-Europeans such as the Ayyubids and the Mamlük Sultanate. Early research suffered from misconceptions, romance, the perceptions of otherness, and disdain for “oriental warfare.” In short, Patrick Porter has labelled these issues as Military Orientalism, building on Edward Sa’id’s theme of the way the west has a distorted

American-European centric view of the rest of humanity.\textsuperscript{53}

Military historian David Nicole has written about Medieval European, Byzantine, Crusader, Mamlūk, and Steppe warfare.\textsuperscript{54} His material about tactics, logistics, armour, and weapons has been invaluable. Nicolle bases much of his prolific writings on his research at museums in Europe and the Middle East, archaeological excavations, and military manuals such as Vegetius’ \textit{De re Militari} (a Roman writer in the late 4\textsuperscript{th} CE), the \textit{Tactica} of Nikephoros (a Byzantine general, circa 1000 CE), and Umar ibn Ibrahim’s \textit{A Muslim Manual of War} (an Arabic writing in Egypt, 1399-1411 CE).\textsuperscript{55} He has conducted experimental research on how various arms and armour were used and their effectiveness. The nomads did not leave any record concerning archery. However, several treatises have been written by their agrarian neighbors to the south that are vital for anyone studying archery in the era of the Steppe Nomads. \textit{Saracen Archery: an English Version and Exposition of a Mameluke Work on Archery} (ca A.D. 1368) by J.D. Latham and W.F. Paterson,\textsuperscript{56} and \textit{Arab Archery, An Arabic Manuscript Of About A.D. 1500: A Book On The Excellence Of The Bow And Arrow And The Description Thereof} by Nabih Amin Faris and Robert Potter Elmer\textsuperscript{57} are two Arabic Furūsiyya mamlūk sources. \textit{The Way of Archery: A 1637 Chinese Military Training Manual} by Jie Tian and Justin Ma is used by modern archers

\begin{thebibliography}{99}
\end{thebibliography}
studying ancient Chinese archery. Mike Loades, a popular military historian, has also written about Steppe warfare and has provided valuable information concerning the equipment used by the nomads. Much of his research is based on experimental archaeology and the reconstruction of weaponry and armament used in the past.

Several authors have written articles that have been particularly valuable in my research. Timothy May’s “Training of an Inner Asian Warrior”, “The Mongol Art of War and the Tsunami Strategy”, and The Mongol Art of War: Chinggis Khan and the Mongol Military System focus on Mongolian warfare. May is one of the leading experts on nomadic warfare during the medieval periods. Cam Rea’s Mongol Warfare: Strategy, Tactics, Logistics, and More and Carl Frederik Sverdrup’s The Mongol Conquests: The military Operations of Genghis Khan and Sube’etei are worth reading, but do not provide a great deal of information beyond May’s book. Witold Swietoslawski’s Arms and Armour of the Nomads of the Great Steppe in the Times of the Mongol Expansion provides information and depictions of the armour and weapons used by various nomads in the 12th through 14th centuries. For a general overview of nomadic warfare Erik Hildinger published Warriors of the Steppe: A Military History Of Central Asia, 500 B.C. to 1700 A.D. Although all the sources acknowledge the importance of the horse, none mention an

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important aspect of what the nomads learned – synchrony – the focus of the next chapter.

Chapter four focusses on what many military historians and experimental archaeologists have not elaborated on – synchrony. Even anthropologist Pita Kelekna’s monumental book, *The Horse in Human History*, makes no reference to it. Nevertheless, her publication is valuable for anyone studying the Steppe nomads on the Eurasian continent. Understanding the horse as a herd animal was something the nomads learned over a long period of time. Synchrony is not a single aspect of the herd; cohesion and collective movement are two components that will also be discussed. In addition, the Steppe nomads understanding of the horse was an evolutionary process from the time of domestication, learning how to ride the horse, using it for raiding, and then using it in cavalry formations of horse archers. It began when the peoples of the Bronze (3000 to 1200 BCE) and Iron Age (1200 to 500 BCE) began to hunt and tame the horse for resources. Therefore, the chapter will begin with the domestication of the horse. Archaeologists have been examining early nomadic camps to determine who domesticated *Equus ferus caballus*. Domestication and learning to ride were the first steps towards the understanding how to utilize the horse as a herd animal in warfare. The nomads learned many things about the horse such as selective breeding, husbandry, the idiosyncrasies of when horses should be allowed to graze and when not, and how the animal interacted within the herd. One of the most valuable aspects the nomads learned about the horse was synchrony and how to utilize it to their advantage when fighting their sedentary neighbors.

Biologists have used synchrony to explain how birds and fish are able to move within a mass without disrupting the movement of those around them. Herds of animals such as sheep, cattle, and goats on the Eurasian continent utilize synchrony when they move from pasture to pasture. In Africa, herds of buffalo, gazelles, and zebras travel in very large herds during the
annual migrations. The ability to move within the herd and not jostle or disrupt the group is not an innate behavior; the animals must learn. The examination of synchrony and horses comes from ethologists Lucy Rees and archaeologist Gala Argent. Rees has traveled the world examining horse behavior, within a herd, in Mongolia, Patagonia and Venezuela. Two of her books – *The Horse’s Mind* and *Horses in Company* – are extremely valuable when it comes to understanding synchrony; as she points out, synchrony is the highest aim of any kind of horsemanship.\(^{64}\) Gala Argent acknowledges the importance of synchrony.\(^{65}\) She examines the relationship between humans and horses, specifically through anthropocentrism of the Pazyryk burial found in the Altai Mountains dating to the 4\(^{th}\) and 3\(^{rd}\) centuries BCE. Both were instrumental in helping me understand synchrony.

Chapter five, the final chapter, draws conclusion from my analysis as to what the nomads learned about synchrony. For centuries the nomadic horse archers of the Steppe proved excellent warriors. Their way of life required every person to learn how to ride a horse and use the bow and arrow at a very young age. This has given credence that every adult male was prepared for raiding and military campaigns. Rarely were Steppe nomads able to conquer any of the agrarian / sedentary neighbors to their south due to lack of numbers (the nomadic populations were smaller than their neighbors), unification, and military technology with the exception of the Seljuq Turks and the Mongols. On the battlefield the nomadic horse archers were adept and extremely difficult to defeat. Several realms tried to develop their own horse archers; yet, they were never able to emulate the abilities of the horse lords on the Eurasian Steppe.

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In the 13th through 16th centuries the Mamlük Sultanate of Egypt and Syria created an army of horse archers. The creation led to an equestrian culture, called Furūsiyya, similar to Medieval Europe’s code of Chivalry. The corps of soldiers was former nomads from the Steppe and was considered cavalry par excellence. They were extremely effective troops who excelled in archery, horsemanship, close-in-combat with swords and lances, and drilled cavalry formations. Nevertheless, they could not emulate the synchrony of the nomad horse archers. The reason for this will be explained in this chapter. In addition, the chapter will also examine the issue of anthropocentricism that refers to humans being the only species with the innate knowledge to teach another, especially Equus ferus callabus.

Before moving forward the issue of dating needs to be addressed. First, BCE (Before the Common Era) and CE (the Common Era) will be used instead of BC (Before Christ) and AD (Anno Domino). The later tends to refer to a Christian orientated theme which does not wholly apply to the Eurasian nomadic narrative. Second, the two terms of ancient and medieval will be used to correspond roughly to 3000 BCE to 500 CE for the former and 500 CE to 1500 CE for the latter. While some may not like the term medieval, implying it references the middle ages of Europe, it has become more wide spread in various literature, written for a western audience, about the historical events that took place on the Eurasian Continent. The two terms are not perfect, yet they are useful when exact time frames are not needed.

Another topic that needs to be addressed is horse breed. To be clear, horse breed is irrelevant when it comes to synchrony. All horses can learn synchrony with other horse if they are allowed to roam in the open within a herd. While some readers may want to know what breed the nomadic Steppe horsemen or the sedentary neighbors to the south used, the study of the topics is beyond the scope of this thesis; furthermore, there is a lack of specific evidence to determine the breeds. Research is being conducted; however, it is extremely difficult to determine the horse breeds of the past due to the extensive amount of selective and crossbreeding within the last three hundred years which has created over 350 different breeds in the modern era. In a recent study researchers examined the Y chromosome of fifty-seven modern breeds, a fairly small sample size, and found two major lineages; the Arabian and the Akhel-Teki (also known as the Turkoman). In addition, there is the factor of landrace in which horses have been kept in relative isolation and not mixed with other breeds. The Mongolian horse is considered a landrace with its unimproved characteristics, yet research, examining the mtDNA, indicates it was influential, via crossbreeding, in the spread across Eurasia and the development of modern breeds. The Kazakh horse is a breed that would seem to appear as a landrace, however, it has been crossbred with the Mongolian and other breeds.

Another issue is horses were generally referred to where they came from. For example, the Nisaean horse, prized by the Greeks and Iranians speaking peoples, was names from the region from where it came from, the Nisaean Plain in modern day Iran. To complicate the

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matter, the Chinese and Soghdians cherished the blood sweeting horse from the Ferghana Valley region of Central Asia. The Nisaean and Ferghana horse are believed to be the same; the Chinese called it Tian Ma, heavenly horse, and the Greeks called it Nisean.\textsuperscript{72} The horse is believed to gone extinct, or at least the last recorded confirmation of live horses, in 1204 in Constantinople, during the Fourth Crusade.\textsuperscript{73} The modern day Akhal Teke (also called Turkoman) is believed to be the descendent of the Nisaean / Ferghana horse. Another example of a horse referred to by location is the Arabian which traces its roots to the Arabian region of modern day Iraq and eastern Iran. Adding to the dilemma of pedigree, written records were not used, although, oral traditions were used by some peoples, especially with the Arabs who can trace the Arabian horse back to the beginning of the Arab invasions of the 8\textsuperscript{th} century CE. In Medieval Europe, the horses were referred to via their role; warhorses were called destrier (\textit{dextrarius} – used by the nobility) and rouncy (\textit{runcinus} – used by non-knightly man-at-arms), the courser (\textit{cursarius} or \textit{fugator}) for hunting, and general riding horses were called palfreys (\textit{palfridus}).\textsuperscript{74} In Anatolia \textit{Cirit}, also called \textit{jereed}, was carefully bred for the game (covered in chapter three) of \textit{jereed}.\textsuperscript{75} The horses of the Eurasian Steppe can be divided into two types, the Kazakh, from the Central Steppe of modern day Kazakhstan west of the Altai Mountains, and the Mongolian of modern day Mongolia east of the Altai Mountains. The modern day Mongolian horse is believed to be the same horse the Mongols used eight hundred years ago due to its


\textsuperscript{73} Beverley Davis, “Timeline of the Development of the Horse,” Sino-Platonic Papers No. 177 (August 2007), p.65. Davis’ paper does not state the Nisean horse went extinct. It simply acknowledges the former home of the horse.; see also - https://www.allhorsebreeds.info/46862/nisean-horse/


diverse mtDNA indicating there was less selective breeding and landrace. The Kazakh, however, is not considered a landrace due to the lack of mtDNA and therefore it is questionable if it was the exact breed used by the Skythians and Turks in the Central Eurasian Steppe; however, it is most likely related.\textsuperscript{76} Despite their small size, they are considered a horse, not ponies which are generally smaller.\textsuperscript{77} Hendricks, a specialist on horse breeds, states a pony has “draft-type qualities – a shorter leg, squarish or boxy type of head, massive muscling – as opposed to a light horse type with a longer cannon and more refined head and lighter body muscling.”\textsuperscript{78} She points out that some Arabians horses are of similar height as the Mongolian horse, yet, no one in their right mind would consider the Arab horse a pony.\textsuperscript{79} Nevertheless, what must be remembered is the breed of the horse does not play a role when it comes to synchrony; the most important aspect that matters is where and how the young horses were raised – the environment and learned behavior are the dictating factors. With that being stated, some breeds – keeping in mind the above information – will be covered in chapter two.

\textsuperscript{76} Ibid., p.252.
\textsuperscript{77} Ibid. p. 3, 126-128, 233, 445, The difference between a horse and pony is size and build; the horse-pony divide is generally 14 to 14.5 hands (56-58 inches). Although the Kazakh and Mongolian are between 12 and 14 hands tall, they are considered horses. John Mason Smith, Jr. refers to the Mongolian horse as pony based on size, but sometimes refers to it as a horse. Smith, John M. "Ayn Jālūt: Mamlūk Success or Mongol Failure?” Harvard Journal of Asiatic Studies 44, no. 2 (1984), p. 336, 345.
\textsuperscript{79} Ibid., p.xvii.
Chapter 1- Geography: Central Asia, Eurasian Steppe and the Silk Road

“To follow the Silk Road is to follow a ghost. It flows through the heart of Asia, but it has officially vanished leaving behind the pattern of its restlessness: counterfeit boarders, unmapped peoples.”

The terms Central Asia and Steppe conjure many different images. For some, it is an ambiguous region where the geography, people, florae, climate, and fauna are unknown, and it is a location on a map they could not locate. For others, who have at least heard of it, it is like the dark side of the moon; they know approximately where it is, but have very little knowledge of the region. For the traveler or adventurer, it is an endless region with vast diversity that is inviting and tempting, yet daunting. It is a region of hospitality, extreme climate, seas of grass and deserts, majestic mountains, flowing rivers, and vibrant colors. Central Asia and the Eurasian Steppe are rich with natural resources such as gold, iron, silver, and more significantly oil and gas reserves. It is dotted with cities and large swaths of land with no inhabitants. Until modern times, it took people weeks to travel from one end to the other, or years for a round trip. Above all, it is an area that has no access to any of the oceans of the world.

81 This shouldn’t be all that surprising. Television hosts such as Jay Leno and Jimmy Kimmel walk the streets near their studios in California asking people geographical questions. Many people, for example, are unable to name the country north of the United States or locate North Korea on a map.
83 For example, it took William Rubrick, a Flemish Franciscan missionary, approximately three months, during the winter months, to travel from the Don River to Qaraqorum (the Mongolian capital of the 13th century), and a month, during the summer for his return trip, to travel from Qaraqorum to the city of Tripoli (modern day Lebanon) on the
The land locked region of Asia is called by several terms such as Central Asia, Inner Asia, the Heart of Asia, Middle Asia, and in more recent times Eurasia, but the terms don’t always denote clearly defined boundaries. The concept of the terms derives from a 19th century German geographer and traveler Friedrich Wilhelm Heinrich Alexander von Humboldt. He was commissioned by the Tsarist government of Russia to explore the region to look for mining prospects and to gather climate data. In the 1830s he published his work calling the region *Asie Centrale*, Central Asia. Although Humboldt introduced the term it wasn’t clearly defined.

Central Asia is a vast area made up of numerous “oases” with different names, three of which are often used: Soghdiana or Transoxiana, Khorasan, and Khwarizmia. To the east of the Aral Sea and bordering the Pamir Mountains is the territory known as Soghdiana, the Pearl of the East, referring to the Soghdian people who inhabited the area beginning around the 6th century BCE. The name Soghdiana remained in common use through the late medieval era. To the south of the Amy Darya (also known as Oxus – further detail on rivers below) lies the region of Bactria, ‘land of a thousand cities’. To the west of Soghdiana, south of the Aral Sea, east of the Caspian Sea and bordering the Karakum desert to the south is the region called

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Khwarizmia. A common term for Central Asia, including most of modern day Afghanistan and northeastern Iran, is Khorasan, which means “the land where the sun rises”. The term originates from the Sasanian Empire (224 – 651 CE) and remained in use for several centuries in Arabic and Persian literature. After the Mongol invasions of the 13th century CE, the region was referred to as Mogholestān, referring to the Mongol conquerors who ruled the territory. The weakness of the terms is they pertain to a smaller geographical area that covers a general area with vague boundaries.

The twentieth century also brought about different labels and boundaries. After the Great War (1914 – 1918 World War I) in the late 1920s, Joseph Stalin drew lines on a map to create border lines for republics and named them to meet his vision of what he referred to as Middle Asia or Turkestan Autonomous Soviet Socialist Republic (Turkestan ASSR). In 1922 the Turkestan ASSR was divided into two smaller regions called Kirgizstan Autonomous Soviet Socialist Republic (Kirgizstan ASSR) and Kyrgyz Autonomous Soviet Socialist Republic (Kyrgyz ASSR). Yet again, Stalin divided the region into five polities – Soviet Socialist Republics (SSR). Uzbek SSR (now Uzbekistan) was established in in 1924, Turkmen SSR (now Turkmenistan) in 1925, Tajik SSR (now Tajikistan) in 1929, Kazakhstan SSR (now Kazakhstan) in 1936, and Kirghiz SSR (now Kyrgyzstan) also in 1936. The borders were not defined by ethnicity, geography, nationality (a concept that hadn’t fully taken root in this region during this

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89 The name is well known for the famous mathematician, al-Khwarizmi – the Khwarizmian – (d, 850 CE), who developed the concepts for algebra. The term algorithm was derived from the Latinization of his name. The word algebra comes from the Latinized title of his book *Kitab al-Jabr wa-l-Muqabala* (*Compendious Book on Calculations*). See Starr, S. F. *Lost Enlightenment: Central Asia’s Golden Age from the Arab Conquest to Tamerlane*. Princeton: Princeton University Press, 2015, p.167-169.


era), religion, language, or any form of historical bases. Middle Asia was created to meet Stalin’s political agenda to ensure none of the peoples in this area would unite against the Soviet Union.

In much more recent times, UNESCO has defined Central Asia to include Stalin’s creations as well as other countries such as Afghanistan, the southern central part of Russia, Mongolia, northeastern Iran, northern Pakistan, and China, more properly Xinjiang, a province in the northwestern region of modern day China. The expanse of the region is situated in the coordinates of 15° to 115° east and 25° to 50° north. In geographical terms the Transcaspian plains and low tablelands between the Aral Sea and the Tian Shan (Heavenly Mountains) mountains make up the western region. The eastern portion encompasses the high plateaus and surrounding mountains of the Tarim Basin as well as the Altai Mountains and southern Siberian Plains.

All the terms that pertain to the region are blanket terms that are arbitrary and change over time to meet scholarly needs or political agendas. They are somewhat useless as explanatory terms for historical, anthropological, or archaeological studies. They lack clear physical geographical boundaries let alone any reference to time and space. The term Central Asia will be used in this paper and is defined as a region. The region will contain the modern countries of Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan, Tajikistan, northeast Iran, northern Pakistan, northern Afghanistan, all of Mongolia, and the northwestern portion of China, specifically Xinjiang. In geographical terms it will contain the mountain ranges of the Pamirs, the Tien Shan, the Kunlun, the Hindu Kush, the Altai, and Karakorum. It will also contain the

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Taklimakan, Gobi, Kyzyl Kum, and Karakum deserts.

The Eurasian Steppe, a Russian word for grassland, is a vast territory spanning the two continents of Eastern Europe and Asia. The most noticeable feature is the rolling grass fields mixed with temperate savannahs, shrubs and the lack of woodlands. From east to west it expands from Manchuria to Romania reaching almost one-fifth of the way around the world. From the north to the south it is narrower bordering the forests of Siberia and the deserts in the south from China to Iran and Turkey. The Steppe lies in the countries of China, Mongolia, Kazakhstan, Russia, Ukraine, Uzbekistan, Hungary and Romania. At its simplest, it can be broken into three parts: The Western Steppe, which sits in-between the Dnieper River and the Ural River; the Central Steppe, which corresponds to the territory between the Ural River and the Altai Mountains; and, the Eastern Steppe, which sits in between the Altai Mountains in the west all the way to the Manchurian plains in the east.

The elevation of the Steppe ranges from 300 feet above sea level to 4,500 feet and averages 3,500 feet. In the far west are the Carpathian Mountains that reach just over 8,700 feet in elevation. To the east of the Carpathians and north of the Caspian Sea are the Ural Mountains which run along a north-south axis. In the southwest, in-between the Black and Caspian Seas, are the Caucasus Mountains reaching 18,000 feet. Next, moving eastward along the southern border are the Pamir, Alay, and Tian Shan (Heavenly Peaks) Mountains. These mountains reach an impressive height of 24,000 feet. The next set of mountain ranges, which are considered the common divide between the Eastern and Western Steppe as well as the divide between western Mongolia and Xinjiang, China are the Altai Mountains that reach up to 14,000 feet in elevation. On the eastern edge of the Steppe are the Yablonoviy and Stanovoy ranges,

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94 Ibid., p.4,12.
both considered to be part of the Khangai Mountains trending southeast to northwest. The highest peak of the Khangais is 13,225 feet.\textsuperscript{96} The surrounding mountains are a significant benefit for the Steppe by providing moisture, substance for animals, and natural barriers against hostile parties.

Along the lower elevations and the lower edges of the mountains, acres of forests grow. Much like Montana there are two types of forests: deciduous and coniferous. Deciduous trees are affected by seasons in which they lose their leaves during the cold season. Coniferous trees, often called pine trees, maintain their needle-leaves year around. Along rivers and valleys groves of fruit trees are grown supplying people with a source of nourishment. In the flood plains, riparian forests of elms, Russian olives, and tamarisk trees thrive. Over the centuries the woods and forests have been an invaluable resource for the peoples living in the Steppe.

In the region of Khorasan, craftsmen were famous for making arms and armour which were sold in markets from Bukhara, Samarqand, Herat to as far away as Cairo, Tbilisi and Baghdad.\textsuperscript{97} In the cities and small villages markets thrived selling goods from metals and wood products made by craftsmen. From the abundant wood sources armourers made lances, saddles, as well as arrows and composite bows which were highly sought after by warring rulers and factions throughout the centuries.

It the past, forests were once abundant in Central Asia. Today many of the regions are void of trees.\textsuperscript{98} Much like the Aral Sea disaster, it is claimed many of the forests have been lost to human actions. Damming of rivers by the Tsarists for irrigation began in the 18\textsuperscript{th} century.

\textsuperscript{96} Ibid., p.1-3. One can find the elevations of any of the peaks within the mountain ranges via Google Earth or even Wikipedia.
\textsuperscript{97} Elgood, Robert. \textit{Islamic arms and armour}. Scolar Pr, 1979, p.43-46.
Climate change has also been cited for the diminishment of the timberlands. How much human interaction and climate change have depleted the region of woods is up for debate. Nonetheless, the lack of woodlands in the modern era makes it difficult to believe the historical sources describing large numbers of trees.

During the winter months, the mountain ranges accumulate large amounts of snow. During the spring, the runoff (melting snow) is the lifeline for the rivers that run throughout the Steppe. The plains are cracked with rivers flowing from the various mountain ranges. Two of the most famous rivers are the Amu Darya and the Syr Darya; or in the pre-Islamic (before 610 CE) times called the Oxus and Jaxartes by the Greeks. The Syr Darya was also referred to as Seyhūn in Arabic sources in the post-Islamic era (after the emergence of Islam in 610 CE). The river springs forth from the Tian Shan Mountains and flows westward into the Aral Sea. Seyhūn refers to one of the four rivers in the Garden of Eden. Syr refers to the color of the river \(^99\) and is a more recent (17th century CE) name for the river. The Amu Darya, referred to as Jayhūn in Arabic sources in the post-Islamic era, forms with the junction of two rivers, Vaksh and Panj, which originate in the Hindu Kush and Pamir Mountains. Amu refers to a city, Āmul, that the river runs through and Darya is Persian for river, giving the river its name. Jayhūn also refers to one of the Biblical rivers in the Garden of Eden.\(^100\)

Other rivers flow from the south to the north ending in the Arctic Sea. Ibn Fadlan, a 10th century Arab traveler, wrote his famous *Risāla*, about his travel adventures, findings and discoveries while traveling north along the Ural River.\(^101\) The river was a navigation route for

\(^99\) The color of the river is a result of the glaciers in the Tian Shan Mountains scraping and grinding the rocks into very fine powder that creates the blue-turquoise color. Glacier National Park in Montana is very famous for its numerous lakes that have similar color due to the movement of glaciers.


trade. In the 10th century the city of Saray-Jük was built along the river, now in modern day Kazakhstan. In the 13th century the city became the capital of the Golden Horde becoming a major hub for the northern portion of the trade routes. The Irtysh River also flowed northward dumping into the Gulf of Ob, over 2,600 miles away. The Irtysh became a natural divide for the various peoples of the region.

In modern day Xinjiang, China, the Tarim Basin, an endorheic basin - surrounded by two mountain ranges, provides the headwaters for the Tarim River. Endorheic refers to an area of land that has limited outward drainage for flowing waters such as streams, rivers, and lakes. The basin is filled with swampy type bodies of water and shallow lakes that blend into the environment from dirt, sand, and silt blown over and accumulated on top of it. The basin was for centuries an avenue for trade along the trade routes connecting China to Greater Iran via the Gansu or Hexi Corridor located in modern day China.

In the Steppe are large lakes that provide an oasis for plants and animal life. Lakes such as Baikal, Issyk-Kul, Lake Alakol, Lake Sasykkol, Balkhash, Aydar Lake and the Aral Sea are among the largest lakes. Lake Baikal in eastern Russia north of Mongolia holds the greatest volume of fresh water of any lake in the world; approximately one-fifth of the worlds unfrozen freshwater. In comparison all five of the Great Lakes hold approximately the same amount of water as Lake Baikal. The surrounding areas provide fodder for fauna and a continuous supply of water for people and animals. Throughout the Eurasian Steppe and Central Asia the rivers are the life blood for lakes, inland seas, and the grasslands. In modern times the mismanagement of

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damming and irrigation has turned some areas of Central Asia into an ecological disaster. The Aral Sea is a perfect example of this; it is now only 10% of its original size and volume.\textsuperscript{103} It used to be the fourth largest lake in the world.

The weather along the Steppe lands is most noted for short, often hot summers, and very long winters. During the summer, temperatures range from day time highs in the 90s to almost freezing at night. Annual rainfall ranges from ten to twenty inches. In the winter, day time temperatures are quite often below zero degrees Fahrenheit. Ulaanbaatar, Mongolia is considered the coldest capital in the world with average temperatures of 20 degree below zero.\textsuperscript{104} In comparison the average temperature in Moscow, Russia is around 20 degrees Fahrenheit.

During harsh winters the weather is very cold, which kills off many of the livestock. The Mongolians call the extremely harsh winters \textit{dzud} or \textit{zud}.\textsuperscript{105} The \textit{dzud} comes in four different forms, cold, iron, white, and black. Cold simply refers to the exceedingly cold temperatures well below -50 degrees farenheight. An iron \textit{dzud} is a thaw followed by a freeze that lasts for that freezing the pastures, the food source for the livestock. White pertains to heavy snows which blanket the region cutting the livestock off from the vegetation. Black is when there is lack of precipitation for long periods of time. In modern times the \textit{dzud} has caused the deaths of hundreds of thousands of livestock.

Travelers of the past have documented extreme weather. In the 13\textsuperscript{th} century, Friar Plano de Carpini, a Franciscan envoy traveled across Central Asia to the court of the Mongolian capital, Qaraqurum. He reported in his journal severe thunderstorms during the summer and

heavy snowstorms in late June of 1246 CE.\textsuperscript{106} In 1942, a meteorological study recorded the weather in June and its extremes. The report stated a:

…calm and sunny evening was interrupted by a 60 m.p.h. gale, bringing dust, fog, and ninety percent cloud cover. The storm lasted an hour, blew itself out and was succeeded by clear sky, with the night stars especially brilliant. Then between 1 and 2 a.m. there were heavy showers of rain, and by dawn the sky was again clouded over. By 9 o’clock the next morning there was fog, driving snow and a temperature of a 33 degrees Fahrenheit.\textsuperscript{107}

Such descriptions of the weather almost appear to be exaggerations of an imaginative writer. Yet, it appears the idiom of wait five minutes the weather will change clearly befits the region.

Spring is a season filled with vibrant colors. Melting snows and plentiful rain brightens the grasslands with seas of green blades. The green pastures are the life blood for providing nourishment for their herds of animals. Colorful flowers of red poppies, gentians, geraniums, eyelets, delphiniums, asters, rhododendrons, edelweiss, white convolvulus, and forget-me-nots bristle the plains and mountain sides. Even the deserts will blossom with colorful plant life for a short period of time. Within Central Asia and the Steppe there are over 8000 species of flora, 1600 of which are flowers that grow only in the desert.\textsuperscript{108} Trees along the rivers and in the mountains spring forth with life bearing nuts and fruits. The trees provide apples, grapes, cherries, apricots, walnuts and pine nuts, all of which play an important role in human cuisine and trade.

The Steppe is not continuous grassland. It is broken by mountains and deserts, and is comprised of smaller grasslands in the south and west. These pocket Steppes are in the countries of Hungary (called the Great Hungarian or Pannonian Plain), Anatolia or modern-day Turkey,

\textsuperscript{107} Ibid., p.5.
\textsuperscript{108} Ibid., p7.
Turkmenistan, Uzbekistan, Iran (Iranian Plateau)\textsuperscript{109}, and China (the Tibetan Plateau or Plateau of Xizang “Roof of the World”\textsuperscript{110} and Inner Mongolia). The most common feature of the smaller Steppe areas is they occupy a large plateau. These pockets of grasslands are not always considered part of the Steppe, but they do offer the same resources as the larger Steppe in the north and therefore will be considered part of the Steppe for this paper.

Both Central Asia and the Steppe are home to one of the most famous features of the region: the Silk Road. The Silk Road is a glamorous term for the trade routes that run east-west and north-south directions linking the region with trade, political and cross-cultural exchange, which lasted for centuries. It is also a misleading term. Rather than a single road it was a network of various trade routes connecting cities, villages, caravansaries, and the nomadic tribes to the north and the exotic territories south of the Indus River. Even the word road is somewhat misleading. Quite often there were no roads. At best people would follow a path or hire guides to lead them to their destination. They also hired soldiers to protect the caravans and travelers from ruffians as Ata Malik Juvaini, a 13\textsuperscript{th} century CE Persian scholar, called brigands and raiders, in his historical account of the Mongols.\textsuperscript{111} Rivers provided an easy form of navigation and in some cases a thoroughfare for those knowledgeable in ship, more accurately water craft, building. The Russ, Volga Bulgars, and Chinese were very adept with this mode of travel. When the trade routes began is up for debate. David Christian claims they began in the third, if not the fourth millennia BCE.\textsuperscript{112}

Historically, the credit to the establishment of the Silk Road is given to the Rulers of the

\textsuperscript{109} Iranian, more accurately Iran zamīn (ايران زمین / the land of Iran) is both a linguistic and geographical reference.
Han Dynasty (207 BCE to 220 CE) especially Emperor Han Wudi (141-87 BCE) who commissioned exploration and expansion to the west. Sima Qian, a 1st century BCE Han historian, wrote about the travels of the envoy, Zheng Qian, who was sent by the emperor to open negotiations with the nomads to the west to form an alliance against a common nomadic enemy to the north. Zheng Qian’s endeavors helped to establish connections to the west encouraging trade and political exchange. However, some historians give credit to the Qin Shi Huang Di, the first emperor of China as the person who instigated the trade westwards. While this may be a bit dubious, it is the Qin’s struggle with the nomads of the north that stimulated an exchange to the north and west of mainland China. Perhaps the most forgotten people who truly expanded the east-west trade routes were the Achaemenid Persians (500-330 BCE). It is they who established the Persian Royal Road that initially ran from Susa, in modern day Iran, in the north to Asia Minor, now known as Turkey. In time it developed into a thoroughfare used for trade and postal stations, from the central Steppes of modern-day Uzbekistan and Turkmenistan to northern India, Iran, Iraq, Syria, and Turkey. The Royal Road featured relay stations that provided fresh horses, riders, and food for envoys and couriers who used the road for communication. Along the routes were established trading posts, later known as caravansaries that provided resting places and sometimes protection for trading caravans, dignitaries, and travelers. Herodotus, Greek historian in the 5th century BCE, praised the posts stating:

There is nothing in the world that travels faster than these Persian couriers [chapars]. Neither snow, nor rain, nor heat, nor darkness of night prevents these couriers from completing their designated stages with utmost speed. (Histories VIII.98).114

Alexander the Great’s conquest of the region was short lived due to his death in 323

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BCE. His empire was divided into several successor states by his Macedonian and Greek generals with the largest referred to as the Seleucid Empire (312 – 63 BCE). The other major state was Ptolemaic Kingdom of Egypt (305 – 30 BCE). The successor states were known as the Hellenistic Empires because of their Greek cultural influence and language. The exploits of Alexander the Great and fragmentation of his empire interrupted the trade routes. However, they were reestablished under the Seleucids and commerce flourished. According to Strabo, the Greeks (in this case the Seleucids) extended their empire all the way to Seres, a Greek term that means ‘the land where silk came from’ – China.

Trading caravans did not traverse the entire length of the routes. They would travel from their originating point to a city and return or they would follow a particular route through a prosperous region. The routes were never static. Environmental or political matters, conflict, disease outbreaks, or brigandage forced routes to change. The rise and fall of empires redirected routes from one city to another depending on which ones had been destroyed or preserved. In the 12th and 13th centuries CE cities such as Afrasiyab, Gurganj and Bukhara flourished. In the early 13th century the cities were decimated by invasion. A century later the city of Samarqand, located at the edge of the ruins of Afrasiyab, was built and became a thriving city for trade and commerce.

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117 Hansen, Valerie. The Silk Road: A New History. New York: Oxford University Press, 2015. Valerie’s premise is caravans were generally small and traveled over fairly short distances rather than large caravans crisscrossing Central Asia. Her primary focus is the Tarim Basin in modern day Xinjiang, China. However, Starr implies some caravans consisted of at least a thousand camels. Starr, S. F. Lost Enlightenment: Central Asia's Golden Age from the Arab Conquest to Tamerlane. Princeton: Princeton University Press, 2013, p.41.
In the 19th century, a German traveler and geographer Ferdinand von Richthofen joined an expedition to various countries in the eastern part of Asia in the 1860s. It was China that captivated his interests. He made several exploratory trips to the region paying close attention to geological, economical, and ethnological studies. After his return to Germany he published his work and coined the phrase *Seidenstraße*, translated into English as Silk Route, or more commonly Silk Road, to describe the trade routes running from China to the west. As the title implies, silk was one of the major commodities sold along the Silk Road.

According to legend, raw silk was discovered by the 14-year-old empress Leizu, circa 3,000 BCE, when a silkworm cocoon fell into her drink. While removing the cocoon from her cup she discovered the cocoon unraveled into a soft thread. With the support of her husband, the Yellow Emperor, Leizu instructed her entourage to cultivate silk worms; now she is referred to as the Silkworm mother. Archaeologists have uncovered silk fabric wrapped around an infant dating the fourth millennia BCE in modern day China. Sometime in the third millennia BCE (a questionable date considering dates given by archaeologists) the Chinese learned how to cultivate mulberry trees, the preferred food source for the silk worm. The harvesting of the silk in large quantities led to the development of a massive economic source, now called sericulture. The process of harvesting the silk was kept a secret for hundreds of years. By holding a monopoly on silk, the Chinese were able to use it as a form of currency for trade. The further west a silk roll traveled the more expensive it became. Eventually the secret was exposed along

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the silk routes allowing other peoples to cultivate the mulberry trees and silkworms. Nevertheless, Chinese silk was considered the preferred product.

Silk wasn’t the only item exported from China. Other products such as sugar, various spices, salt, cutlery, plates, gems, and vases, as well as tea, which became one of the most coveted trade good by the nomads of the Steppe, were traded along the trade routes. During the 13th century CE, porcelain was exported to the Iranian speaking realms. The blue and white dishes became more sought after than tea. From the nomad hordes to the north, China was able to import furs, various animals, precious metals, and horses. From Central Asia and the Iranian speaking regions, textiles of various cloths such as wool and cotton, fruits like melons and peaches, hard wood, as well as jade stones were traded for silk and tea. Arms and armour were transported and traded from one group of people to the other. From the urbanized areas iron-based weapons such as swords were favored by the peoples of the Steppe. Another metal-based item widely traded was lamellar armour, which provided good protection against arrows, a favored weapon all across the Steppe and the Silk Routes.

To facilitate the movement of trading goods along the Silk Road, three animals played a key role: the camel, the donkey, and the horse. The camel, considered the ship of the desert, carried a significantly heavier load than any other animal in the Steppe as well as Central and Southwest Asia. The Bactrian camel could carry up to 1,000 pounds while the Dromedary camel can carry about half that load. In comparison, the horse can only carry a load up to 20% of its

123 See Mode, Markus, and Jürgen Tubach. *Arms and Armour as Indicators of Cultural Transfer: The Steppes and the Ancient World from Hellenistic Times to the Early Middle Ages*. Reichert Verlag, 2006.
mass; in most cases it would have been less than 200 pounds.\textsuperscript{125} Camels can travel an entire day without a break for water. The ability to go long distances and time periods without water proved invaluable when crossing regions with little water. Both camels were also ridden.

Riding a camel feels considerably different than a horse. The stride of a camel is long with a gentle rhythmic to and fro motion sometimes making one drowsy.\textsuperscript{126} Both camels were used by the nomadic peoples of the Arabian and Iranian deserts as well as the deserts of the Steppe and later used as beasts of burden by armies of all peoples of Central Asia. Both camels are tolerant of extreme weather; the Dromedary fares better in the hotter deserts of the south while the Bactrian is more tolerant to the colder deserts of the north. The two camels have developed a symbiotic relationship with humans, depending on humankind to defend them against predators and leading or providing them with food and water. Much like other animals, the camel was essential for daily life. Its fur was used to make ropes, cloth, and felt. The camel also provided nourishment for people; it could be eaten, and the milk was drunk or used to make cheese products. The ability to carry heavier loads and travel greater distances without water made the camel much more desirable for travel in some environments. For some, the camel was more valuable than the horse in regard to wealth and prestige. Even in the 20\textsuperscript{th} century the camel played a significant role during the Soviet-Mongolian campaign against the Imperial Japanese and it was used to move troops and supplies from Central Asia to the so-called Eastern Front during the Great Patriotic War, 1941 – 1945, (World War II) against the Nazis. Bones of camels have been found in burial sites in Central and Southwest Asia. Camel figurines have been found in numerous archaeological excavations ranging from China to the Eastern Mediterranean. As a

\textsuperscript{126} This I experienced while riding a camel in Morocco.
pack animal the camel was an extremely important and cost-effective animal to move goods across the rough terrains in Central Asia and the Steppe.\textsuperscript{127}

In the higher elevations the camel and horse were not the choice animal as a beast of burden. The donkey (and the yak in even higher, less populated regions) served as the primary pack animal. In the urbanized areas it was well suited because of its smaller size. It could not carry as heavy a load as the other two animals; however, it could navigate the rougher terrain with a great amount of ease. The donkey does not share the prestige in the sources as the camel and horse did. During military campaigns it was vital for armies, which used it extensively to haul materials such as weapons, armour, water, food, and goods for military markets all across Central Asia. It was relatively inexpensive in comparison to the camel and horse. It could be used as a mount when needed, but generally, it was used as a pack animal.

In the sources and in archaeological excavations the horse received the most attention. It could be easily ridden and trained to ignore its instincts, especially useful during battles. For example, Usama Munqidh (1095 – 1198), an Arab chronicler and diplomat, who hailed from the Banu Munqidh dynasty of Shaizar in northern Syria, noted his horse continued to obey his commands during a battle even though its intestines were falling out from a sword wound suffered while fighting against the Franj, the Arabic term for the Crusaders, regardless of where in Europe they came from or if they were sons of those who settled in the Levant after the conquest of Jerusalem in 1099.\textsuperscript{128} It was easy to care for; in contrast to other animals it was able to survive the harsh winters of the Steppe, and it was the fastest animal to ride. For the peoples of the Steppe the horse was a sign of status, wealth, prestige, as well as an everyday tool and


food source. In Central Asia the horse was the wings for human beings.

Perhaps Silk Road is not a befitting description or term for the trade routes. The one consistent product traded all across the Eurasian continent was the horse. The Horse Route or Horse Road are not befitting names, but they don’t have the attractive epitome or appeal as the word silk. For centuries by-and-far the most prized possession for China was the horse. Due to poor soil and lack of grazing areas, the Chinese were unable to raise or maintain large numbers of herds. Northern China did have large areas for grazing; however, the area was quite often lost to the nomads who broke through the Sixteen Prefectures where the Great Wall(s) of China was built. To procure horses emperors and warlords traded or mounted military expeditions to obtain large numbers. To the west, beyond the Tarim Basin and Gansu Corridor, silk was used to buy the famed Han xuè mǎ, literally translated as sweats blood horse, of the Ferghana Valley. To the north and west tea was traded for the nomadic horse of the Steppe. When horses could not be procured from the north, China traded with the nomads of the Tibetan Plateau. The horses of the Steppe, such as the Mongolian horse, and the Tibetan Plateau, the Tibetan Pony, were small yet hardy horses with a great deal of stamina. The horse is so small it is quite often referred to as a pony. When one sees a rider mounted on the pony the proportion in size between the two makes the scene appear almost ridiculous and comical. The weakness of the Steppe and Plateau horse is that it cannot carry a heavy load. Therefore, the Chinese preferred the larger Heavenly horses from the Ferghana Valley region.

In ancient Persia and later in the Arab world, horse herders moved thousands of horses all

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130 Fuchs, Jeff. "The Tea Horse Road." *The Silk Road* 6, no. 1 (2008), p.64.
across the region via the Royal Road. Similar to the Tibetan Plateau in modern China, there were plateaus in the Iranian speaking region that provided pasture for grazing. During the reign of the Achaemenid dynasty (550 – 330 BCE), horses were traded along the Royal Road for textiles, spices, and metals. The preferred horses were the larger breeds such as the Nisaean and Tian ma horse known for their size and strength, and the Arabian horse, which is well suited for its speed and agility. The slave soldiers, called mamlūks, centered their training around the horse developing a code called Furūsīyya, similar to the European medieval term of chivalry, and created an army of par excellence that defeated the Crusaders in 1244 CE at the Battle of Haribya (also called Battle of La Forbie) and Mongols in 1260 at the Battle of Ain Jalut.

For the peoples of the Steppe, the horse was by far the most coveted commodity. They were able to procure horses by the thousands making it the greatest article of trade that was desired by their southerly neighbors, especially the Chinese. The horse lords of the Steppe used it extensively for every facet of life. It wasn’t viewed as a pet, rather it was livestock to be used as a tool, a work animal, a source of food, a form of wealth, and most significantly a source of transportation. The horse was to be properly cared for and not mistreated; to do so was a crime that required severe punishment. For the nomads, a man without a horse was like a bird

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133 Creel, H. G. "The Role of the Horse in Chinese History." The American Historical Review 70, no. 3 (1965), p.652. Creel points out the Nisaean horse was ranked “first on the list of tributes due [from the Armenians] the Achaemeneans”.
without wings,\textsuperscript{136} it was an essential part of life for survival in the Steppes. The horse provided the mode for moving from one place to a far more distant territory with far greater speed than on foot, and it allowed them to maintain control over larger herds of animals.\textsuperscript{137} It also allowed the nomads of the Steppe to conduct raids and warfare over great distances. The care, raising, use, and significance of the horse in the Steppe created a sense of horse culture around which life was based. The nomads learned the nuances of the animal and used it to their advantage. Without any doubt, the horse played a very significant role for the nomads. Understanding the horse as a herd animal and its role in history helps to have a greater understanding of the past.

Chapter two: Steppe Nomads and Horses

“Man, threatened by elements that conspire to destroy him and by beasts stronger and faster than he, would have been a slave if the horse had not made him a king.”\textsuperscript{138}

The previous chapter examined the geography of Central Asia, the Silk Road, and the Eurasian Steppe. This chapter will examine the horse and nomadic peoples of the Eurasian Steppe; specifically the nomads who fought as mounted horse archers. From approximately 500 BCE to the 14\textsuperscript{th} century CE the nomads of the Steppe fought among themselves, raided their sedentary neighbors seeking to control trade routes, and in some cases conquered their neighbors. Their ability to wage conflict was possible because of the horse, which allowed them to travel quicker than their sedentary neighbors.\textsuperscript{139} The vast Eurasian Steppe was a grassland that allowed the nomads to wear large herds of animals such as the sheep, goats, cattle, camels,

\textsuperscript{137} Details regarding herds are explained in chapter four.
and more importantly horses. Much like the animals, the nomadic horsemen lived in the same environment without the constraints of an urban or sedentary lifestyle. Because of this the nomads lived with and learned from their animals. The process of learning was not something that took place over a short period of time; instead it took several centuries to develop after the animals were domesticated.

The understanding of the horse in human history begins with the origins of horse domestication and the development of learning to ride. Because domestication predates the written era, the research of *Equus ferus caballus*, a species in the family equidae, is an interdisciplinary study composed of archaeologists, zooarchaeologists, linguists, and geneticists work together to study the origin by excavating various archaeological sites, especially burial grounds, looking for bones, artifacts and any materials relating to the horse and Steppe nomads. Languages have been traced and genetics used to examine the mitochondria in order to follow where the horse herders originated, traveled and to elucidate rates of evolution in horses. The results of the various disciplines have been used to develop theories of when, where and why the horse was domesticated.

Prior to 4300 BCE wild horses ranged the Steppes from Mongolia to modern day Ukraine. Because the Eurasian Steppe provided plenty of grazing it is believed the herds

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could have been rather large, providing a plentiful source of food and hides. Sometime around 3500 BCE hunter gatherers of Central Asia, specifically modern-day Kazakhstan, east of the Ural Mountains, domesticated the horse for husbandry making it easier to catch for butchering and milking the mares for milk, a staple drink of the nomadic peoples of the Steppe. As their population grew, (horses, cattle, goats, sheep, in some cases camels – referred to as tabun qosiyun mal, the five categories of domesticated animals – and people), they spread west and east into the Steppe seeking grazing grounds for their horses. There is also a developing theory that horses were also domesticated in the western Steppe region north of the Black and Caspian Seas around 4000 BCE by a different group of hunter-gathers. Whether or not this group of people was using the horse for subsidence, husbandry, and/or herding is unclear. What is currently believed is this group migrated westward in the Pontic Steppe and eastward into Central Asia pushing other nomadic peoples and their horses eastward, possibly beyond the Altai Mountains into the eastern Steppe of modern day Mongolia. The significance of the latter group brings us to the origins of horseback riding.

After domesticating the horse, the people of the Steppe learned a great deal about the

146 Sinor, Denis. "Horse and Pasture in Inner Asia History." Oriens Extremus, 1978, p.179.; the terms tört tülük or besh tülük are also used by the Kazakhs and Kyrgyz.
horse. For example, domestication led to selective breeding. Wild animals lack color variation. The coats tended to correlate with their environment offering camouflage for protection against predators. Human husbandry introduced variation in coat colors, which spread throughout domesticated horse populations. Early horses were small, limiting the amount of weight they could carry on their back. Through selective breeding, the size of the horse’s body increased developing a larger stronger horse capable of carrying a rider.

It is unlikely we will ever know why the first person decided to ride a horse. Numerous suggestions have been put forward. It may have been a hunter who decided to throw himself on a horse’s back for pleasure or to quickly escape danger such as a predator. Historian Robert Drews suggests there may have been the desire for speed feeling the rush of air flowing through the hair. There is vague evidence that suggests people learned to ride the horse for herding purposes. The evidence is based on bit wear, dental attrition, found on the front of horse skulls found in burial pits. Riding began as a means to control large herds of animals. A mounted herder could control around 500 sheep while a person on foot could handle around 200 sheep; it also allowed the rider the ability to protect his flock against predatory animals such as wolves, bears, and wild cats. Riding increased mobility making movement from pasture to pasture.

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150 Ibid., p.428.
154 The bow (a self-bow, meaning one piece of wood) and arrow were invented prior to the development of riding horses. Baumer, Christoph. *The History of Central Asia: The Age of the Steppe Warriors*. London: I.B.Tauris, 2012., p.35, 38; The shorter composite recurve bow, however, was not developed until around 1200 BCE. Anthony, David W., and Dorcas R. Brown. "The Secondary Products Revolution, Horse-Riding, and Mounted
much easier. Nevertheless, by at least 3,500 BCE, possibly earlier, people were riding horses and using bits.\textsuperscript{155} Without further evidence the answer to the question will be fraught with uncertainty and answered with crafty conjecturing. What must be noted is it still took several millenniums before the horse was used for mounted warfare.\textsuperscript{156}

There is no doubt that \textit{Equus ferus callabus} made the Eurasian nomads the horse lords of the Steppe. The image of mounted nomadic horse archers has come to symbolize the epitome of some of the greatest and longest lasting horsemen in history.\textsuperscript{157} The quality of the Steppe horses was well known for its hardiness, stamina, and ability to survive the harsh winters of the Eurasian grasslands. For example, the 5\textsuperscript{th} century BCE Greek writer, Herodotus (d. 425 BCE), noted the Scythian, a nomadic group who resided in the Pontic Steppe from around 900 BCE to 200 BCE, horse in a campaign “always puts to flight the horse of the enemy”.\textsuperscript{158} A Chinese historian by the name of Sima Qian (c. 145 – 86 BCE) wrote:

“…the territory of the Hsiangnu [Xiongnu a nomadic group who lived in the eastern Steppe north of China form the 3\textsuperscript{rd} century BCE to the 1\textsuperscript{st} century CE] and the skill it demands are different from China. In climbing up and down mountains and crossing ravines and mountain torrents, the horse of China cannot compare with those of the Hsiangnu”.\textsuperscript{159}

In the 12\textsuperscript{th} century CE, a medieval Italian archbishop and diplomat for the papacy remarked, on his trip across the Eurasian Steppe to the Mongol capital of Qaraqorum (in modern day
Mongolia), that he was required to relinquish his horses, brought from Europe, and use the Steppe horses to travel eastwards because they were adapt to surviving in the snow covered grasslands.\(^{160}\) The nomadic horses were not dependent upon fodder because they had the innate [rather a behavior they learned from others within the heard] ability to dig into the snow to find grass.

The grasslands of the Eurasian Steppe provided a huge territory for the nomads to breed and raise large herds of animals. The Mongolian homeland is capable of supporting 1,150,000 horses, 1,078,400 cattle, 228,700 camels, and 7,188,000 sheep.\(^{161}\) The Hungarian Plain, which is much smaller, can support no more than 205,920 animal units; an animal unit is equivalent to one head of horse, cattle, camel, or five sheep / goats.\(^{162}\) The Pontic Steppe was capable of supporting 2,046,858 animal units, and the Kazakh Steppe 1,656,616 animal units.\(^{163}\) These are simple figures based on information provided Denis Sinor who also notes that Plano Carpini was struck by the number of horses the Mongols possessed. “The Tartars are rich in animals: camels, cattle, sheep, goats, and they have so many horses and mares that we did not believe there were that many in all the world…”\(^{164}\) The calculations do not take into account the full area of the Eurasian Steppe, environmental factors, peripheral grasslands suitable for grazing (for example,  

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\(^{162}\) Sinor, Denis. "Horse and Pasture in Inner Asia History." *Oriens Extremus*, 1978, p.182-183

\(^{163}\) The numbers used for the Kazakh Steppe were 804,500 km², and the Pontic Steppe were 994,001 km². If one uses soil type for the Steppe, such as Chernozyom (2,395,739 km²), and Chestnut soil Steppe (1,748,241 km²), the number of animal units that can be supported are much higher. (*Background Information on the Soviet Union*).

Inner Mongolia or the Turan Plains east of the Aral Sea) weather, or natural phenomenon such as dzuds or exceptionally warm and wet seasons, or that the Central and Western Steppes were warmer with higher precipitation numbers, referred to as Steppe Gradient, meaning the grazing lands were more productive. In 1923 there, were an estimated 2.5 million head of horses in Kirgizia (modern day Kyrgyzstan). The numbers provide the image that the nomads had the ability to raise herds of animals, especially horses, by the tens of thousands. The nomads had to migrate along the Steppe to feed their animals. To remain independent the nomads had to remain dispersed; too much grazing in one area depleted the food supply for their herds, which brought about famine and death. Migration brought the nomads into contact with other nomads and their sedentary neighbors to the south. Contact brought about trade and conflict.

The Chinese, as stated above, acknowledged the quality of the Steppe horses to the north. In the 9th century BCE the Chinese invaded the northern nomads, referred to as the Hu, and captured thousands of horses. In the 6th century BCE, a northern state Chinese ruler stated he feared enemy because he had many horses. The importance of controlling northern China was important, although very much a struggle, for various Chinese dynasties. If the Chinese were unable to control the north, they could not defeat their nomadic neighbors. During the Han Dynasty (221 BCE – 220 CE) Ma Yüan, a famous general who specialized in horse training, stated “Horses are the foundation of military might, the greatest resource of the State”. Several centuries later, a Song Dynasty (907 – 1269 CE) official, Sung Ch’I (998-1061) echoed

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168 Ibid., p.656.
Ma Yüan’s sentiments:

The reason why our enemies to the north [the Jurchen (1115 – 1234 CE) from the Manchurian region who conquered north-north eastern portion of China creating the Jin Dynasty] and west [the Tanguts (1038 – 1227), a Tibetan people who conquered north-central China founding the Xi Xia dynasty] are able to withstand China is precisely because they have many horses and their men are adept at riding; this is their strength. China has few horses, and its men are not accustomed to riding; this is China’s weakness….The court constantly tries, with our weakness, to oppose our enemies’ strength, so that we lose every battle….Those who propose remedies for this situation merely wish to increase our armed forces in order to overwhelm the enemy. They do not realize that, without horses, we can never create an effective military force.170

While the nomad horse may have been superior to the horses of northern China, it was also the fact the nomads had a much greater understanding of the horse and were able to utilize it against their sedentary neighbors. The pastoral nomads lived on their horses and were “ready to rush off at a moment’s notice, leaving the herds behind in the capable hands of the women and children: they are lightly equipped for swiftness and surprise.”171 Sima Qian noted:

The little boys start out by learning to ride sheep and shoot birds and rates with a bow and arrow, and when they get a little older they shoot foxes and hares which are used for food. Thus, all the young men are able to use the bow and act as armed cavalry in time of war. It is their custom to herd their locks in times of peace and make their living by hunting, but in periods of crisis they take up arms and go off on plundering and marauding expeditions. This seems to be their inborn nature.172

Rashid al-din, writing in the late 13th, early 14th centuries, noted the Mongols (1206 – 1268 CE)

171 Lindner, Rudi P. "Nomadism, Horses and Huns." Past and Present 92, no. 1 (1981), p.6. Lindner was quoting from a Roman historian and soldier, Ammianus Marcellinus, who wrote about the Huns during the 4th century CE.
also learned to ride a young age. Nevertheless, the Chinese preferred the horses over their own and they went to great lengths to acquire the mounts.

To obtain additional horses China set up trade networks with the nomads using silk to buy horses. The most coveted and most valuable commodity of the Steppe nomads was the horse. During the Han Dynasty, the Chinese obtained horses via markets by arranging marriage alliances with various tribes of the Xiongnu and used silk as a form of currency for payment. During the Tang Dynasty (618 – 907 CE), the Chinese traded over a million bolts of a silk a year for 100,000 horses from the Uighurs, a Turkish Khaganate during the 8th and 9th centuries CE. In the mid-eighth century, the Tang payments of silk increased to over 7,400,000 bolts of silk annually for horses at a cost of 40 (some sources state 50) bolts (roughly 22 inches wide by 41 feet long for a single bolt) per horse. During the Song (907 – 1269 CE) and Ming (1368 – 1644 CE) Dynasties another product of high value was traded: tea. Since tea became in great demand by the nomads, Song officials established a “Tea and Horse offices”. Most tea was traded with the nomads to the north, initially with the Khitan Liao (916 – 1125 CE), a nomadic people in northeast Asia, then the Jurchen who supplanted the Khitan Liao in the 12th century. Under the Ming dynasty, tea for horse trade expanded into the Tibetan Plateau importing thousands of horses. When the relations broke down and the Chinese closed the markets the

nomads responded by raiding and waging war deep into Chinese territory creating havoc and much destruction. The threat of invasion brought about a dynamic relationship between the nomads of the Eastern Steppe and the various dynasties of China. Because of the limitations of raising horses especially in northern China, or simply having a surplus of horses in the case of the Steppe nomads, the horses were traded all along the border of the Eurasian Steppe. The Chinese noted, with anxiety, the nomads used the horse for trade, raiding and warfare:

“The northern barbarians [Uighurs in this case] are covetous and grasping. All they care about is profit. This is the second year that their nomad yearly consignment of horses has not arrived. Can it have become satiated with the profit of silken fabrics? I suspect that what is happening is that they want [to wait till the autumn when] the wind will be strong and their horses fat, so that they can make a sudden invasion of China.”

The horse of the Eurasian Steppe is smaller than their sedentary neighbors to the south, especially when compared to the Ferghana horse, Arabian, and drestier in Medieval Europe. Why did the Steppe nomads continue to use the nomadic pony and not incorporate other breeds into their herds and environment? The shortest answer is climate and adaptation. Horses reared in the Steppe and not kept in stables, corrals, enclosed structures, or arenas tend to be smaller; they are allowed to roam freely on the grasslands, grazing throughout the day. During the spring and summer months the Mongols and other Turkish peoples, such as the Seljuqs (11th through 13th century CE who migrated from Central Asia into modern day Uzbekistan, Afghanistan, Iran, Azerbaijan, Armenia, and Turkey) and Qipchaq Turks (11th through 13th

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centuries who created a loose federation in the Central Eurasian Steppe), kept their horses out to graze for days on end. They rode one horse per day to prevent overworking the animal over long periods of time while tending the herds.\textsuperscript{181} Throughout the summer months the horses grazed and accumulated body fat. A horse was not allowed to graze when ridden and afterwards it was tied up, all of the tack removed, cooled off, and then allowed to join the herd. The reason a horse is not allowed to eat or drink in abundance before cooling down is to prevent it from developing colic.\textsuperscript{182} The fattening of the horses helped them to survive the harsh winters of the Steppe. The horses of the Steppe learned at a young age to use their front hooves to dig through the snow to find grass. Cattle and sheep, two important animals of the nomadic peoples, lack the instinctive nature of surviving digging for grass. However, they learned to follow the horses in order to find grass. To assist the sheep and cattle in survival, the nomads moved their herds to areas that were better suited to providing nutrition during the winter months. All of the nomad horses were well suited for the Steppe environment. For example, their hooves are hard and able to withstand the long distances without being shod, a common issue with sedentary horse which is the reason they are shod.\textsuperscript{183} Another notable feature of the Steppe horses was the winter coat, which is dense with a “complicated structure, containing a thick undercoat and longer outer coats which sheds water.”\textsuperscript{184}

The nomadic horse was rugged, quite strong, had great stamina, and above all was capable of surviving harsh winters. The Steppe horse weighs about 500-600 pounds, yet it was capable of carrying a heavy load. The Darkhad horse of modern Mongolia is known to carry a

\textsuperscript{181} Ibid., p.64-57.
\textsuperscript{182} This is common knowledge for anyone who works, raises, and rides horses; I learned about it growing up around horses.
\textsuperscript{183} A classic example of this is during the Third Crusade (1189-1192), Richard the Lion Heart is reported to have brought thousands of horseshoes with him to the Levant. See Tyerman, Christopher. \textit{God’s War: A New History of the Crusades}. London: Penguin UK, 2007, p.435.
\textsuperscript{184} Ibid., p.253.
load twice its weight. Due to its strength the nomads such as the Mongols, Turks, and Sarmations (a pastoral nomadic people who lived in the Pontic Steppe from the 5th century BCE to the 4th century CE and were known to wear armour), and Scythians, were able to wear armour, but not in great numbers. Armoured horsemen from the Steppe were not necessarily the norm for the nomadic horse archers. The vast majority of the warriors wore little armour, if any, and was equipped with bow(s) and arrows to maintain mobility and rapid movement. The point made in this case is the nomads did not need large horses to carry them into battle.

There are three known breeds that are believed to be the ones used by the Steppe nomads: Mongolian, Kirgiz, and Kazakh. The Mongolian horse is considered to be the oldest true breed of all horses and it average 14 – 14.3 hands. It was used by the Mongols and possibly the Xiongnu. It is considered the oldest true breed in comparison to all other horses. The Kirgiz, “very rare in its original, pure form in the modern era”, was once very common in the Altai regions due to its ability to survive in the higher elevations. Remains of the horse have been found in numerous kurgans dating to over 2000 years ago. One of the most well noted excavated

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185 Yazdik, Elisabeth, "The Mongolian Horse and Horseman" (2011). Independent Study Project (ISP) Collection, p.21.; Powell, Debra M., Karen Bennett-Wimbush, Amy Peeples, and Maria Duthie. "Evaluation of Indicators of Weight-Carrying Ability of Light Riding Horses." Journal of Equine Veterinary Science 28, no. 1 (2008), 28-33. Powell’s article noted horses can easily carry 15-20% of its weight showing relatively little stress. At 25% the horse showed physical stress and at 30% the stress load became accentuated. This study does pertain to the more common pack horse in the modern era weighing between 885 and 1375 pounds. If the Mongolian horse is as strong as Yazdizk’s paper states, then the horse was capable of carrying a rider fully equipped in laminar armour and a full suit of laminar barding.

186 May, Timothy. The Mongol Art of War: Chinggis Khan and the Mongol Military System. Westholme Publishing, 2007. May states about 20% of the Mongol cavalry was armoured. Throughout my research for this thesis I question that amount. At times it may have been that high, but in most cases I suggest it be dropped to 10-15%. See Reuven Amitai’s research on the Il-Khanate Mongols: Amitai, Reuven. "Did the Mongols in the Middle East Remain Pastoral Nomads?" Paper presented at Max Planck Institute for Social Anthropology in Halle, Germany, June 2004. This presentation was not published, however, it can be found on his Academia.edu page: https://www.academia.edu/21768134/Did_the_Mongols_in_the_Middle_East_Remain_Pastoral_Nomads

burial sites are the Saka, Persian term for the Scythians living the Central Steppe, Pazyryk tombs (dated to 5th – 3rd centuries BCE) in the Altai Mountains. The average height of the Kirgiz horse is 12.3 to 14 hands, similar to the skeletal remains found in the Pazyryk tombs, and was used by the Kirgiz and Tajik peoples in the Altai regions. In the Central Steppe the Kazakh breed known since the 5th century BCE and was used by various nomads such as the Skythians and Qipchaq Turks. Although the horse has been known to exist since the first century BCE, it has been crossbred with other breeds such as the Mongolian, Persian Arab, and Turkoman horse. A noticeable adaptation of the horse is it stops growing during hard times (winter) and growth resumes during times when grazing is plentiful (summer). The three breeds cannot be considered the only ones used by the nomads. Because of crossbreeding, migrations, war, famine, and horse trade along the Silk Routes, it is almost impossible to determine all of the different breeds used on the Eurasian Steppe. The same is true for the horses used by the sedentary peoples south of the Eurasian Steppe.

There were several breeds used by the sedentary people, but only a few will be mentioned: Akhal Teke, Turkoman, Persian Arab, and the Arabian. During the Han and Tang Dynasties the most desired *equus* was the Heavenly horses of the Ferghana Valley (Tian Ma). Both dynasties went to great lengths to conquer the Gansu corridor and Tarim Basin trade routes along the Altai Mountains to acquire the horse from Ferghana. Persian and Greek sources noted

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188 Ibid., p.253.
one of the most prized horses was the Nisaean, also called the Turkoman or Turkmenian.\textsuperscript{190} Whether the two horses were of the same breed or not is unknown; it is considered to be extinct, however, there is one horse that is considered a descendental, the Akhal Teke. The most noticeable similarity between the horses is blood sweating, a phenomena that occurs when a parasite breaks through the skin of the horse, usually during the spring, causing a small amount of bleeding.\textsuperscript{191} The horse is well known for its shiny coat, speed, elegance and size, which averages over fifteen hands. The blood sweating horses are well noted in modern literature pertaining to the Silk Road; however, it is the Arabian that is the most famous.

When writing about the Arab horse, Bonnie Hendricks noted “…there is no ground so hazardous as that one treads when speaking of origins of the Arab horse. Many…would almost rather the breed had no earthly lineage whatsoever–hesitating to admit to parentage any less mysterious than the very wind itself.”\textsuperscript{192} For example, the misconception the horse originated in the Arabian Peninsula; it actually originated in northern Syrian, southwest Anatolia, northern Iraq and possibly northwest Iran.\textsuperscript{193} Physically, the horse is averages 14.5 hands, and is known for its elegance, speed, and most notably for holding its tail high up when running. The Arab horse was favored by many cultures from the Eastern Mediterranean to Afghanistan such as the Mamluk Sultanate of Egypt (1250 – 1515 CE) and the Arabic speaking desert nomads, referred to as Bedouins of Arabia and Syria, and the Seljuq Turks.\textsuperscript{194} The controversy of the breed includes the Persian Arab, which is considered by Hendricks to be older than the Arabian. As

\textsuperscript{190} For example, the Achaemenids received tribute from the Armenians of 20,000 Nisaean horses, considered to be superior to their own, on Mithra’s holiday. Creel, H. G. “The Role of the Horse in Chinese History.” The American Historical Review 70, no. 3 (1965), p.652.
\textsuperscript{192} Ibid., p.37.
\textsuperscript{193} Ibid., p.41.
the name of the breed implies, it originated in the Iranian regions (modern day Iran) and is known for similar qualities of the Arabian horse. Both of the Arab horses and the Akhal Teke are well suited for the dryer arid regions in Central Asia and the Middle East. In some regions the horses were allowed to graze in pastures such as the Anatolian Plateau, the southern Turan Plains, and the Iranian Plateau during the summer months. In the winter they were stall fed (alfalfa, beans, barley, wheat, oats, grains) and kept in stables. Because of this, as well as selective and mixed breeding, the horses grew larger than those who roamed Steppe. What must be noted about these horses is they could not survive the harsh winters of the Eurasian Steppe.195

Throughout the centuries the Steppe nomads were viewed as similar peoples, yet with different names. They were diverse and viewed themselves as different groups of people even though they had similar customs, lifestyles, clan and tribe structure, religious beliefs, methods of warfare, and horse culture. The Arabs used the term jins wāhid (جنس واحد) for the Turkish peoples of the Steppe including the Mongols.196 Jins wāhid has no direct translation. In Arabic jins literally means sex and wahid is the number one. The best interpretation is one that denotes a group of people who have a similar culture and nomadic lifestyle, lived in felt tents, spoke a common or related language, sense of common origin, and relied on the horse for daily life. Jinsiyya is a sense of ethnic solidarity. It is people from the Steppe who come from the pastoral nomadic background; they are different from everyone else.197

A good example of daily life is that all of Steppe nomads used the horse for milk. The

197 Ibn Khaldun uses the term asabiyya to describe the nature and characteristics of primitive cultures. When it came to the Mongols he stated there was no equal in asabiyya which can also refer to social solidarity. Gierer, Alfred. "Ibn Khaldun on Solidarity(“Asabiyah”) - Modern Science on Cooperativeness and Empathy: a Comparison." *Philosophia Naturalis* 38 (2001), p.93-96.
Mares were milked which was the preferred drink by the nomads. Plano de Carpini noted “They drink mare’s milk in very great quantities if they have it. …” and William Rubrick wrote “they do not bother about anything except [qumis]”. Mares milk has been one of the staple diets of all pastoral people living on the Steppe. Archaeologists have found pottery with remnants of milk dating the era of horse domestication. Fermented mares milk provided the nomads with a form of alcoholic drink; the milk was also used to make cheese.

Cultures built around a particular animal, the horse in the case of the Steppe nomads, show reverence for that significant animal through a variety of actual practices on multiple levels: the incorporation of artistic traditions such as imagery on rock art, pottery, gold jewelry in the form of zoomorphic shapes, and burials. The horse from the eastern Steppe to the western Steppe had significant meaning for the nomads. Horse burial became an essential part of the nomad belief systems. The earliest description we have of horse burials comes from Herodotus whose description seems almost mythological based on an ethnocentric view that the Scythians were nothing but uncouth barbarians. He stated that when a man dies he is buried along with his horse tender, servants, and several horses and his tack. After the burial, horses and men were killed and placed on top of the mound. A pole was inserted along the spine of the men who in turn were mounted on top of the sacrificed horses which were also propped up by stakes. And then, the mound (kurgan) was abandoned. Scythian kurgans have been found from the Ukraine to the eastern portion of Kazakhstan. Kurgans, linked to the Scythians/ Saka have been

found throughout the western and central Steppe. Inside the mounds jewelry made from gold depicting horses and wild predator animals attacking stags and horses. Throughout the burial sites sacrificed horses have been found. Most barrows with just one person contained one horse; those of prominence were found to have several people, especially prisoners of war, and several horses ranging from four and sixteen.\textsuperscript{202} Inside the Pazyryk kurgans, which are associated with the Saka / Scythian people, several horses along with well-preserved tack have been excavated.\textsuperscript{203} The majority of the horses found in the burials were Steppe horses and they were bays and chestnuts in color because they had stronger bones and hooves. In addition, all of the horses were geldings which were preferred for riding due to the milder tempers.\textsuperscript{204} Other artifacts consisted of metal objects carved into animals such as horses, wild cats attacking stags, (see next paragraph linking the Pazyryk burials to the Xiongnu), and elaborate horse decorations.

In Mongolia, thousands of Xiongnu barrows and deer stones (standing megaliths covered with carvings) have been found. The artifacts found inside the earlier Xiongnu tombs include pottery, bronzes, ironware, gold wares, silverwares, jade and other precious stone ornaments, bone artifacts, lacquered wooden articles and silk fabrics. Animal victims are quite popular, mostly represented by horses’, with horse fittings (bits) and weapons\textsuperscript{205}. Many of the deer stones have carvings resembling a ritualized deer or stag that are very similar to those found in the Pazyryk burials.\textsuperscript{206} The link reflects the Xiongnu migrations that eventually replaced the

\textsuperscript{203} \textit{Ibid.}, p.235-238 and 273-274.
\textsuperscript{204} \textit{Ibid.}, p.231. The Mongols also preferred to use geldings for riding. Mares develop attitudes or drama, as my cousins and sisters refer to them, and stallions can be willful and difficult to handle.
\textsuperscript{205} Yueying Shan, “A study of Xiongnu tombs.” \textit{Chinese Archaeology} 12 (2012): 149-157. The study of nomad burial grounds in Mongolia is still in its infancy stage. Studies are growing; however, they tend to focus on the descriptions of the archaeological artifacts, lacking theoretical analysis.
Scythians, who disappear from the historical record around 200 BCE.\textsuperscript{207} A Tang dynasty chronicle gives the following description of a Göktürk burial ceremony which took place in the sixth century:

“They place the body in a tent, and the man’s sons, grandsons, and other kinsmen whether man or woman sacrifice horses and sheep and spread them before the tent. They ride around the tent seven times on horseback. They cut their faces with knives and weep at the tent door. Mixed blood and tears run down their faces. They repeat this ceremony seven times. Then on a certain day they bury the body with his horse and all personal objects which he used, or burn him on a pyre. If the body is burned they bury the ashes in his tomb on a particular day of the year. They bury those who have died in summer in autumn, when the grass and leaves turn brown, and those who die in winter they bury in spring when the flowers bloom and the snows have melted. On the burial day the kinsmen of the dead person ride around on horseback, cut their faces and cry, just as they did on the day of death. They paint pictures of the dead man and the battles in which he fought on the walls of the structure erected over the grave. If the dead person has killed a man during his life they place a stone over his grave. Sometimes these stones amount to one hundred or even one thousand. After sacrificing horses and sheep they place the heads on stakes.”\textsuperscript{208}

William Rubrick gave a brief description of a Cuman burial site (also referred to as Qipchaq Turks) kurgan: “I saw a man recently dead for whom they had hung up between high poles sixteen horse’ hides, four towards each quarter of the earth, and they had laid down comos \textit{[kumis]} for him to drink and meat for him to eat…”\textsuperscript{209}

The Mongols, however, did differ from other nomads in their burial practices. Throughout nomadic history there tended to be limited disparity between those with wealth and those without. During the reign of the Mongols the inequality became more prominent, even in burial practices. Prior to the expansionist years, when a wealthy man died he was buried secretly

in an open pit in a remote part of the Steppe with a basket filled with meat and a jar of \textit{airig}. The man was joined by a mare, a foal, a colt along with horse tack and a bow with arrows as well as some personal items of value. His closest companions skinned a horse, ate the flesh, stuffed the hide with grass and set it up on a wooden frame or impaled it on poles over the grave.\textsuperscript{210} Along with the deceased man and horses his favorite slave was placed underneath his body. After three days the companions returned to the pit. If the slave survived he became part of the family as a freed guest. The pit was then covered in dirt and horses trampled the area to make the burial site indistinguishable from its surroundings.

Horseback riding offered a significant change in the way people went to war. Mounted warfare shifted the power of balance to those who had large numbers of horses and well-trained cavalry. The nomads raided each other and the sedentary peoples bordering the Steppe. In time they waged war on a large scale attempting to reach a level of appeasement or in the case of the Mongols to conquer. Their reputation has been labelled as barbaric and tainted in a negative way. Early horseback riders – prior to 1000 BCE – lived in a world that was significantly different from that of the Scythians or Xiongnu and those who followed. So, if we are going to examine how the Steppe people learned to use horses in war then we need to differentiate between tribal raiding and organized cavalry which appeared in the Iron Age around 900 BCE. The question of whether or not raiding took place on a large scale is due to the lack of archaeological evidence; archaeologists have not recovered any bones showing strike wounds from weapons or even arrows.\textsuperscript{211} However, if one takes into consideration the growth of


\textsuperscript{211} David Anthony proposes that raiding began shortly after domestication around 4000 BCE. Anthony, David W. \textit{The Horse, the Wheel, and Language: How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World}. Princeton: Princeton University Press, 2010, p.223.
religious writing, specifically Avestan literature and the Rig Veda (some of the oldest written verses in history 1700 – 1100 BCE), raiding was common. A passage in the Rig Veda that seems to indicate raiding reads:

Yes, this is my thought. I will win a cow and a horse. Have I not drunk Soma? Like currents of wind, the drinks have lifted me up. Have I not drunk Soma? The drinks have lifted me up, like swift horses bolting with a chariot. Have I not drunk Soma? 212

The word win is most likely a euphemism for stealing and it also refers to that prosperity. 213 A career in raiding brought a new purpose of gaining wealth, glory, and prosperity. 214 Sheep, cattle, and the horse were a measure of prosperity. They provided meat, milk, wool, and a source for economic growth after the domestication of the horse and development of the composite bow. Raiders were able to sweep in unexpectedly and then depart swiftly. A tribe or clan that did not have horses could not pursue the raiders to regain their stolen items. The Rig Veda text suggests life as a raider with a horse and chariot was a much more appealing which brought glory and adventure. Continuing with the religious tradition, Zarathustra took up the issue of raiding by removing any ambiguity regarding right or wrong. For example, he refers to the raiders as the followers of the lie. 215 They are on the side of evil because of the theft and death they inflicted others. Both sources clearly indicate raiding was taking place.

The term cavalry is defined by two innovations; first is the use of mass mounted archers,

beginning around 1200 – 900 BCE, with improved horse tack and composite bow giving the rider a more stable platform from which to ride and shoot from.\textsuperscript{216} Another defining factor of cavalry was that it was organized as a single cohesive unit.\textsuperscript{217} The term organized is somewhat equivocal. It can refer to tribes who fought together, not necessarily in choreographed formations, using the recurve bow and feigned retreats. It can also refer to trained units that were drilled in formation who learned how to maneuver in specific way, both on the march and on the battlefield. The latter of the two is the most acknowledged among those studying ancient and medieval warfare. An important factor for the term cavalry is that it fought and attacked as an autonomous body under the leadership of one person. In the case of the Xiongnu it was the chanyu and later khan for the Turkish and Mongolian peoples.\textsuperscript{218} This model doesn’t quite fit the nomadic way of fighting, but it did for the sedentary people from China to Europe. Initially nomads fought more for personal glory than as a unified body like an empire or nation state. It is most likely the nomads who had contact with the southern realms learned of formed organized formations from them. After the nomads encountered the Assyrians (2500 – 609 BCE) and Shang Dynasty (1700 to 1027 BCE) they ended the use of the chariot in warfare and shifted to mounted warfare.\textsuperscript{219} In the later part of the first millennia the nomads moved away from the chariot in favor of massed cavalry groups.

The innovation of cavalry, specifically mounted horse archers, is credited to the pastoral

\textsuperscript{217} \textit{Ibid.}, p.223.
tribes of Central Asia. The region was a fertile area that was able to support large herds of horses. The earliest indication of the mass use of cavalry comes from the Greek sources and *kurgan* burials pertaining to the Skythians. The earliest depiction of mounted archers is an Assyrian relief carving, displayed at the British Museum, dating to 865 – 860 BCE, showing two riders, one with a bow and the other holding the reins of his horse and that of the archer. Both horses have bridles, but no saddle or even a blanket. However, there appears to be a breast strap on the horse which would indicate some sort of pad was used. The relief clearly indicates the challenge of using a bow on a galloping horse in the early periods. In relative terms, it did not take long for various peoples to master mounted archery. It was, however, the pastoral nomads of the Steppe that fully understood a very significant factor about the horse and mass formations. The nomads lived a life of hunting, horseback riding, shooting the bow, all of which prepped him for war. Synchrony became the most significant thing the nomads learned.

This chapter focused on the characteristics and attributes of the horse and the Steppe nomads; the fourth chapter will go into greater detail regarding synchrony. The significance of the nomads and the horse is they both lived in the same environment. The horses were not separated from the people; sedentary people kept the horses in stables and in enclosed areas that were located away from their dwellings. Sedentary people tended to have specialists who cared and trained the animals, whereas everyone in the nomadic tribe knew how to ride and care for the horses. When it came to warfare sedentary societies had specially trained soldiers who rode the

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horse into battle. On the Eurasian Steppe every man was an able fighter due to the fact he was
an accomplished rider and archer. Nomadic warfare is the subject of the next chapter.

Chapter 3 - Nomadic Warfare: Horse Archers of the Steppe

“Their arrows are sharp, all their bows bent, their horses’ hoofs seem like flint…”
Isaiah 5:28

Conflict along the Steppe took place in the form of raids and large scale campaigns;
however, warfare waged by the Steppe peoples is not always a popular topic with scholarly
writing.223 When discussed it is briefly covered as if it had little significance in the overall study
of the nomads. The paucity of material, historical and archaeological, is a major impediment to

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such studies. The study of nomadic warfare also faces the issue of orientalism, specifically military orientalism.\textsuperscript{224} Contemporary and modern writers’ view of nomadic form of warfare was primordial, backwards, un-chivalric, and cowardly. Often researchers made simple assumptions such as that the Mongols lacked mores.\textsuperscript{225} In contrast the study of warfare pertaining to other peoples, including the Romans, medieval knights, Byzantines, the Samurai, and recently the Chinese\textsuperscript{226} describes the methods of these groups as culturally rich and complex. This brings up the question: Is there a society that is culturally simple, lacking in richness? The answer, of course, is no. Implying another society’s methods are unorthodox, nonconformist, or untraditional is an ethnocentric view. Such backwardness impedes the scholarly research on any given topic. Instead of viewing Steppe nomadic warfare as alien and inferior it is best to try to understand it from the Steppe nomadic point of view and how the nomads utilized their form of fighting against the sedentary civilizations and each other.

All nomadic peoples, who had large numbers of horses, from the Eurasian Steppe (500 BCE to 1400 CE) fought in a similar manner. Organization varied from one group to the other, but specific techniques, as in tactics and strategy, were essentially the same. The weapons were functionally the same yet differed in details such as style and design. All groups had the similar cultural traits; including the preference for mares milk, living in round felt tents, moving from one pasture to another; the reliance on cattle, sheep, goats, camels, and horse. The nomads of the

\textsuperscript{224} Porter, Patrick. \textit{Military Orientalism: Eastern War Through Western Eyes}. C Hurst, 2009, p.2. See introduction and chapter four for further details.

\textsuperscript{225} This comment isn’t explicitly stated in the sources; however, the overall view of the nomads by contemporary writers is viewed with stereotypical or ethnocentric tropes.

\textsuperscript{226} It must be noted that there was a great deal of “military orientalism” pertaining to the Chinese. For example, early 20\textsuperscript{th} century scholars writing about ancient and medieval era warriors claimed the Chinese lacked stratagem and innovations. Another example comes from the U.S. War Department. An informational film \textit{[Why We Fight A Series of Seven Information Films: The Battle of China information film #6. early 1940s. War Department, Film. Produced by the War Department Signal Corps Army Service Forces for the Morale Service Forces]} was made, during WWII, which stated the Chinese invented gunpowder, but never used it for warfare. It also stated the Chinese were a peace loving population that did not wage warfare.
Steppe suffered similar fates in terms of dealing with harsh weather, famine, or pestilence. Their preferred form of warfare was the raid which led to favorable trade terms with the sedentary peoples to the south. All of the nomads faced the doors of their yurts or gers to the south. Whether this was a cultural trait based off of pragmatism, religious perceptions, or the fear of other peoples, especially the southern sedentary peoples is still up for debate. Essentially their form of warfare remained the same for thousands of years with only minor differences and changes emerging over time. The Mongols did change the methods and concepts or, more accurately they built on old customs and traditions then improved the techniques and organization.

Without the horse the Steppe nomads could not have raided or conquered other peoples. The most notable feature of Steppe warfare is the horse and a rider armed with a bow. The term “horse archer” is given to a person wearing little to no armour shooting a bow from the back of a horse whether at a halt or a full gallop. Rarely, and preferably not, did they fight on foot. The horse and bow were their greatest assets. Horses provided them with mobility, agility, rapid movement, and the ability to flee death and fight another day. The horse could also be eaten or bled from a vein for nourishment in times of need. The nomads traveled with several horses and changed mounts regularly, especially the Mongols, to prevent a horse from becoming fatigued.

227 Kemery, Becky. *Yurts: Living in the Round*. Layton: Gibbs Smith, 2006, p.37. The door frame of a Mongol ger is sacred. It is taboo to step on or touch the frame when entering the tent.

228 Ibid., p. 37. During the early first millennia BCE, the Chinese raided the Eastern Steppe peoples to gather horses.

229 It must be noted here that this applies primarily to the Steppe nomads. Other peoples, such as the Byzantines, Mamluks, Chinese, Persians (Sassanids for example), Parthians (their cataphracts) used armoured cavalry wearing lots of armour and were equipped with bow and arrows. They can be referred to as horse archers; however, they are considered shock troops, those who engage in hand-to-hand fighting.

230 Graff, David A. *The Eurasian Way of War: Military Practice in Seventh-Century China and Byzantium*. London: Routledge, 2016, p.160. Greek historian Herodian, 3rd century BCE, wrote: “They use the bow and the horse in wars, the Romans do, but the barbarians are reared with theses from childhood, and live by hunting; they never lay aside their quivers or dismount from their horses, but employ them constantly for war and the chase.”

The horse could also be used to carry supplies, although the camel was preferred as the pack animal. Without a horse, the nomad was nothing.\textsuperscript{232} This can be challenging to convey and understand. Other peoples of the Eurasian world such as European medieval knights, Mamlûks of Egypt and Syria, the Samurai of Japan, or a Tarkhan of Persia also revered the horse.\textsuperscript{233} What is different for the nomads is the horse was everything and essential.

The all-encompassing importance of the horse is reflected in the saddles used by the nomads. The saddle used by the Xiongnu, Skythians, Huns, and Parthians was similar in basic structure, but different in stylistic details. The equipment changed with time in terms of style, craftsmanship, and design. In the medieval era, also horse tack evolved in design and cosmetics. The basic saddle was made of two padded leather cushions held together by straps and supported by wood or horn. In between the cushions was a gap to avoid rubbing on the horse’s backbone. The saddles were simple, yet ornately decorated.\textsuperscript{234} To secure the saddle to the horse, girth straps were attached. To prevent the saddle from sliding back and forth, breast straps and croppers, a strap that went around the horse’s rump to keep the saddle from sliding forward, were added.\textsuperscript{235} Over the centuries a wooden frame evolved into use with leather cushions stuffed with animal hair. Also added to the saddle was a high pommel and cantle giving the rider additional stability. In antiquity, saddles lacked metal stirrups. However, archaeologist Valery Nikonorov and other scholars have demonstrated leather straps were used as stirrups.\textsuperscript{236} Sometime in the 4\textsuperscript{th}

\begin{footnotesize}
\textsuperscript{232} This concept is viewed by some Mongols who still live the nomadic life. See Kendall, Elizabeth K. \textit{A Wayfarer in China: Impressions of a Trip Across West China and Mongolia}. 1913, p.255.
\textsuperscript{234} Stepanova, Elena V. "Reconstruction of a Scythian Saddle from Pazyryk Barrow No. 3." \textit{The Silk Road} 14 (2016), p.1-5.
\textsuperscript{236} Nikonorov, Valery. Personal interview. The University of Montana, 2012. Professor Nikonorov traveled to Montana and gave a presentation at the university.
\end{footnotesize}
century CE full-length metal stirrups on both sides of the saddle were created in China. In the Steppe stirrups were shortened and enlarged to allow the rider to stand while shooting his bow. In the mid-twentieth century, scholars debated over the development and impact of the stirrup. Initially it was considered a revolutionary piece of tack. However, most scholars have reconsidered its significance pointing to various peoples throughout time and geography who used a bow while astride a horse without the use of stirrups. The stirrup is no longer considered revolutionary, rather a significant development that enhanced the abilities of the horse archer and other types of cavalry. For example, the nomad stirrup was larger which allowed the rider place his weight on his feet for greater stability when shooting the bow.

Several saddles have been recovered from archaeological excavations and many are depicted in artwork throughout the Eurasian continent. The best preserved saddles of antiquity were recovered from the Pazyryk tombs in the High Altai Mountains. They were lavishly decorated with ornaments from all across Eurasia demonstrating the existence of cross cultural exchange along trade routes. Some saddles from the medieval era have been recovered, but they lack extensive studies and subsequent literature. Horse tack was both practical and decorative. In many depictions of Steppe warriors, especially those of Rashid al-Din Tabib and Mamlûk

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239 Three excellent examples are: the Parthians, Scythians, and Xiongnu.
240 Stirrups are not foot rests. A good rider will use the stirrup to support his/hers weight to prevent bouncing on the horses back when traveling at speeds faster than a walk or gait. A larger stirrup pad makes it easier to support the rider’s weight, especially when shooting a bow.
treatises, tassels are shown on the bridle and harness. The tassels were made of animal hair and sometimes died in various colors, and were used as amulets by some cultures.

Cosmetically, it is appealing and shows wealth and prestige. The tassels also served a pragmatic purpose, keeping insects, especially flies, off the horse. A horse will flick its tail along its rump to scare off the flies. The tassels were used with the same affect when the animal was in motion.

Ubiquitous with the saddle was the bow and arrow. The interest of the bows from the Eurasian Steppe has waned and waxed in the scholarly field. In the past few years, with the help of the Internet, the interest in the Asian bow has risen immensely. Some bows have been found during excavations, most being in some state of deterioration. So far, there hasn’t been a Mary Rose, a 15th century ship that sank in the Solent and recovered from the seabed in 1982 that contained dozens of well-preserved English longbows, find for any of the bows from peoples of the Eurasian Steppe. In Mongolia, a bow was found in Cagaan Khad, a cavern, which was still strung (meaning the bow string has been placed onto the bow creating tension). The cavern’s extreme dry and cool conditions kept the bow in very good condition. One of the limbs was bent due to continuous tension. This bow and others have provided good examples of the bows’ construction and design. Bows can be described by their shape, geographical origin, and composition. The most famous bow, from a European and American centric point of view, is the English longbow made from a single piece of wood, preferably yew. The least known bow is the short or simple bow made from a single piece of wood. Due to the West’s fascination with

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Japanese history of the Samurai the *yumi* bow has received a great deal of attention. All other bows made within the Eurasian continent tend to be labelled as Asian, recurve, laminated, or composite.

The general labelling of the bows is sometimes overlapped depending upon methods of classification. The term Asian bow is a generic term for bows that are sometimes referred to as Hun, Hunnic, or Xiongnu meaning those that had a similar shape or were made in the Eastern Steppe and have an elongated to a distinct C shape. In the Western and Central Steppe during the Ancient or Classical period the umbrella term of Scythian was used, and it had an hour-glass shaper. (See figures 1 and 2).²⁴⁶

![Figure 1 Xiongnu style bow](image1)
![Figure 2 Scythian style bow](image2)

For the Medieval period, the terms, *Turkish* or *Mongolian* bow have taken root for all bows made

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by the nomads of the Steppe. \(^{247}\) See figures 2 and 3. \(^{248}\)

Figure 3 Turkish style bow

Figure 4 Mongolian style bow

A laminated bow is one that is constructed of different pieces of the same material bonded together. A composite bow, by far the most commonly made by the nomads, is made up of different materials. \(^{249}\) All of the bows have been referred to as a recurve; when it is not strung it has a shallow to distinct C-shape. When the bow is strung the limbs are pulled away from its natural shape which gives it stored energy. For a detailed explanation of how the bow was

\(^{247}\) The Mongolian bow used today during the Nadaam Games is different from the one used during the 12-14\(^{th}\) centuries. The modern one has a strong Manchu appearance. After the Manchus took over the Ming Dynasty they suppressed bow making in Mongolia, fearing any type of uprising from their Mongol neighbors. In the 20\(^{th}\) century the Soviets attempted to forbid anything related to the Medieval Mongols including bow making. To a large degree Mongolia lost some of it bow making heritage. Since then there has been a revitalization of the craft, however, it has a strong Manchurian influence. There are two bowmakers, Tumurkhua Batmunkh and Master Boldbaatar, who are trying to bring back the traditional bows, called Huunu, of the Mongols. The two significant differences between the bows is the Manchu has distinctive string bridges and large siyehs. The Manchu influenced bows are also much longer since they are not used from horseback. The Huunu bow is shorter with no string bridges and is meant to be used from a horse. The design is based off of the Cagaan Khad bow found in a cave near Övörhangay Aimag, Mongolia which has been dated to the 14\(^{th}\) century, and 13\(^{th}\)-14\(^{th}\) century depictions of Mongols with bows in Chinese and Persian art. The two most notable features of the depictions and Cagaan Khad bow is the minimal contact string and shorter length.


constructed see appendix A.

Culturally, the various nomads of the Eastern, Central, and Western Steppe were very similar. Therefore, their tactics were essentially the same. Peter Golden and Denis Sinor note Chinese sources state that “warfare was the business of the nomads. It was their natural occupation.” Groups of horsemen formed into unorganized groups and raided their neighbors, whether sedentary or nomadic. Sometimes, several tribes united under a strong-willed ruler and formed a makeshift army to control a region. The forces were normally organized around the family and tribe. This left no formal organization or structured leadership. If the ruler died or family disputes occurred, the tribal factions broke up and dispersed, leaving a weak contingent or virtually no army to conduct raids or fight battles.

The Xiongnu and Mongols were well known for their organization. Both peoples used the decimal system of 10, 100, 1,000, and 10,000 to organize their troops into units and family households. For example, it is speculated that a group of Mongol descendants from the 13th century are believed to have remained in the area of Bamyan after the city had been captured in 1221. The people of the area have been referred to as Hezara (plural Hezarajaf), which is believed to be a Persian word (هزار - hezâr) meaning one thousand. In the case of the Mongols in the 12th and 13th centuries, a group of 10 riders was called an arban, (plural arbat), 100 riders a jaghun, (plural jaghut), 1,000 a minqan, (plural minqat), and 10,000 a tümen, (plural tümen)

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This, of course, was in ideal conditions, which rarely existed. Not all tümen were fully manned as was the case at the Battle of Ain Jalut. Each arban, jaghun, minqan, and tümen had a specified leader. It is thought that each unit had a banner, not stated in the sources, but there appears to be some suggestions that they did. The Turks, especially the Seljuqs were not as uniformly organized.

During the Third Crusade a chronicler wrote “They [the Turks] were well drawn-up with so many emblems fixed to their lances, so many standards, so many banners with a variety of details, so many lines appropriately divided into troops arranged in companies that there seemed at a guess to be more than 20,000 armed Turks approaching in order.” The Turks, however, did not use a consistent convenient number to form their units. Horse archers were organized into various tulbs that ranged in size from seventy to two hundred men. Tulb (تُلْب) plural – ātlāb (اتلاب) is a Turkish word incorporated into the Arabic language. While there are terms to describe the units on the battlefield, they are somewhat ambiguous and vague.

There is a great deal of debate as to what kind of formations the horse archers used. John Warry, author of Warfare in the Classical World described the tactics of horse archers used by the Seythians and Parthians:

“Light cavalry [horse archers] form up in loose order, generally with about six feet frontage. The Scythians are said to have invented the wedge formation. When the horse archer attacks he places one arrow on his bowstring and holds more in his bow hand. He then advances at a canter. At about one hundred yards he breaks into a gallop and fires two to four arrows. At about fifty yards he wheels, generally to the right (since it is easier to shoot towards his left) and gallops along the front still firing. Alternately, he reins in and skid-turns and fires

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behind him [Parthian shot] as he retreats.”

Ammianus Marcellinus, a 4th century CE Roman historian described how the Huns fought in battle:

> As they are lightly equipped for swift motion, and unexpected in action, they purposely divide suddenly into scattered bands and attack, rushing about in disorder here and there, dealing terrific slaughter; and because of their extraordinary rapidity of movement they are never seen to attack a rampart or pillage an enemy’s camp.

The above descriptions are consistent with others. Michael Psellos, a Byzantine monk, “saw only disorder, remarking of the Petchnecs, that ‘they are not divided up by battalions and when they go to war they have no strategic plan to guide.’ They attack, he writes, ‘in one mass, close-packed and pell-mell’ and ‘when they break away there is no order in their retreat.”

Other descriptions describe the formations as *globus* indicating the horse archers resembled more of a dysfunctional mass than an organized unit. In short, the horse archers would use no formation as such.

The horse archers were normally skirmishers wearing little to no armour and gathered in small groups. Their primary weapon of choice was the composite bow. As lightly armed troops they were able to move swiftly and fluidly to avoid direct combat and harass the enemy. Their loose *globulus* formations gave them the ability to sweep around the flanks of the enemy showering the opposing force with arrows creating confusion and chaos in the attempt to break or discombobulate the enemy. Descriptions of battle describe a scene of bedlam.

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260 Little, John. *Bruce Lee: Artist of Life*. Boston: Tuttle Publishing, 1999, p.201. This concept is quite similar to martial arts *jeet kune do* which favors formlessness so that it can assume all forms, and since it has no style, therefore *jeet kune do* fits in with all styles.
wrote:

“They are skillful at using decoy troops to lure their opponents to destruction. When they catch sight of the enemy, they swoop down like a flock of birds, eager for booty, but when they find themselves hard press and beaten, they scatter and vanish like the mist.”

The tactical methods used by the Steppe nomads were very similar all across the Eurasian Steppe and timeline from the ancient to the medieval eras. Since the vast majority of the men were lightly armoured archers mounted on horses, they were able to move faster and farther than their enemies. The horse also gave them great mobility allowing them to conduct elaborate maneuvers during the march and on the battlefield.

On the battlefield the horsemen gathered into organized units and concentrated their arrows attempting to make the opposing force falter. The horseman rushed at the enemy in small groups, such as an arban or zuun in the case of the Mongols. As they approached they shot their arrows at a great distance. During the First Crusade the Europeans were astonished at the distance the Seljuq Turks could fire their arrows. As they closed, the small unorganized group tightened its formation continuing to shower the enemy. When they came within a short distance, approximately 40-50 yards, of the opposing force, the horse archers veered to the right, following the lead rider or banner bearer, still peppering the enemy with arrows. Following the group was another group adding to the continuous shower of arrows maintaining pressure on the opposing force. The continuous appearance of horsemen gave the appearance they were limitless in numbers. This technique is often referred to as the shi’uchi which is similar to the

caracole technique used in Europe by Austrian and German cavalry armed with pistols during the 16th century. To concentrate the aiming of the bows one of the leading riders fired a whistling arrow in the desired direction. The rest of the archers shot their arrows in the same direction. If the enemy held its ground, the horsemen rode along the front of the troops shooting arrows to their left, which is the easiest position to shoot from. If the enemy gave any indication of engaging the horse archers, they simply ran away, still shooting their arrows to the rear. The riders rode to a designated point to regroup, changed horses to limit over exerting the mounts, and resupplied themselves, especially with arrows.

The continuous shower of arrows was meant to create havoc in the attempt to break down the morale of the enemy, forcing them to waiver and flee the battlefield. John France states “Archers alone could only decide a battle if the enemy’s nerve broke, but they could demoralize and unpick enemy formations, opening gaps into which the light and heavy cavalry could pour”. The arrow storm, swarming, or rolling barrage resulted in few casualties. If the enemy waivered and fled the battlefield the horsemen rushed in picking off fleeing soldiers at will. This is when the greatest number of casualties took place. In the 329 BCE, Spitamenes, a Sogdian warlord, rebelled against Alexander the Great, shortly after Alexander conquered Bactria; Spitamenes besieged Marcanda, called Afrasiyab in the medieval era, now known as Samarqand. Alexander sent a relief force to break the siege. Spitamenes used his nomadic horse archers to attack the Macedonians most formidable infantry formation, the phalanx. The horse archers swarmed the formation and showered it with arrows. The phalanx broke formation and most of the men were killed in the ensuing rout. If the enemy held their ground, then other tactics

were used.

One of the most noted tactics used by the nomads was the feigned retreat. Either during a battle or a siege the nomads would suddenly depart leaving behind their camp along with anything else such as livestock, supplies, and tents. Their flight appeared to be a disorganized fashion as if they had been defeated. The opposing force, falsely sensing victory, chased after the fleeing horsemen or stop to loot the camp. If they chose to ransack the camp, then supposedly horsemen would turn around and attack picking off the unorganized looters. If the opposing force chose to pursue, the fleeing horsemen rode to a designated staging point then turned to face the pursuing force, see figures 1-5, which was normally disorganized, stretched out and without support of the main force. A prearranged trap proved deadly and quite often inescapable, see diagrams 6-9.\footnote{266 Figured created by the author of this thesis.}
Horse archers utilizing synchrony

If the opposing force remained in position the horse archers rode parallel along the line shooting arrows to their left at their enemy.

If the enemy was armed with bows they used them to keep the horse archers at bay, reducing casualties.

Synchrony is doing what others are doing, moving together and turning together. The horses are following the lead horse without having to be guided by the rider. The lead rider is guiding which direction the unit is traveling.

Diagram 2

As the horse archers continued the curve and continued shooting arrows at the enemy.

Shortly after turning away from their opponent the formation broke apart giving the impression they were fleeing yet they still continued to shoot arrows to the rear, commonly referred to as the Parthian shot.

Diagram 3
When the enemy pursued, the horse archers continued to feign a retreat leading the pursuers away from any support. When the pursuers were too far away from their own friendly lines the horse archers turned and surrounded them, shooting individual riders.

Diagram 4

The nomads used their training from the hunt to surround their enemy and not let any escape.

Diagram 5

Exhausted and strung out the armoured cavalry struggled to defend themselves against the horse archers.

The horse archers now have the pursuing enemy surround and can pick off individual riders at will.

If the pursuers did not surrender the horse archers continued to shoot them until all were eliminated.
Horse archers utilizing synchrony leading to ambush

Horse archers start in a loose formation (pell-mell, globular, unorganized mass) shooting from a distance following the lead rider who is using whistling arrows to direct the shots.

Synchrony was key to maintaining cohesion to avoid the jostling of surrounding riders.

Diagram 6

Turkish horse archers

Turkish horse archers beginning the rendezvous

Crusader knights charging out against the horse archers

When the knights challenged the horse archers they turned to the right to evade the challenger still shooting arrows to their rear.

Diagram 7

Utilizing synchrony was key to maintaining cohesion to avoid the jostling of the surrounding riders.
Diagram 8

Horse archers hiding in a group of trees waiting to ambush the pursuers.

Turkish horse archers feigning retreat leading the knights into an ambush.

Pursuing knights, now exhausted and without any support from friendly troops, begin to slow down.

Diagram 9

When the enemy pursued the horse archers continued to feign a retreat leading the pursuers to a preplanned position where other nomadic cavalry were waiting to spring the ambush.

The crusader knights are now surrounded and usable to catch the horse archers.

The Turkish horse archers continued to shower the knights with arrows until they surrendered or died.
Sun Tzu, circa 544 – 496 BCE, wrote “do not pursue an enemy who simulates flight”.267 The Xiongnu were notorious at feigning retreat when fighting the Han. Peter Lorge points out the Steppe nomads had a cultural understanding of the mobile warfare which the Chinese disdained.268 The Achaemenid Persian Ruler, Darias, complained the Skythians would not stand to fight, instead they fled into the Steppe drawing the ruler farther and farther from his resources. The retreat weakened the Persians who eventually turned back without ever engaging the nomads. In 910 CE, the Magyars (a nomadic group that invaded and settled in the Hungarian plains during the 10th century BCE) defeated a German force when they drew out the armoured horsemen, the prelude to the European knights, at the Battle of Augsburg.269 During the Crusades, the Byzantines warned the Franks not to fall prey to this ruse employed by the Seljuq Turks, yet they still fell for it. In May of 1104 at the Battle of Harran, the Seljuq Turks engaged the rulers of the newly established Crusader States of Antioch and Edessa.270 The Turks quickly rode towards the crusaders showering them with arrows. The Franks held their ground; however, the Turkish horsemen appeared to waiver, which enticed the Frankish knights to break ranks and engage the Turks. The Seljuqs fled in disarray while the knights pursued. After two days of fleeing the Turkish horse archers turned to engage their pursuers. Many of the Frankish horsemen fell to the arrows of Turks and were defeated. Even nomads sometimes fell prey to their own ruse. In the early 13th century, the Mongols defeated a combined force of Rus’ and Kipchaq Turks at the Battle of Kalka River by feigning defeat. After several days of fleeing from the combined forces the Mongols lured the Rus’ and Qipchaqs to a prearranged location

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that favored the Mongols.\textsuperscript{271} The combined forces were caught by surprise and defeated. Even Marco Polo noted the effectiveness of the feigned retreat:

Thus they fight to as good purpose in running away as if they stood and faced the enemy, because of the vast volleys of arrows that they shot in this way, turning around upon their pursuers, who are fancying that they have won the battle. But, when the Tatars [the term for the Mongols often used by the Latin and Arabic sources] see that they have killed and wounded a good many horses and men, they wheel round bodily and return to the charge in perfect order and with loud cries, and in a very short time the enemy is routed.\textsuperscript{272}

The nomads were masters of rapid fluidity of movement in which they avoided engaging with their opponent yet remained in close proximity to entice the enemy to follow them. This tactic is called the Fabian retreat, referring to a Roman commander, Quintus Fabius Maximus, 221 – 217 BCE, who defeated the Carthaginian ruler, Hannibal Barca, 221 – 202 BCE, during the second Punic Wars of the 3rd Century BCE, by avoiding direct contact. Herodotus wrote:

“The Skythians were more clever than any other [after describing them as ignorant] people in making the most important discovery we know of concerning human affairs, though I do not admire them in other respects. They have discovered how to prevent any attacker from escaping them and how to make it impossible for anyone to overtake them against their will. For instead of establishing towns or walls, they are all mounted archers who carry their homes along with them and derive their sustenance not from cultivated fields but from their homes. Since they make their homes on carts, how could they not be invincible even to engage in battle?”\textsuperscript{273}

In short, this technique is one of movement, deception and enticement. When the nomads were aware they could not defeat their enemy, they lured the opposing force into an area that was more suitable to their form of fighting. Quite often the nomads divided their forces to avoid being surrounded, and it also gave the appearance their army was falling apart, which encouraged pursuit. After a period of retreat and pursuit the nomads turned against the enemy to

\textsuperscript{272} May, Timothy. "Genghis Khans Secrets of Success." \textit{Military History} 24, no. 5 (August 2007), p.45.
ambush or envelop them.\textsuperscript{274}

The retreat could last for months as in the case of the Achaemenid ruler, Darius I, and his pursuit of the Scythians. As noted in a previous chapter the Scythians simply fled into the Steppe and harassed the Achaemenids until they chose to stop the pursuit and return to their homeland. It could also last just days, as in the case of the Battle of Köse Dag, June 1243 CE.\textsuperscript{275} When the Mongols invaded the Seljuq territories in Anatolia they were outnumbered. The actual numbers between the two forces is unknown. What is made clear is the Seljuqs and their allies, the Cilician Armenians, and the Trebizond Greeks, a remnant of the Byzantine Empire that fell to the Crusaders in 1204 CE, were numerically superior to the Mongols. The Mongols began the invasion by seizing the city of Erzurum. When the Seljuqs resisted, the Mongols fled avoiding direct contact with the Turks. After several days of cat and mouse the Mongols turned back, enveloped the Seljuqs and defeated them. The Fabian tactic, like all the others, required a great deal of training and practice to properly execute.

Examining the training of a nomad army is a challenging task. Most of them were illiterate leaving no record explaining how they trained. What is known comes from outside sources. Even then the descriptions are limited or vague. A valuable asset to examine is the Mamlūk military manuals from the 13\textsuperscript{th} through the 15\textsuperscript{th} centuries. The treatises are full of information concerning horse archery and training techniques used to train the slave soldiers.\textsuperscript{276} The weakness of the sources is the nomads did not fight exactly like the sedentary armies, including the Mamlūks, who were mostly Qipchaq Turks. The slave soldiers drilled in tight

formations and focused a great deal on melee as well as archery. The nomad usually avoided close combat until the opposing force broke down from continued arrow showers.

Before being recruited into any army the nomads were excellent riders and archers. From an early age they learned to ride horses. Friar Plano Carpini attest to this stating the nomads learned how to ride a horse before learning to walk.\textsuperscript{277} When they became strong enough, they learned to shoot a bow to protect their herds from predators and hunt for food. Both skills were necessary for the survival in the Steppe. The daily riding and constant use of the bow made the nomads very proficient horsemen and archers. To move in a mass required additional coordination.

To learn how to coordinate maneuvers the nomads of the Steppe participated in a large hunt called the \textit{battue}.\textsuperscript{278} They formed up in groups, fanned out over several miles, rounding up every animal they came across and enveloping them. While the hunt was very common among the nomads of the Steppe as a source of entertainment and food, it was the Mongols who converted it into a military exercise. It was on a grand scale, well organized, thoroughly planned and stringently - if not draconian - regulated. The troops were guided by their commanders. The \textit{battue} took several days, weeks, or months to complete. The coordination required extensive communication and discipline in order to maintain the encirclement. In addition, the riders were not allowed to let an animal slip through the enveloping circle. Once the circle was complete it


\textsuperscript{278} The term \textit{nerge} is often commonly used. Ata Malik Juvaini uses the term \textit{nerge} to describe columns of troops. \textit{Battue} (also \textit{batut}) is a term that refers to a hunt in which game is driven into an area and therefore will be used in this paper. Another term for the hunt is \textit{gorugen}.; For further information regarding hunting on the Eurasian Continent see Allsen, Thomas T. \textit{The Royal Hunt in Eurasian History}. Philadelphia: University of Pennsylvania Press, 2011.
moved inward trapping all the animals inside a wall of horses and riders. After the animals were corralled the khan, or whoever was the leader, made the first kill. Next the bravest of the soldiers entered the ring with one arrow. If he failed to kill an animal, he faced chastised by his peers. Not all the animals were killed. Eventually an elder would intervene and those remaining alive were allowed to escape. The nomads were well aware it was unwise to depopulate an area of wildlife.

At the most basic level, the hunt provided the source for meat, animal tendons for making bows, and fur for textiles and the felt tents. The _battue_ also provided the training needed to instill discipline among the troops and coordination between the commanders. Utilizing the _battue _on a large scale provided the training for navigating around difficult terrain and obstacles. Nomadic horse archer armies preferred large open areas to maneuver.\(^{279}\) The hunt was used to train and coordinate the troops during maneuvers.\(^ {280}\) It was also a source of entertainment for tribal gatherings, special guests, or simply the time to acquire needed quarry. The hunt was conducted by all the nomadic peoples of the Steppe from the Xiongnu and Skythians of antiquity to the Timurids and Moghuls of the late medieval era. Even sedentary peoples conducted the hunt on small and large scales. Emperors from the Holy Roman Empire, Byzantium, the Tang, Ming, and Qing China thoroughly enjoyed participating in the hunt. A Khitan Liao emperor once stated hunting was more than just pleasure; it was also a means of practicing warfare.\(^ {281}\) In Southwest and Central Asia sultans, shahs, and khans went to great lengths to participate in hunts


as many times as possible. The hunt was a vast party that everyone wanted to attend and soldiers, musicians, camp followers, servants, retainers, nobles, slaves, merchants and rulers gathered round for the large hunts. It was festive, spectacular to watch, an honor to participate in, and sometimes dangerous. A hunter ran the risk of being unhorsed, attacked by his quarry, or murdered by his host who wished to see an adversary eliminated; a stray arrow wasn’t necessarily a misdirected shot.

The *battue* was used to hone the skills of the riders in horsemanship and maneuver. The hunters rode their mounts the entire day, quite often over difficult terrain. During the encirclement they faced hardship from weather, long hours of riding, discipline to remain in formation and deprivation from rest and eating. In short, the soldiers were training to become accustomed to the hardships and rigors of stress from campaigning. The horsemen were required to maintain strict discipline and remain in position throughout the entire march. A rider who fell out of line was severely punished. They also learned to face their fears by working together as a single cohesive unit.\(^{282}\) During the encirclement, animals of all kinds were enclosed. Bears, wolves, wild cats such as tigers and leopards, hyenas, and boars when cornered lashed out in fear and attacked the hunters. Ungulates are also very dangerous when threatened. A single moose, wapiti (elk), or a caribou in a state of desperation can drive through a small group of riders. As herd animals, there was always the risk of a group panicking resulting in a stampede attempting to break through the line of horsemen. If a group of riders allowed animals to escape through a gap, they were beaten or executed. Anyone who fled in fear was killed by their leaders. The men learned to work together and support each other in all manners of hardship and trepidation.

The *battue* provided an excellent training opportunity for command and control. While it

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is known that the hunt was popular with all of the nomadic peoples, it was the Mongols who received the most attention from contemporary writers. The Mongol troops were divided into three groups, the left wing (*je ’un ghar*), the center (*tob or gol*), and the right wing (*baraghun ghar*). All three remained connected and never separated from the center. The three wings formed a line that stretched for many miles. The line slowly moved forward driving the animals before it. The two outer wings stretched out moving slightly faster, yet without disengaging from the center, then inward to gradually envelop the animals. After a solid ring was established, the troops slowly tightened the circle until it was approximately three to five miles in diameter creating a human barrier mounted on horses. A felt fence was placed along the encirclement with entrances into the circle. Coordination and communication was essential to prevent the three wings from becoming disjointed as well as keeping the cohesion of the envelopment. Those in command used swift riders, flags, and drums to coordinate the movement of the entire force. The hunt was also a way to test the skills of commanders and members of the *Keshig*, the elite Mongol *tümen*. The same techniques were used when the Mongols set out on campaign. It was also used on a smaller scale during a mock battle.

Building on a nomadic pastime of chase games, the Mongols participated in a sham-fight with large numbers of troops. Troops formed up on a battlefield into *gurans* (small regiments or units) and attacked via maneuver attempting to circumnavigate the other and avoid being outflanked via retreats and rapid maneuvering. There was no actual fighting with weapons, that could injure someone, but fights did break out requiring intervention of the commanders.

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283 The division of the military forces into three divisions or wings was common among the Steppe peoples including the Ayyubids and Mamluks of Egypt.
Its purpose was to conduct mock battles of maneuver. Supposedly the Mamlûks adopted the training. Sultan Baybars conducted a sham fight, grand review, prior to setting out against the Mongols in Rûm. Sham fights were part of the Mongol custom. James Gilmour, in his account *Among the Mongols*, wrote about some strangers who approached a *ger* bearing gifts of whiskey. The men were stopped by a rather large man demanding what brought the strangers to his tent. They demanded entry. The large man’s reply was they would have to fight him. A scuffle, which lasted only a few minutes, broke out pulling each other about, while taking care not to spill the whiskey. The large man eventually relented and allowed the men to enter. However, another dispute erupted when they could not decide who would enter the *ger* first. Each of the men kept bowing to the other, yet none entered. The large man eventually pushed the men into his *ger* ending the fracas. Such was their nature of a sham fight.

On campaign, large numbers of troops marched over great distances. The lessons learned from the hunt were very valuable, especially for campaigns where troops marched over difficult terrain. Quite often the army divided into separate groups each one aiming for the same objective from different directions, giving the impression of innumerable riders. Or, each group went after a different objective, which gave the appearance the Mongols were everywhere with an endless supply of men. The maneuvers learned from the *battue* were used in almost every campaign by the Mongols. In 1219 to 1221 the Mongols sent detachments into Khwarizmia in different directions and some crossed territory thought to be impassable. Cities were besieged and battles took place over a vast area, which gave the impression the Mongols were

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everywhere. In 1251 through 1260 the Mongols invaded Song China from different directions.\textsuperscript{290} Similar patterns were used against the Rus’ and Eastern Europe in 1235 to 1242.\textsuperscript{291} The campaigns conducted by the Mongols were the \textit{battue} on a grand scale. Instead of hunting animals, people as in kingdoms, cities, and territory were the prey.

The tactics of the \textit{battue} were also applied on a smaller scale. Anytime an opposing force was spotted, the Mongols would try to envelop or outflank it, just like they did during a hunt. One or two wing(s) would swing around the enemy attempting to outmaneuver the army as the Mongols did at the Battle of Mohi in 1241 against the Hungarians.\textsuperscript{292} It was on the battlefield that the horsemen utilized the lessons from the \textit{battue} and the horse’s ability to operate in a group. Maneuvering and controlling the horse during the hunt or in combat required excellent equestrian skills. One way to hone their riding skills was to participate in equestrian games. The games were used to synchronize the rider and the horse.

The equestrian games of Central Asia and the Steppe are barely, if ever, represented by western media.\textsuperscript{293} Nevertheless, the games served the purpose of personal training, entertainment, political display, and cultural ritual. The games fostered cooperation between riders as well as individual prowess. They were extremely popular and competition was fierce regardless of what type of equestrian game was being played.

All the above tactics and games help to explain how the nomads trained and conducted warfare. The narrations are sound and have been detailed in several sources.\textsuperscript{294} None of them

\textsuperscript{290} For details concerning Mongol campaigns into Song China see Morris Rossabi - Rossabi, Morris. \textit{Khubilai Khan: His Life and Times}. Univ of California Pr., 1988.
\textsuperscript{292} Sverdrup, Carl. "Numbers in Mongol Warfare." \textit{Journal of Medieval Military History} 8 (n.d.), 1p.09-117.
\textsuperscript{293} Buzkashi was represented in the Rambo movies during the 1980s.
\textsuperscript{294} Edwards, Sean J. "Historical Cases." In \textit{Swarming on the Battlefield: Past, Present, and Future}, p.13-45. Santa Monica: RAND, 2000. Edwards gives descriptions from Alexander the Great’s struggle with the Scythians, the
however, are able to clarify exactly how the nomads were able to maneuver their groups on the battlefield. While scholars claim the nomads practiced in groups, and later the Mongols are stated to have drilled, the explanations lack detail. Some claim the warriors kept some control over the horse by keeping the reins of the horse around their fingers of the bow hand. There is a great deal of risk with this. If the horse spooks, stumbles, or gets out of control the rider could lose his fingers. Modern riders are taught early on, the reins are never to be wrapped around fingers, the hand, or the wrist. Furthermore, wrapping the reins anywhere around the hand will impede the rider’s ability to shoot with effectiveness. Since the horse archers needed their hands to use the bow and arrow they needed to have excellent equestrian skills regardless of how fast the horse was moving. The archery skill of the horse archers was noted by an Arab named al-Jahiz:

“If a thousand of their horse [the Turks] join battle and let off a single shower of arrows, they can mow down a thousand [Arab] horses. No army can withstand this kind of assault. The Kharijites and the Bedouin have no skill worth mentioning in shooting from horseback, but the Turk can shoot at beasts, birds, hoops, men, sitting quarry, dummies and birds on the wing, and do so at a full [gallop] to fore or to rear, to left or to right, upwards or downwards, losing ten arrows before the Kharijite can nock one.”

Ibn Fadlan, an Arab from Baghdad who traveled north into the Steppe witnessed a Turkish rider shoot a goose out of the sky while galloping on his horse. Usama Munqidh, a 12th century Arab living in Syria noted that he saw a man shoot three arrows at a squirrel in a tree, all of which missed. After the man moved away a Turk came and shot the squirrel on his first try.

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Romans against the Parthians at Carrhae, Byzantines and Turks at Manzikert, the Crusaders against the Turks at Dorylaeum and, of course, the Mongols.
Munqidh state the shot would have killed a man had it been directed at one.\textsuperscript{297} Anna Comnana, (b. 1083 – d. 1153) the daughter of Byzantine Emperor Alexios I Komnenos, also noted the Turks prowess with the bow and horse:

“As for the weapons they use in war, unlike the Kelts (Europeans) the do not fight with lances but completely surround the enemy and shoot at him with arrows; they also defend themselves with arrows at a distance. In hot pursuit the Turk makes prisoners by using his bow; in flight he overwhelms his pursuer with the same weapon and when he shoots, the arrow in its course strikes either the rider or horse, fired with such tremendous force that it passes clean through the body. So skilled are the Turkish archers.”\textsuperscript{298}

Ata Malik Juvaini adds “Turkish archers (who can, if they wish, with the discharge of an arrow, sew up the heaven) charging to and fro [while on a horse] with such effect that with every arrow that they let fly with the speed of a shooting star they hit the target.”\textsuperscript{299} Such was the skill of a nomadic warrior as an archer and rider.

Riders can control a horse by using just their knees and feet. Good equestrian riders will push one knee into the side of the horse to direct which way the horse is to move. Simply using a foot to gently push the side of the animal can be used to change the lead. When a horse gallops or canters one of the front legs will reach out further, in the forward motion, than the other. This is normal for all quadrupeds. The significance of the lead is balance. When a horse changes direction it needs to be in the proper lead to maintain good balance for both itself and the rider. Changing leads is a sign of good horsemanship. Those fighting in tight formations such as the Mamlūks, needed to know how to change the lead without using the reins. By using his feet and knees the rider was able to use both his hands to control the bow. Therefore, there was no need


to hold the reins in their hands. The skills were taught over many generations and at an early age. In short, it was part of the nomadic daily life whether playing games, conducting raids, fighting battles, participating in the hunt, or simply attending their flocks.

Horses were central to nomadic Steppe tactics and games as well as other societies of the Eurasian Continent. Petroglyphs depicting horses are found all along the Eurasian Steppe. Unsurprisingly horses are featured in two-thirds of the Bayeux tapestry, the Norman invasion of England in the 11th century. Horses appear in vast numbers in the art work of Rashid al-Din’s Jāmiʿ al-Tawārīkh, Compendium of Chronicles, dating to the late 13th early 14th century. Horses, camels, and donkeys are depicted throughout the famous Qingming shanghe tu, Beijing Qingming Scroll, dating from the 12th century in Song China. In buzkashi the horse was held in as much honor as the rider. Horse archery and riding skills were essential to the nomadic peoples of the Steppe. They needed to be able to hunt for survival and to control their herds. The ability to ride a horse and shoot arrows while mounted made any man from the age of sixteen and older an able body soldier. Games allowed riders to synchronize with their horse. The battue provided the training for coordination between groups of riders. Military effectiveness and social status alike made the possession of horses crucial in nomadic life. Maintaining large herds and playing games over the centuries allowed the nomads to learn a great deal about horses. The greatest knowledge the nomads had over the sedentary populations was synchrony, the understanding of how horses moved as a group.

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302 The scroll can be viewed online at: http://afe.easia.columbia.edu/songdynasty-module/intro-two-versions.html
Chapter 4 – Synchrony Equus Ferus Caballus

“Goodness is tied to the forelocks of horses until the day of judgement”
Book 28, Hadith 1

The previous chapter discussed the methods of how the nomadic horse archers of the Eurasian Steppe conducted warfare. Contemporary descriptions of horsemen in unorganized masses maneuvered in unison, yet appeared to be discombobulated and completely disordered; however, they were able to function as a fighting unit capable of harassing their opponent with numerous arrow showers. To the sedentary peoples, this scene of bedlam was an indication of a broken enemy that needed to be destroyed. For the nomads, it was their normal way of fighting. They understood how the horse maneuvered within a group and utilized to their advantage. The ability to move en masse without any sort of organization is referred to a synchrony, the subject of this chapter. Because the study of synchrony is relatively new, scholars have a difficult time incorporating it into research, which is why it has been noticed by a few scholars studying the nomads.  

The first part of this section will examine the biological aspect that enables an animal to synchronize within a group without jostling the ones next to it. Next is cultural, the

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learned behavior the horse needs to learn in order to maintain its distance within a herd traveling at speed. Following culture will be discussions pertaining to cohesion and computer modelling of synchrony.

Synchrony is defined as the state of operating or developing according to the same time scale as something else. Synchronization “occurs when large numbers of individuals co-ordinate to act in unison.”

Research on animal synchrony has focused primarily on primates, fish and birds. Animal communication and motor behavior developed at a young age. The use of synchrony in animal groups is associated with collective movement, which is defined as “a group of animals that decide to depart/move quite synchronously, move together in the same direction and maintain cohesion.” It implies non-independent individual decisions to move and relies on information transfer between group members mediated by behavioral cues or signals, and social responses.” The understanding and the use of the term synchrony is fairly recent in eques studies. Lucy Rees, an ethnologist, takes the definition farther into maneuvering by describing it as “doing what others are doing, moving together and turning together”.

There are numerous animals in the animal kingdom that routinely utilize synchrony. Flocks of birds can change direction at a moment’s notice without collision. Schools of fish will suddenly change depth and direction with ease. Film crews travel every year to Africa to shoot video of ungulates, hooved animals including horses, running across the savannah during

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migration. When chased, an entire herd can change direction in a manner that looks effortless. Sheep can run without knocking each other down even when running on a slope. Fish and birds have to deal with a three-dimensional world of altitude, plane, and depth. Terrestrial creatures deal with a primarily two-dimensional world, albeit one that is jutted with obstacles. Among ungulates, synchrony is important in regards to escape; it is what keeps the herd together when fleeing. While there are more elements to cultural behavior, it is important to understand the advantageous positioning of the horse’s eyes.

The essential biological component for synchrony of the horse is the eye due to its wide field of view. The field of view is one of the ways a horse attains information regarding its surroundings and communication with others around it. Its vision is not as high in spatial resolution and does not perceive color as well as a human eye. Yet the horse’s eye can see movement in a 340° arc as opposed to the human eye, which spans an approximate 120° of arc. When looking straight ahead, the horse has a binocular vision of about sixty degrees. The advantage of binocular vision is depth perception allowing the horse to travel at speed over uneven terrain. Its broader field of view allows it to quickly assess the ground, a distinct advantage to escaping predators. The horse does not have excellent depth perception. To gauge distance the animal will lift and lower its head: lowering its head to judge closure distances, and raising its head to judge objects farther away. Another reason for the horse to move its head up and down is to help bring an object into focus. The disadvantage is reduced binocular vision.

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compared with humans. For a prey animal (e.g. wolf, wild cat, bear, and bird of prey), the lack of peripheral vision would result in a low chance of survival against a predator. Because the equine’s eyes are laterally placed, they primarily see in a monocular view. The horse’s eye has a panoramic image with each eye having a view of 190° to 230° on each side of the equid’s flank. The advantage of the panoramic view is the ability to see movement, possibly a predator.

Another unique aspect of the horse’s eye is it functions in a similar manner as bifocal glasses. As a grazing animal, it needs to be able to see in an upward view to detect threats. As the equine eats, it is continually scanning through the upper portion of its eyes surveying the horizon. If the horse is distracted by something, it will raise its head to examine the object through its lower lens, which is better for focusing. A person using bifocal glasses can relate to this. The lower lens focuses on closer, smaller objects such as words on paper, while the upper portion of the lens allows the person to view objects with clarity at a distance. In order to bring an object into focus, the horse will raise its head up and down until it can see it clearly. Furthermore, the horse’s eyeball is the largest orb of any ungulate. As a result objects appear larger.
Due to the positioning of the eyes, a horse can see almost all the way around its body with a small blind spot directly to the rear. Inside a group, the horse can only perceive its immediate surroundings. Those at the front of the group and to the side have an unrestricted view of their surroundings. This is why they will follow the horse in front. Panoramic vision also allows them to split apart to avoid an obstacle and then regroup. A way of visualizing this is to create an imaginary circle around each horse in a group. (See figure 1). The outer edges of the circle may collide, but the horse inside the circle is not affected as it moves in unison with the group. The desire of cohesion lends to synchrony.

Figure 1  From "Equine Vision and Its Effect on Behavior"

Horses synchronize with each other in many aspects of their daily lives such as easting, resting, and moving (as a group) to another location. After observing a group of horses at pasture, Lucy Rees points out the horses usually east, sleep, and move at the same time. They don’t act in a random manner with each one doing its own thing. When the herd moves off to another grazing area or watering hole they move together. Synchrony is not following blindly; it is doing what the rest of the group is doing. When traveling, regardless of the speed, horses will match each other’s speed. As a group they will all flee together in the same direction at almost the same speed and then all of them will stop together to turn and face what spooked them. If a rider falls from his horse (e.g. during a race or in a group) the horse will not stop, instead it will remain

\[313\] Ibid., p.66.
within the group. Of course, not all horses run at the same speed. Horses that cannot keep up because of injury or age will still continue to follow the herd at whatever speed they can. Foals, however, will stop since they have no group to synchronize with; whereas, a matured horse will continue to run following the herd.

Synchrony is not innate, the horse has to learn; it is acquired knowledge referred to as culture, a slippery term than needs explaining. If you ask a group of anthropologists for the definition of culture they are likely to break out into clan warfare trying to come up with a universal explanation. This exaggerated statement points out an important issue; culture is a challenging abstract term to define. It is widely used and defined by each discipline of the social sciences as well as biology and psychology. Anthropologists have long claimed that culture has been the basis of their discipline. Sociology claims it too studies culture, yet others claim its focus is on the term society. Social historians acknowledge culture plays an important role with humanity. What then is the difference between a social historian and a sociologist? Sometimes the answer is a joke; history is sociology without the brains, while sociology is history without the hard work. Even military historians have picked up on culture and combined it with warfare trying to explain why “others” fight differently from the so called West. Psychology acknowledges the influence of culture upon the human psyche. From a philosophical point of view, does it need to be defined? After all, we can all use it in a sentence. For the purposes of this thesis, the meaning of culture will refer to the most significant factor, in my view, in all the various definitions given – learned behavior.

To avoid colliding with each other, mares teach the younger horses in everyday life vis-à-vis slight aggression. When a younger horse moves too close to another horse, it is forced to

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leave space or face bellicosity from a mare. The young abandon a crowding behavior with low rewards\(^{315}\) and learn to stay within their own space. In short, younger horses learn to avoid invading another’s space. The ‘don’t collide clause’ is learned by young horses because older ones continually tell them to keep their distance – except their mothers, of course; that is why it’s taught by non-mother mares. In a stampede, if they collide someone dies; it is a vital lesson the young must learn. If the lead horses see an obstacle ahead, they will veer to the side ‘pushing’ or shifting without colliding with the other horses and then reform after passing it. Synchrony is all about maintaining space. Foals practice synchrony between themselves. Ethologists have noted very small groups of young equines will run together maintaining the same step. By imitating each other, they learn to become part of a “group mind” or herd behavior. They become part of the collective decision making.\(^{316}\) In some regards, synchrony is such a prevalent behavior among equine that no one, especially military historians and zooarchaeologists, take notice of it, except ethologists like Lucy Rees.\(^{317}\)

Horses also tend to synchronize on a smaller dyadic scale. When a foal walks or runs alongside its mother, it will synchronize its footwork to match, or as Gala Argent puts it, exact foot-for-foot synchrony.\(^{318}\) In her studies she found numerous examples of two horses running next to each other maintaining the same stride. Horses have also been noted to synchronize their movements with humans. Because the horse has the ability to see a person’s leg it will coordinate its movement in the same way it does with another horse. After they have learned it


\(^{316}\) *Ibid.*, p.27.

\(^{317}\) Rees, *Horses in Company*, chapters four and five. Both chapters focus on synchrony and cohesion. See also Gale Argent and Susanna Forrest for synchrony.

from a young age, it becomes a natural behavior when moving alongside another horse or person. Argent states the manner in which horses synchronize their movement is a form of nonverbal communication between horses and humans.\textsuperscript{319}

Other less-dramatic examples provide further evidence of synchrony. In \textit{Doñana}, southern Spain, each year wild horses are rounded up for the famous El Rocío celebrations. Around 2,000 horses are moved together without difficulty, but riders on horses are needed at the front to keep them heading in the correct direction. In the United States, the Bureau of Land Management (BLM) uses a tamed horse, called a “Judas Horse” to round up wild horses. The horse is trained to run a particular route that leads to penned corals. After the horse learns the route, it is released into the wild to join the wild herd. When the BLM conducts its round up, the Judas Horse begins to run and the others follow it. In Montana, a group of Blackfeet boys were competing in a horse race around a pond while riding bareback. One of the riders fell off, but the horse continued the race following the rest of the horses.\textsuperscript{320} In the case of domesticated horses, they would have grown accustomed to following a lead rider. The riders behind the banner bearer would have to do very little to guide their horses. The advantage of this is it left the archer’s hands free to use his bow and arrows.

There is no doubt the Steppe peoples understood how to guide and herd horses; their livelihood revolved around the horse. Nevertheless, this leads to the question how does one guide a group of mounted horse archers? They did not have control of the reins since they were


\textsuperscript{320} It has been noted horses will return to or follow the herd rather than remain with the rider who has fallen off. Hartmann, Elke, Janne W. Christensen, and Paul D. McGreevy. "Dominance and Leadership: Useful Concepts in Human–Horse Interactions?" \textit{Journal of Equine Veterinary Science} 52 (2017), p.7.
focused using the bow and arrow. They could use their knees to direct the horse, but they needed to maintain balance with the horse. To direct a group all they had to do was follow a lead rider. The banner bearer rode in front of the unit leading the direction of travel. The fact horses will follow a lead horse is supported by several examples. The first example is an incident that took place in the Netherlands.

“On one occasion…a heard of some 120 horses got trapped on a patch of dry pasture in the middle of a flooded area. With twenty horses already drowned, people were attempting to save the others. One of the more radical proposals was for the army to erect a pontoon bridge, but the local riding club came up with a far simpler solution. Four brave women on horseback mixed in with the stranded herd, then splashed through a shallow area and, like pied pipers, drew the rest with them in single file. The horses had to swim a few stretches, but all made it safely to terra firma.”

The author emphasized that it was synchrony and cohesion that attributed to the willingness of 120 horses to follow the riders across the water. The women riding the horses were the initiators.

Synchronization is a requirement for social cohesion that benefits a group. Cohesion is the urge to remain together. Ungulates have been noted to have bouts of synchronized feeding. Grazing and resting at the same time reduces the likelihood of the group splintering off and having individuals become easy prey. The added benefits of synchrony help establish cohesion, group stability, protection, information transfer (location of food, water and alertness),

321 Clutton Brock, Horse Power, p.74. The use of knees to direct the horse is a sign of good equestrian skills. In modern horse archery competitions the competitors place the reins on the front panel (often referred to as the pommel) of the saddle.
326 Ibid. p.126.
and the ability to move as a mass without jostling each other. When a herd is spooked, it will flee in the same direction and individuals will also stop together. To maintain cohesion and direction, ungulates will take peripheral positions. The movement and stopping are not choreographed as in a rehearsed about-face seen in marching formations; more along the lines of a horse taking chorus-line style cues from its nearest neighbors.

The coordinated behavior between the horses as a group is referred to as collective animal behavior. The foal learns from the other horses that it needs to dig through the snow in order to reach the grass below. Horses are naturally a herd animal in which they gather together in groups. Facets of collective behavior include the transfer of information among the group, the group decision process, as well as group movement and synchronization. Synchrony encompasses several aspects ranging from feeding, standing/resting, mutual grooming, and collective movement. Collective movement occurs when a

“group of animals decide to depart/move quite synchronously, move together in the same direction, which implies the animals have a choice between different alternatives, and maintain cohesion until the group stops moving or starts a new activity, all resulting in a change of location. It implies non-independent individual decisions to move and relies on information transfer between group members mediated by behavioral cues or signals, and social responses whose dynamics may be modulated by the ongoing collective movement itself.”

Various animals are stimulated to move via different signals such as a dominant member of the group.

In the case of horses, at times there is not a dominant leader who determines where and how the group moves. In behavior literature “leader” often refers to a single actor. In some cases, individuals will take up peripheral positions to signal their motivation to move.

particular direction. It would be more relevant to use the term “initiator” instead of “leader.”

In some cases all members of the group can contribute to the decision to move; this is called equally shared decision. Horses are social ungulates. Social integration of all members of the herd “generates a high degree of behavioral synchronization and generally translated into group cohesion and group stability.” The synchrony of group cohesion was utilized by the Steppe nomads. When the horse was domesticated, it did not lose its desire for cohesion. Over time equus became reliant on people for survival. In turn people became reliant on the horses’ strength for survival and conquest. Over hundreds of years the peoples of the Steppe learned about the horse, its behavior, reaction to fear, what stimulated it to rely on humans, and how it interacted within a herd.

Lucy Rees has studied the horse and human relationship. As a post-graduate student of zoology and neuro-physiology, she observed 150 wild horses in Venezuela that were spooked by people hiding in a bush.

“They saw us under a bush, got scared, ran away but some of them - the young males - were inquisitive so they came back to look, dragging everyone else with them. As they turn you can see the spacing wonderfully. As they get closer, some get nervous and start running again, dragging all along with them, then the boys turn again: they just follow an individual who makes off in a convinced and definite way...it [went] on and on for ten minutes. I have seen this lots of times in stampedes. As you can see, sometimes one is in the lead, sometimes another.”

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328 Ibid., p.638.
331 Forrest, Susanna. The Age of the Horse: An Equine Journey through Human History. London: Atlantic Books, 2016, p. 336. Lucy Rees sent me a copy of this report before it was published via personal communication. She was very instrumental in helping me understand how horses were able to move in mass without jostling each other via synchrony and cohesion.
How a multitude of individuals makes a decision and determines a leader is still hypothetical.\textsuperscript{332} There is a popular notion there is a lead mare within a group of horses. Rees points out this has not been empirically proven, yet many horse handlers claim this to be valid.\textsuperscript{333} Petit and Ron noted that female horses are reported to initiate movements proportionately more than males when spooked, otherwise there was no dominant leader.\textsuperscript{334} The need to follow and stay together bonds the \textit{eques} in interconnection.

Cohesion rose sharply after horses were domesticated. Domestic horses instinctively want to be in a group and readily form herds when maintained at pasture. Horse herds in the Steppe can be rather large; Zhao Hong, a Song Dynasty envoy to the Mongolian Steppe, remarked that there was an abundance of grass and water in Mongolia that it could support hundreds of thousands of animals.\textsuperscript{335} Due to high numbers, they were forced to move over great distances between pastures. When the nomads traveled along the Steppe, it was often at a casual pace due to other animals (e.g. oxen, sheep, and goats) and movable property. When mobilizing for war, large numbers of horses were moved quickly from one location to another. Without the ability of synchrony and group cohesion, they would not have been able to move with great speed. Even today, one can watch videos of herders in Mongolia and Central Asia herding horses at a run over the grassy plains. They are running as a cohesive, single mass without

\begin{footnotes}
\textsuperscript{333} I grew up around horses and many in my family are avid horsewomen. Some compete in equestrian tournaments and several of my cousins compete in a tournament called O-mok-see (a native American term for horse games). All of them claim there is a dominant mare that will lead the heard. They also note that mares tend to create drama, which is why they prefer to ride geldings, much like the nomads.
\textsuperscript{335} May, Timothy. \textit{The Mongol Art of War}. Yardley: Westholme Publishing, 2007, p.54. May points out, on page 166, the number may be exaggerated for the typical nomad, but those of status did have large herds. The point is, the Steppe could support very large herds of horses.
\end{footnotes}
jostling each other. The individuals in herds learned group cohesion overcoming the natural instinct of smaller groups, which feral horses tend to break into. Other activities, such as play in juveniles or a perceived threat, also encourage animal cohesion. As a social animal the horse’s natural behavior, such as herd formation, is linked to them being a prey species. *Equus ferus caballus* is known for its social facilitation meaning the young learn from older horses.³³⁶ Move – find location.

Cohesion starts at birth, a foal will follow its mother.³³⁷ This behavior is innate which leads to the desire of cohesion, also referred to as gregariousness. Horses innately need to be with others for their own wellbeing. In a herd they exist cooperatively; they will stand close to each other to fend off threat or pests, and they remain close for safety when sleeping. A horse that is alone, especially if it used to being in a herd with other horses, will exhibit depression and agitation. They will, however, accept humans or other animals for companionship. Otherwise, long distance couriers would never have been able to travel alone over great distances from one relay station to the next.

Animals are intrinsically complicated and it can be difficult to provide a good description of the behavior of individuals interacting within a group during movement. To help explain movement, biologists and ethologists have turned to mathematics.³³⁸ Mathematical models are becoming increasingly used as an important research tool when understanding movement within a collective group. Models have been developed to help demonstrate how schools of fish or flocks of birds move in a three dimensional world. When it comes to ungulates, they are affected by topography and in turn they affect the landscape. For example, when they traverse the land

the animals compress the soil, grass, or even snow and others following exhibit a tendency to maximize their comfort, which minimizes energy, and follow the trodden path. Another factor to consider, when understanding group dynamics with ungulates, is the influence of stochastic (random) events, such as the response to an opposing force (weather) or an unexpected issue with terrain, like a ditch. The collective group must make the decision to follow a leader or follow their own choice. These factors can complicate the variables.

A commonly perceived problem with mathematical models is the notion that collective movement is simplified and yet animals and people are complex organisms. For example, human behavior within crowds is conducted almost automatically without a great deal of thinking. People from New York, accustomed to moving and navigating through a large crowd, puts very little thought into their movement; they learned how to move with the group. Although the organism is complex, the interactions need not necessarily be. Mathematical models, called algorithms, for collective movements have also been used in the film industry to create fleeing animals such as in the movie The Lion King or the clashing Rohirrim (horse lords of Rohan) in the Lord of the Rings. Algorithms have been used to help detect motion synchrony, i.e., the coordinated motion of a group of individuals, in fish, marching soldiers, and crowds attending a sporting event. The point is, synchrony can be observed; what can be observed can be modeled; what can be modeled can be explained.

David Sumpter, a mathematician of synchrony modelling, states synchrony is a state of three zones - repulsion, attraction and alignment. In the case of horses they repulse each other to maintain space for ease of movement. While in a group, they are attracted to each other in the

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sense they tend to herd. Maintaining individual space and attraction radii constant allows the animals to form group cohesion that can move in a common direction, split to avoid obstacles and then reform, and even change directions without colliding.341 In the case of ungulates, their eyes allow them to see those immediate to them in order to align themselves in the same orientation as the others. Mathematical models are being used with computer animation programs.

Craig Reynolds, a computer animator, developed a program to emulate the movement of birds and other animals that move en masse. In the 1980s he wrote a program called Boid with three basic rules to recreate the movement of birds flocking. The three rules were separation, alignment, and cohesion. Separation is the individual space that a horse learns when running in a mass. Alignment (as in Sumpter’s case), or synchrony, is the horse’s ability to view others around it and move accordingly. Cohesion is the animal’s desire to remain within the group. All the boids are programed as an independent actor, much like agency. The rules create synchrony when numerous boids are brought together. In other words, the boids did what the others were doing without colliding. Over time, Reynolds was able to add more complex rules such as obstacle avoidance and reforming the mass. Each entity has a visible, yet invisible space surrounding it preventing collision. All three rules operate together, making each one inseparable from the other. The mathematical models are not about giving each “character” a mind of its own. It is about creating space and maintaining it.342

The work of Reynolds has been expanded. Weta Workshop, under the supervision of Stephen Regelous, developed a program to model crowd related visual effects. It was used for

the making of the *Lord of the Rings*. What is different about this program is each of the agents was programmed to act individually and to its surroundings. It incorporates the concept of synchrony in which an agent is doing what the others are doing with the goal of not colliding with each other or obstacles. The program incorporates movement created from filming an actual object, such as a person or horse, which is then incorporated into an artificially intelligent agent to generate motion and animation. Massive (Multiple Agent Simulation System in Virtual Environment – a program that generates crowd-related visual effects)\textsuperscript{343} has proven to be very successful in the modeling of mass groups and is now being used widely in a variety of application from film to architecture visualization, and anthropological applications such as the study of synchrony of the Eurasian Steppe nomads. For example, if the three elements in Reynold’s and Sumpter’s are essential in synchrony, then regardless of the study or subject manner, these elements should be observable and replicable.

The domestication of the horse along the Steppe was a time of learning about and mastering the horse. The sedentary peoples of the south studied the horse (its anatomy, behavior, ailments)\textsuperscript{344} and wrote treatises on what they learned. The nomads did not write down their acquired knowledge of the horse; what they learned was demonstrated on the battlefield and described by other peoples. The most significant thing they learned was how the horse functioned within a herd, how it moved in synchrony. They didn’t view it as a computer program or through the lens of any sort of empirical study. Instead, they learned how to utilize the behavior and adapted it to their form of warfare as horse archers. The movement of the horses may appear to be irregular, but in all actuality it was normal for them. This understanding


led to the development of the distinctive free form maneuvering tactics of the nomadic horsemen that did not require the training in choreographed formations so well known in military matters.

Avoiding collision is the ultimate goal of any mass whether it appears choreographed, drilled, or simply a seemingly disorganized mass. Throughout time people have drilled in formations spending weeks at a time rehearsing movement and coordination. Soldiers are drilled to ensure each one knows his or her place within the unit. In addition, entire groups are drilled so that field commanders can move, whether on the march or the battlefield, the units around in a fashion to avoid collision. This kind of training has been recorded all across the Eurasian continent from the Greeks, Romans, Macedonians, Persians, the Han, the Tang, and Ming Dynasties, the Byzantines, Mamlûks, Ottomans, to all of the European continental armies during the Napoleonic Wars. Horses can also be drilled to move in choreographed formation. Military treatises from sedentary realms such as the Byzantines, Mamlûks, and the Tang elaborate on drill training for mounted armoured troops.345 There is one significant factor regarding drilled formations: In order for an army to become proficient, it must practice on a continuous basis; the rider usually rode the same horse until it died, retired of old age, or was injured. Both men and horses were trained to learn the required maneuvers. The nomadic horsemen were not professional soldiers.346 They didn’t drill in choreographed formations. The Steppe nomads did practice moving groups around, especially during the battue. Since they had a much larger number of horses, they did not ride the same horse day after day, even on the battlefield. They didn’t have to rehearse how to move within a group because the horse already knew how.


Mounted warfare shifted the balance of power to the Steppe nomads in the north. On the battlefield the utilization of synchrony in the feigned retreat gave the nomads a distinct advantage almost to the point they could not be defeated. Those with large numbers of horses such as the Xiongnu, Skythians, Huns, the various Turkish peoples, and the Mongols successfully defeated or conquered the sedentary powers to their south. This must not be blown out of proportion. Generally speaking, none of the nomads had the ability to conquer and rule another empire for long periods of time, except for the Mongols. They lacked man power and the essential aptitude to control those whom they conquered. There is a common statement given about the Mongols – empires can be conquered from horseback, but cannot be ruled from horseback. The Skythians and Xiongnu raided along their borders, sometimes deep into enemy territory. They preferred to be appeased by receiving tribute rather than having a desire to rule. There is the exception of the Parthians. They were, however, only a semi-nomadic people, not true nomads from the Steppe. It took over a thousand years before any nomadic peoples acquired the ability to rule over taken territory. The Turks, especially the Qipchaqs, Seljuks, were successful in Central Asia and Anatolia. The Mongols, on the other hand, were able to rule, more accurately proxy rule, through the use of administrators and tax collectors. What must be noted is they, themselves, did not rule. Rather they used the bourgeoisie to govern their newly acquired territories. The Moguls were the last of the nomads to conquer and rule a territory. The Manchus and Ottomans sometimes are given credit, but they were only descendants of the nomads from the Steppe; although they did hire nomadic horse archers for their armies.

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The horse archers’ advantage was the ability to move as a unit without having to drill to maintain a structured formation. Understanding how the horses interact as a collective will help to further our understanding how the horse archers were so effective on the battle field. Synchrony is not a systemic process nor is it an end all explanation. It simply expands our understanding of a dynamic form of warfare. The front horses only need to follow the banner rider. Even Lucy Rees points out synchrony and cohesion are so prevalent that many don’t realize they are seeing it. Another way of stating it is, to the nomads, synchrony became hyperobtrusive from centuries of interaction with the horse since domestication.

The impact of domesticating and learning to ride a horse cannot be understated. The ability to ride a horse was a revolutionary change in human history. A mounted herder could manage twice as many animals than on foot; wheeled carts pulled by a horses more than tripled the carrying load of a human being; a mounted individual or a group of people could travel a much farther distance in a single day; and the ability to ride a horse allowed people to hunt with much greater efficiency. Furthermore, the horse became the primary means of mounted warfare on the Steppe that reigned supreme until the age of massed gunpowder weapons.

Chapter 5 – Emulation and Anthropocentrism

Two horses speaking with each other: “When one asks ‘have you ever asked yourself why, when the manure on the Steppe smells so good, that of our stables stinks so?’ The other replies, ‘Yes, it’s because we live closer to humans’”.

348 Forrest. The Age of the Horse, p.338.
Domestication of the horse, whether in one or several places, made it the most valuable animal all across the Eurasian landscape, including North Africa. Initially a source of food then a mount to move swiftly over greater distances, its adoption as an instrument of warfare, first for traction, then as a steed, changed the way humans fought against each other. The nomads of the Steppe fought using similar tactics. This has been noted from Chinese, Persian, Latin, and Greek sources. Even the Arab sources noted this, not just in warfare, but in many other cultural traits referring to the Mongols and Qipchaqs as *jinsiyya*. As mentioned in chapter two, this term is challenging to explain in a simple sentence. What it does refer to is the common traits, beliefs, living styles, group solidarity, horsemanship, archery and their ways of conducting warfare.351 In sum, this means that horses were fully integrated with all aspects of life of the nomads.

Horses and archery played in a role in warfare, hunting, games, and entertainment for thousands of years. The Steppe nomads had the greatest advantage above all others due to their understanding of the horse as a herd animal. Other peoples tried to emulate the nomad by creating their own horse archers; however, none were able to fully match the ability of their nomadic neighbors. The Mamlūks of Egypt and Syria came the closest to succeeding in their attempt. Due to the lack of large pastures, they were unable to work with horses in large numbers and learn how the horses interacted within the fold/ herd. Instead, the Mamlûk horses were stable fed and trained in a choreographed manner in order to function as a group on the

battlefield as well as the march.

The Byzantines, Crusaders, Fatimid’s of Egypt (909 – 1171 CE), and Chinese quite often lacked cavalry forces to match those of the nomadic horse archers.\textsuperscript{352} The Byzantines and Chinese did have some pasture lands that were able to support herds of horses, but not in the large quantities that the Steppe nomads did. The Han dynasty trained men to ride and shoot as light horse archers, but they could not match the Xiongnu in skill or numbers.\textsuperscript{353} However, their traditional, or one could state cultural, form of fighting was hand-to-hand fighting rather than shoot and evade. The Byzantines, Chinese and Persians used heavily armoured men and horses to counter the nomads. The advantage of horse armour was to protect the mount against the arrows of the nomads. Due to the lack of horses, they could not afford to lose their mounts in great numbers. They attempted to train and equip horse archers to supplement their heavier cavalry force. However, they did not succeed.

Northern China does have grazing grounds and was able to support large numbers of horses. The south, however, was much more humid and the land was filled with wet soggy rice fields making it undesirable for supporting herds of horses. The problem with the north was quite often the nomads swept southward taking control of the grasslands and depriving the Chinese of horses. During these times, the Chinese tried to procure the animals via trading with silk and tea. During the Song Dynasty the \textit{tea for horse} program was implemented, with only moderate success.\textsuperscript{354} The nomads were not fools; they were well aware the Chinese needed the

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horses for warfare. A lightly armed nomadic horse archer was no match for a heavily mounted Chinese warrior in close combat. When the Chinese had a large number of heavy cavalry, they invaded northward attempting to catch the nomads unawares.\textsuperscript{355} If they could surprise the nomads, the Chinese were able to defeat them. Therefore, the numbers of horses going south was quite often limited.

China has a strong tradition of archery. Their bows were made of similar composites much like their nomadic neighbors. Mounted archery began with men shooting from a chariot. In the Warring States period (247 – 221 BCE), men with bows moved from the chariot to riding the horse. Artwork from the Tang, Song, Ming, and Qing Dynasties depict soldiers on horses with bows. The Chinese did attempt to emulate the way the nomads fought. In the late 4\textsuperscript{th} century BCE, King Wuling of Zhao, (325 – 299 BCE) broke against the ethnocentric view of “resisting riding because, among other things, it required the wearing of a short jacket rather than the long gown which, in Chinese eyes, was obligatory for a man of status” and the taboo of copying the Hu nomads (7\textsuperscript{th} century BCE – 2\textsuperscript{nd} century BCE).\textsuperscript{356} In the north, hunting from horseback with a bow was very popular. There are numerous depictions of Chinese using the horse and bow to surround and kill their prey with arrows.\textsuperscript{357}

Learning to use a bow is not an overly difficult task; a group of people learning archery

\textsuperscript{355} The Tang Dynasty, sometimes referred to as the dynasty of the horse, was able to conquer the Ferghana valley region and areas north of China, modern day Mongolia.

\textsuperscript{356} Creel, H. G. "The Role of the Horse in Chinese History." \textit{The American Historical Review} 70, no. 3 (1965), p.651.; Graff, David A. \textit{The Eurasian Way of War: Military Practice in Seventh-Century China and Byzantium}. London: Routledge, 2016, p.154. Hu (often translated as barbarian) refers to any non-Han Chinese living along the Steppe. In the case of Wuling the nomadic peoples he emulated were the Donghu, a nomadic horse people who were conquered by the Xiongnu in the 2\textsuperscript{nd} century BCE. See Beckwith, Christopher I. \textit{Empires of the Silk Road: A History of Central Eurasia from the Bronze Age to the Present}. Princeton: Princeton University Press, 2009, p.354-356, regarding the translation of barbarian.

can consistently hit a target in a small field within a day. Building the archer’s strength and technique to use a bow with enough draw weight to release an arrow that can penetrate armour, on the other hand, takes a long period of time with continuous training. Learning to use a bow from horseback while moving at a full gallop is another challenging aspect to mounted archery. It took a great deal of time to master both archery and horsemanship. King Wuling, mentioned above, was able to form a small group of horse archers who fought in a similar manner as the nomads; but the practice did not last after his death and the collapse of the Zhao in 256 BCE. In 615 CE, Emperor Yang of the Sui Dynasty (581 – 618 CE), ordered one of his commanders to train a group of men to fight in the same manner as the nomadic horse archers. The commander chose 2,000 cavalrymen, who were skilled archers and excellent riders, from the ranks of the army and trained them.

“Their food, drink, and lodgings were the same as those of the Türs. They followed the grass and water, and placed outposts at a distance. Whenever they encountered Türs scouts, they behave as if no one was watching and galloped around shooting and hunting, so as to flaunt their awesome martiality….When they encountered the Türs suddenly, the bravest and keenest were organized as a separate unit and ordered to maintain their cohesion in order to watch for their opportunity. Whenever the Türs saw [the commanders troops] troops, they always said that because of their behavior they suspected that they belonged to their own tribe.358

The horsemen did reach a degree a success; however, they were unable to maintain significant numbers to compete against the nomads for long periods of time. It was cheaper to hire nomads, bribe them with textiles and other valuable goods, or play one tribe against another.

The Chinese were not the only ones who attempted to create horse archer units. In Byzantium, a light horse archer contingent was created and called Tourkopoulos, meaning sons of Turks. Tourkopoulos refers to an ethnic background and a military role. The term appears in

\[358\] Ibid., p.156-157.
the Greek sources in the eleventh century after the Seljuk invasions of Anatolia. When the Seljuq Turks settled in Rum, (modern day Turkey), some married Christian women and their sons learned to fight in a similar manner as their Turkish fathers, learning how to ride and shoot a bow at an early age. They were hired as mercenaries who supplied their own mounts and weapons, primarily the bow and arrow. The plateau had been a large recruiting area for the Byzantine army. Asia Minor had been divided into themes and given to military commanders who used the revenue to generate cavalry units. The themes supplied the core of the mounted troops for the emperor of Constantinople. The loss of an extensive amount of territory meant the Byzantines no longer had the ability to supply a significant number of mounted soldiers for the army. Therefore, men of different ethnic origins were hired as light cavalry acting in the manner as horse archers.

During the Crusades the western Europeans learned about the Tourkopoloi and adopted their own version of horse archers called turkopoles. After the conquest of Jerusalem in July of 1099 CE the vast majority of troops returned to Europe, depleting the newly founded Kingdom of Jerusalem and Principality of Antioch of fighting men. What few mounted soldiers remained behind were milites, nobles most often referred to as knights, and serjeants who were equipped and fought similarly to the knights but who were not nobles. Their

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362 Approximately only 300 out of 1,200 knights (milite) remained in the Holy Land after the siege of Jerusalem.

numbers were very limited and all of them wore armour which limited rapid mobility. Furthermore, they had no light cavalry forces, leaving the newly founded realms in a precarious situation. To augment their numbers, turkopoles were hired. Until recently scholarly sources have referred to the turkopoles as sons of Turks; however, this interpretation has been brought into question.\textsuperscript{364}

The Crusader States (1099 – 1291 CE) did not have access to ethnic Turks. The region the Europeans conquered ranged from southern Turkey in the north to the Bay of Aqaba in the south. The western border was the Mediterranean Sea and the east extended no farther than the Jordan River. Due to the lack of pastures and water, the lands in that area were not suitable for large numbers of Turkish hordes. The term turkope in the crusader states lost its ethnic specificity. To be clear, this did not mean none of them were Turks or at least of mixed ethnic background. This still leaves the question of their ethnicity unanswered. The role of archaeology and genetic testing is helping to answer the question of ethnicity. Archaeologists recovered the bones of 25 individuals, dating to the 13\textsuperscript{th} century, in the town of Sidon, modern day Lebanon, once a former Crusader stronghold. Ancient DNA testing has revealed several of the individuals had mixed genomes.\textsuperscript{365} The findings indicate a genetically diverse population. Europeans who settled in the Levant during the Crusades intermixed with the local population and some of their heirs may have been employed as turkopoles. Although turkopoles were equipped with bows, they were not the caliber of the Turkomen horse archers in Asia Minor.

Prior to the arrival of the Crusaders, the people of the region were not allowed to own


weapons and any significant number of horses, if any at all.\textsuperscript{366} However, some Christian groups did own horses and their own equipment, fighting as lightly armed cavalry, often with a bow. During major battles their primary role was to follow the sergeants and the nobles in the charge – essentially forming the rear ranks. During the march, the turkopoles performed the roles of scouting and light skirmishing. In small engagements the turkopoles were used to move quickly ahead to delay a caravan, harass supply lines, or skirmish with small forces. The basic equipment of the turkopole was a sword and composite bow; and some carried a spear and perhaps a shield. Yet, for all their effort, the Tourkopouloi and turkopoles did not compare to the Turks on the battlefield. Their numbers were too small and they did not have herds of horses to learn how the animals functioned within a group.\textsuperscript{367}

Since the sedentary realms could not emulate the abilities of the nomadic horse archer, they instead chose to hire them as mercenaries.\textsuperscript{368} Peoples such as the Pechenegs and Avars served loyally with the Byzantine Empire. In Syria, the Levant, Iraq, Khorasan, Khwarizmia, and Rum the Turkomen were given land, which had large enough pastures to support several clans or tribes, by a shah, sultan or an emir. In return they were to protect the land from banditry and outside raiding parties and provide military service when called upon. Caravans traveling through their given territory were escorted with an armed escort. The Han Chinese tried to convince the Yuezhi to become an ally to fight against a common enemy, the Xiongnu. The

\textsuperscript{366} Since the region was controlled by Muslims (the Abbassid Caliphate of Baghdad, then the Fatimid Caliphate of Cairo who lost the territory to the Seljuqs) the inhabitants were not allowed to own weapons or horses.


\textsuperscript{368} Golden, Peter B. \textit{Nomads and Their Neighbours in the Russian Steppe: Turks, Khazars and Qipchaqs}. Variorum, 2003, p.137. Golden also notes that the nomads north of China tended to form states where as those in the central and western Steppes did not; statelessness was the norm. p.136. He also notes the nomads did not organize their states along ethnic lines: rather, the binding factors were life style \textit{[jinskiyya]} (i.e. Nomadic economy and social institutions and political-military leadership \{charismatic clan\}), p.161.
Tang hired the Tujue, a Turkish people, in their struggle against the Goguryeo (Korea), and campaigns into Central Asia. In Hungary, the Black Magyars, late 9th and early 10th centuries, were converted to Christianity and forced to fight for the Hungarian Nobles. During the 12th century the Cumans fought, with disastrous results, with the Hungarians against the invading Mongols.

The Mamlūk Sultanate of Egypt (1250 – 1517 CE) also attempted to emulate the nomadic form of warfare. The corps of the army consisted of former slave soldiers, called mamlūks (مملوك - mamlūk (singular), ممالک - mamālīk (plural), meaning "owned" or “controlled”), primarily of Qipchaq origin. They were taken to slave markets in Central Asia and sold to Muslim rulers as far away as Cairo, Egypt. In 1250, the mamlūks killed the Ayyubid (1171 – 1260 CE) Sultan of Egypt, founded by the famous Muslim leader Salah al-din (Saladin, d. 1193 CE), and took power, establishing the Mamlūk Sultanate of Egypt. As former nomads, their skills in archery and horsemanship were incorporated into the mamlūk sultanate army. The Mamlūks played many games of nomadic origin with great pomp and ceremony in cities from Cairo, Damascus, and Aleppo. The mamlūk soldiers specialized in horsemanship, archery and swordsmanship, and they learned to maneuver as a unit. What the mamlūks were not able to do, was emulate synchrony. Due to the lack of horse pastures, their horses were kept in corrals


371 See appendix A for equestrian games.

and stall fed; therefore, the horses were not able to learn synchrony like the horses the Eurasian Steppe. The mamlūks trained exclusively in drilled choreographed formations rather than learning to form globs of seemingly unorganized horse archers like the nomads of the Eurasian Steppe. The Mamlūk Sultanate relied on the nomadic Turkoman, who lived in the grasslands of Anatolia and Azerbaijan, as allies who could fight against the Mongols as loose formations of horse archers.

The mastery of synchrony, culminated by the great Mongol Ulus, gave the Steppe horse archers the ability to defeat their enemies and create nomadic empires or control over the trade routes, which expanded cross cultural contact. A person’s life on the Steppe depended on the horse and the bow, and in other lands the horse was the key for the development of chivalry among the knightly nobility in Europe, the Samurai in Japan, and Furūsiyya in the Mamlūks of Syria and Egypt. For the nomads it was the primary symbol of prosperity, prestige and life. The nomads had to be able to conduct mounted warfare as horse archers. Without the abilities of the horse and mastery of the bow they could not effectively control the trade routes along the Silk Road. The nomads used violence to get what they wanted, which was to be appeased or in the case of the Seljuq Turks and Mongols control, and given part of the wealth of the sedentary peoples. Their ability to understand the horse as a herd animal and utilize its abilities allowed the Steppe peoples to wage warfare on a large scale over great distances. Quite often they ravaged the lands and at other times they created security along the trade routes or simply created trade routes within the Steppe, especially in the case of the Mongols. Their skill, speed, love for games, comprehension of their herds, disdain for close in combat, seeming compulsion for the

feigned retreat, and lack of interest in the stylized choreographed formations in warfare brought the hordes victory after victory and sometimes control over the Silk Roads, which can be referred to as the battle routes. It wasn’t until the development of gunpowder weapons that the horse archers of the Steppe no longer reigned supreme.

Horsemanship and the use of the bow were so important to the Abbassid Caliphate, who observed Turkish horse archers, he initiated a plethora of writings about equestrian skills, hippiatry, and archery called Furūsīya, (farasnāmah in Persian).\textsuperscript{374} One of the first furūsīya treatises written was Kitāb al-Furūsīya wa 'l-Bayṭara (كتاب الفارسية و البيطاره), A Book of Horsemanship and Hippiatry, in the latter part of the 9th century in Baghdad.\textsuperscript{375} The writings continued with the Ayyubid rulers fighting against the Crusaders in the 12th and 13th centuries. In the 13th through the 15th centuries the Mamlūks of Egypt and Syria expanded on the treatises in great detail during their conflicts with the Crusader states of the Levant and the invading Mongols from the east. One third of the manuals written over the 13th through the 15th centuries pertain to archery alone.\textsuperscript{376} Shihab al-Sarraf, the author of the cited article, stated “the essence of military furūsīyah and the whole mamlūk institution was based on horse archery”.\textsuperscript{377} Two Mamlūk Furūsīyya treatises pertaining to archery have been translated into English: Arab Archery, an Arabic Manuscript of about A.D. 1500 Arab Archery, an Arabic Manuscript of about A.D. 1500: A Book on the Excellence of the Bow and Arrow and the Description Thereof and Saracen Archery: An English Version and Exposition of a Mameluque Work on Archery (ca.

\textsuperscript{376} Ibid., p.161.
\textsuperscript{377} Ibid., p.162.
The manuals are used by historians, competitors, even the Prince George’s Muslim Association (PGMA) Girl Scouts, and enthusiasts of archery trying to master and understand the techniques of the past.

Observing synchrony is rather fascinating. With greater access to video, via online streaming, a viewer can watch horses acting in synchrony. The groups filmed always remained in cohesion regardless of the direction change. Military historians and experimental archaeologists have not yet fully realized the importance of synchrony. Synchrony and cohesion are still being researched by ethologists and biologists. The paradigm shift from only one discipline studying a topic is changing to an interdisciplinary process of sharing information. Military historians and experimental archaeologists are slowly shifting with anthropologists, sociologists and climatologists to incorporate the studies of others. The work of ethologists researching synchrony and the horse contributes a great deal to understanding the past.

The study of the horse archers of the Steppe is a daunting task. The time line of all of the nomad horse archers expands over 2,500 years of historical writings. Many civilizations have written about them; however, it is virtually impossible to read in all of the languages. Archaeology is expanding the knowledge of the Eurasian Steppe. The horse was one of the three important elements of the nomadic warrior, the archer and the bow being the other two. Research about the nomads of the Eurasian Steppe still needs to continue. The knowledge gained will help to break through the barrier of stereotypical beliefs (uncouth barbarians who

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379 A .pdf copy of Saracen Archery can be downloaded from the PGMA website at https://pgmagirlscouts.files.wordpress.com/2012/10/saracen_archery.pdf

380 The Silk Road series has some clips of horses running in a herd. https://www.youtube.com/watch?v=j7C8N8YDyc4&list=PLILRQ_uVCaoOtZ6Q6egVvUyEMhbN70G9y&index=2. A short clip of horses running in a group can be found at 20:12.
lacked mores) and give scholarship a better understanding of the amazing integration between horses and humans achieved by the nomadic horse lords of the Steppe.

The joke quoted at the beginning of this chapter notes the horses on the Steppe were in their natural environment, whereas the horses of the sedentary peoples were out of their element and, therefore, unable to obtain synchrony and had to be trained in choreographed formations. The sedentary peoples believed they alone had the knowledge to train horses to fight in a cohesive group.

Anthropocentrism is a term that refers to humans putting themselves at the center of all living creatures and assuming that only mankind has the innate knowledge to teach animals how to function in man’s world.\textsuperscript{381} The assumption is animals cannot teach people anything. For example, this thesis has pointed out that many of the sedentary people taught and trained their horses to ride in formations that have been choreographed and drilled often to learn how to maneuver. The animal, in this case Equus ferus callabus, has been taken out of its natural element and incorporated into that of humans. The horses were stall fed with grain, alfalfa, or barley. The horses, as well as many other animals such as dogs, sheep, cattle, goats, donkeys, and some birds, were selectively bred for their perspective qualities such as strength, size, color, and any other desired attributes. Over the centuries of selective breeding horses became larger, faster, and stronger, which allowed them to carry heavier loads or compete in equestrian games such as horse racing. For the sedentary people, horses were an important element in their

lifestyle. The horse was adapted to the will of humankind. While horses “may not be able to
give informed consent or understand all the rules of engagement in different activities”, it is
involved in a complex human-horse relationship.382

The horse has long played a role within human societies, a role often characterized by
close interrelationships with humans. The horse was once an animal that was hunted for meat.
After domestication, it was used for milking, traction, and then riding. Beginning around 1,000
BCE it was used in human conflict, and continued to be up through 20th century such as World
War II. It has been involved in sports, used as beasts of burden carrying items too heavy for
humans and mounts for couriers who needed speed to deliver messages, and has provided
recreational activities such as trail riding and therapy.383 The horse does have to be broken
before it can be ridden. Riding is considered a risky activity that can lead to injury or even
death.384 After the horse was broken it was easier and, usually, safer to work with and it created
an interspecies collaboration of mutual willingness. For example, “horses ‘pay attention’ to
known handlers more closely than to unknown ones.”385 Marco Polo noted the Mongol’s horses
were so well trained they moved ‘hither and dither, just like a dog.’386 A Song Dynasty emissary
Zhao Hong remarked “When the horses are only one or two years old they ride them harshly in
the Steppe and train them. They then maintain them [meaning the horses were released into the
herd] for three years and after that mount and ride them again.”387 This suggests horses can and

383 Ibid., p.135.
387 Ibid., p.56
do exercise agency and chose to cooperate with humans.388

The horses chose to carry the Steppe nomads on their back. “Nonhumans can make choices, they can exercise agency in their actions and interactions, although this agency may differ to that which we readily ascribe to and recognize in humans.”389 Horses, and the camel, perform work, even though they do not cognitively think of it as humans do, and participates in human endeavors, such as conflict. A horse can chose not to participate as a mount and become unruly not allowing itself to be controlled by the rider. This is not to say the horse understood, in the same manner a human would, that allowing a person to ride its back could mean the death of the horse during battle. “Equally, [decision making] is a human-defined concept, human conflict participants frequently explain their interspecies encounters with nonhumans, as in the case of horses, in terms of freedom, and transcendence; experiences which the human partner believes are shared, at least to some extent, by their nonhuman companion.”390 In other words, the nomads and horses co-existed in the same environment, relied upon each other for survival, and coproduced the aspect of synchrony, in which the nomads learned from the horse that in turn carried humans into battle.

The nomads of the Steppe had a less of an anthropocentric view than their sedentary neighbors. They did not mark their horses or give them names; instead they identified them by color.391 The horse was not viewed as a pet. Unlike their sedentary neighbors, they did not keep

388 Growing up around horses I’ve noticed that when entering a pasture to halter a horse for riding some will run around in a form of rebellious playful behavior and not allow the handler to approach it. After the short tantrum the animal will stop and allow the handler to put the halter on and lead it away.
390 Ibid., p.134.
391 Rachewiltz, Igor D. The Secret History of the Mongols: A Mongolian Epic Chronicle of the Thirteenth Century. Edited by John C. Street. The Australian National University, 2015, p.5. The Secret History of the Mongols does not state horses were not named; however, it refers to horses by their color.
their animals in stalls or corrals.\textsuperscript{392} They were allowed to roam the pastures and breed freely; in other words the horse was allowed to live in its natural habitat. For the nomads, the horse meant much more than an animal used for traction, transportation, or entertainment. Instead of assuming they had all the knowledge, the nomads incorporated the horse’s way of life into their own way of life. The nomads did control the horses in ways that were needed for their way of life and survival. For example, every horse was broken-in for riding at an early age, mare’s milk was used for drinking, and most significantly for this thesis it was used for warfare. As noted before, children learned to ride at a very young age. Throughout their lives, they rode their horses on a daily basis and sometimes slept on them. The horses were essential to enabling the nomads to manipulate, influence, or conquer sedentary powers and to control the trade routes or to create their own trade routes. By avoiding the view only humans had the innate knowledge to teach animals how to move in mass, the nomads incorporated from the horses’ synchrony, and utilized the horse’s ability for greater maneuverability on the battlefield. The nomads did not view themselves as separate from or superior to their livestock.

Horses are not here for human domination nor are humans the superior lifeform; rather each plays its role, acting together. The domesticated horse depends on and needs human interaction creating a symbiotic relationship (the same can be said with the camel). For the nomads, domesticating the horse, allowing it to behave in its natural manner, and recognizing the horses natural abilities was a way of surviving the harsh environment of the Eurasian Steppe. Synchrony alone did not make the nomads powerful, it was, however, one aspect they learned about the horses that allowed them to fight successfully against the better equipped and trained

armies of their sedentary neighbors.

Over the past several years horse archery has been growing in popularity. It is now a national sport in Hungary. The founder of Hungarian horse archery competition, Khassai Lajos developed his school of horse archery and has gained an extensive following around the world. Many countries such as Finland, Germany, Iran, Korea, Poland, and the United States hold Khassai competitions and training seminars. One of the first to introduce the Khassai School of horse archery into the United States was Todd Delle, now retired, from Big Fork, Montana.\(^{393}\) In Japan, *yabusame* – traditional Japanese horse archery, has been revived and performed around the country. *Yabusame* is more of a ritual than a form of competition. One of the finest horse archers in the world is Anna Minkkinen from Finland. Her abilities have earned her multiple awards in competition and the attention of National Geographic.\(^{394}\) She is also a YouTube sensation galloping on her horse at great speeds while shooting arrows from her bow.

In China, the practice of archery is referred to as *shè dào* (射道), the way of the archer. Several archery manuals were written over the various dynasties. *The Way of Archery: A 1637 Chinese Military Training Manual* penned by Gao Ying, the person who coined the term *shè dào*, is one of the most utilized manuals among modern archers.\(^{395}\) Horse archery waned and waxed over the centuries depending on its control over the north. When it controlled the north mounted forces were prominent with the vast majority of them carrying a bow. China may never have mastered the skills of the swift horse archers of the Steppe, but it did revere their skills and always acknowledged the significance of the horse and lightly armoured Bowman. In the

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modern era the practice of traditional archery in China, Mongolia, and Korea recognizes, preserves, and respects the cultural heritage of archery, a skill that pervaded the region for centuries.

Archery has long played a role on the Eurasian Continent. In England, people are enamored with the famous archer Robin Hood. In Iran, the story of Rashdam and his horse, Rakhsh, from the Shahnameh written around 1010 CE, is quite famous. Hou Yi is the Chinese mythical ‘Lord Archer’ who descended to Earth to assist the Jade Emperor. In China, the practice of traditional archery is referred to as shè dào (射道), the way of the archer. Several archery manuals have been written over; for example, The Way of Archery: A 1637 Chinese Military Training Manual penned by Gao Ying, the person who coined the term shè dào, is one of the most utilized manuals among modern archers. People desire to connect to the heroes of the past, relearning the lost skills of their ancient predecessors in order to preserve and nurture the skills for a continuous connection with the past.

Over the past several years, horse archery has been growing in popularity throughout the world. The countries of China, Mongolia, Japan, and Korea now recognize, preserve, and respect the cultural heritage of practicing traditional archery. Khassai Lajos from Hungary developed his form of archery and competition, now a national sport, and has gained an extensive following around the world. Khassai competitions and training seminars are held in many countries such as Finland, Germany, Iran, Korea, Ukraine, and the United States. One of the first to introduce the Khassai School of horse archery into the United States was Todd Delle,

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now retired, from Big Fork, Montana. In Japan, yabusame – traditional Japanese horse archery, has been revived and performed around the country. Yabusame is as much a competition as it is a form of ritual. One of the finest horse archers in the world is Anna Minkkinen from Finland. Her abilities have earned her multiple awards in competition and the attention of National Geographic.

Horse archery is not the only equestrian game linking people to their cultural heritage. In Turkey, jereed reflects the connection to the Ottoman Empire (1299 – 1918 CE) and the Seljuq Turks who conquered much of the Anatolian Plateau in the 11th century. In Afghanistan buzkashi is considered the national sport. Understanding jereed and buzkashi is to understand the people. Whitney Azoy, in his insightful study of buzkashi in Afghanistan reveals the complex relationship between the people, their politics, horses, ancestors, and equestrian games. Understanding the games will contribute a greater knowledge of the Eurasian Steppe nomads and their horses during the ancient and medieval eras. Literature pertaining to equestrian games is scattered and challenging to find: perhaps this could provide the opportunity for a Ph.D. project using Thomas Allsen’s *The Royal Hunt in Eurasian History* as an example to studying the games.

Anthropology attempts to tease out notions of distinctiveness and universals under the particulars; first learning the particulates and how it represents the universal humanness. Horse archery competition brings together the universal commonality of people such as the horses, bows, and style of shooting; yet, the desire for a unique cultural heritage that is different from...
others is displayed by the different types of clothing, bows, arrows, horse tack, style of shooting, and interactions with horses. This examination of difference can be used to help understand Steppe nomads who lived in various parts of the Eurasian grassland as well as different time periods. Understanding the connections helps to understand the past.

The art of bow making was almost lost to the Mongolian and Kazakh people. Daniyar Baidaralin, who practices archery in Kazakhstan, stated the majority of people in the country are unfamiliar with the bows of the past. The establishment of the Nadaam Games in Mongolia and the revitalization of bow making, in the traditional manner using the same materials their ancestors used hundreds of years ago, is allowing the Mongols to connect to their cultural heritage. The annual Nadaam game in Mongolia links the competitive archers to both the Mongols and to the Hunnu people. For example, at the Nadaam games people use two different bows, Mongolian and the Hunnu, linking them to the era of the Ilk Mongol Uls and the Xiongnu. (See appendix B regarding the Mongol bows.)

Archaeology is well suited for discovering and examining the ancient and medieval bows used by the Steppe nomads. Experimental archaeologists have the ability to recreate the composite bows and develop objective tests. The English Longbow for example, has been examined by numerous scholars, scientists, and lay people testing the bow to determined how it

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403 The Mongols of the 13th century left a lasting impact on the peoples of Manchuria and China. In 1644, the Manchus, a semi-nomadic people from Manchuria, conquered China, ending the Ming Dynasty, and renamed the newly established realm as the Qing Dynasty. Because the Manchus feared the Mongols they swept across the country killing as many as the bowyers as they could. During the early 20th century the Soviet Union tried to eliminate all forms of nomadism in Mongolia by gathering their horses into collective farms and forcing the people to move into the city, Ulaanbaatar.


faired against armour or how far one can shoot it, but equivalent studies on the various types of composite bows used by the nomads have not gone through similar scrutiny. There are claims the Mongolian composite bow can shoot farther and has more power for penetrating armour than the English Longbow. 406 There are people making bows and conducting their own tests; however, there is no consistency in testing and they tend to lack empirical guidelines. 407 Experiments need to combine the knowledge of those who make the bows, archers who use them, and various scholars who study them to help create empirically based tests. Comparative tests can provide insightful information regarding the differences and capabilities. Aspects that can be re-examined are the materials used to construct the bow. For example, the glue used to bind the materials together for the composite bow can be gelled and saved for future use. Did the nomads store the gel and/or was it traded along the Silk Road? Testing pottery samples, similar to those used for discovering mare’s milk, may indicate it was stored. The contributions of all the disciplines will help to further our knowledge of the Eurasian Steppe nomads and horses that roamed the grasslands for over 2,500 years.

Synchrony contributes to anthropology, archaeology, and history in different ways. Anthropology examines the nuances of culture trying to understand what represents the universal humanness of people. As stated earlier in this thesis, Arabic texts use the term jins wahid when describing the commonality of Steppe nomads even though they lived hundreds of miles apart. The nomads recognized synchrony in their horse herds without any form of specialized training and utilized the horse’s abilities to their advantage. Today, people in Mongolia and Kazakhstan

406 One can scour the web and find forums where people are making this claim.
407 One can scour the Internet, especially www.youtube.com, or watch documentary channels such as History or Discovery Channel to view the various tests that reflect the lack of empirical testing. Tod’s Workshop, “ARROWS vs. ARMOUR – Medieval Myth Busting” on Youtube is one of the better objective videos concerning the longbow capability.
are connecting to their past by living in the gers or yurts and raising large herds of animals for substance. Anthropologists can use synchrony as a tool to examine how the nomads utilize it to control their herds. Military historians with the knowledge of synchrony will bear this in mind when combing through the primary text, looking for information that offers additional insights describing how Steppe nomads maneuvered.

Finally, the study of the Steppe nomads and how they utilized synchrony is a subject that can be expanded upon through additional DNA testing on horse bones from archaeological contexts.\textsuperscript{408} The testing can potentially lead to deciphering the different types of breeds used by the Steppe nomads. Armed with this knowledge, scholars can examine other horse cultures, such as the Comanche warriors fighting against the Texas Rangers in the 19\textsuperscript{th} century, expanding the study of the human-horse relationship and synchrony. Looking for synchrony can open up a new way of imagining how the Steppe nomads functioned as a group on the battlefield expands the understanding of the past.\textsuperscript{409}

\textsuperscript{408} DNA testing has been ongoing. For additional details see Cell Press. "A genomic tour-de-force reveals the last 5,000 years of horse history." ScienceDaily. www.sciencedaily.com/releases/2019/05/190502111040.htm (accessed January 19, 2020).

Appendix A
The Bow and Arrow

The common materials used to construct a composite bow were animal horn, sinew, and wood. Several pieces of wood were used for the frame. The middle of the bow called the grip or handle was the first piece. Moving outward from the handle were the limbs, which were attached to the handle via a V-split that was glued and reinforced with strips of sinew. At the end of the limbs were the *siyahs*, which were used to hold the string. They, too, were glued and reinforced with sinew to the limbs. On the inside of the limbs, referred to as the belly, horn was glued onto the wood. Horn came from water buffalo, oxen, yak, or wild sheep. It resists compression and it adds strength to the wooden frame. On the outside, referred to as the back, strips of sinew, were glued onto the wooden limb and the handle. Sinew is animal tendon shredded into elongated fibers. Similar to a rubber band, but stiffer, sinew is excellent at storing and releasing mechanical energy. To increase the draw weight of the bow, additional sinew was added. After the glue dried, sinew was wrapped around the bow in the opposite direction to reinforce the horn and sinew strips. On the back of the bow birch bark was glued onto the sinew to protect it against moisture. The *siyahs* were sometimes reinforced with horn and/or sinew for added strength. The handle of the bow was often wrapped in leather to reduce friction, improve grip, and comfort against hand/wrist shock – vibration created when the arrow is shot from a
poorly made bow.\textsuperscript{410}

Not all bows were made with all three materials. Early bows consisted of a wooden frame with strips of sinew on the front then wrapped with sinew all around the bow, sometimes in a diagonal direction. Bows found in Skythian and Xiongnu burial sites were made in this fashion.\textsuperscript{411} These bows are still referred to as composite bows, which can be confusing. For example, the composite bow have been referred to as a horn bow, which seems to imply it was made of horn and possibly wood; however, this is an incorrect interpretation of the term. A horn bow can mean horn has been added to the bow along with wood and sinew.

Ancient techniques for constructing composite bows relied on naturally occurring materials. Glue made from animal sources was commonly used to fasten objects together. The glues were made by extracting collagen from animal tendons and fish bladders. Collagen is the primary protein in sinew. Collage-based glues are very strong and flexible. To create the glue, the dissected tissues are heated for several hours in an acid or mineral solution that causes hydrolysis. The heating and chemical solutions break down the amino acids that make up the proteins. When the collagen cools, the denatured proteins form a gel that creates greater stability of the proteins.\textsuperscript{412} The gel is then cut into small chunks and reheated and used to glue the components of the bow together. Animal tendon gels fairly quickly while fish bladder-based glue has a much longer set time. Gel from animal tendons works best for joining the wooden


components together while fish gel was used to glue the horn and sinew onto the wooden frame. This specialized glue extracted from sturgeon, a fish found throughout Central Asia, is known as isinglass.\textsuperscript{413} The flexibility of the adhesive allows for repeated use of bending a bow. One weakness of the glue, however, is its susceptibility to moisture, which weakens collagen bonds and leads to delamination. Nevertheless, the same techniques are still used in Mongolia and Turkey with bowers. Due to the slow drying time of the glue, the entire process of making a bow takes around thirteen to fourteen months. When the sinew and glue dried, it pulled the bow into a slight to accentuated C-shape. When strung the bow was pulled away from its natural shape giving it the term recurve composite bow.

The bow string was made from silk, as in the case of the bow found in Cagaan Khag, or animal tendons and hide.\textsuperscript{414} Since tendons and hide were susceptible to wetness silk was the desired material to make bow strings. Wax or thin layers of oil were sometimes used to protect the bow. Silk, traded along the Silk Road, was the preferred material due to its superior qualities.

Not all bows were created equally; they varied in quality and strength. In his account of the Mongols, Friar Plano di Carpini states each warrior was required to own at least two bows, or at least one very good one.\textsuperscript{415} Rashid al-din describes how a bower was paid rather handsomely

\begin{footnotesize}
\textsuperscript{413} Thanks to Bret Tobalske, Ph. D., and Amanda Andreas, Ph. D. candidate, with the University of Montana Biology Department for explaining the details of hydrolysis and collagen-based glues.
\end{footnotesize}
by Ogedai Khan for bows that were of poor quality. William Rubrick was given a very strong bow that two men could hardly string, and two arrows with silver heads full of holes, which whistled like a flute when they were shot.

The draw weight of the average composite bow is not known. Whether the average nomad used high draw weights (over 100 pounds) is uncertain. Some researchers claim the average draw weights were around 150 pounds, while others speculate it was around 120. The longbows found in the Mary Rose have been estimated to have an average draw weight of 90-110 pounds and 150-160 on the high end. To classify a bow as a “war bow” the draw weight should be 80 pounds or more. The higher weight is required to shoot a heavier arrow in order to penetrate armour. In addition, arrows had to be thicker to penetrate armour, otherwise they broke on impact. However, a draw weight of forty to fifty pounds is all that is needed to bring down most wildlife including a person or horse from a short distance away. Arabic Mamlûk sources state new slaves used a bow with a light pull and increased in draw weight as their strength increased. It is very plausible they did use bows with a one hundred pound pull or more considering that the nomads used bow and arrows on a regular basis for survival; they were

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required to learn how to ride a horse as well as shoot a bow and arrow with accuracy at a very young age.\textsuperscript{421}

Many learned to shoot a pellet bow which was used to shoot a small pebble at birds, much like a sling shot. A famous Chinese painting of Khubilai Khan in his wildlife park shows a depiction of a rider shooting at birds. Sultan Baybars of Egypt was nicknamed Bundaqdari for his skill in shooting birds with the pellet bow, \textit{bundaqdari}. They also learned to use different types of arrow.

Arrows are made up of several components: shaft, arrowhead (also called point or tip), fletching, and nock. The shaft is made of wood or bamboo and is the backbone of the arrow. The fletching is feathers that are glued onto the bow. The nock is the end of the arrow that locks onto the bow string. A nock could be carved into the arrow, meaning there is a slot cut into the end of the shaft; sometimes, a piece of horn was inserted into the end of the shaft to reinforce the nock creating a \(+\) shape when looking at the very end of the arrow. Some nocks were carved from horn and glued onto the arrow and reinforced with sinew. Arrowheads were made of bronze, horn, and later horn. Some arrowheads, such as the case with the Scythians, were socketed and then glued onto the top of the shaft.\textsuperscript{422} Other arrows, made by the Mongols, had a tang that inserted into the end of the arrow and were reinforced with sinew wrapped around the arrow.\textsuperscript{423}


Various arrowheads have been discovered in burial mounds found on the Eurasian Steppe. They vary in size, weight, dimension and purpose. Some arrows had two large barbs extending away from the point. The barbed arrowheads were good for hunting game, which caused the animal to bleed out. Other arrows were slender and thin with no barbs; shaped similar to a leaf for penetrating armour.\textsuperscript{424} These were best suited against armoured riders. The tri-lobed \textit{arrowhead}, at close range, was able to penetrate armour. Some arrows were triangular shaped, which tended to create a lot of damage when they penetrated their intended target. Some arrow heads were small and very light and were mounted on lighter arrows which were used for long range shooting or to send messages that were attached to the arrow. The lighter arrows rarely did any damage even when shot \textit{en masse}. Their purpose in this context was to dishearten an opponent. There are accounts describing mass arrow volleys blackening the sky as if there was a cloud covering the sun or rain.\textsuperscript{425}

There is another arrow that has brought a great deal of interest to scholars and popular media writers – the whistling arrow. The whistling arrow was a hollowed out tip, made from horn or wood attached to the end of an arrow, that whistled while in flight.\textsuperscript{426} Whistling arrows have been recorded by several sources in the historical record and some have been found in burial grounds.\textsuperscript{427} There is a misconception about these arrowheads. Popular media, such as National Geographic state they were used to frighten the opposing force.\textsuperscript{428} What exactly was


\textsuperscript{426} One can use ping pong balls to make a whistling arrow. Three or four holes are cut into the front of ball which is mounted on the head of the arrow. It actually works better than a whistling arrow from Mongolia made with traditional materials.


\textsuperscript{428} Edwards, Mike. "Genghis Khan." \textit{National Geographic} 190, no. 6 (December 1996), p.15.
the purpose of the whistling arrow? There are various hypotheses. One idea claims the arrows were used to flush out game. Nomads routinely hunted wild game for food. The whistling arrow was an excellent tool to flush out birds or animals. Another explanation for the purpose of the whistling arrow was to use the weapon as a psychological tool. Firing numerous whistling arrows at a group of people could possibly frighten them causing them to waiver and flee the battlefield. The problem with this idea is twofold: there is a lack of historical evidence to support that whistling arrows were actually used to dishearten a group of people; the archaeological record does not show large numbers of whistling arrows. While some have been found, they do not constitute a significant number. Thus, it appears the primary purpose of the whistling arrow was for scaring out game during the hunt and directing the shot.

However, these arrows could also be used for communication and direction. The earliest mention of the whistling arrow is by Sima Qian who states the Xiongnu used them. He relates a story in which an aspiring son of a Xiongnu leader trained his men to shoot their arrows in the direction he shot his whistling arrow. Eventually he aimed one of his arrows at his father who was killed after the other arrows followed. On the battlefield or during a large hunt a designated rider using a whistling arrow shot in a particular direction while the rest of the riders in his group fired their arrows in the same direction. As during a hunt, the ability to direct the arrows into a specific area allowed the horse archers to concentrate their arrow showers in their attempts to break the opposing force.

Another arrow that draws popular misconception is the poisoned arrow. Some literature

mentions that arrows used by the Steppe peoples were poisoned. Ancient sources mention this and modern media has definitely picked up on this claim.\textsuperscript{432} How many of the arrows were actually poisoned is unclear. How the poison was placed on the arrowhead is not explained. Snake venom has been mentioned. In the summer this is viable, but during the colder months, which last much longer than the warmer months, snake venom is not available. Plant sources may have been used for poison. However, no specific plant has been mentioned in the literature. Providing enough poison to cover numerous arrowheads would have been a demanding task. Perhaps it is best to acknowledge that some, on a small scale, were coated with some form of poison. Poison wasn’t always necessary. A wound from an unclean arrow tip could lead to infection. For example, Richard I of England died from gangrene after being wounded by a crossbow bolt.\textsuperscript{433} Arrow strength and type of tip were far more effective than poisoned arrow tips.

Arrows ranged in thickness and length from region to region and throughout time. Skythian arrows, based on reconstruction from the pictorial record, ranged from 40-70cm in length.\textsuperscript{434} Only fragments of arrow shafts have been found in Xiongnu burial sites. Numerous arrow heads and remnants of quivers have been found in barrows. In some cases imprints of the shafts remained allowing archaeologists an opportunity to measure them. The arrows were slightly longer than the Skythian arrows.\textsuperscript{435} Arrows used by the Qipchaq and Seljuk Turks along with the Mamlūks were shorter because their bows were smaller, but not less effective. Arrows

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\textsuperscript{432}James Yates, “Sagitta,” University of Chicago, updated 29 September 2018 / Accessed 21 September 2019, http://penelope.uchicago.edu/Thayer/E/Roman/Texts/secondary/SMIGRA*/Sagitta.html.; Timothy May points out it is unlikely the Mongols poisoned their arrows. Arrowheads were sufficient enough to kill animals or people. The Mongol Art of War, p.52.
\end{flushright}
Arrow sizes are dictated by the strength and length of the bow and the requirement to penetrate the target as well as travel the distance. To penetrate armour the arrow needed to be thick otherwise it would snap upon impact. A bow with a high draw weight requires a heavier arrow to fly accurately. Arrows were made in a manner called barreling. The two ends, except for the nock, were thinner than the middle. This added to the strength of the arrow and it helped to reduce oscillation, called archer’s paradox, as the arrow was loosed. Small arrows specifically designed for long distances, often called flight arrows, can reach a distance of several hundred yards. A stela found in the basin of the river Kharkiraa near Lake Baikal was inscribed with the statement Esunge (a relative of Chingis Khan) shot an arrow the distance of 335 alds, 536 meters. Clearly long distances could be achieved. However, the most effective ranges were less than three hundred meters. At those distances the ability of the arrow actually kill was low. The main purpose of the arrow showers was to create disorder, confusion, and fear. The most deadly and concentrated arrow showers were less than 100 meters in distance.

What the penetration ability of composite bow was is somewhat vague. It was believed to be very effective at penetrating armour and deadly. There are plenty of television documentaries and YouTube videos that compare the composite recurve bow to the English longbow. The comparisons claim it was equal to or more powerful than the longbow.

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436 When an arrow is loosed from the bow it will flex (bend) back and forth for a short distance in flight, and then it will straighten out. This oscillation is commonly referred to as the archer’s paradox.
Contemporary accounts describe the Turkish and Mongolian arrow storms were deadly, implying the bow had the ability to penetrate armour. Regardless of the claims, it can be stated it was effective, otherwise, it would not have been used. However, additional objective tests need to be conducted.

Without the bow and the horse, the nomads could never have threatened or imposed their will upon their neighbors. By and far the most common form of warfare conducted by the Steppe peoples was the raid. It had many advantages and offered minimal risks. It was effective because its objective was to disrupt the enemy’s infrastructure, destroy crops and villages, steal livestock, capture people for slavery, and decimate the country side creating havoc. Raiding was a form of appeasement warfare that strengthened one’s position. It was meant to force the sedentary people to pay a tribute to the nomads to stop the forays. To minimize risk the nomads avoided battles and simply fled when challenged. It is clear that although these groups provided formidable warriors, they lacked an apparatus for empire. Furthermore, they lacked the means to conduct siege warfare; thus, most of their military activities were raids on rival tribes and sedentary dwellers in Central Asia, China, and the Rus’ principalities.
Appendix B
Equestrian Games of Central Asia

A popular game in Central Asia was buzkashi, giyangen, ulak tartish or kokpar. Buzkushi, a Persian term, translates to “goat pulling.” The history of the sport is steeped in oral tradition and difficult to follow. It is believed to have been played for several centuries, perhaps even longer. Today it is still played in Afghanistan as the national sport. A buzkashi rider was called a chapandaz. The players have to grab a headless goat from the ground while riding a horse at full gallop and in a crowd of other riders, get it clear of the other players and pitch it across a goal line.

The game was played in a large open area and the number of players was not limited. The numbers ranged from a few players to several dozen per team. When it was a free for all with no teams there could be up to a hundred riders. The rules were simple, grab the carcass,

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break free of the maelstrom, run to a designated place and drop it without falling off the horse. There were no rules to restrict the actions of the riders whose goal was to take the carcass for himself. The game could last for hours and was quite rough with men using their whips or fists on each other all the while trying to gain possession of the goat. Injuries did occur. In more recent times the number of players has been limited to ten per side and the field is much smaller – approximately 100 meters long. The headless carcass is placed in a circle on one end of the field. The riders reach down to pick up the carcass, ride to the other end of the field where a flag is placed on a pole, circle the pole, then try to return to the circle where the calf is dropped for two points. If the calf is dropped by the holder the tussle begins all over again. When a rider grabs the carcass, his teammates try to lead his horse out of the fray toward the end of the field all the while his opponents try to take it from him. The horses used for buzkashi were especially trained and highly prized. Buzkashi wasn’t the only team equestrian sport.

An ancient game of debated origin was invented in Central Asia during the Axial Age and spread along the Silk Road east and west. Now referred to as polo, it was called chogân in Persian, pulu (meaning ball) in Tibetan, tzykanion in Byzantium, jiju in China, and in Arabic tabtab, a variation of the game. No one knows exactly who invented the game. The consensus seems to point to the Persians, yet some disagree and claim it was in Tibet the game originated. Polo may have had more than one point of origin. The nomads enjoyed playing chase games such as kyz kuumai, where the groom chases his new bride to mark his worthiness for her and more significantly to steal a kiss. If he didn’t catch her, he turned away and fled while she pursued using a whip to beat him. As a chase game, in the case of polo, chasing a ball, the game

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may have been introduced to other peoples along the Silk Routes by the nomads of the Eurasian Steppe. Regardless of where it started, the game remains famous all across the world.

The sport is played by two teams whose objective was to hit a ball, each rider using a wooden mallet on a long handle, or a broad piece of board (the tabtab), across the opposing teams goal line. The number of players per team was normally less than a dozen. The numbers were increased if played on a larger open field. The game was normally played on a field with boundaries. In Byzantium special hippodromes called tzykanisterion were built specifically for the game. It was so popular emperors spent a great deal of time playing the game. Emperor Alexander, r. 912 – 913 CE, died of exhaustion while playing the game. In the Arab regions arenas called maydān were constructed just outside a city to play equestrian games. In China, men and women played the game during the Tang Dynasty. In the Persian regions women also played, sometimes defeating men. Of all of the equestrian games played across the Silk Road, polo was played with the utmost passion and enthusiasm from Byzantium to China. No other sport received as much attention in the historical written record and artistic traditions. While polo was popular as a sport, it was important for military equestrian exercises. Its demand combined speed, skill, stamina, and boldness; all of which were needed on the field of battle. Not all equestrian games were team oriented. Some focused on individual feats.

One such popular game, called qabāq, involved the use of the bow and arrows. A qabāq, the Persian and Arabic term for gourd, kàbak in Turkish, was placed onto a vertical pole at the height of approximately five to seven meters, or in some cases a stuffed bag hung from a tree. A rider rode swiftly towards the pole shooting arrows at it as he approached and as he rode away from it practicing the Parthian shot. The most detailed sources for this game come from the
Arabic Mamlūk treatises written in the 13th and 14th centuries. In Egypt and Syria, the game of qabāq was extremely popular with the Mamlūks, who were primarily Qipchaqs. According to the literature the game was played in the maydān used for polo. The game had its dangers; in one case a mamluk was shooting at the qabāq whilst riding at a full gallop. The horse collided with the pole killing itself and the rider.

A similar game to qabāq was mogu, believed to have originated in the Far East. A lead rider, called a mogu puller, pulled an animal carcass or a stuffed hide, which was attached to a long rope, at a full gallop while several horse archers ran alongside attempting to shoot it without hitting their fellow riders or the one pulling the bag. To avoid unintended injuries, arrows were tipped with nonlethal heads. Since the riders rode on either side of the moving target they had to be skilled in shooting from the left and right side as well as forward of the horse and to the rear (Parthian shot).

Not all games required the use of the bow. The Turkish peoples enjoyed a game that used a small spear called naizeh. The naizeh was just over a meter long with blunted tips to avoid injury. The sport was called jareed (meaning confrontation), played between two teams ranging in numbers from six to twenty. The objective of the game was to throw the blunted javelin at a rider on the opposite team. The game was played when a rider rode against the opposing team and challenged one of their riders by throwing the naizeh at him. Then the challenger fled back to his team. If the challenged rider was not hit by the blunted javelin, he pursued the challenger attempting to hit him with a naizeh. To score, the thrower must hit the

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443 Dennis, George T. *Three Byzantine Military Treatises*. Washington D.C.: Dumbarton Oaks, 2008, p.131. Shooting at a ball being pulled has been noted in Byzantine treatises. “Artificial targets could be, for example, balls or some other objects pulled by cords some distance away.” It is unclear if this was for purely military training or a game for mounted archers in the Byzantine army.
rider. Hitting the horse was a sign of poor skills and lack of experience. The rule of not hitting the horse reflects the connection between the Turks and the Persian poetic writer, Ferdowsi who wrote the *Shahnameh*, the *Epic of Kings*. In the *Shahnameh* there is a tale between two legendary heroes fighting against each other. They are Rostam of Skythian ancestry and Isfandiyar an Iranian (Persian) who was blessed by Zoroaster. Because of his blessing Isfandiyar could not be pierced by an arrow. The battle between the two is one of the longest tales in the *Shahnameh*. An angel appears to Rostam and gives him an arrow stating he cannot under any circumstance hit the horse with the arrow. He must shoot Isfandiyar in the eye in order to defeat him, reflecting the ability of how accurate one could be when shooting while mounted on horse and more significantly the significance of the horse.444

The game of *jareed* gave the riders opportunities to display their horsemanship.445 To avoid being hit, a rider will hang to the side, clinging to the horse’s mane or the saddle with one foot in the stirrup to support his weight, to hide himself behind his horse’s flank. If he escaped he got back into the saddle and chased after his opponent attempting to hit the rival with the *naizeh*. If a rider didn’t have one in his possession, he retrieved one thrown at him, without dismounting, and pursued his adversary. Chasing and fleeing from one’s opponent required exceptional equestrian skills and taught the riders how to maneuver with their horses. The game reflects traditional Turkish tactics of hit-and-run. Horse archers were infamous for their tactic of rushing towards the opposing force, whilst shooting their bows, and then turning away, fleeing away from their opponent as if they had given up battle enticing their enemy to pursue them. *Jareed* was an excellent game to allow riders to practice *kar wa far* (ْكَر وَفاَر), Arabic for hit-and-

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run. It also had its risks of injury or death. In modern day Turkey, several jareed players are killed each year when playing the game. Like all of the other games played on horseback, it functioned in training and entertainment.

The utilization of equestrian games lasted for many centuries. They were played throughout the Eurasian continent. In Europe the torneamentum, the medieval tournament, is by far the most known equestrian game of the Eurasian continent in the West. For several hundred years, starting in the 9th century CE, the torneamentum was a mêlée between groups of knights. The joust, a one on one duel between two knights, was another game in medieval Europe and the Crusader states in the Levant. Although the tournament was played in the Levant by the Franks (Crusaders), it never gained popularity beyond their borders.446

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