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The title of the published paper differs from that given in this set of proofs. It is

‘Chariotry to cavalry: developments in the early first millennium’

rather than ‘Developments in Near Eastern chariotry and chariot warfare in the early first millennium BCE and their contribution to the rise of cavalry’ (as given in this file).

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DEVELOPMENTS IN NEAR-EASTERN CHARIOTRY AND CHARIOT WARFARE IN THE EARLY FIRST MILLENNIUM BCE AND THEIR CONTRIBUTION TO THE RISE OF CAVALRY¹

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Introduction

The horse-drawn war chariot was a feature of warfare in the ancient Near East for many centuries and chariots of a less martial aspect were important symbols of their owners' status for even longer. Relatively little scholarship has been devoted to the topic of chariotry, however, and the vast majority has been devoted to the rise of the chariot as a military technology in the second millennium BCE. In this contribution I will examine the rather neglected subject of chariotry in the early first millennium BCE—the period in which the chariot declined as a military technology, steadily eclipsed by the rise of cavalry. I will argue that chariotry and chariot warfare and cavalry and cavalry warfare are largely the same thing. The two simply represent consecutive stages of the same basic technology and methodology of warfare and, rather than representing a clash between two different, albeit related, technologies in which one technology lost out and was entirely replaced by the other, the gradual replacement of chariotry by cavalry was really a process of evolution.

Defining Chariotry and Chariot Warfare

Chariots are best defined as horse-drawn vehicles with two spoked wheels that require their drivers and passengers to stand whilst in motion. This is a rather loose definition, of course, but it is necessarily so due to the great variation to be seen in the forms of chariots used over the centuries. The war chariots of the Late Bronze Age were very light,

¹ This paper has benefited enormously from the counsel of Dr Karen Radner, who, after reading an early draft, provided numerous suggestions for restructuring and additional sources. The conclusions drawn herein remain my own, however, as are any remaining errors.

fast vehicles that carried two people (usually a driver and a warrior), drawn by a pair of horses. The only surviving examples of Bronze Age chariots are those that were found in the tomb of Tutankhamun but, despite their probably ceremonial nature, they seem to conform closely to this pattern.² Some variations appear to have existed—Egyptian reliefs of the 13th century BCE depict Hittite war chariots as rather heavier vehicles, usually carrying three people (see below for problems with, and the potential for, intentional inaccuracy in Egyptian depictions of foreign military forces)—but these seem to have been the exception, rather than the rule. In the first millennium BCE, chariots appear to diversify, usually becoming larger and heavier and increasing the number of passengers and horses to three or even four.

It is disconcerting to think how little consensus there is in the scholarly community on the relatively straightforward questions of how a war chariot was actually used in battle and how formations of chariots would have operated in relation to each other and other sections of an army. A wide variety of theories have been put forward over the years, and the following paragraphs will examine the major theories and attempt to draw some conclusions about what exactly chariot warfare consisted of in its heyday during the Late Bronze Age, so as to provide a basis for the discussion of how chariot warfare evolved once this heyday was over.

The earliest theories for the use of chariots in war are those derived from Homer's *Iliad*. Most likely written down in the late eighth century BCE, the *Iliad* may have been composed somewhat earlier than that, but was still removed from Mycenaean civilisation and the supposed events it recounts by several centuries. Chariots are few in number in the *Iliad*. They are used as transports, bringing the heroes to the battlefield, where they dismount and proceed to fight on foot—the so-called 'battle taxi' idea. This idea has been largely dismissed and is often taken as evidence that 'true' chariot warfare (whatever form it took) had died out so thoroughly in the Greek world by the time the *Iliad* was composed that people had forgotten how it actually functioned. Littauer and Crouwel, two of the most prolific scholars in the study of early vehicles and riding, have actually backed the 'battle taxi' idea for Mycenaean chariotry.³ This

² For detailed information on these chariots see M. A. Littauer and J. H. Crouwel, *Chariots and Related Equipment from the Tomb of Tutankhamun* (Oxford: Griffith Institute, 1985).

³ M. Littauer and J. H. Crouwel, "Chariots in Late Bronze Age Greece," in *Selected Writings on Chariots, Other Early Vehicles, Riding and Harness*, ed. P. Raulwing (Leiden: Brill, 2002), 61.

is, perhaps, not unreasonable, as the terrain of much of mainland Greece and of the Aegean islands that the Mycenaeans controlled was not conducive to the massed use of chariots, being far too rocky and uneven a surface on which to operate chariot formations of any significant size. Attractive though this idea is (although only for Mycenaean Greece, as Littauer and Crouwel are quite careful to make clear), it neglects the Linear B archival texts documenting the numbers of chariots owned by some of the various palace citadels, which indicate that they would each have had access to several hundred at least. A number of Linear B tablets from Knossos record numbers of chariots in the palace stables, one listing fifty-six, two listing eighty and one listing over two hundred.⁴ It seems rather far-fetched to think that a single palace would have maintained such a large and expensive fleet of vehicles purely as prestige transports and, although these expensive vehicles were commonly kept as prestigious personal transports for many centuries after they ceased to be used actively in battle, they were never kept in such extraordinary numbers for that purpose. For the Mycenaeans to be devoting the level of resources necessary to acquire and maintain these vehicles in such numbers, we must assume that there was some kind of significant practical advantage to be gained from them, most likely on the battlefield.

The second theory derived from a reading of Homer was explored primarily by Greenhalgh for Mycenaean chariotry⁵ and also posited for Hittite chariotry by Yadin on the basis of their representation in the Egyptian reliefs concerning the Battle of Kadesh.⁶ It suggests that chariot warriors fought at close quarters with long spears and is based on the following passage in the *Iliad*:

When a man from his own car encounters the enemy chariots
Let him stab with his spear, since this is the stronger fighting.
So the men before your time sacked tower and city.⁷

Greenhalgh claims this as evidence that Mycenaean charioteers fought with long spears or lances in the same manner as medieval cavalry. Even the interpretation of the text here is tenuous (“when a man from his own car” may simply refer to a man that has just stepped down from his

⁴ J. Chadwick, *The Mycenaean World* (Cambridge: Cambridge Univ. Press, 1976), 167.

⁵ P. A. L. Greenhalgh, *Early Greek Warfare: Horsemen and Chariots in the Homeric and Archaic Ages* (Cambridge: Cambridge Univ. Press, 1973), 7–12.

⁶ Y. Yadin, *The Art of Warfare in Biblical Lands* (New York: McGraw-Hill, 1963), 80.

⁷ *Il.* 4.306–308, translation by R. Lattimore (1951).

chariot), and Littauer and Crouwel have demonstrated in some detail that it would have been simply impossible for a charioteer to fight with a spear whilst in motion.⁸ Known models of Mycenaean spears would only just have reached past the head of one's own horses if they were set to the front of the chariot and, even were the chariot warrior to only attack targets to the side of his chariot, a thrust spear would become lodged in the body of anyone stabbed with it, forcing the warrior to let it go immediately or be dragged straight out the back of his own chariot. Although it is known that Chinese charioteers did sometimes fight in a similar manner, they fought with long-handled halberds—slashing weapons that would have inflicted deep cuts on their targets, but would not have become lodged in them.⁹

The idea that chariots would have engaged the enemy at close quarters is one that must be viewed with scepticism. Horses will not willingly charge into massed ranks of infantry, always preferring to pull up and stop just short of their lines, regardless of the intentions of their riders and handlers. The primary objective of a cavalry charge is to intimidate the targeted enemy formation, convincing it to break and flee before the charge hits home and, whenever mounted forces have engaged infantry units that retained their order and discipline and stood their ground, the mounted forces have almost always come off the worse. Any light chariot of the kind used in the Bronze Age attempting to charge massed infantry that retained its discipline would have inflicted more damage on itself on impact than it would have on the enemy, likely shattering the frame of the vehicle itself and leaving the horses and dazed crew in a position to be butchered in short order. If this was ever attempted with large numbers of chariots the resulting pile-up would have been devastating, resulting in the destruction of most of the chariots involved, the death of large numbers of men and horses and the waste of all of the resources put into obtaining and training them. While chariots could well have been used to mount a charge, this would have been an almighty gamble, dependent entirely on the enemy breaking and fleeing before the chariots hit them and would probably only have been attempted against an enemy that was wavering already.

With their utility at close quarters so restricted and so risky, chariots would have to attack with ranged weapons to be of any use at all and this

⁸ Littauer and Crouwel, "Chariots," (n. 3): 53–61.

⁹ A. Cotterel, *Chariot: The Astounding Rise and Fall of the World's First War Machine* (London: Pimlico, 2004), 195.

is what the overwhelming majority of the evidence from the Near East suggests. Throughout its history, the light war chariot was bound up inextricably with the use of the composite bow. In fact it appears that the composite bow was only introduced into Egypt at the same time as the chariot in the seventeenth century BCE, despite already having been in limited use in the rest of the Near East for several centuries.¹⁰

Simple or self bows, made from a single strip of flexible wood, are the oldest form of archery weapon and were used throughout the Near East for thousands of years.¹¹ They are a very simple weapon that can be manufactured quickly, easily and cheaply and are restricted only by their relatively short lifespan—self bows tend to warp over periods of intensive use, reducing their tensile strength and, therefore, their range and hitting power. The composite bow, which first appeared in the Near East around 2500 BCE, is a much more complex weapon that, thanks to the long drying times required when gluing together the multiple layers of wood, horn and sinew that it is composed of, can take years to manufacture.¹² On the battlefield, however, the composite bow is a vastly superior weapon to the self bow, able to fire an arrow at much greater speeds over at least twice the range without losing any of its power due to intensive use. A trained bowman mounted on a chariot should be capable of firing an arrow around once every six seconds and with reasonable accuracy (even though this would not have been strictly required when firing into large infantry formations). This high rate of fire, coupled with the great range and striking power of the composite bow and the speed of the chariot itself, which would have allowed the Bowman to quickly escape any retribution, would have made formations of chariots particularly deadly on the battlefield.

Despite this, some scholars have insisted that Mycenaean and Hittite chariots did not use these highly effective weapons. Only one pictorial representation of a Mycenaean charioteer using a bow has been found (a gold ring from shaft grave 4 at Mycenae), and this has been dismissed by Littauer and Crouwel as it depicts a hunting scene.¹³ It seems unlikely, however, that the Mycenaeans would not have used their chariots in the same way as the neighbouring states. The same can be said for the Hittites

¹⁰ D. Miller, E. McEwen and C. Bergman, "Experimental Approaches to Near Eastern Archery," *World Archaeology* 18 (1986): 182.

¹¹ *Ibid.*, 180.

¹² *Ibid.*, 182, 184.

¹³ Littauer and Crouwel, "Chariots," (n. 3): 61.

and the fact that knowledge of Hittite chariotry is based on Egyptian representations of the battle of Kadesh makes this interpretation even more suspect. Although pictorial representations of battles can be very useful historical sources, they must be regarded as sceptically as any other kind of primary source material and cannot simply be taken at face value. The Egyptian kings that commissioned these depictions had no interest in displaying objective history or providing accurate information for future scholars on their monuments. Their inscriptions and reliefs were pure propaganda pieces, intended to demonstrate the king's splendour and the invincibility of Egypt. The enemy forces were almost always depicted as bearing significantly inferior arms and armour, assuming they were shown with equipment of any description (it was not uncommon for enemy forces to be shown naked). The intention was not to demonstrate the king's skills as a warrior by showing how he overcame a formidable opponent, but to demonstrate Egypt's position as the sole beacon of order in the world by depicting foreign forces as a disordered, ineffectual rabble that could never hope to successfully challenge Egyptian order and might, and whom the king could slaughter without difficulty whenever they appeared, regardless of their numbers (which had to be prodigious to even be worthy of his attention). It is, therefore, no surprise that the Hittite chariots were depicted without bows—if they had bows, they would have actually appeared as a disciplined and effective force, which was not the intention of the exercise.

Although chariots clearly acted as mobile archery platforms, exactly how they were organised and employed in battle remains debatable, as does the question of their effectiveness. Most scholars maintain that chariots were used in combination with infantry, but differ on how the two formations interacted. There is also considerable variation in their views on the effectiveness of chariots, with some claiming that chariots were all but useless and others claiming that they were the single most important factor in warfare during the Late Bronze Age.

For Schulman, the chariot warriors were bowmen, but he attempted to combine this idea with the 'battle taxi' theory, rather than recognising the two ideas as incompatible. He claimed that chariots were used to ferry bowmen to suitable firing positions where they dismounted and fired their bows on foot, climbing back into their chariots and speeding away when threatened.¹⁴ As the key advantage of the chariot was its

¹⁴ A. Schulman, "Chariots, Chariotry and the Hyksos," *Journal of the Society for the Study of Egyptian Antiquities* 10 (1980).

speed and mobility and as it was stable enough to fire from effectively, this idea of 'taxied archers' is unconvincing. Schulman's conclusions on chariotry seem to be based on his reading of classical sources that dismissed the chariot as too inefficient and ineffective to be of use in battle, and it can only be concluded that he based his theories on this (incorrect and anachronistic) preconception.

The conclusions drawn by Powell and Watkins are also rather implausible, as both relegate chariotry to a very minor role in Late Bronze Age warfare. Powell claims that chariot formations were used only in the opening stages of a battle, that they provided cover for the initial advance of the infantry, shooting at the advancing enemy whilst remaining at a sufficient distance from them that their horses would not be seriously endangered and withdrawing from the battle as soon as that was no longer possible in order to preserve these expensive assets.¹⁵ Watkins agrees that chariots were too expensive to risk needlessly, but takes the opposite position on their actual use, claiming that they would have been held back from the battle for most of it and used as a kind of fire brigade formation, only committed to combat when the battle reached a critical moment at which their deployment would ensure a swift victory or prevent an impending defeat.¹⁶ This scenario seems unlikely, however, as Ramesses II's account of the Battle of Kadesh lists more than two thirds of the Hittite chariotry as a main force that formed the Hittite's primary attacking force.¹⁷

A recent theory that has drawn considerable attention was proposed by Robert Drews, who suggested that chariot warfare was the key to the rise and fall of the great kingdoms of the Late Bronze Age. He claimed that the groups of people living in peripheral areas who were employed as mercenaries by these kingdoms were put in a position to observe their battle tactics closely and to figure out weaknesses in the practice of chariot warfare that they could exploit. He claims that the collapse of the Late Bronze Age international system was a direct result of mass invasions conducted by these peoples, whose knowledge of Near Eastern chariot tactics allowed them to sweep the great kingdoms away in short

¹⁵ T. G. E. Powell, "Some Implications of Chariotry," *Culture and Environment: Essays in Honour of Sir Cyril Fox*, ed. I. Foster and C. Adcock (London: Routledge, 1963), 165–66.

¹⁶ T. Watkins, "The Beginnings of Warfare," *Warfare in the Ancient World*, ed. J. Hackett (New York: Facts on File, 1989), 31.

¹⁷ For a detailed account of the battle see D. Dawson, *The First Armies* (London: Cassel & Co, 2001), 139–50.

order.¹⁸ This theory has been widely, and correctly, criticised as an overly simplistic reworking of the old 'Sea Peoples' theory that ignores a number of significant factors contributing to the collapse of the international system.¹⁹ Drews' ideas on how chariots functioned in battle are equally far-fetched and, despite having drawn a number of followers, they should be viewed with the same scepticism.²⁰

The basis on which Drews built his theory is sound. Reviewing the evidence on chariot warfare and the preceding theories, he correctly identified the chariot as an effective mobile archery platform and dismissed the theories that relegate chariot warfare to a minor or unimportant role in Bronze Age warfare. In reaction to these ideas, however, he took up the exact opposite stance, constructing what can be seen as the most fanciful theory advanced to date. Drews' theory holds the chariot aloft as the only important factor in Late Bronze Age warfare and dismisses the role of infantry almost entirely. He claims that when chariots were first deployed late in the Middle Bronze Age, they were so effective against the supposedly loose, undisciplined infantry forces in use at the time, that the use of infantry as an offensive force was abandoned entirely and that until the collapse of the international system the only function for large forces of infantry was to garrison and besiege cities.²¹ The only infantry that Drews places on the battlefields of the Near East in the Late Bronze Age are the mercenary 'chariot runners' that he claims were the architects of the collapse and whose sole function was to follow on behind the chariots to kill or capture stranded enemy charioteers and horses and to aid in the escape of charioteers and horses on their own side whose chariots had been immobilised.²²

Drews' vision of a chariot battle is one in which the opposing armies formed themselves into wide, shallow formations and then drove straight at each other, firing on each other all the while and somehow contriving to make their formations loose enough to allow the enemy to pass cleanly through when they inevitably met in the middle of the battlefield, before forming back up on the other side and turning around to repeat the

¹⁸ R. Drews, *The End of the Bronze Age: Changes in Warfare and the Catastrophe ca. 1200 BC* (Princeton: Princeton Univ. Press, 1993).

¹⁹ M. Littauer and J. Crouwel, "Robert Drews and the Role of Chariotry in Bronze Age Greece" *Selected Writings on Chariots, Other Early Vehicles, Riding and Harness*, ed. P. Raulwing (Leiden: Brill, 2002), 66–74.

²⁰ Cotterell, *Chariot* (n. 9) and Dawson, *Armies* (n. 17).

²¹ Drews, *End* (n. 18), 138.

²² *Ibid.*, 141.

process until one side or the other broke and fled.²³ The devastation that a unit of chariots driving into massed infantry would suffer has already been discussed. The carnage that would ensue when two chariot forces attempted to drive through each other in the manner that Drews suggests, especially whilst firing at each other, would be truly appalling. As soon as a chariot was halted by enemy bow fire, those behind it would have to swerve to avoid hitting it, which (assuming they were able to do so while moving at the speed of a galloping horse) would probably put them in the path of an oncoming enemy chariot, forcing them to swerve again to avoid hitting that chariot head on, something that would likely spell instant death for all involved. Once the two forces turned and tried to repeat the process, they would do so over a battlefield littered with wrecked chariots, making the whole business even more dangerous than it would have been first time around. The level of casualties that would have been suffered in any battle that took place on the terms Drews describes would have been totally unsustainable.

There are a number of problems with Drews' theory aside from the problems with his vision of an actual chariot battle. He claims that chariots achieved their primacy on the battlefield by defeating and rendering obsolete infantry armies, but then claims that the chariot's downfall came at the hands of infantry as well. He is also forced to concede to the ineffectiveness of chariots in siege warfare, meaning that large forces of infantry would still have been required in order to assault and garrison cities. These forces would have needed to travel to their targets. One can only assume that, according to Drews' theory, these forces relied on a chariot escort to protect them and that, if they were intercepted en route to an enemy city, they would sit back and watch the two chariot forces fight and take flight if their chariots lost, certain in the knowledge that they would be powerless to prevent whatever was left of the opposing chariot force from wiping them out if they were caught. Drews' theory rests on the idea that those infantry formations that were fielded prior to the first millennium BCE were unordered mobs that fought in a disorganised fashion with no real cohesion as a unit, making them easy prey for the well-drilled and organised charioteers. Depictions of infantry formations from the time and even as far back as the Royal Standard of Ur, however, show infantry units operating in closely ordered, ranked up formations that made the best use of their standard equipment of shield and spear.

²³ Ibid., 127–29.

The chariot was undoubtedly a significant element of Near Eastern warfare in the late second and early first millennium, but it operated alongside and in support of infantry. The low cost of provisioning and maintaining infantry formations in comparison to chariots meant that they would always be available in vastly superior numbers. The high level of training required by each member of a chariot team and their horses in comparison to infantry soldiers would also have made it possible to replace infantry losses far more quickly. While a force composed solely of chariots could certainly have harried a large force of infantry and slowed its advance, it would always lack the numbers and direct punch to deliver a knockout blow. Acting in support of an infantry army, however, chariotry could well have proved devastating.

The most plausible scenario for the use of chariots in battle is one in which they would have operated in relatively small squadrons (Schulman sets the usual size of an effective squadron at fifty or more in the Egyptian army),²⁴ using hit and run tactics to harry the flanks and rear of the main body of the opposing army, driving into range to deliver several salvos of arrows, before turning away again to avoid retribution. They would probably only have charged directly at an infantry formation if it was already wavering under the weight of significant casualties, hoping to convince it to break and flee, then pursuing the fleeing troops and harrying them with further bow fire to make sure they did not rally. When these chariot squadrons met other chariots on the battlefield, rather than driving into each other, as Drews would suggest, they would most likely have studiously avoided closing with each other, preferring to keep the range open and use their bow fire to inflict damage, as they would have against the opposing infantry. In all likelihood, chariot squadrons would have circled and strafed each other in a situation not all that dissimilar to dog-fighting aircraft, trying to reduce enemy squadrons to breaking point and drive them off, clearing a path to the vulnerable flanks and rear of the enemy infantry.

The Rise of Cavalry

In the present contribution, I would like to propose and explore the idea that cavalry evolved directly from chariotry, in contrast to past

²⁴ A. Schulman, "Egyptian Chariotry: A Re-Examination," *Journal of the American Research Centre in Egypt* 2 (1963): 75.

scholarship which has tended to view cavalry as a related but distinct development,²⁵ or as an entirely separate invention.²⁶ An important distinction that must be made is the one between the relatively informal use of ridden horses in military or military-style operations (most especially raiding, but also scouting and carrying messages), and the operation of militarily organised cavalry formations. The more informal uses of horses all rely on the animal's utility as a very fast mode of transport. When horses are employed purely as the fastest way to get from point A to point B, their riders do not need to be particularly effective horsemen and do not require advanced equestrian technology. Organised cavalry formations, on the other hand, require a significant level of equestrian skill and technology to operate effectively, in addition to effective, standardised weaponry.

Antony is very careful to draw this important distinction in his recent study of the peoples of the Eurasian steppe. He argues that while people on the steppe would regularly have ridden horses while conducting raids aimed at stealing horses from their neighbours from as early as 4000 BCE, they did so in an informal manner and had nothing even resembling organised military cavalry formations.²⁷ Such formations required a level of equestrian ability and weapons technology (particularly, as Antony stresses, arrows of a certain level of quality and standardisation) that was not seen on the steppes until the first millennium. Antony even argues that these things only appeared on the steppes because first millennium groups like the Scythians and Cimmerians were conscious of the military prowess of the settled civilisations of the Near East and began to intentionally copy their organisation and manufacturing techniques.²⁸

The horse raids described by Antony were conducted by small groups of men that used the horses' speed first to gain the element of surprise during the initial approach and then to provide the fastest, safest means of escape when the raid was complete (often the most dangerous part of a raid). An inexpertly ridden horse would have made a decidedly

²⁵ R. Drews, *Early Riders* (London and New York: Routledge, 2003).

²⁶ M. Littauer, and J. Crouwel, "The Origin of the True Chariot," *Selected Writings on Chariots, Other Early Vehicles, Riding and Harness*, ed. P. Raulwing (Leiden: Brill, 2002), 51.

²⁷ D. W. Anthony, *The Horse, the Wheel, and Language: How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World* (Princeton: Princeton Univ. Press, 2008), 222–24.

²⁸ *Ibid.*, 224.

unstable platform from which to engage in hand to hand combat, so it is most likely that these raiders would actually have dismounted when about to make contact with the enemy and fought on foot. A letter discovered in the Tell Leilan archives from north-eastern Syria describes a raid against an enemy encampment's livestock and refers to the use of horses as a mode of transport by the raiding party's leader (it is reasonable to infer that also the rest of the raiding party was on horseback), confirming that this practice was common in the Near East by at least the early second millennium BCE.²⁹ The letter makes no reference as to whether the raiders were on horseback during the actual raid and it seems unlikely that they would have been, considering the lack of equestrian technology and skill in the Near East at the time.

When the horse was first domesticated it was a much smaller creature than it is now and would have been regarded in the Near East as a much less useful draught animal than the ox and a much less useful pack animal than the donkey, as well as a less controllable riding animal. The original use of the domesticated horse on the steppes was as a source of meat—and this is still the case in certain present day tribes of horsemen on the steppes—and a common argument is that horsemanship and various items of technology for the control of horses were developed to allow human horse herders on the Eurasian steppes to keep up with and control their herds.³⁰ Littauer and Crouwel argue that horsemen on the steppes were riding effectively, rather than just sufficiently to conduct raids, from as early as 4000 BCE and this conclusion provides the basis of their argument for the indigenous development of chariotry in the Near East: the people of the steppes would have had no need to invent chariots, as their expertise in and technology for the handling of horses was already sufficiently advanced long before the Middle Bronze Age for them to have effective cavalry—a superior technology to chariotry in all ways.³¹

There is a simple problem with Littauer and Crouwel's theory, however. If the people of the steppes were riding effectively by 4000 BCE, why did this expertise take three millennia to reach the Near East? A number of technological exchanges (wheeled vehicles and the horse itself, for instance) took place between the people on the Eurasian steppe

²⁹ Document L87–651, see J. Eidem, "The Tell Leilan Archives 1987," *Revue d'Assyriologie* 85 (1991): 131.

³⁰ Drews, *Riders* (n. 25), 10.

³¹ Littauer and Crouwel, "Origin," (n. 26), 51.

and the people of the Near East between 4000 BCE and the first millennium BCE, so why would not horsemanship itself have travelled as well?

Unlike his theories on chariotry, Drews' ideas on cavalry are somewhat less far-fetched, but they are still not entirely convincing. His recent study of the origins of horsemanship demonstrates that effective riding is not necessary to control a herd of horses.³² Horses naturally follow the single leader of the herd so, as long as the herders had control of this animal, they would have had control of the entire herd—something that could be achieved by simply tethering the lead animal. Every depiction of horse-riding in the Near East, from the end of the third millennium right down to the middle of the eighth century BCE,³³ shows the riders sitting a long way back on the horse, with their knees raised up—the usual posture for riding a donkey, an animal well-known in the Near East long before the horse. This was evidently an unsatisfactory and undignified way of riding a horse as a letter from Bahdi-Lim—a governor of Zimri-Lim, the king of Mari at around 1775 BCE—demonstrated by advising his lord to “drive in a chariot or, if you must ride, ride a mule. For only thus will you preserve the dignity of your royal position.”³⁴ This position also left the rider with relatively little control over the horse, which would have made such riders all but useless in battle. Depictions of people riding horses continue to exhibit the ‘donkey seat’ well into the early first millennium BCE. Several New Kingdom Egyptian reliefs show people riding horses but, in all cases, these depict either enemies of the Egyptians fleeing the battlefield on horses they have cut loose from their immobilised chariots, or Egyptians riding in the same, unwieldy manner, apparently acting as messengers or scouts. Even the early depictions of Assyrian cavalry show riders using this position, which is probably the reason that cavalry took so long to replace chariotry completely.

Drews argues that effective riding was first developed at the start of the first millennium BCE on the Eurasian steppe and brought to the Near East by peoples that settled in the Taurus and Zagros mountains

³² Drews, *Riders* (n. 25), 23.

³³ The first known confirmed image of a human riding a horse from the Near East is the seal impression of Abbakalla, a scribe in the service of King Shu-sin of Ur, dated to ca. 2030 BCE. See D. I. Owen, “The ‘First’ Equestrian: an Ur III Glyptic Scene,” *Acta Sumerologica* 13 (1991): 260–62.

³⁴ ARM (Archives Royales de Mari) 6, 76, see J.-M. Durand, *Les documents épistolaires du palais de Mari, Volume 1* (Paris: Les Editions du Cerf, 1998), 485–88.

only at this time; he maintains that this innovation was only slowly adopted by the existing Near Eastern states because of the continued prevalence there of chariotry.³⁵ Drews claims that the development of effective riding was the result of the use of bronze bits that gave a rider better control over his mount, but these bits were developed in the Near East for use with chariots, and after having persuasively argued that people on the steppe did not need advanced equestrian skills in their daily lives, Drews neglects to explain why they would use a piece of technology developed in the Near East to become better horsemen. His explanation of the time lag between the perfection of effective horsemanship on the steppe and in the Near East is also unsatisfactory. Assyrian cavalry was not effective enough to take over from chariotry completely until two centuries after Drews claims people in the Taurus and Zagros Mountains had perfected it. Yet as the Assyrians regularly bought and raided horses from this region, why could they not also have employed or kidnapped horsemen from this region to teach these skills to their own men?³⁶ To me the most probable explanation for the length of time required for the development of truly effective cavalry amongst the Assyrians is that the people of the Near East themselves were the ones pioneering this development, not the people of the steppe.

Devastating as the effective application of chariotry could be, chariot corps were extremely expensive to assemble and maintain and their inability to function in broken or uneven terrain restricted their deployment to relatively flat, open battlefields, allowing infantry forces that could move through wooded or mountainous terrain to evade them easily. Over the course of the lifetime of the Neo-Assyrian Empire (934–612 BCE), a clear line of development in military technology can be seen to take place. The military records and representations of the Neo-Assyrian Empire allow us to trace the gradual development of effective cavalry alongside the continued use of chariotry until cavalry reached the point at which it was more effective than chariotry in all arenas and chariots ceased to be used as frontline units.

When one considers just how long chariots continued to be used and the numbers in which they were deployed, it soon becomes clear that

³⁵ Drews, *Riders* (n. 25), 99.

³⁶ S. Dalley, "Foreign Chariotry and Cavalry in the armies of Tiglath-pileser III and Sargon II," *Iraq* 47 (1985): 43; K. Radner, "An Assyrian View on the Medes," *Continuity of Empire: Assyria, Media, Persia*, ed. G. B. Lanfranchi, M. Roaf and R. Rollinger (Padua: Sargon srl, 2003), 43.

their expense was seen as a secondary consideration in relation to their effectiveness and prestige value—if not, they would most likely have been phased out much earlier. It seems most likely that the development of cavalry was an attempt to overcome the terrain limitations of the chariot. Although horses can traverse difficult terrain with relative ease, the light and brittle construction of a chariot and its lack of suspension meant that if driven over uneven terrain at any speed it would bounce around uncontrollably and quickly suffer damage to its wheels that would immobilise it. In the late second millennium this was a less pressing concern as the focus of military attention was the great flat plains of Mesopotamia and Syria. Around the start of the first millennium BCE, however, a number of population groups emerged in the Zagros and Taurus mountains that posed a threat to the resurgent Assyrian state, namely the Medes, Mannans and, especially, the kingdom of Urartu. A traditional chariot would be all but useless in fighting these new highland powers. The earliest representations of cavalry on the Balawat Gates, dating to the reign of Shalmaneser III (858–824 BCE), depict them as teams that operate in exactly the same way as a chariot, but simply without the body of the chariot itself, therefore removing the terrain limitations.³⁷ Therefore, it could be said that the development of cavalry was, in fact, an attempt to develop a rough terrain chariot.

The early cavalry depicted on the Balawat gates operated exactly as the chariot teams of the late second millennium did and as contemporary first millennium chariots continued to do. They consisted of two horses and two men—all that is missing is the chariot itself. Although each man rides his own horse, one of the pair holds the reins of both, acting exactly as a chariot driver would, and leaving the hands of the second man free to fire his bow. The movement of a horse would make its back a less stable platform from which to fire a bow than the floor of a chariot, making the bowmen less accurate and making these chariotless chariot teams slightly less efficient on the battlefield. The Bowman's position level with the horse's head would also have restricted his fire arcs and the size of bow that he could use. Cavalry archers have traditionally had to use quite small bows or bows of an unusual shape. Note, for example, the Japanese *daikyu*, where most of the bow's length is above the grip.

³⁷ A. Schachner, *Bilder eines Weltreichs: kunst- und kulturgeschichtliche Untersuchungen zu den Verzierungen eines Tores aus Balawat (Imgur-Enlil) aus der Zeit von Salmanassar III, König von Assyrien* (Turnhout: Brepols Publishers, 2007), 293–308.

True cavalry only appears in the pictorial record in mid-eighth century BCE (meaning that it probably entered use only a short time prior to that), by which time the riders of the Near East had developed the skills necessary to ride a horse effectively in combat. A skilled rider sits forward on his horse and is fully capable of controlling it just with his legs, meaning that he does not need someone else to hold the reins for him. This meant that every rider in a cavalry formation could now carry a bow and meant that the firepower of the chariot unit it had evolved from was doubled overnight. Cavalrymen were also able to fight far more effectively at close quarters. Admittedly, a cavalry charge had the same objective as a chariot charge—to persuade a wavering unit to break and flee before impact—but the much reduced fragility of a cavalry unit meant that, should the target formation hold its ground, the cavalry would not face the kind of instant destruction that a chariot unit would suffer; the cavalry would even stand a good chance of being able to fight their way clear and fall back before the infantry could overwhelm them. There are a few depictions of horsemen equipped with spears, rather than bows, but these are primarily in hunting scenes and it is likely that their use on the battlefield would have been severely limited as the bow would have remained the superior weapon, thanks to its range and the flexibility it afforded.³⁸ That such units rendered their true chariot and rough terrain chariot predecessors obsolete so rapidly is therefore not surprising.

The appearance of true cavalry by the end of the eighth century BCE was most likely the product of an accident. When confronted in the tenth century BCE with the problem of dealing with new enemies emerging in the highlands to the north and east, Assyrian military planners would not have sat down and decided that they needed to invent an entirely new method of warfare (in this case cavalry) to deal with them. It is more reasonable to assume that ways to modify existing methods and technology to suit the variable terrain were explored, and the chariot-less rough terrain chariot team quickly emerged as a very straightforward solution to this problem. These teams may never have been intended to replace the true war chariot, but only to serve as a rough terrain version that could fight in places a standard chariot could not;

³⁸ E. Weisert, “Royal Hunt and Royal Triumph in a Prism. Fragment of Ashurbanipal (82-5-22,2),” in *Assyria 1995*, ed. S. Parpola and R. Whiting (Helsinki: Neo-Assyrian Text Corpus Project, (1997): 354–5.

their reduced efficiency would have been acceptable when weighed against their reduced cost and greater tactical flexibility. Over time, the use of these units in battle would have driven the accumulation of sufficient horse-riding experience for the Assyrians to refine their equestrian techniques and produce the skills needed for each horseman to fight as a self-contained unit—the point at which they became true cavalry. This development, however, was most likely a side-effect of a technology that, in itself, had probably already satisfied the Assyrian military's needs.

Chariots in the First Millennium: Representation and Reality

Although the second millennium BCE was undoubtedly the heyday of the war chariot and its use began to decline in the first millennium BCE due to the need for rough terrain units, chariotry remained a significant element in most Near Eastern armies until at least the mid- to late-eighth century BCE. The prestige attached to chariot units meant that, even after they were retired from front line service, the Assyrians continued to assemble and maintain a small chariot corps right up to the fall of their empire at the end of the seventh century BCE, purely as a prestige formation. Chariots also retained their position as the foremost prestige vehicle for kings and noblemen in Near Eastern and Mediterranean cultures for many centuries to come.

The collapse of the Late Bronze Age international system and the realities of warfare in the changed political climate of the first millennium BCE had different effects on the military formations in different regions of the Near East. In Mesopotamia and the Levant chariots and chariot warfare seem to have carried on for some time in much the same way as they had in the second millennium, but they seem to have disappeared entirely from Greece and the Aegean, while the picture from Egypt remains unclear. Perhaps the most straightforward explanation for this is economics. As mentioned above, the cost of assembling a chariot unit, of equipping the charioteers and of training them and their horses was very high. Mesopotamia and the Levant recovered from the effects of the international system's collapse relatively quickly, whereas written records only reappeared in Greece at the end of the eighth century BCE (usually a good indication of a lack of economically strong, centralised governments in the intervening period), and Egypt remained politically fragmented and weak until the accession of the Saite dynasty in the

seventh century BCE In both cases it is likely that the cost of maintaining chariotries had become prohibitive, especially considering the chariot's reduced utility in both regions.

The difficulties with chariotry in Greece have already been discussed. The apparent limitations placed on the use of war chariots by the rugged terrain in Greece and the disappearance of the strong, centrally controlled palace economies needed to fund chariot corps explain why the war chariot disappeared from Greece so completely that even oral traditions could no longer recall how it was used. An arrangement similar to the rough terrain chariot teams that formed the precursor to true cavalry in Assyria seems to have been used in Greece in the early first millennium,³⁹ and when these factors are taken into account, it is not surprising that it had replaced true chariotry entirely.

Egypt is more of a conundrum. Military records of any kind from the Third Intermediate and Late Periods are few in number and there is no clear picture of whether the chariot survived there as a military unit or not. Although the New Kingdom Egyptians undoubtedly possessed and used chariots, it appears likely that chariots were only a useful weapon for the Egyptians when they were operating outside of Egypt itself. The Hyksos are known to have introduced horses and the chariot into Egypt in the seventeenth century BCE but, although the kings that drove the Hyksos out of Egypt are known to have used chariots, the evidence from the time suggests that they used them only as prestige transports,⁴⁰ as the Hyksos themselves would most likely have been limited to doing in Egypt. The constrained space in the Nile valley would have left very few open, empty plains on which the Egyptians could have fought a chariot battle, just as the marshy terrain of the delta would have left chariots unable to run on anything but a purpose-built road. Within Egypt itself, the defining war machine was always the river boat, which allowed the Egyptians to move large numbers of troops quickly and to perform surprise assaults on riverside targets.⁴¹

Representations of battles that took place on Egyptian soil during the New Kingdom period depict infantry battles supported, more often than not, by boats. The most famous of these are the reliefs illustrating Ramesses III's (1187–1156 BCE) battles against the 'Sea Peoples' at his mortuary temple at Medinet Habu. The reliefs depict a number of scenes

³⁹ Drews, *Riders* (n. 25), 58.

⁴⁰ A. J. Spalinger, *War in Ancient Egypt* (Oxford: Blackwell Publishing, 2005), 4–5.

⁴¹ *Ibid.*, 2–3.

containing both mobile and stationary chariots in use in different stages of the battle.⁴² It is likely that the nature of the amphibious assault and the battlefield's terrain would have prevented their use as a mobile force for much of the battle. Most likely, they were included in the reliefs purely because it was expected that the most prestigious section of the army would have been present and artistic license was taken with their depiction in order to make them as impressive as possible. Aside from this, only depictions of battles that took place outside of Egypt show war chariots being used and, with the loss of Egypt's territories in the Levant between 1140 and 1130 BCE, the war chariot probably ceased to be of any practical value to the Egyptian army. Certainly those few documented examples of Egyptian campaigns outside of Egypt in the following centuries do not suggest the continued use of chariots. The Egyptian presence at the battle of Qarqar in 853 BCE as part of the coalition formed against Assyria is listed only as a force of a thousand soldiers with no mention of chariots or cavalry.⁴³

It is possible that some sort of military unit that involved horses may have appeared in Egypt once again in the ninth and eighth centuries under the 25th dynasty—the kings of Kush (Nubia, in modern Sudan), ruling from their capital, Napata. Piye (750–715 BCE) is reported to have had a particular interest in horses and the victory stele set up to commemorate his conquest of Hermopolis and the Nile Delta records that he was angered by the discovery of the poor treatment received by the horses in the royal stables while he was besieging the city.⁴⁴ Additionally, the Assyrians are known to have obtained horses from the Kushites, purchasing them specifically for their chariot corps, as their greater size and strength made them better suited to pulling chariots than the smaller Mannean horses that they preferred for cavalry.⁴⁵ What exactly this implies for the state of chariot or mounted warfare in Egypt at the time remains obscure, however. These units would still have been relatively ineffective inside of Egypt itself thanks to the terrain

⁴² The Epigraphic Survey, *Medinet Habu I: Earlier Historical Records of Ramses III* (Chicago: Oriental Institute, 1930), plate 32.

⁴³ A. K. Grayson, *Assyrian Rulers of the Early First Millennium BC II* (Toronto: Toronto Univ. Press, 1996), 23, A.0.102.2 ii 89–102.

⁴⁴ M. Lichtheim, *Ancient Egyptian Literature: a book of readings. Volume 3* (Berkeley: California Univ. Press, 1980), 73.

⁴⁵ Dalley, "Foreign Chariotry," (n. 36), 43 and L.A. Heidorn, "The Horses of Kush." *JNES* 56 (1997): 108.

limitations, so it is possible that the Kushites reared their superior horses only for use in Nubia itself and for trade.

In Mesopotamia and the Levant the use of chariots in warfare seems to have continued from the second through to the first millennium BCE with little or no interruption. The relatively fast recovery of these areas from the collapse of the international system meant that they could still afford to assemble and maintain a chariot corps and chariotry had always been most useful in these geographical regions. War chariots continued to be used in Mesopotamia and the Levant in numbers similar to those seen in the Late Bronze Age right up to the great campaigns of Assyrian expansion in the latter half of the eighth century, at which point they began to be phased out in favour of the more efficient and tactically flexible cavalry that had become possible by then.

The best documented battle of this period is the battle of Qarqar, fought in 853 BCE between the Assyrians and an alliance of Western kingdoms. The Assyrian sources, namely the annals of Shalmaneser III (858–824 BCE) inscribed on the so-called Kurkh Monolith, claim that the alliance fielded a force of forty thousand soldiers⁴⁶ and four thousand chariots—a force similar, if not slightly larger than those being used a few centuries earlier: the numbers listed for chariots at the battle of Kadesh are three and a half thousand for the Hittites and, although the inscriptions do not give a number for the Egyptians, estimates usually place their deployment at just under that figure.⁴⁷ The Assyrian royal inscriptions also list the use of two thousand cavalry by the alliance,⁴⁸ but it is not clear whether this refers to two thousand cavalry teams of the kind discussed above (and therefore four thousand men on horseback and a chariot to cavalry team ratio of two to one) or to two thousand men on horseback (and therefore only a thousand teams and a chariot to cavalry team ratio of four to one).

Amongst the powers that fought the Assyrians at Qarqar was the kingdom of Israel. Although Damascus sent a larger total force, the Israelites provided two thousand of the chariots fielded by the alliance at Qarqar—as many as all the other powers put together.⁴⁹ The Israelites seem to have had a reputation for the expertise of their chariotry and their use of Nubian horses; so much so that, when the Assyrians finally

⁴⁶ Grayson, *Assyrian Rulers* (n. 43), 23, (A.0.102.2 ii 89–102).

⁴⁷ Drews, *End* (n. 18), 107.

⁴⁸ Grayson, *Assyrian Rulers* (n. 43), 23, (A.0.102.2 ii 89–102).

⁴⁹ *Ibid.*, 23, (A.0.102.2 ii 89–102).

conquered Samaria, the capital of Israel, in 722 BCE, the Samaritan chariot corps was folded into the Assyrian army and stationed in the royal city of Kalhu.⁵⁰ This was not an unusual occurrence—it was standard practice to absorb the remaining forces of a conquered territory into the conquering army. What was unusual about the Samaritan chariot corps was that it was the only unit of foreign troops stationed at Kalhu to have been specifically marked out as hailing from a particular city. In her survey of that unit, Dalley argues that the particular expertise of this unit is the most likely reason for this honour and for the apparently good disposition of the Assyrians toward the Samaritans in general.⁵¹

Although the basic principles of chariot warfare remained unchanged until the war chariot was retired as a frontline unit at the end of the eighth century BCE, there do appear to have been some attempts to modify the chariots themselves. Many of the Neo-Assyrian reliefs with representations of chariots depict much larger, heavier vehicles than those in use in the second millennium BCE, usually with larger crews.⁵² Although these larger vehicles would have been sturdier than their predecessors, provided better protection for their crews and increased the unit's firepower by allowing it to carry more bowmen, their very size and weight would have mitigated the primary advantage of a chariot: its speed and manoeuvrability. It is possible that the Assyrians favoured the Samaritan charioteers because the combination of their skills and their use of the large Nubian horses had allowed them to actually make these heavy chariots an effective battlefield unit. Yet another possible explanation may be that, while light chariots continued to form the mainstay of chariot corps in the Near East, these heavy chariots acted solely as prestige units, taking pride of place on the Assyrian reliefs simply because they looked more impressive than standard chariots. Light, fast, highly manoeuvrable units would have remained in use on the battlefield and the actual deployment of these heavy chariots would probably have been limited. Yet, once the chariot ceased to be used as a frontline military unit, the heavy chariot units were retained as deliberately archaic formations whose sole function was to look impressive at grand state occasions, rather like the cavalry units still maintained by the British army today, while the light chariot disappeared entirely.

⁵⁰ Dalley, "Foreign Chariotry," (n. 36), 32.

⁵¹ *Ibid.*, 32.

⁵² E. Weissert, "Royal Hunt," (n. 38), 354–55.

The sharp decline in the numbers of chariots in Assyrian military records from the end of the eighth century BCE indicates that they no longer formed an important practical part of the Assyrian army.⁵³ The only function retained by chariots in the Near East from this point onwards would have been as status symbols for kings and noblemen. Even stripped of its military functions, the chariot was still the most visually impressive mode of transport available. As it happens, the very fact of their uselessness might well have served to make them even more desirable as status symbols. Anyone seen to ride around in a chariot was obviously someone able to bear the cost of obtaining and maintaining it and so would, by definition, be wealthy and important. J. N. Postgate once called it, fittingly, the 'Assyrian Porsche'.⁵⁴

Aside from military scenes, chariots were depicted in the context of the royal lion hunt.⁵⁵ As these hunts would have taken place in cordoned off royal parks or been arranged so that already captured animals were released directly in the king's path, the lack of speed and manoeuvrability suffered by the large, heavy chariots being used would not have been a problem.⁵⁶ In fact, the chariot's size may well have been an important safety feature on such occasions. A cornered lion is an exceptionally dangerous creature and a hunter on horseback would be immediately vulnerable if it turned and attacked. A hunter in a large chariot is much safer, as, if the creature being hunted turned and attacked the horses, the charioteers would be at a sufficient distance to shoot it before it reached them. Even if the creature attacked from the side, the body of the chariot (and the king's retainers) would impede its progress sufficiently for someone to kill it before the king was harmed.

Concluding Remarks

Scholarship on the chariot has focussed primarily on its initial development late in the Middle Bronze Age and on its importance and use in the Late Bronze Age. Little consensus has been reached on either of these issues and the importance of the chariot in the early first millennium

⁵³ J. N. Postgate, "The Assyrian Army at Zamua," *Iraq* 62 (2000).

⁵⁴ J. N. Postgate, "The Assyrian Porsche?" *State Archives of Assyria Bulletin* 4 (1990): 35–38.

⁵⁵ E. Weissert, "Royal Hunt," (n. 38).

⁵⁶ M. Roaf, *Cultural Atlas of Mesopotamia and the Ancient Near East* (New York: Facts on File, 1990), 154.

BCE has been largely overlooked. The utility of the chariot as a war machine has often been grossly underestimated. War chariots played a vital role on the battlefields of the Near East in the second millennium BCE, acting as effective flanking and pursuit formations in concert with solid infantry units. In the first millennium BCE the basic principals of chariot warfare remained unchanged, but the changed geopolitical situation required a modification of the chariot itself. Assyria, the sole survivor of the great chariot powers of the second millennium, found itself confronted with a number of new rival powers emerging in the highland areas to the north and east in which its chariot corps could not function. The answer to this was the 'chariot-less rough terrain chariot team' which, over the course of two centuries, evolved into the first true light cavalry. Even then, the operation of this formation remained essentially identical—cavalry operated as a flanking and pursuit arm that supported the infantry just as chariotry had before. Although retired from front-line military service, the chariot continued to perform the other role that it had always played from its conception, that of the prestige transport and hunting vehicle.