

2012-12-12

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Wrightson, G. C. (2012). Greek and Near Eastern warfare 3000 to 301: the development and perfection of combined arms (Doctoral thesis, University of Calgary, Calgary, Canada).

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Greek and Near Eastern warfare 3000 to 301: the development and perfection of combined arms

By

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE

DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF GREEK AND ROMAN STUDIES

CALGARY, ALBERTA

December 11th, 2012

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ABSTRACT

This dissertation traces the developments in battlefield tactics from the early Mesopotamian societies through to the battle of Ipsus in 301 BCE. The primary concern is an analysis of the system of combined arms and its gradual implementation in the Near East and Greece. This thesis will show that armies using combined arms generally proved to be more successful than those that did not. Moreover the use of combined arms was one of the underlying causes for the many victories of the most successful conquest societies in this period, principally Neo-Assyria and Macedon. Conversely the Persian Empire was created through the use of overwhelming resources but was defeated precisely because of its minimal use of combined arms. Overall this thesis will provide a thorough examination of the history of combined arms in ancient warfare and a detailed analysis of its benefits.

ACKNOWLEDGEMENTS

I thank the Department of Greek and Roman Studies for their generous financial support without which I would have been unable to devote so much time to this enterprise. I thank my colleagues in the Department for sitting through and providing generous feedback from my numerous presentations of my arguments, especially Carolyn and Sean who heard parts of this thesis repeatedly. I also thank Sean for happily succumbing to my repeated requests to use his books. I also especially thank my supervisor Waldemar Heckel for giving me so much support and good advice throughout this process and who was able to endure my off beat work patterns. Finally I especially want to deeply thank my lovely wife Dorie for putting up with all the lonely nights while I was in my office and for encouraging me to discuss matters with her over the years.

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Introduction part 1: The purpose and methodology of the study

Greek warfare after the introduction of the hoplite remained tactically static for centuries. A number of factors created this circumstance—the geography of Greece, the political climate, the lack of external spheres of conflict or military influence, and the lack of any necessity to develop other styles of warfare, to name a few. After the Peloponnesian War Greek poleis began to make use of other units in battle and develop innovative tactics not wholly reliant on a hoplite phalanx as the new demands, resources and operational theatres of war required. This process eventually led to the multi-faceted armies employed by Alexander the Great and his Successors.

The main focus of this dissertation is an examination of Greek warfare from the archaic period through to the wars of Alexander's Successors, tracing the development and importance of 'combined arms' in land warfare.¹ In order to examine combined arms and the process of the implementation of 'integrated warfare' in Greece this study will concentrate on the introduction and development of individual units and their coordination and use in battle. This will start with the beginnings of hoplite warfare in the seventh century and end at the battle of Ipsus in 301.

The battle of Ipsus is a good terminal point for a number of reasons: by 301 most units found in ancient armies had come into being and been used effectively; few new tactics involving combined arms occur afterwards; and after Ipsus primary source material becomes fragmentary and less reliable, especially concerning tactical details.

Putting Greek warfare in context

The Greeks did not develop their style of war in a vacuum and so before examining hoplite warfare it is necessary also to be familiar with earlier Greek practices as well as contemporary warfare elsewhere. It is especially important to review the methods of war in influential societies that had direct or indirect contact with early Greece, in particular the Near East. The beginnings of combined arms can be seen in early Greece and other contemporary civilizations and therefore

¹ What is meant by the terms combined arms and integrated warfare will be discussed below alongside an outline of the specific terminology to be used. The principal focus of this study is land warfare, in particular the specific tactics employed in battle. As a result naval and siege warfare, as well as other aspects of war and the modern application of combined arms, do not feature in this discussion. See below for a detailed discussion of what is meant by combined arms.

the subsequent shift of focus in Classical Greece to an army reliant on heavy infantry alone becomes that much more significant.

At the collapse of the Bronze Age the Greeks regressed in military style to a simpler army structure, which, though simple, was better at effective conflict resolution. This change can be explained by a number of factors, such as the nature of the polis and consequent parochialism, Greece's mountainous terrain and isolated position, and the fact that war was primarily used for defence and resolving local disputes but not conquest. As Greek poleis expanded their influence outside their immediate area, rival states or different terrain prompted changes in military style. This necessitated a return to combined arms and led to the integrated warfare of the Macedonian style armies of the fourth century.

The need for this examination

Much has been written on Greek warfare in general and on specific armies, battles and units. But when scholars discuss battle tactics or unit types there is no concept of a tactical continuum or concern for unit evolution over the whole period. Even works intended as overviews of all Greek or ancient warfare often view each conflict independently with only a few threads of development followed throughout.

Perhaps the earliest example is Sir Edward Creasy's *The Fifteen Decisive Battles of the World: from Marathon to Waterloo* (Boston, 1851) where each battle discussed is dealt with in isolation. H. Delbruck's *Warfare in Antiquity, History of the Art of War* (1920, republished by the University of Nebraska in 1990), continues this trend even though it is intended as a complete history of the science of warfare rather than a simple discussion of individual conflicts. This is also true even for works written by experienced commanders, such as J.F.C. Fuller's *The Decisive Battles of the Western World and their Influence upon History* (New York, 1954) and *The Influence of Armament on History from the Dawn of Classical Warfare to the End of the Second World War* (New York, 1945), and T.A. Dodge's *Great Captains. Alexander: A History of the Origin and Growth of the Art of War from the Earliest Times to the Battle of Ipsus, B.C. 301* (New York 1890). General Sir John Hackett's edited volume *Warfare in the Ancient World* (New York, 1989) is a more recent example.

Modern scholars have followed the same trend, in particular J. G. Warry's *Warfare in the Classical World* (London, 1980).² Victor Davis Hanson's numerous general works on ancient warfare, and on Greece in particular, examine individual generals, statesmen or battles but do not demonstrate any concept of a process of continual development throughout.³ Even his recent work on the subject, *The Father of Us All: War and History, Ancient and Modern* (New York 2010), does not mention in detail combined arms in the ancient world and does not focus on the development of ancient warfare from simple battles through to the advanced mixed armies of the Successors. Modern works on strategy also fail to take note of the importance of combined arms in the ancient world.⁴

The best summary of combined arms in the Macedonian armies of Philip II and Alexander is Archer Jones, *The Art of War in the Western World* (Chicago, 1987). He focuses on the success of the Macedonian style of warfare against the Persian army by integrating all the four basic types of unit into the army. However, he does not provide any background to earlier developments in combined arms warfare. He only provides a surface level of detail as expected in a general work covering the whole of western warfare. He is not an ancient historian and so takes all the ancient accounts on face value. He also rarely references his sources for his conclusions. Nevertheless his account is valuable in relating ancient warfare to modern military theory, in particular the importance of combined arms in overcoming the strength of the enemy.

Perhaps the best work that traces the development of combined arms throughout the ancient world is Arther Ferrill's work, *The Origins of War: From the Stone Age to Alexander the Great* (New York, 1986). Ferrill begins with early man and briefly outlines Mesopotamian

² See for example Livesey 1990; Regan 1992; Davis 1999; Gabriel 2002; Lewis 2010 who all discuss decisive battles in history independently. Gabriel and Metz 1991 attempt a general survey of the developments of warfare in the ancient world but take as face value the arguments of other scholars for each period without entering into any of the debates or dealing with the primary sources themselves. Pietryowski 2009 discusses all of the major battles of the Successors of Alexander but with little new scholarship and without detailing a continuing timeline of military development or where Macedonian warfare fits into the general scheme of ancient warfare. Sheppard 2008 discusses Alexander's army but not in great detail. Carmen and Harding 1999 details the importance of military innovations in influencing current and future warfare, but the scope is so large it is unable to enter into enough detail.

³ On general warfare and lessons of ancient warfare see Hanson 1999a; 2001; 2003; 2005; 2010a; 2010b. On Greek military history see Hanson 1983; 1989; 1991; 1999b; 2005.

⁴ See for example May, Stadler and Votaw 1995. Heuser 2010; Olsen and Gray 2012.

warfare before detailing Greek warfare up to and including Alexander. However, he does not mention combined arms specifically despite the use of modern military theoretical terms, such as firepower or fighting in column versus line. Even when he discusses examples of historical events or images he rarely provides full references and rarely engages in, or acknowledges the importance of, source criticism. In view of the large timeframe of his study he cannot go into significant detail but his referencing is scanty and the work is clearly intended for the general reader.

Each chapter takes the form of a generalized historical review and narrates battles rather than engaging with a detailed tactical discussion. At the end of every chapter Ferrill discusses the extent to which armies used integrated units but provides no further details on how they did so and if there were different degrees of integration. For example, arguably his most detailed tactical discussion (83) is of the Persian army and is far too brief and generalized without providing any specific supporting evidence,

the national army was not a tactically cohesive force. Although it was a tactically integrated army in the sense that Persians used infantry, cavalry and skirmishers in coordination on the field of battle, it consisted of ethnic and regional levies that retained their local, tactical organization. Obviously the resultant mixture was not always tactically harmonious. Again, however, the Greeks benefited, especially when Philip and Alexander learned how to combine the forces of the Macedonians and their allies in a tactically unified army in which every element was familiar with the style of fighting of the units up and down the line of battle.

Ferrill praises the armies of Persia and Alexander because of their level of integration and criticizes the hoplite phalanxes of Classical Greece because of their tactical simplicity. He is advocating the use of combined arms in warfare, and to some degree tracing its development in the ancient world, but he never spells out if this is his aim. Nor does he provide any reasons for his preference for integrated armies or discuss what these actually entailed in each case. Moreover in ending with Alexander, Ferrill fails to recognize the crucial developments in army integration that occurred under Alexander's successors. In trying to write a general history Ferrill does not engage in detailed tactical analysis of the intricacies of army integration and his arguments suffer as a result.

Ferrill argues (175) that the style of warfare practised in the Near East, involving the integration of cavalry, missile troops and light infantry, developed independently of Greek warfare. He argues that the Greek way of war involving heavy infantry was formed free from any influences from the east, and vice versa, until Philip and Alexander united both styles of battle. This argument is untenable since both sides of the Aegean Sea were well aware of each type of warfare. The Greeks knew of the Persian use of cavalry and missile troops in combination, and the Persian Empire was well aware of the Greek preference for hoplite phalanxes throughout the period when the phalanx was developed.⁵ The Neo-Assyrians even incorporated mercenary hoplites into their armies in the late seventh century.

Moreover Macedon was different from Classical Greek poleis in that its traditional style of warfare relied more on cavalry and light infantry than hoplites. In this way Macedon was more eastern than Greek. Philip did indeed newly incorporate a heavy infantry phalanx into his army, perhaps because of his experiences at Thebes, but earlier Macedonian warfare was not directly under the influence of Persia, just as the chariot warfare of Celtic Britain was not directly influenced by the chariot battles of Egypt.⁶ The similar styles of warfare reliant on cavalry and light infantry developed relatively independently. The fact that a fully integrated army was not achieved properly in the ancient world until Philip shows, rather, that combined arms had yet to be perfected despite its use throughout Mesopotamian history.

Philip was the first general to marshal an integrated army that was interdependent rather than fielding a large army of varied, but uncoordinated, units in the Persian style. He did so not because fourth century Greece rediscovered the eastern style of warfare but rather through the creation of a truly national standing army incorporating, and integrating, all the different units available and already used in Macedon. As Archer Jones (1987: 21) aptly summarized

the Macedonian tactical method blended the Greek and Persian systems by depending heavily on cavalry but substituting in the line Greek heavy infantry for Persian light infantry. The reliance on cavalry had its origin not only in the Persian practice but also in the traditional importance Macedonians had attached to cavalry in a country more suited to the horse.

⁵ See for example Herodotus 7.9.2 where the Persians comment on the stupidity of the Greek way of waging war. See also Hanson 2001: 60.

⁶ See Griffith 1981 in particular on the influence of light infantry on Macedonian warfare.

As Ferrill (1986: 83) states Philip was successful because he was the first to create a “tactically unified army in which every element was familiar with the style of fighting of the units up and down the line of battle.”

Very rarely in any society does warfare ever exist in a vacuum, isolated from outside influences on tactics or technology. Once an innovation occurs that significantly alters the outcomes of battles other states must adopt, or adapt to, this new practice or weapon in order to survive. Moreover one innovation usually leads to many more in the future. There is always the drive to create better ways of waging war or to perfect what already exists. Carl von Clausewitz stated as much in *On War* in 1832, “War is more than a true chameleon that slightly adapts its characteristics to the given case.” Mansoor rightly summarises:

as Clausewitz stated nearly two centuries ago, although war changes its characteristics in various circumstances, in whatever way it manifests itself, war is still war. War in the twenty-first century has been and will remain a complex phenomenon, but its essence has not and will not change.⁷

The concept of a continuum of developments in warfare is touched on occasionally by scholars of the ancient world, but rarely dealt with specifically and in detail.

Combined arms has a relatively modern application in military theory, but although the specific term is new its application is not.⁸

The concept of combined arms in ground combat has existed for centuries, but the nature of that combination and the organizational level at which it occurred have varied greatly....Since then twentieth-century warfare...developed to the point where some form of combined arms is essential for survival, let alone victory (House 2001: 3).

Similarly Post Traumatic Stress Disorder is a modern name for an illness, the symptoms of which are visible throughout history.⁹ ‘Total War’ is another modern term that is often used to describe the all-encompassing warfare of the nineteenth and twentieth centuries. More recently it has been ascribed to the Napoleonic period and even the U.S. Civil War.¹⁰ However many, if not

⁷ Murray and Mansoor 2012: 1.

⁸ See House 1984; Spiller 1992 and in particular House 2001.

⁹ See for example Shay 1994 & 2003; Tritle 2000.

¹⁰ Bell 2007; Förster and Nagler 1997. For a general history of Total War see Power and Tremain 1988.

all, of the aspects of war that are collated in this succinct name can be seen in the ancient world.¹¹

The use of combined arms is widely regarded as the most efficient, and successful, way of fighting a battle. Gradually use of the theory of combined arms is coming to define discussions of Greek warfare, in particular with regards to the armies of Philip and Alexander.¹² However, no-one previously has discussed the importance of combined arms in ancient warfare as a whole.¹³ In order to appreciate combined arms in the modern world it is important to give it due consideration throughout history, and the concern here is Greece in particular.

The model of combined arms warfare as outlined below serves as a way of analyzing battles from a tactical perspective. It is very useful in detailing the intricacies of a battle where such information is not necessarily provided in the sources. This is particularly relevant in ancient warfare where the number, focus and reliability of sources is problematic for any tactical reconstructions and analysis. Using combined arms as the end point for the most advanced, and successful tactical realization in battle it is possible to review all battles through a comparative lens. Combined arms allows historians the means of comparing the tactical efficiencies of armies and commanders throughout the history of warfare. Here the focus is on Greece and the Near East, but this model of analysis is just as relevant for discussions of Roman or medieval warfare.

In this study there is no space for any detailed analysis of generalship in the ancient world and the ancient knowledge of the theory of combined arms. Nor is this study focused on strategy

¹¹ There is a firm belief that in the ancient world sieges or conflicts involving the whole population were very rare. Technology was limited and biological or chemical warfare alongside the use of terror was rarely practiced. Religion and propaganda, as well as deceit and politics, are integral to Total War and are often noticeably lacking in early warfare. However the Neo-Assyrian Empire repeatedly captured cities through sieges, often using terror tactics such as diverting or polluting the water supply or fostering disease among the beleaguered population. Throughout history mass executions, enslavements or deportations were often used as a way of subduing a captured region or population.

¹² Pederson 1998 discusses combined arms use by Alexander in his battles but simply retells the history of the campaign against Persia with the eye of a modern soldier. He adds very little in the way of scholarship and does not place Alexander's (and to a lesser extent Philip's) use of combined arms in the context of its use elsewhere in the ancient world. Lonsdale 2004 and 2007 mentions briefly the use of combined arms in the armies of Philip and Alexander but goes no further than that.

¹³ Oorthuys 2007 discusses Agricola's use of combined arms in his campaigns in Britain but he is concerned more with combined operations involving the army and navy than combined arms on the battlefield.

in ancient warfare. I intend to use combined arms as a tool for examining both generalship and strategy in the future, particularly as each is expressed in military manuals. Here my focus is limited to the application of tactics in battle as the simplest way of assessing the level, and importance, of combined arms in ancient warfare.

The outcome of this study

This study will provide a detailed analysis of all the trends and developments in Greek land warfare from the Archaic period through to 301. It will demonstrate the importance of combined arms to warfare in general as well as examining specific examples of its influence on Greek warfare in particular. The overall result will be a comprehensive timeline of Greek warfare showing how each innovation in tactics and armament and different battles led to the eventual adoption of combined arms in Greece. My aim is to demonstrate that different styles and periods of Greek warfare should be taken as a whole and not dealt with individually and that the whole picture represents the widespread implementation of combined arms.

Examining Greek warfare through the lens of combined arms tactics will also shed more light on the independent culture of the Classical Greeks and how that culture shaped, or was shaped by, warfare reliant on the hoplite to the detriment of the implementation of combined arms tactics. It is this analytical tool that I hope will create the foundation for future examinations of Greek culture and serve as one means of assessment for its rather slow adoption of aspects of other cultures, both military and other.

Methodology & Terminology – A conceptual methodological framework:

Combined arms warfare

The very term “combined arms” means different things to different people, or it is left undefined and vague....the combined arms concept is the basic idea that different combat arms and weapons systems must be used in concert to maximize the survival and combat effectiveness of the others. The strengths of one system must be used to compensate for the weaknesses of others. The specific arms and weapons included in this concept have varied greatly among national armies and over time.¹⁴

For the purposes of this study the term combined arms refers to the process of moving from an army centred on a simple unit to a diverse and multifaceted army, as well as to the tactical uses

¹⁴ House 2001: 4.

and deployment of two or more units in combination in battle.¹⁵ This includes integrating all the diverse units into a successful tactical plan on the battle field.¹⁶ The goal of combined arms is to enable a coordination of action in a battle that brings each unit into offensive or defensive action to mutually support the rest of the army “working in concert towards a common objective to destroy or disrupt the enemy forces.”¹⁷ It is intended “to achieve an effect on the enemy that is greater than if each arm was used against the enemy independently.”¹⁸

The US Army *Field Manual 100-5* specifies the nine principles of war that govern the US Army (US Army 1993). The sixth principle regarding unity of command stresses that “[u]nity of command obtains unity of effort by the coordinated action of all forces towards a common goal. While coordination may be attained by cooperation, it is best achieved by vesting a single commander with the requisite authority.”¹⁹ This statement aptly summarises the purpose of combined arms, to achieve success “by the coordinated action of all forces towards a common goal.”²⁰

Most armies today are organized around combined arms. “Imagine a modern army on today’s battlefield not utilizing combined arms, an idea that simply doesn’t seem plausible to even the most inexperienced warrior.”²¹ Yet according to Herbert (1988: 7) the idea of combined arms was not a formal part of U.S. Army training until the 1976 edition of the field manual: *FM 100-5*.²² Even though the U.S. Army did not officially recognise combined arms until forty years

¹⁵ Very little has been written about combined arms warfare in the ancient world but much has been written about 20th- century warfare.

¹⁶ As House 2001: 5 aptly summarizes the exact application of combined arms tactics in battle “is the area that is of most concern to professional soldiers, yet it is precisely this area where historical records and tactical manuals often neglect important details.”

¹⁷ Pederson 1998: xii

¹⁸ *Ibid.*

¹⁹ As quoted in Matloff 1969: 7.

²⁰ *Ibid.*

²¹ Pederson 1998: vii

²² Matloff’s great work tracing the US Army’s development from its instigation to 1969 never refers to combined arms. His reference to the then current *FM 100-5* (1969: 6-7) demonstrates the novelty of the 1976 edition in using combined arms theory as a basis for army doctrine as discussed by Herbert 1988.

ago, it has been used variously throughout the history of war with varying degrees of success and expertise.²³

The US Army Field Manual outlining strategic and tactical operations (US Army 1993: 2.3) says the following concerning the modern application of combined arms warfare:

Combined arms warfare is the simultaneous application of combat, CS [combat support], and CSS [combat service support] toward a common goal. These arms and services are integrated horizontally at each command echelon, normally battalion through corps, and vertically between these command echelons. Combined arms warfare produces effects that are greater than the sum of the individual parts. The combined arms team strives to conduct fully integrated operations in the dimensions of time, space, purpose, and resources.... The goal is to confuse, demoralize, and destroy the enemy with the coordinated impact of combat power.

This *Field Manual* (US Army 1993: 2.12) also outlines that the qualities of any successful military force involves an understanding of combined arms warfare.

²³ Arguably the first full use of combined arms in modern warfare (i.e. using mobile field artillery alongside infantry, cavalry (tanks) and static artillery) was the German First World War offensive at Amiens in March 1918. There the German command “counted on numerical superiority (4 to 1), surprise, and the first mass application of new tactics developed originally in the east by Lt. Gen. Oscar von Hutier. Earlier small scale uses of these tactics had occurred at Verdun from February to December 1916. The successes of Hutier’s army throughout 1917, in capturing Riga in two days from September 1-3, the battle of Caporetto in October and the defeat of the British massed tank attack at Cambrai in November, encouraged the Germans to use combined arms on a wide scale (English 1981: 23-6). The so-called “Hutier tactics” involved a relatively short (several hours) but intensive artillery preparation, heavy on gas and smoke, followed by a rolling barrage creeping ahead of the infantry at a predetermined rate. Organized in small battle groups built around a light machine gun, the infantry infiltrated to cut off strong points rather than assault them, leaving that task to others who came behind. The enemy’s forward positions ruptured, the infantry advanced swiftly to overrun the enemy artillery and break into the clear. In both these phases, light artillery was attached to assault battalions, a tactical use of horse-drawn field pieces heretofore considered suicidal in trench warfare” (Matloff 1969: 385). It was the success of this German offensive that prompted the Allied forces to create a unified command system. In the end it was the British refusal to give ground easily that slowed the advance of the Germans enough to call off the various assaults on the Allied lines. Amiens certainly marks a significant shift in the practice of battle in modern warfare to becoming reliant on combined arms combat teams utilizing infantry, cavalry and artillery together and finally ended trench warfare. For more information on the German uses of combined arms in the First World War and afterwards, see in particular Citino 1999.

Once the force is engaged, superior combat power derives from the courage and competence of soldiers, the excellence of their training, the capability of their equipment, the soundness of their combined arms doctrine, and, above all, the quality of their leadership.

In addition to this the manual argues that “commanders fight combined arms battles and engagements employing every tactical means available.” This shows that today the application of combined arms is a complicated process that requires significant levels of training for soldiers and commanders alike, but is fundamental to the actions and successes of the army as a whole.²⁴ The same is true also for the application of combined arms in the ancient world. Perhaps more so since much of the specific tactics and the level of training required to implement the system did not exist originally.

There is a crucial difference between a combined arms army making full, and the best, use of every unit in the battle plan, and an army made up of diverse units. Diversity in an army does not equal combined arms. Diversity is a starting point for an army to develop combined arms, but if there is no tactical integration of units then there is no use of combined arms. This is an important factor in tracing the development of combined arms in the ancient world. As discussed below, the Persian army is the best example of a diverse army that was not integrated tactically and therefore lacked the benefits of combined arms in battle. Tactical integration is the most important aspect of combined arms in an army in battle.

Combined arms should also be distinguished from support arms.

Combined arms hits the enemy with two or more arms simultaneously in such a manner that the actions he must take to defend himself from one make him more vulnerable to another. In contrast supporting arms, is hitting the enemy with two or more arms in sequence, or if simultaneously, then in such a combination that the actions the enemy must take to defend himself from one also defends him from the other(s). Combined arms ... seeks to strike at the enemy psychologically as well as physically....The distinction between combined arms and supporting arms is important because combined

²⁴ The German use of combined arms at Amiens in 1918 was so extraordinary that because these “new tactics put a premium on courage, stamina, initiative, and co-ordination, qualities which, for lack of time, the Germans could instill in only about two dozen specially selected divisions. These were pulled from the line, filled out with men from other divisions, and put through an intensive training program” Matloff 1969: 385.

arms take no more firepower, but will usually be much more effective (Lind 1985: 20-21).

A commander utilizing supporting arms makes use of different units in battle but does not achieve the best tactical coordination of them in order to disadvantage the enemy in battle. It is the level of tactical coordination that is important in employing combined arms on the battlefield.²⁵

Modern military theory makes a clear distinction between combined arms (two or more combat arms acting jointly), combined operations (two or more countries fighting as allies), and joint operations (two or more services, such as the navy and army, acting together).²⁶ Here, when dealing with the ancient world, only the first is of prime concern. In modern armies combat arms are air defense artillery, armour, aircraft, cavalry, field artillery, infantry, and special-forces regiments.²⁷ Of these only infantry, cavalry, and to some extent field artillery, are present on the ancient battlefield.

In the study of the ancient world it is necessary to divide the list of combat arms even further. The most basic list includes infantry, both light and heavy, cavalry, both light and heavy, including chariots and elephants, missile troops, and to a lesser degree field artillery. Within each category there are many other types of unit available depending on their armament, armour or training. All of these units have different strengths and weaknesses and different effectiveness in battle. In effect ancient military practices can be divided into their use of these four weapon systems: heavy infantry, heavy cavalry, light infantry and light cavalry.²⁸ Not every type of unit was readily available to every state in the ancient world, or in Greece in particular, but they were all used somewhere at some time.

²⁵ The term coordinated arms is not in use in military theory as combined arms is preferred.

²⁶ For a clear distinction see Pederson 1998: xii. The operational field manual clarifies the terms in the glossary defining combined arms as the “application of several arms, such as infantry, armor, artillery, and aviation” and combined operation as “an operation conducted by forces of two or more allied nations acting together for the accomplishment of a single mission” (US Army 1993: glossary.2). For joint operations see US Department of Defense 2001. Any work on modern warfare utilises this terminology. See for example House 1984; Herbert 1988; Spiller 1992 and recently Kretchik 2011.

²⁷ See US Army 1990.

²⁸ For a clear description in modern military theory terms of combat arms in the ancient world through the four weapon systems see Jones 1987: 39-45.

It is also necessary in the ancient world to distinguish between the tactical application of combined arms on the battlefield and the strategic use of combined arms in a campaign setting. This study is concerned with the tactics of combined arms only. The strategical use of combined arms, for example in waging a war using the navy and army together, is another aspect of this topic but one that should be reserved for a fuller discussion elsewhere. Battles are the basic foundation for any military activity on which all other aspects of war depend. Especially in the ancient world, campaigns or wars could not be concluded without a battle. As a result any detailed analysis of ancient warfare should focus on battles first, and then address strategy and the larger implications of war. In my view it is crucial to distinguish between the tactics and strategy of combined arms in order to be fully able to analyse its development throughout the ancient world. Combined arms forms the basis for a comparative discussion of all aspects of warfare, but the starting point should be tactics in battle.

Combined arms in the ancient world.

The modern term of combined arms refers to military action in a tactical setting. In today's world where almost every army has the same units and weapons technology there need be no differentiation between stages of combined arms. However in the ancient world this is far from true. The simplest form of combined arms is the use of two arms together. This can be infantry and cavalry, infantry and missile troops, cavalry and artillery, or any other combination. Even the earliest armies for which we have records apparently used a basic form of combined arms. As discussed below, the Sumerians used chariots alongside infantry. However, there is a clear difference between the armies of the Sumerians and those of Alexander and his successors. Both use combined arms but at very different levels of sophistication.

In the ancient world it is absolutely necessary to differentiate between armies employing combined arms at different levels of sophistication. The simplest way to do this is to view combined arms as a continuum ranging from the most basic use of combined arms—two units acting in concert—to an army that fully integrates a large number of different units in battle. Different levels on the sliding scale represent varied amounts of unit expertise and successful coordinated action in battle. The final point on this continuum is the successful integration of all the diverse troop types available into one army in order to get the best use out of each unit. Such an army is one that fulfills a number of criteria:

1. It is as diverse as possible in terms of the different units incorporated in it, and includes every individual type of unit that is available.
2. Each unit demonstrates the perfection of warfare within its own style, such as Agrianian javelin men or Cretan archers.
3. The general is able to make the best use of each and every unit in a coordinated battle plan calling on his own knowledge of the latest tactical and strategic knowledge.

The term ‘integrated warfare’ is used here to describe the style of battle employed by an army that has reached the end of the continuum of combined arms.

Just as with modern armies using combined arms in battle, in the ancient world employing integrated warfare in battle was a difficult thing to achieve. “The application of combined arms in this manner is complex and demanding. It requires detailed planning and violent execution by highly trained soldiers and units who have been thoroughly rehearsed.”²⁹ Combined arms in this study refers both to the integration of two or more units in battle and the process of developing a multi-faceted and fully integrated army.

‘Integrated warfare’

In modern military terminology integrated warfare is: “The conduct of military operations in any combat environment wherein opposing forces employ non-conventional weapons in combination with conventional weapons.”³⁰ The term is most commonly used in relation to Integrated Warfare Systems, the electronic programmes or devices that allow modern armed forces to use different weapons systems.³¹

Since this modern term is largely irrelevant for ancient warfare where electronic systems did not exist, I use it to refer to an army that has made full use of combined arms in battle. Integrated warfare is how an army has perfected the coordinated use of a variety of different units in battle according to the basic principles of combined arms.

The process of moving from a basic use of combined arms to integrated warfare

As mentioned above, military innovations occur at different times throughout history and usually lead to further advancements in technology or tactics. An army at any time can only utilise units

²⁹ US Army 1993: 2.3.

³⁰ US Department of Defense 2005.

³¹ Ranstorp and Normark 2009. The Navy is the only U.S. military force that has a specific office dealing with Integrated Warfare and appoints a Program Executive Officer to oversee its application: Arnold 2012.

or tactics that are available until an innovation occurs. As states or commanders become acquainted with new tactics, technologies or units they see the benefits of incorporating them into their own army. This is the process that is interesting to historians.

Once the specific military innovations are identified and their development traced, it is possible to suggest answers to a number of important questions. To what extent do military advances shift the balance of power in war? How quickly do different types of innovation spread? Why do some states or armies not embrace the changes? To what extent can an understanding of the science and history of ancient warfare influence war today?

A methodology for examining this process

Combined arms cannot occur when there is only one type of soldier available in war. As different units are invented, or encountered, they should be integrated into the battle plan in order to keep pace with military science. To examine the development of combined arms in Greek warfare as a whole it is necessary to look at two different things. Firstly the study must detail specific innovations in tactics or technology and analyse their significance in advancing combined arms warfare. Secondly it is crucial to discuss when, how, where and why individual units first appear in order to see the combined arms of different units in action on the battlefield within an army.

A simple examination of the development of combined arms will detail the specific innovations and units as they occur historically and link them on a continuous timeline of military science. A more detailed examination will propose reasons for any new advances in warfare and assess their significance. Where there is a break in the timeline, for example in Greece where military science favoured warfare focused on heavy infantry, it is necessary to determine the factors that influenced this anomaly.³² Overall, in tracing the development of combined arms it is possible to create a thorough account of the tactical and technological advancements in military science throughout history.

The focus of this study

This dissertation will examine the following: the development of combined arms; why it developed; when it was used and what impact it had; when, where and why new units were

³² In the Near East there is never a break from continual advancement of military science. From Sumer's infantry based armies through to the large Persian armies containing many different units warfare constantly advanced and embraced any innovations, admittedly with varying degrees of success.

introduced and what influence they had on warfare. This will involve problems such as regional terrain variance, cultural variance, social variance, and outside contact with other military systems. The discussion of particular battles will show exactly how combined arms impacts warfare.

This study will use modern terminology to analyse Greek history in order to examine the overall development of warfare in the Greek world and demonstrate that individual poleis, regions, conflicts or periods should not be viewed in isolation but taken as a collective whole. The main focus is on an army on the battlefield and not elsewhere. As a result campaign logistics, training practices, siege warfare, naval warfare, biological warfare and terror tactics are not of concern here.

The analysis will be anchored by an examination of tactics and deployment on the battlefield, and will use certain battles as case studies. Battles for study are selected either because significant changes occur or because the sources are particularly good in documenting aspects of warfare. All types of source available pose difficulties in interpretation. Neither inscriptions nor historical works are usually specifically concerned with military matters and archaeology can rarely show how something was used in battle. Excavations at a site can to some degree illustrate the events of a battle but there is always the possibility that the finds moved over time either on purpose or accidentally.

I will attempt to escape from reviewing the “experience of War” that scholars such as Keegan and Hanson have popularized.³³ Although this aspect of war is crucial to understand and appreciate, it should not take away from the more direct view of battle. Instead this study seeks to emphasize and unite the practical aspects of war, such as the implementation or execution of the battle plan. Breaking away from the porous one-dimensional logistical history of Engels, in particular, I will create a detailed tactical analysis of Greek armies.³⁴

Overall this thesis will present a thorough examination of the development of combined arms in Greek warfare from the hoplite phalanx through to the battle of Ipsus preceded by a brief analysis of the use of combined arms in the Near East and early Greece.

³³ Keegan 1976; Hanson 1989.

³⁴ Engels 1978. Bar Kochva 1976 provides a similar review for the Hellenistic Seleucid armies in particular.

Introduction part 2: The theory of combined arms

Combined arms vs. integrated warfare

As mentioned above combined arms is the effective integration of different unit types into one cohesive battle plan and army. It allows each unit to focus on its strengths without having to worry about its weaknesses. Combined arms does not mean that each unit fights independently supported by the other units, rather it is the focused communal action towards the same goal that gives the army its strength.

Although the basic form of combined arms only requires the effective use of two of the three main types of unit—cavalry/chariots, infantry and missile troops—the full implementation of combined arms makes the best use of all the sub-categories of unit type in an army. That is to say that if an army has many types of cavalry, infantry and missile troops, a general will make use of each individual unit in the best way possible to achieve the overall aim of victory. I have termed this integrated warfare—the most advanced coordinated action of an army—in order to differentiate it from the most basic uses of combined arms, and everything in between. Combined arms here is used to describe the basic theory of mutual action of different units, as well as the process of developing an army that makes use of fully integrated warfare—the end point of the process.

The obvious benefit to a general in using combined arms in any form is that he has his bases covered. He can attack or defend against the enemy in a variety of ways as the situation demands. This adaptability is a priceless asset for any general in enabling him to cope better with the tactics and strategy of the enemy. Perhaps most importantly, the adaptability does not come at a cost in offensive power or effectiveness. Each unit has different strengths and weaknesses depending on its armament, training, and all the other factors that influence military ability. All of these things should be incorporated into the battle plan. Despite, or, perhaps, as a result of, the many styles of unit in the army, integrated warfare allows for harmonious action, and in doing so actually increases effectiveness.

The main drawback of using any level of combined arms is the large amount of coordination, training, and trust required for an army to use the system successfully. Each unit has not only to be very good at what it does, but also must be able to understand how its role fits into the grand scheme of battle. It also has to believe wholeheartedly that the other units will cover up its own flaws while they do the same for them, all working towards the common goal.

Integrated warfare is a complicated system and only an army with sufficient training is able to implement it successfully, hence its relatively late appearance in western warfare. Furthermore, if any one of the parts of the system breaks down or is overcome then the whole military machine collapses along with it. Because each unit's strengths protect the weaknesses of others, once one falls the other is exposed to the danger.

So we can see that combined arms is a difficult system to implement fully and successfully. But when employed as integrated warfare it is a highly effective way of neutralising any weaknesses and enhancing the overall ability of the army whether in attack or defence.

The effect of terrain on warfare and units

Terrain strongly influences warfare and battles in particular. Good generals adapt their battle plans to the terrain on which they are to fight. But topography also influenced the style of unit developed. "Geography had much to do with the development of regional or national models of warfare, as seen with the Greeks, the Persians, and the Parthians."³⁵ As discussed below, the flat terrain of Thessaly, Boeotia and Macedon allowed those Greek states to develop a reliable cavalry force alongside infantry. The mountainous terrain of Aetolia led to a dependence on light infantry.³⁶ Despite terrain restrictions armies had to adopt other styles of warfare in order to make use of combined arms. In this study terrain will be discussed in detail wherever it is important for a particular battle or for the development of specific units.

Unit categorization and subdivisions

Each of the basic types of unit used in combined arms can be subdivided into heavy and light (that is heavily armed and lightly armed) and even further into various armaments or fighting styles. In order to fully appreciate the varying abilities of each unit we have to describe their normal equipment and primary function.³⁷ Before beginning the historical analysis of the

³⁵ Jones 1987: 41.

³⁶ See Best 1969. For the style of warfare practiced in Aetolia as viewed by Messenians at Naupactus see Thucydides 3.94.3-5. Also see the battle of Spartolus below.

³⁷ Part of this latter process involves looking at the ideology of war in societies and poleis. For example in most Greek states the hoplite was the primary unit in an army regardless of the strategic or tactical situation. In Macedonia by contrast the aristocratic heavy cavalry unit was the most important. The ideology of the state regarding the qualities and uses of various units affects the employment of those troops in a battle. These problems will be dealt with in the historical developments chapters below.

development of combined arms it is necessary to briefly outline the many unit types present in ancient warfare with a particular focus on Greece.

Plutarch (*Pelopidas* 2.1) provides a metaphor of the army as a body, “as Iphicrates analyzed the matter, the light-armed troops are like the hands, the cavalry like the feet, the phalanx itself like the chest and breast plate, and the general like the head.”³⁸ Plutarch’s purpose in quoting Iphicrates is to show that generals were foolish who did not realise their own survival was of paramount importance for the success of their army. However it also shows us how Plutarch, Iphicrates and their audiences viewed each part of an army in terms of its purpose in battle. Iphicrates’ metaphor adequately explains the system of combined arms in one of its most basic forms, using light and heavy infantry and light cavalry. It does not, however, go far enough in providing a function for all the different units employed in an advanced system of combined arms. Let us take each of the military arms in turn—infantry and missile troops, and cavalry—and expand on Iphicrates’ body metaphor to cover the whole range of units in an army.

Infantry – the hands and chest of the army

Infantry are the glue that all armies require. They are usually the base foundation on which all the other units are added. The heavy infantry, in Greece in particular, are often the main force of an army, hence Plutarch’s association with the chest. Light infantry and missile infantry, although usually more numerous, typically had little to do with the outcome of a battle, yet were very useful in war, hence their association with the hands. This section will deal with all the types of infantry that appear in the ancient world in turn. Specific, and more detailed, analysis will be reserved for the appearance of each unit in the historical development chapters that follow.

Heavy Infantry – the chest and breast plate of the army

As Iphicrates stated it is the heavy infantry that fill the role of the chest, or body, of the army. They are often its principal defence, since they are called “the breast plate” (Plutarch, *Pelopidas* 2.1). Whether that heavy infantry is a sarissa phalanx, such as the Macedonians used, a hoplite phalanx in the Greek style, or the Roman legionary, does not change its main role. Some armies

³⁸ See also Polyaeus 3.9.22.

relied on the heavy infantry more than others.³⁹ Few armies can be repeatedly successful in all aspects of warfare without including some form of heavy infantry as a foundation.⁴⁰

What makes a heavy infantryman? Is the definition one of weight of armour or weight of attack? To many admirers of the Greek hoplite it is certainly the former. Herodotus (9.62.3) states that the Persians at Plataea were weakened by their lack of armour and could not hope to win a battle as *anhoploi* against *hoplitai*. He goes on (9.63.2) to describe the Persians as lightly armed (*gymnetes*). He also describes the armament of the Persians as having an iron scale corselet but no metal helmet or greaves and only a wicker shield (7.61.1). Herodotus is ignoring the fact that the Persians used scale armour, especially in their elite units, as discussed below, and believes that the bronze panoply of the hoplite was greatly superior. To Herodotus, then, it was the armour of the Greeks that made them so successful as a heavy infantry unit. However, the Persians, Egyptians, Assyrians, and other eastern civilizations did field infantry armed with spear, shield, helmet, and some form of effective body armour, just like hoplites. Why are these not classed as heavy infantry by Herodotus?

Perhaps the difference is the weight of attack. Some of the reasons that the Persians were defeated by the Greek hoplite are the relative shortness of Persian spears and the size and construction of their wicker shields. The fact that they did not fight in a dense formation such as the phalanx also made their attack much less penetrative and their defence much less effective.

³⁹ The Greek poleis in the Classical period often fielded armies of hoplites exclusively. Whereas the armies of the late Achaemenid Persian Empire, as discussed below, tended to put their hope of victory in the heavy cavalry and archers, and relegated their spearmen to purely defensive functions.

⁴⁰ Iphicrates and his victories over hoplites with only peltasts, such as at Lechaeum in 390 (Xenophon, *Hellenica* 4.5.11-17; Diodorus 14.91.2; Plutarch, *Agesilaus* 22.2), is the exception that proves the rule. Since, if the Spartans had also had light troops or cavalry, they would not have suffered so badly and if Iphicrates had had heavy infantry to follow up the decimation caused by his peltasts then even more of the Spartans would have died. It was a chance occasion where each side only had one style of unit and because of the locale, the peltasts emerged victorious. The victories of eastern armies using missile cavalry and heavy cavalry demonstrate the possibility of winning battles without much heavy infantry. However close-quarter infantry such as axemen or spearmen were used by the eastern empires, as discussed below. But these infantry were not armoured enough to be truly considered heavy infantry as the Persian defeats at the hand of hoplites demonstrated. In general, to be successful in sieges or to occupy territory requires infantry. Infantry are usually better able to excel in hand-to-hand combat the more heavily armed and armoured they are.

The early Egyptians apparently lacked any form of good defensive armour.⁴¹ Contrary to Herodotus' belief, the Persian spearmen were heavy infantry they were simply not as heavy as Greek hoplites.⁴²

Snodgrass, when discussing the Macedonian sarissa phalanx, states that the infantry did not wear bronze corselets and "they were thus in no real sense heavy infantry."⁴³ But they did have helmet and bronze-faced shield, and perhaps greaves. By the mid-sixth century the Greek hoplite was usually armed with a linen corselet rather than a bronze breastplate. Since the Macedonian phalangite was also equipped with a linen corselet, in this respect the Greek hoplite is certainly not much more protected than his northern counterpart. The main difference between the two is the use of a sarissa and smaller shield instead of the hoplite spear (*dory*) and shield (*hoplon*). Both should be classed as heavy infantry because of their roles and abilities in battle regardless of their armour.

The sarissa phalanx was preeminent in warfare throughout the Hellenistic Age, suggesting a Macedonian superiority over the Greek hoplite in both attack and defence in many situations. The battles of Chaeronea in 338 (Diodorus 16.85-6; Polyaeus 4.2.2; *Demosthenes* 20.2) and Megalopolis in 331 (Diodorus 17.62-3; Curtius 6.1.1-16) are perhaps the best examples of the relative abilities of the sarissa and hoplite phalanx. Despite the perceived relative lack of armour, the soldiers of the sarissa phalanx achieved the prime function of a heavy infantry unit to excel in hand-to-hand combat, albeit at a greater distance because of the length of the sarissa.

In my view a heavy infantryman is determined by the use and effectiveness of defensive armour *as well as* his abilities in close quarter combat. Perhaps a better definition is any foot soldier whose defensive and offensive abilities in a battle are very high, and whose main function in battle is to engage in close combat or hand-to-hand warfare. He may have metal armour and large shield or simply a large weapon.⁴⁴ There are many varieties of heavy infantry but each is

⁴¹ For more detailed analysis of Egyptian and other Eastern heavy infantry see chapter 1.

⁴² A distinction can be made between heavy infantry and medium infantry. The latter would be the Persian and Near-Eastern infantry and the former the hoplite. However, in Greek warfare medium infantry rarely appear or have an important role and so the distinction is not a focus of this study.

⁴³ Snodgrass 1999: 117

⁴⁴ Saxon Husscaarls, who used only a double-handed axe for attack and defence, are just one example of a heavy infantry unit that did not need defensive armour or shield to be effective: Bennett et al. 2005; Poss 2011.

relatively successful in battle at close quarters. The main armaments of a heavy infantryman are usually some form of body armour, a shield, and an assault weapon.

Whatever armament a heavy infantry unit employs, its strengths and weaknesses remain almost the same. In most cases a unit will function more effectively when fighting in a formation with its flank and rear protected.⁴⁵ Even when not deployed in formation, the heavy infantry was often the most important part of the army in the majority of battles in the ancient world. It was the heavy infantry of Rome that created and maintained its Empire.

The main weaknesses of most heavy infantry units are their slow movement and lack of flexibility. Phalanxes especially were vulnerable when attacked on their exposed flank and rear.⁴⁶ The more professional armies instituted a number of drills to allow them to change face in an instant to counter that threat.⁴⁷ A unit relying on heavy armour or large weapon loses mobility in a trade off for a greater frontal offensive. In the same way a unit armed with lighter armour and a sword or other smaller assault weapon is more flexible in its formation and mobility on the battlefield, but often has less of an impact in a frontal attack. Once at close quarters, with the enemy unable, or unwilling, to get away, the heavy infantryman is in his element. He can hack or stab at will behind the relative safety of his armour and is very effective with his expertise in hand-to-hand warfare. Getting to that point, if the enemy does not want to do so, is the difficult part.

Since this study centres on Greek warfare, most of the focus is on Greek heavy infantry units. These are mainly the hoplites and the sarissa phalangites. Nevertheless the various units

⁴⁵ The successes of the Saxon shield wall show this in the early medieval period. One soldier held a shield defensively overlapping with his neighbor while from behind archers, spearmen and men armed with two-handed axes attacked the enemy. Despite relatively little body armour the shield wall was able to stand firm against repeated attacks from various types of troops. See Bennett et al. 2005; Poss 2011.

⁴⁶ The defeat of Eumenes' victorious phalanx at Paraetacene (Diodorus 19. 30.7-10) when attacked in the flank and rear by Antigonos' cavalry shows this well, and there are many other examples, such as Delium (Thucydides 4.90-6) and Ipsus (Plutarch *Demetrius* 29.3-5; Appian *Syrian wars* 55).

⁴⁷ The best example would be Alexander's maneuvers of the phalanx when faced with superior numbers of Illyrians (Arrian 1.6.1-5). Xenophon (*CL* 11.8) discusses the training of the Spartan phalanx to be able to change face in an instant so that the best hoplites are always facing the enemy line. Asclepiodotus (10.1-22) and the later tactical writers describe in detail the variety of maneuvers that could be employed by a phalanx.

used by eastern armies also appear. A closer examination of the specific armaments and tactics of the various units in this study will be given as they appear in the historical record.

Light Infantry – the hands of the army

Iphicrates equates the light infantry with the hands of the body. This fits with their role as the general dogs-bodies of an army, doing all the necessary but unglamorous work behind the scenes. Light infantry are a much more diverse collection of troops than heavy infantry. They range from the peasant armed only with what he could find to a professional, well-armed and experienced mercenary peltast. Missile troops are an integral part of light infantry and often are the only such troops in an army. The principal role of the light infantryman was to support the heavy infantry and protect them in their vulnerable areas, usually on the flanks. Light infantry are also very effective against cavalry, and particularly chariots, as they have the agility and flexibility to crowd or avoid the mounted soldier and to drag, or shoot, him off his horse or chariot.

The great disadvantage of light infantry is their vulnerability in close quarter situations. Although some armies, such as the Assyrians, used heavily armed archers in order to increase their effectiveness at close quarters, most archers wore no armour or protective gear at all. Consequently they were very exposed if the enemy were able to close them down, and in such cases a great number of casualties ensued. This is why a force of non-missile light infantry, unless they have an overwhelming superiority in numbers, cannot function as the main thrust of an army opposed by heavy infantry.⁴⁸ In using light infantry the trade off is for a highly mobile force excelling at skirmishing and rapid attacks but that is also ineffective in close combat.

Missile troops

The primary focus of missile troops is to engage the enemy at a distance before the two armies close hand-to-hand. There are many specific tactical uses for missile troops ranging from pre-battle skirmishing, and harassing an enemy's march, to covering the movements of other units. Their main use in a battle is to protect the flanks of infantry and cavalry, as well as forming a screen in front of the whole line. They are most successful at breaking up enemy attacks,

⁴⁸ In many instances non-missile light infantrymen are an unnecessary inclusion in an army. Their roles can easily be taken on by missile troops, who provide the added bonus of being able to cause damage to the enemy at a distance using hit-and-run tactics. Nevertheless it is necessary to mention them as many ancient armies did use them in great number because of their ready availability and cheapness.

especially cavalry or chariot charges, using the sheer numbers of their missiles to expose both horse and rider.⁴⁹ With time to concentrate on densely packed formations of infantry they can cause significant damage. Just like other forms of light infantry, missile troops are often ineffective in hand-to-hand conflict. It is for this reason that Eastern armies began to protect archers with metal armour and equip them also with assault weapons, such as swords, axes or spears. Such soldiers could act as heavy infantry fighting successfully at close quarters while also being just as able at engaging at a distance.⁵⁰

The problem with most ancient missile weapons is that their penetrative effectiveness was rather limited.⁵¹ So the offensive ability of missile troops was not necessarily to kill or disable a significant number of the enemy, but rather to break up attacks and give cover to allow the decisive units to enter the fray. Archers, slingers and javelin men were the principal types of missile troops used in ancient warfare. Individual units will be discussed in more detail as they appear. Here it is enough to provide a brief discussion of each type of unit.

Archers

Archery required large amounts of practice to master and as a result skilled archers were in demand in the ancient world. East of the Aegean archery was popular and often decided battles especially after the invention of the composite bow, as discussed below. The professional troops of most eastern empires, such as the Assyrians and Babylonians, were archers and archery was favoured as an aristocratic pursuit. The Persians relied more on archers in their army than any other form of infantry.⁵² However in Greece archery was ignored for the most part in favour of

⁴⁹ This is how Alexander used them at Gaugamela, as well as to protect his vulnerable flanks (Arrian, *Anabasis* 3.8-15; Curtius 4.9.9-16; Diodorus 17.56-61; Plutarch, *Alexander* 32-3). For a full discussion of Alexander's tactical uses of light infantry see below.

⁵⁰ The best example of these dual purpose soldiers is the Persian Immortals, as discussed in detail below in chapter 1.

⁵¹ The thousands of Athenian peltasts on Sphacteria took a whole day to kill just half of 400 Spartan hoplites, if we believe our source (Thucydides 4.26-39), and Iphicrates' peltasts at Lechaeum in 390 only killed half of the Spartans there, albeit in a shorter space of time (Xenophon, *Hellenica* 4.5.11-17; Diodorus 14.91.2; Plutarch, *Agessilaus* 22.2). For references and a discussion of each battle see below.

⁵² For example the Persian elite force of 10,000 so-called Immortals was armed with spear and bow. The common organization of the base Persian infantry unit of ten was one spearman with large shield protecting nine archers behind him. See Sekunda 1992: 16-7.

the hoplite. In the more isolated parts of Greece this was not the case. Crete, in particular, promoted archery and its archers were often hired as mercenaries throughout the Mediterranean (cf. Thucydides 6.25.2).

Javelin men

Before the advent and widespread adoption of the effective composite bow, javelins were the principal missile weapon in an army. As discussed below, the Sumerians armed their chariot warriors with javelins and even after the adoption of the highly effective composite bow chariots maintained a quiver of javelins. Drews 1993 argues that it was the arrival of northern armies armed with the javelin that prompted the downfall of Mycenaean Greece and other states reliant on the chariot in battle. This is unlikely, but in the East the javelin was, for the most part, abandoned in favour of the more expensive, and difficult to master, composite bow. The use of a javelin required comparatively little training and was therefore the principal weapon given to missile troops.

Slingers

Slingers rarely appear in Greek warfare.⁵³ They are often classed alongside other missile troops as the light infantry in an army. Elsewhere a number of ancient armies made use of slingers, particularly in the east and Western Europe.⁵⁴ According to Pritchett's summary (1971–91: V.56.) ancient sources state “that the range of the slinger was longer than that of the bow and javelin.” Lead bullets, usually between 30 and 40 grams, could penetrate the body and were hard to extract.⁵⁵ Plato (*Laws* 794c, 834a) even lists use of a sling as one of the main arts a child should learn in his ideal state, suggesting slingers had their uses in war, probably to defend cities or on ships.

The Biblical tale of David and Goliath is a perfect example of a slinger in battle and suggests both the low status of slingers as well as their existence in many armies of the ancient world. Rhodes became synonymous with slingers in the ancient world (Xenophon *Anabasis* 3.3.16–20; cf. Diodorus 15.85.4–5 on the training of slingers). Xenophon (*Anabasis* 3.3.16) states that “their missile carries no less than twice as far as those from the Persian slings.” The city of Aspendus was so proud of its greatest export, the mercenary slinger, that it put his image

⁵³ Pritchett 1971–91: vol. V.1–67 lists all the references to slingers in the Greek and Roman worlds.

⁵⁴ Echols 1949–50; Korfmann 1973.

⁵⁵ Pritchett 1971–91: V.43

on its coins (Pritchett 1971–91: V.37, 46–7). The art of the slinger is difficult to master, needs space to be used in battle and, until the manufacture of lead bullets, caused limited damage to an armoured opponent.⁵⁶ These factors reduced the need for slingers in battle in Greece in particular, where the hoplite’s armour would protect him from all but the most precise volley from a slinger.

Peltasts

Peltasts are a hybrid light infantry unit that functions somewhere between missile and non-missile infantry.⁵⁷ Armed with a small shield, or *pelte*, javelins, and a helmet they repeatedly proved their effectiveness in battle using hit-and-run tactics.⁵⁸ They could also be called on to engage in hand-to-hand combat and were usually armed with a small sword or dagger for this purpose, and sometimes a long thrusting spear.⁵⁹ The peltast was the main type of soldier in Thrace, along with light cavalry.⁶⁰

The terrain of Thrace and the north of Greece was ill-suited to hoplite warfare.⁶¹ The successes of Thracian peltasts against Greek hoplite armies that were unsupported by light infantry or missile troops caused the widespread adoption of peltasts into all Greek warfare by the end of the Peloponnesian War.⁶² Other types of light infantry never reached the same level of importance as peltasts and gradually were superseded by them.

Cavalry – the feet of the army

The cavalry are the feet of the army if we follow Iphicrates. Iphicrates equating light infantry and cavalry to the same level of body parts (hands and feet) shows that in his time cavalry were not

⁵⁶ Vigors 1888.

⁵⁷ Griffith 1981 argues that peltasts, particularly from Thrace, influenced the Macedonian phalanx of Philip II. However, the phalanx was still a unit of heavy infantry and the evidence for Macedonian peltasts is scarce.

⁵⁸ I will deal with many aspects of their uses in the historical examples below. The specific history of their development in Greek warfare has been dealt with well by Best 1969.

⁵⁹ See Best 1969: 3-7 for a discussion of the early Thracian peltast’s armament. See below for a discussion of Iphicrates’ so-called peltast reforms.

⁶⁰ Hodinott 1981; Webber 2011.

⁶¹ Hoplites were vulnerable in wide plains and mountainous regions; the former because the phalanx could easily be outflanked and the latter because the phalanx could not maintain its rigid formation or move quickly.

⁶² Thucydides (6.22) has Nikias say in his speech before the campaign is launched argues that the Athenians should take “great numbers also of archers and slingers, to make head against the Sicilian horse.” See below in chapter 4 for a full discussion of the Athenian campaign against Syracuse.

used as an offensive force. They were clearly used in the same way as light infantry. Usually this was to harass the enemy or as a screen, while for the most part the winning of the battle was done by the heavy infantry. The problem here comes that, unlike with the infantry, Iphicrates does not differentiate between light and heavy or missile cavalry. In this case missile cavalry and light cavalry can have different functions on a battlefield, and do exist in armies together, and so should be accounted for. If we continue with Iphicrates' body metaphor, we must propose independent roles for the heavy, light and missile cavalry. Again let us deal with heavy cavalry first since here, just as with the infantry, the separation between light and heavy is significant. The chariot and the elephant are generally used in the same way as heavy cavalry and will receive a separate discussion below.

Heavy Cavalry

Iphicrates did not provide a role for heavy cavalry in his body metaphor since for him cavalry in Greek armies all had the same role and armament. If the cavalry as a whole are the legs of the army body, the heavy cavalry are the feet used to kick the opponent. Their purpose is to attack the enemy at speed and cause as much damage as possible in a short space of time. Heavy cavalry are usually larger men riding bigger horses, wearing more armour, and fighting with stronger weapons.⁶³ Just as with the heavy infantry, the definition rests with the excellence of heavy cavalry at close quarters rather than necessarily more armour or armament. Armoured horse archers are still classed as missile cavalry if they are not expected to fight in hand-to-hand combat.

The main strength of a heavy cavalry force is the charge. A close formation of heavy cavalry charging at full gallop is an awe inspiring sight, even for a well-drilled professional in the phalanx. Most cavalry charges succeed because the frightened infantryman does not stand to receive the huge force he can see coming but turns and runs before, or just as, contact is made.⁶⁴

⁶³ In the British army of the nineteenth century the Heavy Brigade consisted entirely of men over six feet tall riding larger horses and wearing a large breastplate, even though rifles effectively made them defensively useless. Of course it did not take long for the Heavy Brigade to fall out of use as the lancer and mounted rifleman became a much more efficient cavalry force in the changing style of nineteenth-century warfare. The Heavy Brigade remained for so long merely to maintain the awe of a heavy cavalry charge. Such a charge on an infantryman, even in formation, more often than not resulted in the defeat of the infantry. See Muir 2000.

⁶⁴ Darius' two flights from Alexander's charge at Issus (Diodorus, 17.34.6-8; Plutarch, *Alexander* 20) and Gaugamela (Arrian, *Anabasis* 3.8-15; Curtius 4.9.9-16; Diodorus 17. 61; Plutarch, *Alexander* 33.4-5) are good

The heavy cavalry is best used in repeated charges over short distances, and falling back to charge again once the impetus has gone. The clear advantage of the fully armoured horse and rider is in the added impact of the charge. However, the extra weight of the armour of both rider and horse usually meant that they could only charge once or twice in a battle, and this rather reduced their repeated effectiveness.⁶⁵

Another important strength of the heavy cavalry is its rapid movement and ability to change the focus of attack. Although slower than light cavalry, their flexibility in attack is a key benefit for an army in a battle.⁶⁶ Heavy cavalry can also use its strength and power in defence to withstand the cavalry of the enemy or to counterattack quickly. It is normally a very resilient unit because of the strength of both men and horses, and as a result has great stamina.

The disadvantages of heavy cavalry are few, but significant. Horses will not charge headlong into a dense mass of people especially if that mass is bristling with weapons. If the defenders can manage to stop a heavy cavalry charge in its tracks then the stationary cavalryman becomes vulnerable to the mass of infantry.⁶⁷ Obviously the horseman has a height advantage over a man on foot, but once he is immobile then he is far less effective. Heavy cavalry rely on the force of a sudden impact and once this is removed they become much more vulnerable.

Another very important problem is the vulnerability of the horse itself. This is why many later armies began to protect their horses with armour. A heavy cavalry unit is also ineffective against missile cavalry as long as the latter can stay just out of reach and make use of its greater speed of movement. The trade off for heavy cavalry to have an impact at close quarters is the lack of prolonged speed of movement. The weight of the rider and his armour, plus any armour placed on the horse, significantly reduces the stamina of the animal and limits the timescale of its

examples of the effectiveness of the Macedonian heavy cavalry. For a full discussion of each battle see the case studies in chapter 4.

⁶⁵ At Magnesia Antiochus' cavalry and cataphracts on the right wing easily routed the opposing Roman infantry and chased them to their camp but could not be turned for another charge in time to save his defeated phalanx (Livy 37.37-44; Appian, *Syrian Wars* 30-6).

⁶⁶ At Paraetacene Antigonus' rapid attack with his heavy cavalry on Eumenes won him the battle and his kingdom (Diodorus 19. 30.7-10).

⁶⁷ The defeat of the French knights at Crecy, Poitiers, and Agincourt show this as does that of the English at Bannockburn. See Bennett et al. 2005.

effectiveness in battle. Light cavalry can fight for much longer periods of time without causing their mounts to go lame from exhaustion.

Chariots – earlier feet of the army

Before the advent of cavalry the chariot was the cutting edge of the battle line. Then it functioned as the feet of the army, the role taken on by heavy cavalry. Chariots were still used in some areas even after cavalry replaced chariots as the striking force of an army on the battlefield, as discussed in chapter 1 below.

There are a number of different types of chariot, especially in warfare before cavalry.⁶⁸ Chariots could have four wheels or two and range from very small mobile chariots pulled by one or two horses to large cart-like vehicles drawn by four or more. Early chariots were pulled by onagers before the harnessing of the horse and as a result were rather cumbersome and slow. Slower or larger chariots were often used as firing platforms for archers or javelin men and this was almost certainly their first use in battle.⁶⁹ They also functioned as mobile platforms to transport elite infantrymen to different parts of the battle, whether these men were aristocratic heroes, such as in Homer, or professional elite troops, just as in Assyria and the Hittite empire.⁷⁰

Some chariots could hold only the driver and one other warrior, others could hold four men in total. As chariots became faster and more reliable they became more useful as a rapid attack force. Archers and other missile troops could ride in the chariot and quickly bring massive firepower to any point in the battle line, in order to assault the enemy or prevent defeat. This it seems was the use favoured by the Egyptian pharaohs on the open plains of North Africa and the Levant.⁷¹ Greece used the chariot in a number of these different styles.⁷² However, it seems from a lack of archaeological evidence that chariots were rarely used in Greek warfare after the Mycenaean period.⁷³ In eastern armies chariots retained their prevalence throughout.

Chariots also have limited use in rough terrain or bad weather. Darius after preparing the ground at Gaugamela was forced to attack prematurely when Alexander marched his army away

⁶⁸ For a detailed discussion of the various types of chariot used in ancient warfare see Cotterell 2005.

⁶⁹ Moorey 1986; Anthony 1995.

⁷⁰ Anderson 1975; Noble 1990; Nardo 2008.

⁷¹ Littauer and Crouwel 1985; Spalinger 2003.

⁷² This will be discussed in more detail in chapter 2 below. See in particular Anderson 1965 & 1975; Littauer 1972; Greenhalgh 1973; Crouwel 1981; Nefedkin 2001.

⁷³ For a full discussion see below in chapter 2. Also see in particular Greenhalgh 1973 and Littauer 1972.

from the levelled area.⁷⁴ The greater mobility given to the archers in a chariot could be achieved by horse archers at a much reduced expense. Once blades were added to the wheels of a chariot it was given a whole new offensive capability.⁷⁵ Scythed chariots could cause incredible carnage when charging into infantry in disorder or not in a strong formation.⁷⁶ Celtic tribal societies, particularly in Britain, continued using chariots as aristocratic status symbols and elite fighting platforms.⁷⁷

Later Seleucid armies had scythed chariots in their armies that were increased in size to be drawn by as many as six horses. The drivers and horses were all heavily armoured in order to protect against missiles. The greater size allowed more archers to be included as well as increasing the power of its charge.⁷⁸ Despite these alterations the chariot had limited success. Antiochus III never used them in battle against Greek opponents and when he tried to use them against the Romans at Magnesia, Eumenes the King of Pergamum told his enemy how to deal with them successfully; the last use of them in battle.⁷⁹ In fact, as Bar Kochva (1976: 83) summarises, it was “the disaster inflicted on the whole force at Magnesia by the retreat of the chariots [that] persuaded the Seleucids to withdraw them for good.”

Scythed chariots in particular were successful in a battle when directed against a disordered mass of infantry who could not disperse. However against a compact formation of heavy infantry their effectiveness was significantly reduced.⁸⁰ They were unable to penetrate and use their scythed wheels if the phalanx’s flanks were protected. The chariot also can be easily overcome by light troops and missiles. The most problematic use of scythed chariots is the

⁷⁴ Arrian, 3.13.2. Heckel et al. 2010.

⁷⁵ Nefedkin 2004.

⁷⁶ For Darius III’s use of scythed chariots in the battle of Gaugamela see Heckel et al. 2010.

⁷⁷ Boudicca famously used chariots in her conflicts with the Romans in Britain as late as 61 CE. Anderson 1965.

⁷⁸ At the parade at Daphne 100 six-horse chariots, but only 40 four-horse chariots were arrayed. Polybius (30.25.11) even records one drawn by elephants. These chariots may all have been retained for purely ceremonial reasons Bar Kochva 1976: 84.

⁷⁹ Livy 37.41.6-42. The chariots were stationed on the left wing and their defeat and subsequent retreat threw the whole wing into chaos causing the rout of the whole army.

⁸⁰ Antiochus III had chariots in his Seleucid army and used them against the Romans at the battle of Magnesia as a surprise. It did not work (Livy 37.37-44; Appian, *Syrian Wars* 30-6). He never used chariots against Macedonian style armies because of their ineffectiveness against a phalanx.

devastation they could cause on their own army in a panicked retreat, as happened to Antiochus III at Magnesia. Overall the inclusion of scythed chariots in an army caused more harm than good. The usefulness of chariots in warfare in the Mediterranean virtually ended with the conquest of the Persian Empire by Alexander.⁸¹

Elephants – the joints of the army

The elephant is a form of heavy cavalry. If we were to expand on Iphicrates' metaphor once more we may propose that elephants are the joints of the body of the army. They are a solid force that provides a base for the flexible movement of the cavalry and light infantry. They are usually a more defensive option, often being employed as movable mini-castles within a battle line from which to fire missiles or hold the line. The strength of the elephants provides a solid foundation for offensive or defensive action against the enemy but does not provide the flexibility of rapid action afforded by other heavy cavalry units.

Elephants came into western warfare through the Persian Empire after their conquest of India in particular. The Egyptian pharaohs do not seem to have made much use of elephants in battle despite their prevalence in Africa. The main uses of elephants were as shock troops and as missile firing platforms.⁸² The former use was very effective against disorganised infantry, and to some extent against cavalry where the horses were unused to the animals. The shock value was often maximised by purple cloths, or elephant armour consisting of head pieces and leg guards (Kistler 2007). In certain cases the elephant's tusks were reinforced with iron (Arrian, *Punica* 9.581-3).

Against heavy infantry in a compact formation the elephants' first charge had only limited success and the animals were vulnerable once they had lost their impetus.⁸³ If the lead elephant was killed, then the other animals would lose heart. Once an elephant was wounded or enraged it was just as likely to attack its own side as the enemy. Elephants could also be utilised in a siege. They were able to use their trunks to pull apart wooden palisades or to force a city gate.⁸⁴ However they were ineffective against stone foundations and were vulnerable to spiked planks, or caltrops, placed in their path, as Polyperchon found out at Megalopolis (Diodorus

⁸¹ Cotterill 2005.

⁸² See: Scullard 1974; Kistler 2007; Nossov and Dennis 2008.

⁸³ See Charles 2008.

⁸⁴ Scullard 1974; Kistler 2007.

18.71.2-3). This defensive tactic could also be used on the battlefield, as most effectively seen in Ptolemy I's defeat of Demetrius at Gaza.⁸⁵

As a firing platform elephants were similar to chariots although the elephants themselves were more defensively sound to protect the missile troops. These missile troops sat on the elephants and later in the early third-century wooden towers were built on their backs to better protect the soldiers.⁸⁶ Up to four soldiers could be placed in the tower on an Indian elephant but probably only two in the smaller African elephants (Kistler 2007). The Seleucids may have armed some men with sarissas in the elephant platform alongside the missile troops.⁸⁷

Usually elephants were drawn up in battles intermingled with light infantry and missile troops. They acted as protection for the flanks or as a frontal screen. In a battle the defensive qualities of the elephants proved to be much more useful than their offensive thrust.⁸⁸ The effectiveness of elephants against troops who were used to them was very little and gradually they went out of use. The Parthians did not use elephants and after the 140s the Seleucid and Ptolemaic Empires abandoned them also.⁸⁹ I will examine the tactical use of elephants more closely below when we deal with the historical development of combined arms in the Hellenistic period.

Light Cavalry – the limbs of the army

Light cavalry are the units that link the heavy infantry to the heavy cavalry and support the light infantry, or if we expand on Iphicrates' body part metaphor they are the arms and legs. Primarily used for screening the army in the vanguard or the rear or acting as flank guards, the main strength of light cavalry is their flexibility in speed of movement.⁹⁰ The other forces in the army

⁸⁵ Diodorus 19.80-4; Plutarch, *Demetrius* 5. See Devine 1989c.

⁸⁶ Scullard 1974; Kistler 2007

⁸⁷ See: Scullard 1974; Kistler 2007.

⁸⁸ Glover 1948. As discussed below, the effective use of elephants in a battle was not perfected until Ipsus in 301 BCE where Seleucus used them as a screen to hold back Demetrius' cavalry (Plutarch *Demetrius* 29.3-5; Appian *Syrian wars* 55). Other defensive alignments did not work, such as Porus' defensive wall at the Hydaspes (Arrian 5.8-19; Curtius 8.13-14; Diodorus 17.87-9; Plutarch, *Alexander* 60-2) or the static screens adopted by Eumenes and Antigonos at Paraetacene (Diodorus 19.26-31) and Gabene (Diodorus 19.39-43; Plutarch, *Eumenes* 16).

⁸⁹ Glover 1944.

⁹⁰ There are many examples of this practice. See for example Alexander's uses of light cavalry at Gaugamela (Arrian, *Anabasis* 3.8-15; Curtius 4.9.9-16; Diodorus 17. 61; Plutarch, *Alexander* 33.4-5).

are given the time and space to advance to the attack because of the actions and movability of light cavalry.

In Greece in particular, cavalry was not available in large numbers and there was rarely an occasion where the enemy's position or numbers were not known beforehand, reducing the opportunities for light cavalry as scouts.⁹¹ Eumenes and Antigonos both made use of light cavalry as scouting screens when engaged in their strategic marches around Paraetacene (Diodorus 19.26-31) and Gabiene (Diodorus 19.39-43; Plutarch, *Eumenes* 16), and Eumenes used his light cavalry in a flanking attack to defeat Antigonos' superior cavalry on the left wing at Paraetacene (Diodorus 19.26-31).

Light cavalry as an offensive force are best unleashed on a retreating enemy to chase down the tired soldiers, where they can utilise their speed without worrying about engaging anyone in close combat.⁹² Just as light infantry, light cavalry are ineffective at close quarters. In a battle they are useful to break up an attack by chariots or to harass elephants and often are used as flank guards or to screen movements.⁹³

The main difference in most cases between light and heavy cavalry is primarily their tactics in battle, as well as the amount of armour worn by the rider and the horse. Some heavy cavalry used javelins or bows despite their advantage in battle relying on the impact of the charge. Light cavalry usually required less armour because of their peripheral roles in battle of scouting or screening deployments, and the choice of arms and armour often rested with the individual soldier. Light cavalry were principally reserved for scouting, in pursuit, or on the march, but nevertheless they are an indispensable force in an army. Again there are many types of light cavalry both missile and not.

Non-missile light cavalry

⁹¹ Spence 1993; Gaebel 2002.

⁹² There are of course many examples of cavalry turning defeat into a rout. The first in the Greek world was the battle of Inessa in 426/5 during the Peloponnesian War (Thucydides 3.103). Perhaps the most significant in the Greek world was the defeat of Lysander at Haliartus. There the Theban cavalry turned his defeat into a complete rout (Xenophon, *Hellenica* 3.5.17-20; Diodorus 14.81.1-3; Plutarch, *Lysander* 28).

⁹³ Alexander made great use of light cavalry as flank guards in battles, especially at Gaugamela where he used them to extend his line beyond the Persian wing (Arrian, *Anabasis* 3.8-15; Curtius 4.9.9-16; Diodorus 17. 61; Plutarch, *Alexander* 33.4-5). In this situation their lack of ability at close quarters did not matter since they were only required to fight other light cavalry.

Xenophon *On The Cavalry Commander* recommends that cavalry should use the javelin and not the spear. It is difficult to find many examples of non-javelin light cavalry, particularly after the widespread adoption of effective body armour by infantry and cavalry alike. Light cavalry were lightly armoured. Not expected to engage often in hand-to-hand combat light cavalry would not have needed much defensive armour in order to maintain their speed of movement. This is the trade off—rapid movement for minimal defensive armament.

The effectiveness of such lightly armoured non-missile cavalry in battle was limited and their tactical battlefield roles could easily be provided by missile cavalry. Scouting, shielding the army's movements, pre-battle skirmishing and chasing a defeated enemy can all be achieved by missile cavalry. Because of this, light cavalry often took the form of missile cavalry of various sorts. Here light cavalry using the javelin as a throwing weapon would be classed as missile cavalry alongside horse archers.

Horse archers

Horse archers rarely appeared in Greece except in the Persian armies of Mardonius. Although such cavalry did not play a very important role in warfare in Greece until the fourth century it was very common in the east. Athens used some of these horsemen as mercenaries in the latter stages of the Peloponnesian War.⁹⁴ The ability of some missile cavalry units to wheel in a circle while shooting obviously has great benefits, as Crassus' death at Carrhae shows (Sampson 2008), and led to the widespread use of horse archers in the east.

The most notable of these eastern horse archers were the Scythians.⁹⁵ Horse archers were often not expected to engage at close quarters and so wore little armour. Some horse archers, particularly in Assyria and Persia, were more heavily armoured since they were the main battle force and were usually expected to engage in hand-to-hand combat before or after using their bows (see chapter 1 below for a full discussion). These are classed as heavy cavalry because their principal role in battle was to excel in close quarter combat. Usually horse archers were held out of the battle to engage from afar and so did not require much armour.

Addendum: Field Artillery

⁹⁴ Sulimirski 1952

⁹⁵ Karasulas 2004.

In the ancient world artillery was primarily reserved for sieges because of the relative paucity of reliable and easily maneuverable field artillery pieces.⁹⁶ There are very few instances of machinery being used on the battlefield at all until the third century and even then it was a rare event.⁹⁷ The static nature of artillery did not fit with the flexible battle plans of the Hellenistic Era. Even in situations where artillery could have been used to disrupt the phalanx, the adoption of elephants fulfilled this goal. Artillery pieces were static and so could easily be attacked and outflanked.⁹⁸ They were also very expensive and few generals could afford to lose them by risking them in battle. Philip and Alexander certainly had artillery in their armies, and its use is recorded on occasion but not regularly enough to prompt a detailed analysis.⁹⁹ Nevertheless a true system of combined arms should make use of artillery if it is available and easily deployable without negative effects on the battle plan, just as the Romans did on occasion.

Conclusions: The benefit of Combined Arms and Integrated Warfare

The system of combined arms is the modern term used to describe the coordinated use of different units in battle. It allows each unit to focus on its strengths without having to worry about its weaknesses since it is supported by others. In ancient warfare different units appear, or are developed, at different times. As a result combined arms also refers to the process of developing a completely integrated army focusing on the appearance and incorporation of new, or foreign, units into the army. Why, when and how each unit is introduced into Greek warfare, in particular, is at the centre of the discussion of combined arms here as well as how each innovation leads to the implementation of integrated warfare.

⁹⁶ Small and reliable machines did not really come into play in Greek warfare until the fourth century. By then the Macedonians relied on the flexibility of their battle lines for victory. The benefits of static artillery were outweighed by the maneuverability of missile infantry and cavalry. See Marsden 1969.

⁹⁷ See Marsden 1969.

⁹⁸ Machanidas' defeat by the Achaeans at Mantinea in 207 (Polybius 16.36-7; Pausanias 3.10) and the success of the Romans at Thermopylae (Livy 36.15-19; Appian, *Syrian Wars* 17-20; Plutarch, *Cato the Elder* 13-14) and Aous Gorge (Livy 32.5-6, 10-12; Plutarch, *Flaminius* 3-5) show the vulnerability of static artillery.

⁹⁹ See Keyser 1994. Also see the postscript to chapter 3.

There were many different units in use in the ancient world. Each type of unit has both strengths and weaknesses. Each “has its own special capability and relative dominance.”¹⁰⁰ It is clear how each unit can complement and improve the other. Heavy infantry are much more secure and forceful when fighting with flanks protected by light infantry, cavalry, or missile troops, and so are able to concentrate on their offensive central thrust. Heavy cavalry are more effective when they can attack an enemy already weakened by missile troops, or one held in place by the advance of the heavy infantry. If their charge is stopped they can rely on the heavy infantry to come to their rescue in a static close combat situation. Missile troops, both cavalry and infantry, and other light infantry are better when able to concentrate on their background roles and let the melee work be done by the more heavily armed troops. Finally light cavalry are much more effective when retained to be unleashed fresh onto a retreating enemy or to scout the enemy’s position.

Every unit has its uses but there is an exchange of abilities in each case. Those soldiers who fight well in a rigid formation at close quarters, such as the phalanx, are vulnerable on the flanks and in the rear. Those who do not need a formation are more vulnerable to concerted direct assaults and often lack organization. Those who excel at distance fighting are limited when it comes to hand-to-hand conflict. Those who rely on speed of movement in attack or defence become less effective when their mobility is reduced. All of these tradeoffs can be made redundant by the other units in an army if the commander knows how to do so—the basic principal of combined arms.

So we can see that integrated warfare, the full realisation of combined arms, is a difficult system to implement successfully. However when employed correctly it is a highly effective way of neutralising any weaknesses and enhancing the overall ability of the army, whether in attack or defence. It also makes it very hard for an enemy army to find any weak spots, as the different unit types mutually protect one another and eliminate all the vulnerable areas. Its implementation creates a complete package and is the forerunner of the modern professional armed forces.

¹⁰⁰ Jones 1987: 39-45 provides a detailed discussion of the relative merits of each of the four basic types of unit in battle against the others.

Chapter 1: Historical Developments: Eastern Civilizations

This chapter will examine the existence and development of combined arms in eastern armies in order to aid a comparison with contemporary Greek warfare and to establish the early history of combined arms warfare in the ancient world. I will utilise only the most relevant extant evidence for such warfare in Mesopotamia and Egypt through the Assyrian Empire to the Persian invasion of Greece.¹⁰¹ Each section of an army—infantry and missile troops and cavalry and/or chariots—will be dealt with in turn, with a final section focused on how combined arms was used and developed.

Early Eastern warfare

Infantry battle is almost always the first to be used in any civilization for obvious reasons. Consequently it is no surprise that the first evidence of warfare in Mesopotamia comes from the Sumerians, from 3000 through to 2300, and the rise of the Akkadian Empire. Here it seems the majority of the fighting was done by the infantry. However, chariots are shown in the same battle as the infantry and so we have the first example of combined arms.

This section will begin with an analysis of war in Sumer and Akkadia with a particular focus on the extent to which missile and melee infantry fought in combination as a platform for the subsequent development of combined arms also using chariots and cavalry. In order to trace the developments of individual units in the ancient world it is important to outline in detail their beginnings. Here the focus is on infantry as the principal fighting force in early armies, and how this military arm developed through the fourth millennium.

Sources

The military history of early civilizations is dependent almost entirely on inscriptions and artefacts. Very few other sources exist, particularly for the earlier periods. However, by the time of the Neo-Assyrian Empire we have comparatively many written documents detailing victories and conflicts. Very few sources exist for the early years of the civilizations in Mesopotamia principally because writing was in its infancy. Pottery and archaeology can tell us some things but rarely provide specific details of armies and warfare.

¹⁰¹ The Persian armies that fought at Plataea and against Alexander will be dealt with in the following chapter concerning Greece and the West.

It is not until what is termed the Early Dynastic II period (2800-2600) that things begin to become clearer.¹⁰² In this period “the appearance of walls around Babylonian cities suggests that inter-city warfare had become institutionalised.”¹⁰³ It is from this period that we have the first inscriptions from the Kings of Kish discovered at Nippur, Adab and Girsu.¹⁰⁴ However these inscriptions are more concerned with kings claiming victories than describing how they achieved them.¹⁰⁵ As these inscriptions demonstrate, it was common practice for Mesopotamian monarchs to recount a list of their victories and building projects and to thank the relevant God for inspiring them to these varied successes.

The most useful inscriptional information about the early political and military history of Sumer is the inscriptions of the rulers of Lagash.¹⁰⁶ These describe a border conflict with neighbouring states and are relatively voluminous.¹⁰⁷ From these texts we can gather significant information about the military capabilities of the Sumerian city states, such as Lagash, whether they were engaged in territorial disputes or more simple raids.¹⁰⁸ But never do we get a thorough description of the type of soldiers employed, in terms of armament and training, or a statement of

¹⁰² For general histories of Mesopotamia see: Oppenheim 1964; Bottero 1965; Redman 1978; Nissen 1988. Perhaps the most useful summary is still the work of Roux 1964 now in a third edition from Penguin Books 1992. The best modern treatment is Foster and Foster 2009. On the archaeology of Sumer see: Postgate 1982; Lloyd 1978. On its history and for general studies see: Parrot 1960; Kramer 1963; Schmandt-Besserat 1976.

¹⁰³ Cooper 1983: 7.

¹⁰⁴ For the texts of the inscriptions see: Thureau-Dangin 1905; Barton 1929; Sollberger & Kupper 1971; Cooper 1986. See also Jacobsen 1939. The inscriptions refer to subordinate rulers suggesting that the King of Kish ruled over a territory as well as his own city. The title King of Kish was adopted by subsequent Babylonian rulers attempting to establish hegemony over all of Mesopotamia. See Seux 1967; Hallo 1967. The existence of an Empire of Kish has been disputed by Edzard 1980: vol. 5 608 but see Gelb 1981. See also: Maeda 1981. For Ebla and its archives see: Matthiae 1980; G. Pettinato 1981.

¹⁰⁵ For example the Sumerian King List is exactly what it professes to be, a list of kings without any description of the individuals named. In the early period it lists kings of the more important cities in Sumer but leaves out others such as Lagash. See Kramer 1963: 328ff and Edzard 1980: vol. 6 77ff.

¹⁰⁶ For Lagash see Falkenstein 1966.

¹⁰⁷ For a full discussion of the conflict between Lagash and Umma see in particular Cooper 1983. Also see: Lambert 1956; 1965; & 1966; Steiner 1986.

¹⁰⁸ One such raid is described in a letter from a temple administrator on the edge of Lagash territory to the administrator at Girsu, a Lagash city, during the reign of Enanatum II (circa 2500). He states that he intercepted a force of 600 men carrying booty from Lagash to Elam. See Gregoire 1962: 9ff.

the tactics used in battle. Perhaps the best evidence we have concerning more specific military matters is the images that accompany such inscriptions.

These images of battles are carved onto stelai in order to demonstrate the success of the king. However there are many problems of interpretation with regard to this pictorial evidence. The most difficult question to accommodate is the extent of artistic licence. Since we have little other comparative evidence there is no way to determine how much of what we see in the depictions is imagined. We must establish the purpose of the artist and if he sought to differentiate from reality the image he created.¹⁰⁹ On these stelai we see only the victory of the king depicted. The enemy are usually shown defeated and fleeing with the victorious army marching across the bodies of the dead. The king is pictured at the head of the army standing on the bodies of his enemies or in the act of slaying them.

These images are meant as propaganda and therefore must show a positive view of the battle. The king's men are not shown to be injured or dead even though some of them must have perished. The enemy are not as well armed as their opponents, perhaps in order to demonstrate the overwhelming military superiority of the king's forces. Everything in the images is intended to show the king in a positive light and therefore affects our conclusions about the military capabilities of the Sumerians. However, this study is concerned with the specific details of warfare and individual units not the outcome of battles and so the bias of a source is not so important.

A few of these images on stelai show multiple scenes. It has always been assumed that each of the scenes depicts different stages of the same event. However there is nothing to confirm this. It is possible, though unlikely, that each scene shows a different event. If we accept that all the scenes concern the same event then we must establish in what order they occur, from the top down or bottom up. When the image is accompanied by a text, such as the Stele of the Vultures as discussed below, this question of interpretation becomes easier. The images are intended to illustrate the inscription that accompanies them. If there is no text, determining the order of the images becomes important.

¹⁰⁹ A fine example of Royal Inscriptions altering the report of a battle is the Royal Inscriptions of Sennacherib. Here the King reports unmitigated success against Jerusalem but the reality is perhaps somewhat different. See Laato 1995.

There is also the question of perspective. All of the soldiers represented on these images are shown in profile. This was likely the artistic convention and style of the time.¹¹⁰ Therefore do the images of soldiers marching into battle in a line, as in the middle scene on the Standard of Ur as discussed below, depict a true procession or simply a battle line shown in profile? In most images the difference does not impact our interpretation. However, on the Stele of the Vultures the question of perspective is vital. Are we supposed to see a line of spearmen fighting side by side or a column of spearmen marching behind the king? This question will be addressed fully below in the discussion of the Stele of Vultures. Here it is enough to mention the difficulties of interpretation that accompany the images.

Although questions concerning the reliability and intention of sources are vital it is still possible to reconstruct the units involved in early warfare even if specific tactics in battle remain unknown. The focus of this section is the armaments and tactical uses of infantry and chariots in Sumerian and Akkadian armies in order to establish the nature of warfare as shown in the earliest records of battle in Mesopotamia. This will serve to create a starting point for a discussion of combined arms warfare in the later Near Eastern and Greek societies.

Early infantry

Three main images serve as the basis for any discussion of early Mesopotamian armies, The Standard of Ur, The Stele of the Vultures and The Victory Stele of Naram-Sin. I will discuss each in turn dealing with the depictions of infantry first followed by an analysis of the representations of chariots, and then a discussion of the level of combined arms warfare represented.

The Standard of Ur

The famous Standard of Ur, now in the British Museum, is not a stele commemorating a specific victory.¹¹¹ It consists of two panels known as ‘War’ and ‘Peace’. The panel that is important here is the former depicting a victory in battle and the taking of prisoners. The other panel shows revelling at a feast, perhaps the king hosting ambassadors or other dignitaries. The war panel

¹¹⁰ [There is abundant comparative evidence for Greek art presenting hoplites in profile see Osborne 1998; Van Wees 2005, for just two modern discussions of this.

¹¹¹ The image is reproduced in most works on Sumer. The British Museum provides a good summary of its nature and provenance on its website:

http://www.britishmuseum.org/explore/highlights/highlight_objects/me/t/the_standard_of_ur.aspx.

consists of three scenes each showing different events. The first two show infantry and the third shows chariots, which will be discussed in the section on chariots below.

In the top scene the king, followed by his three officials, has dismounted from his chariot to inspect a line of prisoners. The king is taller than all the others depicted by half a head and is in the centre of the image. Three officials are behind the king and are also arranged according to size; getting shorter the further they are from the king. The official nearest the king holds a curved stick that resembles a shepherd's crook, the second a staff and the third an upturned spear. Behind the officials and directly in front of the horses, or onagers (wild-asses), drawing the chariot is a small figure, probably the groom or some menial attendant. The officials carry a spear or staff in their left hand and an axe in their right.¹¹² They each wear a helmet and a dress that wraps over the left shoulder, similar to a Roman toga. The king's dress is similar but more elaborate, and he holds an umbrella-styled mace. The captives are naked and bound and accompanied by their captors.

In the middle image a line of spearmen advances into battle killing the enemy or collecting captives. The spearmen all wear armoured cloaks slung from the shoulders and clasped over the clavicle. These seem to have metal studs sewn onto the fabric as protection. They do not have shields and all hold their spear with two hands. They also all wear skull-cap style helmets secured with a strap below the chin. Fighting (apparently) in front of this line of spearmen are three figures. The foremost of the three has a sword in his right hand and a cloth or cloak in his left, which is thrust out in front of him. He wears a toga style dress and helmet but no armoured cloak. Behind him a man, also sporting a helmet and a toga-style dress, is in the act of killing the enemy with his sword. The details of the third man are unclear but he seems also to wear a toga-style dress and to be holding a prisoner. The enemy in front of these men are skulking off, the rearmost of them looking back in despair. The enemy are unarmoured but some are armed with spears. Most of them exhibit fresh injuries.

It is not clear what stage of the conflict is shown here.¹¹³ If the infantry are shown advancing to battle in an orderly fashion why are there three individuals in front of them impeding their advance? The enemy are retreating, so we may be witnessing the orderly pursuit

¹¹² This was the usual way of representing soldiers out of a battle context. See below for the importance of the axe as a badge of office.

¹¹³ It is probably not representative of multiple stages of the battle. Hamblin 2006.

of them led by the officers, perhaps after the successful chariot attack shown in the third panel. However, any pursuit over flat terrain is more effective at speed and by chariots.

The current belief is that the middle scene on the Standard of Ur shows the collection of prisoners after the attack of chariots has dispersed the enemy infantry. So the first action depicted on the stele is the lowest scene showing the pursuit in chariots of the fleeing enemy and then the collection of prisoners by the victorious infantry in the middle scene (Hamblin 2006). But in the middle scene the enemy at the far right are still armed and they are certainly not prisoners yet. The enemy pictured are still in a relatively dense formation and remain in significant number, which would have been unlikely if the battle had been resoundingly lost. These men cannot be other men of the victorious army since their style of dress is distinctly different but is the same as the enemy on the other scenes. If the battle was over and the enemy had been dispersed and routed by chariots, those that remained to be made prisoner would not still have their weapons at hand. They would have tried to flee the battlefield as quickly as possible probably abandoning all their equipment to do so.

Furthermore, we see one of the officers in the act of killing an enemy not capturing him. It is true that not all of the enemy would submit to capture easily, and some would have to be dispatched, but this scene does not suggest the enemy have been subdued at all. Rather it seems that the image of the infantry in formation depicts the moment of victory, when the enemy turn to flee. The three men in front of the victorious spearmen are the officers, or the elite nobles, leading the advance to victory and the other infantry follow up behind in an orderly fashion. The infantry shown with their armoured cloaks are in an ordered formation, either a battle line or a marching column depending on the interpretation of the perspective shown. Perhaps more importantly their spears are lowered to an attack position. If they were simply rounding up the defeated and demoralized enemy they would not need to remain in an ordered formation. In my view the middle scene shows the battle at the point of the defeat of the enemy and the beginning of the capture of prisoners and not the simple collection of a dispirited and vanquished enemy.¹¹⁴

Lorenzo Nigro, in his invaluable discussion of the iconography of Sumerian reliefs, states that,

¹¹⁴ Hamblin 2006: 49-50 is one of the latest to argue for the collection of prisoners. He describes the armament and clothing of the individuals but fails to account for the fact that many of the defeated enemy still carry their weapons.

Early Dynastic artists often conceived enemies an indistinct realm. They were almost always depicted according to one of only two iconographies, either as corpses overrun by advancing soldiers or as prisoners bound and led by infantrymen in rows or singly, like those on the Standards of Ur ... and Ebla.¹¹⁵

The top scene on the Standard of Ur certainly shows the collection or presentation of captives. But the enemy as pictured on the middle scene do not fit into either of Nigro's categories. They are neither dead nor bound prisoners. If Nigro is correct in his general analysis of Sumerian iconography then the depiction of fleeing but armed enemy soldiers is a novel one and must be important to the artist or the individual who commissioned the work. Perhaps the moment of defeat was personally significant or the victory could have gone either way until the moment shown on the stele. It is impossible to determine this, but the middle scene certainly does not depict the rounding up of prisoners from a subdued and demoralized enemy.

The Standard of Ur does reveal the dress and armament of the soldiers, both defensive and offensive. The infantry are shown armed with shields and are protected by a helmet and a cloak covered with metal studs. The helmet may only be made of leather but it is impossible to tell the difference on the image. Officers, and especially the king, are represented wearing different, more elaborate, uniforms and holding swords not spears. There are no archers or other missile troops pictured, nor do the enemy display any arrow wounds, suggesting that archery was not a significant part of battle in the earliest organized Sumerian warfare.

Stele of the Vultures

Another source for Sumerian warfare is the so-called Stele of the Vultures, a Bas-relief stele from Girsu, now in the Louvre.¹¹⁶ Although fragmentary, the inscription commemorates the victorious recovery of lost lands by Eannatum of Lagash over the King of Umma. It recounts his creation as champion of the God Ningursu, his victory in battle and a list of the fields restored to

¹¹⁵ Nigro 1998: 89. See also Winter 1985. For the Standard of Ebla see Matthiae et al. 1995.

¹¹⁶ The stele is pictured in most works on the history of Sumer and especially in those concerned with Sumerian warfare. For the best image of the stele as preserved in full, albeit without the side panels, see Bahrani 2008: 148-9. For the side panels see Winter 1985. The Louvre discusses the fragmentary nature of the stele and its historical significance on its website: <http://www.louvre.fr/en/oeuvre-notices/stele-vultures>.

Lagash, as well as the swearing of oaths by the ruler of Umma, and a list of his titles and victories.¹¹⁷ Of particular interest to us are the illustrations of the army of Lagash.

The stele is very fragmentary but is two-sided. The obverse has two panels showing divine scenes of Eannatum being inspired by the Gods. The reverse has four panels. The bottom panel as preserved only shows a spear stabbing the face of an enemy, probably the enemy king, whose head is larger and taller than others around him. The third panel shows a ritual scene of Eannatum seated watching his men carrying baskets of earth to bury a pile of dead bodies. The first and second panels are the most informative for us. The top panel on the left side shows Eannatum marching at the front of a group of spearmen protected by rectangular shields, who march over the dead bodies of their enemy; on the right side we see more dead and retreating enemies. The vultures, that give the name to the Stele, hover above carrying severed arms and heads of the dead. The second panel shows Eannatum riding his chariot in front of a group of soldiers armed with axes and spears.

In the top panel the soldiers, as depicted, all wear helmets that seem to be metal, hold spears pointing forwards, and are protected from neck to ankle by rectangular shields. The details suggest that the shield may have had a number of metal bosses on it or some sort of decoration.¹¹⁸ There are problems of interpretation of the details shown on the image. It is clear that there are nine heads of soldiers on the front image but only four or five shields and a further two heads and one shield on the side of the stele.¹¹⁹ Beside each shield on the front image are six spears, each seemingly held by two hands. Importantly the shield pictured on the side image does not show a line of spears in front of it.

¹¹⁷ For a translation of the inscriptions on the Stele see Cooper 1983: 45-7.

¹¹⁸ There is some debate as to whether there were six or nine bosses. The last shield of the group, the one on the edge of the stele, seems to indicate nine bosses. However the other four shields seem to show only six. The state of preservation on the stele is such that it may be impossible to tell for certain. Suffice it to say there were a number of bosses on each shield. Hamblin 2006: 57 suggests that these body shields were made of reeds and covered with leather. A contemporary body shield from Mari is constructed in this way and has a large handle two-thirds of the way up. See Aruz 2003.

¹¹⁹ Winter 1985: 30 n. 28 argues that "Allowing for missing figures, with those on the side we can account for twelve figures in each register behind the king; thus, an equal number in each register, despite the apparent inequity of what is visible on the reverse face alone." I am unaware of any other similar assertion and, as far as I can see, there is no evidence for any missing figures from what is preserved on the fragments of the stele.

What is impossible to tell from the image is whether the spears shown are all from the front rank or from the men behind. Twenty-four total spears are shown to only five shields and eleven men. The positioning of each line of six spears between each of the five shields suggests that six spearmen lined up behind each shield.¹²⁰ However, all the spear points end at the same length suggesting that the men holding them are all in the same rank.¹²¹ Moreover each spear is obviously held by two hands.

Since the spear is held by two hands when seemingly closing to fight we should conclude that this was the normal way of fighting. This is reminiscent of the spearmen pictured on the Standard of Ur who hold spears in two hands in the middle panel when marching against the enemy, as discussed above. What we see in the top image is one man holding a shield to protect six spearmen behind, who hold their spears in both hands. The image seems to show a shield wall, as suggested by Frankfort 1954: 71.¹²²

Since the shields shown in this image are in profile but with spears protruding across their fronts this must represent a battle line. The artist was only able to show men, shields and spears together in profile in this way. The infantry depicted in the lower image on the Stele of the Vultures confirms this fact. Here we see two distinct lines of five men marching with an officer at their head. This is how a column of men is represented as opposed to a battle line.

In the lower image all the men are armed with spear and axe but no shield. It is possible that the curious thing protruding just past the first shield and level with its top in the first image is meant to represent an axe.¹²³ If this is the case it should be assumed that it belongs to the extra

¹²⁰ The final two heads and the fifth shield are depicted on the side of the stele as a continuation of the image on the front. The only difference is that this shield does not have a line of spears showing across it.

¹²¹ This must be true unless each subsequent rank had spears of different lengths. The sarissa blades of a Macedonian phalanx projected past the front rank so that every illustration shows three or four spears at different lengths. However this conclusion is tentative since this is almost certainly an artistic convention.

¹²² The Persian army used a wall of shields to cover their archers at Plataia (Herodotus, *Histories* 9.61-63). The Persians coupled one thousand spearmen with nine thousand archers so that the former would shield the latter. See Sekunda 1992: 6. In the Saxon shield wall the second line of haascarls swung their two-handed axes over the top of the shield carrying spearmen in the front line. See Poss 2011; Bennett et al. 2005. The reliefs of Sennacherib show Assyrian spearmen shielding archers in a siege; see Porada 1945.

¹²³ As far as I am aware there are no specific definitions of what this item is or how it relates to the spears and shields.

individual depicted. This would provide us with two men per shield and one axe man at the end of the line. Perhaps this eleventh individual is the officer and the axe designates him as such.¹²⁴

As mentioned above, the shield team pictured on the edge of the stele does not have a line of spears crossing its front. Although this could be an artistic omission due to spatial concerns it is possible that this detail, or lack of, is intended to show that at the end of the shield wall the men are not armed with spears. In a Macedonian sarissa phalanx, the end ranks armed with sarissas made the flank very vulnerable. The Macedonians avoided this problem by protecting the phalanx's flanks with more maneuverable infantry and cavalry.¹²⁵ Perhaps at either end of the Sumerian shield wall were men armed with an axe, in order to better secure the flanks.

Many scholars have seen this stele as evidence for the Sumerian invention of the infantry phalanx as used by the Greeks centuries later.¹²⁶ However, this image is significantly different from images of a phalanx. Each spear is held by two hands and there are two heads per shield. Six spearmen hold their spears with two hands while each file of six stands behind a shield bearer who protects those behind. This would explain the ratio of heads to shields, assuming that the remaining head pictured is of another team of spearmen, or an officer. It does not show a

¹²⁴ On the Standard of Ur the three officials standing behind the King in the top image each hold an axe in one hand and spear or standard in the other. There is also a fragmentary panel from the temple of Ishtar at Mari (circa 2500) which shows a line of dignitaries following behind a standard. Each man holds an axe in his left hand. See Yadin 1963: 138-9. The axe continued to be a ceremonial item into the Akkadian Empire. The King on the Victory Stele of Naram-Sin also holds an axe. As Nigro 1998: 96 states when describing a stele of Sargon "The regularly arrayed officials following him represent members of the military class that benefited from the royal conquests. These commanders (whose rank is indicated by the crescent-like axe, the flounced shawl and the bold skirt with long fringes) were the political elite whom Sargon attracted through his promise of great rewards (in terms of land and workers) from his military success."

¹²⁵ See below in chapter 3 for a discussion of the tactical uses of flank guards in the Macedonian army.

¹²⁶ Perhaps the most influential of these scholars is Yadin 1963: 49-50, 135-6. Subsequent historians have followed his description. For example, Gabriel and Metz 1991: 5 write: "the stele demonstrates that the Sumerian troops fought in phalanx formation, organized 6 files deep, with an 8 man front, somewhat similar to the formation used in Archaic Greece." They cite Yadin as their only reference for such a bold statement without providing an image of the stele. They proceed to argue that the Sumerian city states must have had a professional army in order to train men in the implementation of the phalanx in battle. Since this is an example of a Sumerian shield wall only minimal training would be required.

phalanx of spearmen even if the formation pictured were to move forwards. A shield wall is a very different formation from a phalanx in whatever form.

In his discussion of the image Yigael Yadin argues that we see a phalanx of sixty-six men organized into six files of eleven men. He does not provide a detailed discussion of the image and therefore does not account for the number of shields or the lack of spears shown on the side of the stele. He does suggest that we see “possibly ten men and an officer or NCO” (1963: 50) but goes no further. Instead he attempts to reconstruct the marching order of the unit and its drill square maneuvers to change face for battle. The image itself cannot provide any basis for such a reconstruction.

In another image lower down on the stele, the lines of infantry shown marching behind the king in his chariot have no shields. Both ranks hold their spear in their right hand, at the bottom of the shaft, and hold an axe in their left hand. Frankfort describes these soldiers as light infantry but gives no explanation as to why, although presumably it is because they do not have shields.¹²⁷ The men in this image are as equally well armed as those pictured in the shield wall, except they are without a shield. The fact that they hold a spear and axe shows they are getting ready for pursuit where shields become of little use.¹²⁸ Light infantry very rarely wore helmets or body armour, even in the Hellenistic period, so the likelihood of such men being equipped with helmets in Sumer is very small. These must be the heavy infantry from above in a different scenario.

These men are shown marching in formation. Shouldering their spears and holding their axes must be their normal way of marching. Moreover there are eleven men shown in this lower image. This is the same as the number of heads pictured in the image above. This cannot simply be coincidence. The artist intended to show the same unit as above in a different part of the

¹²⁷ Frankfort 1954: 71.

¹²⁸ Later art shows soldiers fighting in a melee with an axe and spear but no shield. A fragmentary stele often attributed to Shamsi-Adad shows a soldier armed with a spear in his left hand and an axe in his right (Moortgat 1980: plate 204). He attacks a fallen enemy thrusting the spear into his chest while also cleaving his head with the axe. Another stele shows a king armed with axe and perhaps sickle sword marching over a conquered fortress (Parrot 1961: 291). Canaanites as depicted in Egyptian art are often shown armed with two weapons of various kinds (Hamblin 2006: 279-280). It seems then that it was common for heavy infantry in Sumeria to fight with two weapons and no shield. However, we have to admit that it is not clear what phase of battle we see on these stelai. We may be witnessing the dispatching of the defeated enemy remaining on the field after the battle has been won.

battle. The men in the lower image march in two lines of five with the foremost line led by the officer.¹²⁹ The two lines of five are shown exactly behind each other in marching formation. Contrary to Yadin's opinion this must be the formation adopted by the Sumerian army when it marched to and from battle.

The king is represented in both images. In the top image he fights on foot with a sword, in the lower one he is in a chariot and throws a javelin, with a number of others stored in a quiver next to him.¹³⁰ Since the bottom scene depicts him riding his chariot, it is likely that the second image represents the victorious king and his army chasing the fleeing enemy. If this is the case the heavy infantry would shed their cumbersome shields and chase after the defeated armed only with their offensive weapons.

If one individual, namely the king, is represented in every scene on the stele, as Winter 1985 argues, then it is possible that other people are also shown in every scene. If we assume that this is the case, we can understand the workings of the Sumerian army better. In the top image the infantry march into battle behind their shields led on foot by the king. In the bottom image the infantry march behind the king without their shields. The king rides ahead in his chariot using javelins to strike at the fleeing enemy. What we see are the two phases of battle. The first is the attack by the infantry protected by their shields. The second phase shows the pursuit of the defeated foe, when shields would not be required as much, or would be an encumbrance, led by the king riding in his chariot. The chariot allows him to cause greater damage to the fleeing enemy than would a pursuit on foot. It is probably this second phase of battle that is depicted on the bottom scene of the Standard of Ur and on the Victory Stele of Naram-Sin, as discussed below.

Winter 1985: 16-26 argues that the Stele of the Vultures should be read from bottom upwards. The Stele of the Vultures, however, is accompanied by explanatory text, the events of which for the most part mirror the images if they are read from the top down. Moreover the text itself, which accompanies the images, is read downwards not upwards. Winter seeks to find evidence in the order of the images on the Stele of the Vultures for a pictorial representation

¹²⁹ It is not clear but the officer in this second image may be holding a standard in his left hand. There appear to be two flags or drapes next to him which could indicate a banner of some sort.

¹³⁰ It is likely that his chariot was pulled by onagers, wild asses, since horses had not yet been yoked to a chariot. However the image itself does not provide the evidence for this conclusion and so it must remain speculation.

showing the King gradually increasing in size from bottom to top in order to mirror the change in ideological interpretation of Mesopotamian monarchy. She is right (1985: 22) that

the correspondence between text and imagery is not exact. Significant elements within the verbal narrative are not depicted on the stele, while certain of the details so carefully depicted in the relief are not fully described in the text.

However her conclusion (32) that the imagery “is devoted to a detailed representation of the preamble and actual conflict with Umma” is unproven and other stages of this conflict could be displayed. It would be strange for an inscription that praises a victory in battle not to show that victory and its aftermath in the accompanying images.

As Hamblin 2006 rightly concludes, the images actually show the conflict and *aftermath* of the conflict with Umma. The third image clearly shows the burial of bodies after the battle, not just the mound of bodies described in the pre-battle dream of Eannatum, as Winter 1985 asserts. The fourth panel does show a subsequent battle of Eannatum against reinforcements of Umma’s ally, the King of Kish, as suggested in the accompanying fragmentary text. Hamblin (2006: 59) is probably right that the images on the stele are intended to illustrate both the actual battle and Eannatum’s dream. The king’s point is that his victory was foretold by his divinely inspired dream.

This scenario is confirmed by the fact that the image below shows the enemy king looking back over the bodies of his defeated army. The fourth and final image shows Eannatum burying his dead. The four images represent the different stages of battle:

1. Battle is joined
2. The victorious king switches to his chariot to pursue the defeated
3. The enemy flee and are overtaken in their flight
4. The victors claim the field and bury their dead.

What we see in the first image then is not a phalanx but an artistic representation of a line of spearmen, each file protected by a single shield bearer. As Frankfort described it “Eannatum is seen advancing before the phalanx of his heavy infantry; the spearmen are protected by a wall of shield bearers.”¹³¹ The lines of six spears probably do represent six spearmen behind each shield each using two hands at the butt of the spear to wield their weapon in front of the shield carrier.

¹³¹ Frankfort 1954: 71.

Once the battle is won the infantry drop their shields to pursue the fleeing enemy, led by the king in his chariot.

The men in the lower image are also shown wearing a skirt with scales, a detail that is not evident in the upper depiction. The king in both images is shown wearing a headdress and a similar, but more elaborate, scaled dress. It is possible that this represents a form of body armour with metal scales fixed to a cloak just as shown in the Standard of Ur.¹³² However, many other stelai from Sumer show men and women wearing similar skirts of a scale-like pattern, who are not engaged in a military activity.¹³³ The armoured cloak is pictured in the Standard of Ur, as discussed above, and is distinctly different from the clothing of the men here. It seems then that the only protective armament of the infantry on the Stele of the Vultures is a helmet and shield.

The Standard of Ur and the Stele of the Vultures both reveal the same details of the infantry of Sumer. The soldiers are armed with spears and axes. Officers on the Standard of Ur may also have used swords, but this weapon does not feature on the later Stele of the Vultures. There was some degree of regimentation in the army as the existence of standards and officers demonstrates. The use of a shield wall may be a later feature, perhaps as a response to the use of archery, something which is noticeably lacking on the Standard of Ur. The final stele discussed here adds further support to these conclusions.

The Victory Stele of Naram-Sin

The best evidence we have for the Akkadian military is a stele in honour of Sargon the Great's grandson, Naram-Sin, commemorating his victory over the Lullubi and King of Magan.¹³⁴ This stele was found at Susa and is now at the Louvre, although its origin is unclear.¹³⁵

¹³² For this argument see Gabriel & Metz 1991: 6.

¹³³ For the best reproductions of images of such stelai see especially Frankfort 1954: 69 figure 72 showing a stele from Khafaje and 70 figure 73 showing a stele from Telloh. For other Sumerian sculptures showing an identical representation of a skirt see Frankfort 1954: 55 figure 52 and 57 figure 56. Also see the dress of the king as pictured on the other panel of the Standard of Ur (Frankfort 1954: 74 fig. 77).

¹³⁴ Again there are many reproductions of the stele in works on Mesopotamian or Akkadian warfare. Perhaps the best is Frankfort 1954: 86-7 and figure 91. The Louvre website provides recent digital photographs and again discusses the provenance and nature of the stele: <http://www.louvre.fr/en/node/38993>.

¹³⁵ The later Persians and Iranians liked to move old sculptures for the purpose of artistic copying: "the steles of Naramsin and Hammurabi and all the known statues of rulers of Eshnunna were carried as loot to Susa and discovered there in recent times." Frankfort 1954: 334.

There are few specific details of Akkadian warfare before this stele, and the army of the founder of the Akkadian empire, Sargon the Great, is never outlined in detail. Numerous inscriptions of Sargon exist but as was common practice, most simply list his achievements and military victories without telling us much about them.¹³⁶ We are told that Sargon's army was organised into regiments and that the frontage of the battle line was one double mile long.¹³⁷ Unfortunately few of his contemporary stelai are sufficiently well preserved to show us how his infantry fought.¹³⁸ Sargon was so revered in Mesopotamia that many later accounts of his exploits do survive. The most interesting to us is the so-called *Epic of the King of the Battle*.¹³⁹ However the reliability of these later documents is questionable since they are closer to myths than reality, similar to the famous *Epic of Gilgamesh*.¹⁴⁰

On the Victory Stele of Naram-Sin the king is pictured at the top of a hill.¹⁴¹ The details of the soldiers and of the king are excellent. All wear domed helmets but little or no body armour. The soldiers carry a variety of weapons. Two carry standards in their right hands and axes in their left. Two others carry a spear in the right hand and an axe in the left. Another holds his axe in his right hand, and another a bow in his left. Before the king, looking back up at him, are the defeated enemy. Some lie dead or dying at his feet, one pierced by an arrow and another with a broken spear; one holds his hands up in supplication to the king. The enemy as pictured wear distinctly different headgear, namely hats, or helmets, that come to a long point, similar to medieval jester's caps.

We can see many things from this stele. Firstly, the Akkadian military might was based on infantry. Unlike the Stele of the Vultures and the Standard of Ur there is no representation of the king in his chariot, chasing the enemy. This may be because the battle here was fought on a

¹³⁶ For the texts of Sargon and Naram-Sin see Westenholz 1997.

¹³⁷ See Westenholz 1997: 65 & 87. We also are told that there is a flank side but its length is not preserved. This suggests that the infantry fought in a mass and had exposed flanks similar to a classical phalanx. However the evidence is too sparse to allow any conclusions on the type of formation adopted.

¹³⁸ Liverani 1993; Grayson 1974-7.

¹³⁹ For this see in particular Albright 1923.

¹⁴⁰ The Epic of Gilgamesh reflects more the military style of the time it was written (Neo-Sumerian) rather than the era of Gilgamesh the historical king (Old-Sumerian).

¹⁴¹ "He holds his bow in one hand, an arrow in the other. His battle-axe hangs in the hollow of his left arm. Below him his soldiers climb the wooded mountainside." Frankfort 1954: 86.

hill where chariots would have been ineffective. The infantry of Naram-Sin are protected only by helmets, which on account of their shape must have been constructed from metal. The lack of body armour, and the carrying of a spear and axe, echoes those soldiers pictured in the second scene on the Stele of the Vultures. In both stelai the infantry rest their spears on their shoulders while pursuing the enemy. Consequently we must conclude that this was the standard practice of the armies of the Sumerian city states.

The infantry of Naram-Sin as seen here fought with three main weapons: spear, axe, and bow. The fact that the king and the men carrying the standards are armed with the axe supports the proposal of Nigro that the axe was a badge of office as well as the primary weapon for close-quarter fighting. Since the king does not hold a spear but uses his bow and axe, we may conclude that these were the two principal weapons of his army or at least the two most prestigious weapons in Akkadian culture (Nigro 1998).

The lack of shields on the stele is interesting. It is very unlikely that the Akkadians would abandon the use of shields, especially without wearing any form of body armour since they would be too vulnerable in battle. Perhaps again we are seeing the moment of pursuit by the victorious infantry, just as in the second panel on the Stele of the Vultures. Here, as there, the infantry march after the fleeing enemy, having abandoned their shields so as not to hinder their chase. As Frankfort describes so well “the repetition of their stride renders the relentless character of their advance more effectively than the massing of figures in the stele of Eannatum” (Frankfort 1954: 86).

The main difference between the soldiers depicted on the two stelai is the existence of archers on the Victory Stele of Naram-Sin. The bow shown here may be the first example of the composite bow in existence, and is often used as evidence for the emergence of the composite bow as the primary weapon in Mesopotamia over the axe.¹⁴² This may well be true but that does not prove that the simple bow was not employed in battle before the adoption of its superior relative. It is possible, but unlikely, that the army of Lagash as depicted in the Stele of the Vultures did not use archers. Perhaps the shield wall shown on this stele was used in order to

¹⁴² For this argument see Yadin 1963: 47. For the best discussion of Yadin’s argument and the problems with it see Hamblin 2006: 89-95.

provide protection against arrows. Arrows were very effective against an unarmoured foe and the bow was the main weapon of the elite in contemporary Egypt.¹⁴³

Yadin (1963: 39) argues that the bow “was not yet in wide use during this period” in Sumer, using the lack of images as evidence, as well as the fact that no archery equipment was excavated in the Royal Tombs of Ur. However, the bow certainly did exist in early Mesopotamia as evinced by a granite stele from Warka showing a man hunting with a drawn bow.¹⁴⁴ That the bow would have been reserved just for hunting is difficult to imagine. The fact that the bow is not depicted in a military context until the Victory Stele of Naram-Sin is not enough evidence to argue for its total absence in the army.

We do hear of the use of bows in battle. Eannatum, the king who dedicated the Stele of the Vultures, was wounded by one in battle.¹⁴⁵ The very use of the body shield depicted in the Stele of the Vultures probably suggests the use of archery by the opposing army.¹⁴⁶ Perhaps the victories commemorated on the Stele of the Vultures and on the Standard of Ur, were due more to the heavy infantry than archers and so the latter were left off.¹⁴⁷

Even after the adoption of the composite bow, infantry armed with spear and axe still remained the main force in battle, closing to hand-to-hand fighting in order to press home the advantage and force the enemy to flee.¹⁴⁸ The composite bow probably was not adopted on a

¹⁴³ Bows are depicted on numerous monuments from the late fourth millennium in Egypt for example the Hunters’ Slate Palette from the late Pre-Dynastic period. See Yadin 1963: 118-9; Hamblin 2006: 89-95.

¹⁴⁴ Yadin 1963: 118. For a discussion of the evidence for the widespread use of the bow in Post-Sargonic Sumeria see Civil 2003.

¹⁴⁵ See Cooper 1986: 34.

¹⁴⁶ The common representation of infantry fighting at close quarters with two hand weapons and no shield suggests that this was the normal way of engaging in hand-to-hand fighting. A body shield is designed to provide great protection against missiles and makes non-formation infantry fighting rather laboured.

¹⁴⁷ The fact that Eannatum is pictured in his chariot using javelins rather than a bow is made more interesting in this perspective. Surely arrows would have been more effective than javelins against a disordered and fleeing enemy.

¹⁴⁸ The use of the longbow is really the first and only example of a number of battles being decided by archery alone such as at Poitiers, Crecy, and Agincourt Bennett et al. 2005. Yadin argues that “it is indeed no exaggeration to suggest that the invention of the composite bow with its comparatively long range was as revolutionary, in its day, and brought comparable results, as the discovery of gunpowder thousands of years later” (1963: 48). However after its adoption in Egypt the victories at Megiddo, Kadesh (as discussed below) and against the Sea Peoples were not due to the use of the composite bow alone.

large scale until the eighteenth or nineteenth century, when we begin to see heavier arrowheads and the widespread adoption of significant amounts of body armour. Hamblin (2006: 95) rightly concludes that

If the Akkadians did have the composite bow, it was either a less efficient version of the weapon, or it was so difficult and expensive to make that only the elites could afford it, and therefore its tactical importance before the late Middle Bronze Age was limited. Bows were used in Sumerian and Akkadian armies but not to any degree of superiority over other types of weapon.¹⁴⁹

It must be stated that early bronze weapons had little effect against even basic forms of armour.¹⁵⁰ Metal helmets especially could usually not be penetrated by such swords, spears or axes. As a result hand-to-hand warfare took a long time to decide a battle on its own. Undoubtedly most battles were decided by one side losing its nerve and retreating. This morale victory could often be achieved by bombarding the enemy with arrows before the close quarter engagement began thus making the need for and reliance on archery understandable. If time and lives could be saved by using a massed missile bombardment before the melee most generals would do so.

Certainly there is some element of artistic licence taken in this battle scene, but the fact that not all the men pictured carry spears and axes must be significant. Only the first few men are discernible on the stele. In order, after the king, we see a man holding spear and axe, two standard bearers, an archer, a man holding an axe in his right hand, and another man holding a spear and axe. The final man is unclear but may also be carrying a spear and an axe.

As Nigro 1998 argues, the axe is often the badge of office in Sumer. This is confirmed by Naram-Sin here who is pictured with an axe but without a spear. The man pictured here without a spear is probably then also meant to represent an officer. The absence of an officer accompanying the first regiment is perhaps due to the fact that this is the king's regiment, and he is the officer commanding that unit.

We see the infantry marching armed with spear and axe followed by their standard bearers, who in turn are followed by the archers. We would expect the archers to follow the

¹⁴⁹ Shulgi, King of Ur, received a tribute of 500 bows and quivers from a tributary kingdom in 2048 showing that bows were prized, and perhaps a scarce commodity. See Astour 2002: 128-9.

¹⁵⁰ See Nardo 2009: 49-55.

close-quarter infantry so they can fire over the heads of their own side into the melee. What we see next is perhaps the second regiment: an officer holding just an axe is followed by the heavy infantry carrying both spear and axe. If these men pictured were followed by an archer we could confirm this hypothesis. Moreover, the details of the soldier behind the axe man are unclear. It seems to me that he is carrying a standard, not merely a spear. If this is the case then he must represent another regiment following behind the first. This would mean that the first regiment has two standards and we can suggest that the faded final figure is the second standard bearer of the second regiment. The use of two standards per regiment is not unusual. For example in the eighteenth and nineteenth centuries, regiments always marched with the national flag as well as the regimental colours.¹⁵¹ If the image were intact and the procession continued we would be able to draw firmer conclusions, but it is possible that we are witnessing the marching order of the army.

The presence of at least two military standards on the stele of Naram-Sin shows that there was some degree of regimentation in the Akkadian army. Each standard is different, one of a triangular shape and one of an eagle or winged goddess. It is possible that these were religious symbols that were to be carried with the army in the same way as the army of the Latin Kingdom of Jerusalem always marched with the cross. However, the fact that the men carrying the standards are armed with helmet and axe, in the same way as the other men pictured, suggests that they are not priests but soldiers. It is very likely that the Akkadian army was professional to a large degree and that there was some ordering of troops into units commanded by an officer and attached to a specific standard.¹⁵²

These three stelai all confirm that infantry were the main force of the army. They were armoured at least with helmets and usually fought with a spear and/or axe. Archers also existed though perhaps in a subsidiary role. Shields were used but perhaps not in the melee, and certainly not when pursuing the enemy. The use of the shields as shown on the Stele of the Vultures

¹⁵¹ Muir 2000.

¹⁵² In the texts from Mari in the mid-eighteenth century there are numerous mentions of officers and their commands. Regiments range from 500-2000 men commanded by a general assisted by two colonels. Next were captains commanding units of 100 assisted by two lieutenants. Five standard bearers are assigned to each unit of 100, perhaps commanding 20 men each. The lowest commander leads a unit of 10 men. See Heimpel 2003: 508; 581; 597. Clearly later Mesopotamian armies were as well organized as modern ones and it is likely that this organizational structure was in place well before.

provides the origin of the later Eastern practice of protecting archers behind a shield wall, as discussed below. Overall it is possible to see the beginnings of heavy and missile infantry and subsequent sections will trace the developments of these units.

Early chariots

The chariots represented on both the Standard of Ur and the Stele of the Vultures are of the four wheeled variety and are pulled by a pair of onagers, not horses.¹⁵³ These are some of the earliest representations of the chariot in warfare.¹⁵⁴ The chariot itself is very heavily constructed on four solid wheels and must have been a cumbersome vehicle. On the Standard of Ur two men are shown riding in the chariot, a driver and a warrior. The warrior is dressed as a nobleman, wearing better looking clothes than the infantry. This man is armed with a javelin or an axe and a quiver of javelins is attached to the chariot. All the men pictured here, drivers and soldiers, wear a toga-style dress and helmet.

It is difficult to determine with certainty exactly how these slow and heavy onager-drawn chariots functioned in battle. Without scythes attached to the wheels and the speed afforded by horses the impact of such chariots on a mass of infantry would be minimal. If the enemy adopted a formation similar to the shield wall shown on the Stele of Vultures the chariots would have no impact at all. Even later when the light two-wheeled horse-drawn chariot was adopted chariots were not used to attack an ordered mass of infantry head on. As Moorey 1986: 203 states, “The light, horse-drawn chariot was never used to charge into dense formations of infantry.” The chariot as depicted on these images must have been reserved for the pursuit of the defeated enemy infantry.¹⁵⁵ This pursuit could not have been very rapid. This is perhaps why so few of the enemy is pictured as having been overcome by the chariots.

¹⁵³ The earliest evidence of the horse in Mesopotamia is around 2000. This is well after the domestication of the horse on the European Steppe perhaps as early as 4000. Hyland 2003: 11; Sabin 2006: 3.

¹⁵⁴ Anthony 1995.

¹⁵⁵ “This is borne out by all surviving representations of chariotry in Western Asia and Egypt in the Bronze Age. It was pre-eminently its speed and mobility as a firing platform and its manoeuvrability over suitable terrain that controlled the horse-drawn light chariot's tactics: to harass, break up and demoralize infantry before and during a battle in the open and to mop up the enemy afterwards, perhaps one of its most effective roles; to provide protection for an army on the march and in combat; to blockade at times of siege; and to transport archers and other elite troops.” Moorey 1986: 203-4.

The bottom image on the Standard of Ur shows four four-wheeled chariots riding over the bodies of the enemy. It is not clear whether the chariots here represent one chariot shown in motion during the attack or four separate chariots. The lack of clarity regarding who, if anyone, is meant to be the king, adds to this confusion. What we can say is that the enemy pictured are dead or fleeing without weapons in a scattered and disordered manner. This is in contrast to the ordered retreat of the enemy in the middle image above. We are seeing the pursuit of the fleeing enemy by the nobles or elite soldiers in their chariots. Certainly we do not see an attack of chariots on an ordered enemy, as would be the case if the chariot attack began the battle.

Still it is not clear whether the action of the chariots as depicted on the Standard of Ur precedes the middle image showing the infantry combat. The reverse side of the standard shows a feast scene. Perhaps it is the feast honouring the victory shown on the obverse. Most experts believe that this should be read from the bottom upwards and this fact is used as evidence that both sides of the Standard of Ur should be read from bottom to top.¹⁵⁶ The bottom scene shows men and beasts of burden carrying goods or war booty. The middle scene shows men leading animals intended for slaughter and fish. The top scene shows dignitaries seated at a banquet. In a Roman triumph war booty is presented before the sacrificial animals and so we may want to read the sequence here in a similar order.¹⁵⁷ However, there is nothing to say whether that is necessarily the case. It is possible that the animals for slaughter were led first followed by the booty. Processing the animals for the feast would have taken more time than a simple display of captured goods required.

I believe that the bottom image on the war panel of the Standard of Ur takes place after the middle one, just as is the case with the Stele of Vultures. The positions of the prostrate enemy are in distinct contrast to the ordered retreat of those facing the infantry advance. As discussed above, the chariot was not able to charge the infantry head on. Consequently the chariots must be shown engaging in the pursuit of an already disordered enemy not in the opening skirmishing stages of a battle. That is not to say that the chariots did not engage the enemy forces before and during the infantry melee, but in my view that is not what is depicted here.

The main armament of the pictured chariot warriors is the javelin, so clearly these chariots were intended to be mobile firing platforms for javelin men. The expense of

¹⁵⁶ See Winter 1985 for the relevant bibliography and a confirmation of this view.

¹⁵⁷ Beard 2009.

constructing and deploying the chariot at this time suggests that these chariot warriors were the elite members of society. The lack of images showing the bow in use on chariots demonstrates the relatively late introduction of the weapon into Mesopotamian warfare, or at least into chariot warfare.¹⁵⁸

It is likely that the chariot warriors harassed the enemy with their javelins before and during the battle as well as during the pursuit. However, on the Stele of Vultures the king is very clearly shown to be leading the infantry on foot before he begins the pursuit in his chariot. If this is true it is possible that he had previously engaged the enemy at a distance in his chariot only to dismount and lead the general advance. It is impossible to know how many chariots were fielded by early Mesopotamian armies but even the missiles of a small number of chariot warriors would be effective against a mass of infantry. Nevertheless the main force of an army at this time was certainly its infantry of heavy infantry of spearmen and axemen, and later also archers. They were supported by nobles in chariots and were customarily led to battle by the king.

Early combined arms warfare

On the Standard of Ur the top scene is the most important one and the other two describe other actions or events. As Frankfort described it “Each subject is divided into three registers...The main scene occupies the upper register, while the others record subsidiary events, for there is no strict time sequence.”¹⁵⁹ On its own it is difficult to say whether the middle or bottom scene is the first action. I agree with Hamblin (2006: 50) that the actions depicted in the three scenes show the aftermath of battle not the battle itself but the order of events is uncertain. The evidence provided on the Standard of Ur for the order of battle must remain secondary to the plentiful evidence provided for other aspects of war, but taken with the other stelai we can form some assumptions.

It is possible that we see the same people depicted in successive frames. The similar representations of the king in separate scenes suggest that this is true. If this is the case then each scene probably represents a subsequent phase of the same battle in the same location involving the king. On the Standard of Ur the marked difference in size of the king in the top scene is not

¹⁵⁸ It is certainly possible that the army of the Sumerians did make use of the bow in chariots. The Stele of Naram-Sin does not show a chariot and is the only one of the three military images to picture archers at all. There is simply not enough evidence to form a conclusion.

¹⁵⁹ Frankfort 1954: 74.

echoed in the other two scenes. The middle scene shows three officers, as we see them, who are perhaps the same as those shown behind the king in the top scene. What we see on the Standard of Ur then may be a victory on behalf of the king by his officers while he waits behind to receive prisoners. On the Stele of the Vultures it is clear that the king is represented in all the scenes proving they depict successive events. As discussed above the images on this stele should be read from top to bottom and so the same is likely true of the Standard of Ur.

We can use the evidence of these two stelai, supported by the Victory Stele of Naram-Sin, to reconstruct a tentative order of battle for Sumerian armies. The first contact in a battle was made using ranks of spearmen fighting behind a line of shield bearers and probably commanded by an officer armed with an axe. Then the infantry using an axe in one hand and a spear in the other joined the general hand-to-hand melee of battle.¹⁶⁰ Once the enemy was forced to flee the pursuit and collection of prisoners began. The king and the nobles rode their chariots in pursuit of the fleeing enemy striking them down with javelins from behind. The prisoners are then presented to the king or the gods as booty and to give thanks for the victory.

All three artefacts, the Standard of Ur, the Stele of the Vultures and the Victory Stele of Naram-Sin, show us the same information about the army of the Sumerian city states. Infantry was the main force in battle and they fought at close quarters, armed with spears and axes. To begin with soldiers were protected by studded cloaks and later used metal helmets and body shields, but no body armour. Archers were also used although they were probably not the decisive force on the battlefield. There was a significant degree of training required for the army and therefore some degree of professionalization. Standards existed to distinguish each regiment and it is probable that there was the possibility of promotion through the ranks. The king had the honour of leading the army into battle. For victory, the Sumerian city states relied on heavy infantry and the chariot was reserved for pursuing the defeated enemy.

There is other evidence in later Neo-Sumerian written documents that support these conclusions. The Shulgi hymns suggest an order of Sumerian battle, despite their poetic exaggerative style. We see Shulgi begin his attack with a hail of missiles—arrows, sling stones, and heavy clay lumps. After this barrage Shulgi engages in hand-to-hand combat, using his mace

¹⁶⁰ As noted above, it is possible that the use of a shield wall in the opening stages of battle was in order to seek protection from massed archery. Once the arrows ran out or the command was given the infantry advanced to hand-to-hand combat where they were accustomed to fight without a large and unmaneuverable shield.

and double-edged axe.¹⁶¹ The Epic of Ninurta describes the king armed with bow, mace, and axe and giving battle instructions to his regiment of “long spears”.¹⁶² The chariot remained an expensive and rare commodity as shown by one of the Mari texts where a nobleman pleads with the king to replace his broken chariot.¹⁶³

It is difficult to use any of this evidence to reconstruct the battle tactics and the degree of integration of the infantry and chariots. We do not see armoured infantry fighting alongside the chariots, and may see the same individuals fighting on foot and in chariots. We also do not know what period of the battle and its aftermath we are witnessing. We must conclude that the infantry were the main force in the battle and that chariots were used in auxiliary roles pursuing the fleeing enemy. As Hamblin (2006: 146-7) says concerning the widespread adoption of an integrated tactical use of chariots,

it probably required several generations to fully develop such tactical expertise, and several more generations for soldiers and other elites to fully accept all the social and military changes required by the new chariot warfare. It was not until the seventeenth century that all of these complex elements were finally in place in the proper balance to maximize the military potential of chariot warfare.

A letter of a later Babylonian King of Isin, Lipit-Estar (1870-1860), describes the composition of his army: two thousand spear men, one thousand archers, and two thousand soldiers armed with double axes.¹⁶⁴ The king is concerned with protecting his cities and so the

¹⁶¹ Klein 1981: 79.

¹⁶² Jacobsen 1987: 244.

¹⁶³ Dossin 1952: 164.

¹⁶⁴ Civil 2003: 53. See also Ali 1964: 76-79; Michalowski 1980-83: 51-59; 55 (section 4.3). The full text is as follows: Letter from Lipit-Eštar to Nanna-ki-ang about driving away the enemy: “1-3 Say to Nanna-ki-aĝ, the general: this is what Lipit-Eštar, your lord, says: 4-7 Because of {enemy troops} {(I ms. has instead:) the enemy}, {I, the king, have sent you a letter} {(I ms. has instead:) I have sent a letter}. Atta-mannum, who pleases his lord, is (?) a better {servant to his lord} {(I ms. has instead:) man} than you! Why is it that {you have not been avenging your lord, and not keeping me informed} {(I ms. has instead:) while I (?) have kept the soldiers loyal (?), you have not stationed them among those people}? {(I ms. adds:) So now you are to station the troops there.} 8-10 Now, {I have sent to you in haste} {(I ms. has instead:) they have pursued (?)} {2000} {(I ms. has instead:) 4000} {(I other ms. has instead:) 3000} soldiers {who are spear-throwers} {(I ms. has instead:) who are spear-throwers}, {2000} {(I ms. has instead:) 4000} soldiers {who are archers} {(I ms. has instead:) who are archers}, and {2000} {(I ms. has instead:) 1000} soldiers {who are double-axe wielders} {(I ms. has instead:) who

army provided for this purpose consisted entirely of appropriately armed infantry.¹⁶⁵ Chariots are not mentioned. They were still primarily used for pursuing the retreating enemy after a battle and so would be out of place in this situation. Nevertheless here we can see the stress placed on heavy, close combat infantry over archers, in a ratio of four to one.

The constant warfare and proximity of all the Sumerian city states almost certainly led to each state implementing the same military structure and armament as its neighbours. Innovations in tactics or arms would have spread to the other states very quickly. Just as in classical Greece, it proved very difficult to maintain hegemony over the other states. Even Sargon's great empire collapsed after Naram-Sin's death (he reigned 2254-2218).¹⁶⁶ "There is no doubt, however, that Naram-Sin was the last great monarch of the Akkadian dynasty" (Roux 1964: 157). His image carved into the cliffs above the gorge of Darband-i-Gawr in the Qara Dagh, serves as a symbol of his power.¹⁶⁷ Yet by the end of the Akkadian kingdom, revolts were brewing in Sumer and Elam as well as wars against the nomadic Alomites and the Lullubi. The military abilities of the early empires of Mesopotamia were not so great as to be able to dominate their neighbours for a lengthy period of time. They did, however, set a platform for the use of combined arms in warfare. Although emphasis still remained with the infantry, chariots were used in battle and provided a vital service in turning a defeat into a panicked rout.

The Hittites and Egypt – the horse-drawn chariot and the composite bow

The next most significant development in the history of combined arms warfare in the East is the successful integration of the horse-drawn chariot. We have already seen that the chariot existed in Sumer but was not used on a wide scale on account of cost and resource restrictions. Until the

are double-axe wielders}. 11-17 The enemy has camped down in Iri-gibil. Chase them away from those settlements; do not Guard (?) each city Do not let these cities out of your grasp. Station your people -- it is urgent!" taken from University of Oxford's *The Electronic Text Corpus of Sumerian Literature* t.3.2.04.

¹⁶⁵ It is worth noting that the army division totaled 5000. The numbers are clearly approximations but the fact that this matches the Egyptian army division of 5000 is interesting.

¹⁶⁶ A document exists called "the Cuthean Legend of Naram-Sin" which presents the great King as overcome and exhausted by an impending invasion but is questionable in its reliability Gurney 1955. Another incomplete inscription shows Naram-Sin only able to defend Agade after the defeat of his great army but again provides little useful information Grayson & Sollberger 1976.

¹⁶⁷ See Edmonds 1925; Smith 1928: figure 9.

horse was established in Mesopotamia on a wide scale, shortly before or just after 2000, chariots were pulled by slower moving animals and as such had minimal military impact. The horse revolutionised chariot warfare by allowing the vehicles to move faster and therefore have a greater influence on the outcome of battles. Nevertheless the chariot still remained a unit of status as a result of cost and training. The majority of troops in an army were infantry.

Sources

Unfortunately the armament of the army is never spelled out in detail in Hittite or Egyptian texts. In both cases the written accounts record the campaigns and victories of various rulers without going into any detail. The Hittite texts do discuss the size of armies sent, allied contingents provided or enemies captured but do not provide any details as to individual unit organization, deployment or armament. They can shed light on the professional organization for the Hittite king and the units employed in the royal bodyguard. But there is no occasion where a battle is described in detail, thus making an analysis of the use of combined arms difficult. Egyptian written sources, with the exception of the accounts of the battle of Kadesh, suffer from the same problems of detail.¹⁶⁸

In Egypt there is a wealth of information to be found on the images of battle that adorn numerous temples and other buildings. Although these sources are all created from an Egyptian perspective they still provide useful information on armament, in particular, that it would not be possible to find elsewhere. These images depict enemies as well as the Egyptian forces and provide useful information for the Hittite soldiers especially. Unfortunately the representation of battle tactics in these scenes is more difficult to determine. To some extent this problem can be mitigated by the accompanying captions that describe the action displayed in the scenes but invariably these are concerned with identifying individuals involved rather than battle tactics.

Nevertheless by combining all the information available, whether from written sources, captions or images, it is possible to create a relatively full account of both Hittite and Egyptian armies. This is especially true concerning unit armament and the relative strengths of chariots to

¹⁶⁸ The battle of Kadesh is a notable exception to the lack of detailed military sources and will be dealt with below in detail. Both written accounts and the pictorial record allow for a relatively accurate reconstruction of the tactics of both the Egyptians and the Hittites in the battle and can therefore add significantly to our understanding of the use of combined arms.

infantry in the army. This latter piece of information is crucial here in order to assess the extent of the use of combined arms in this period.

Infantry

Hittites

In the Middle Bronze Age the Hittites relied primarily on infantry, as did their contemporaries in Mesopotamia.¹⁶⁹ Beal (1992: 50) states that from the Middle Kingdom period onwards, “it would appear that the Hittites had a standing army made up of *UKU.US* and *sarikuwa*-troops.” It is not clear whether the distinction between the two units was one of armament or style (infantry or chariots).¹⁷⁰ There may also have been a special unit of light infantry in the army which could be sent on special missions.¹⁷¹ The Hittite king could also call up levies of all citizens if required.¹⁷² Nevertheless the majority of the army seems to have been infantry.

Certainly a number of Hittite infantry were armed with spears. The procession that surrounded the king on ceremonial occasions included rings of various infantry regiments all armed with the spear. The Hittite infantry pictured on a number of Egyptian reliefs show spearmen.¹⁷³ These men wore armoured coats similar to the chariot warriors. They are usually pictured wearing striped tunics used to imply scale armour. The spearmen are only occasionally depicted using shields. For example only two of the twelve spearmen shown defending the city of Kadesh in the Egyptian mural have shields.¹⁷⁴ However, there is no evidence for Hittite infantry using different weapons, other than daggers or short swords, and so we should conclude that spearmen were the most common form of infantry.

¹⁶⁹ Houwink ten Cate 1984.

¹⁷⁰ Numerous scholars have tried to suggest divisions according to armament type. Archi 1982 views *sarikuwa* as light infantry and *UKU.US* as hoplites. Cornil and Lebrun 1972 differentiate between “ordinary infantry” as the *sarikuwa* and “heavily armed infantry” as the *UKU.US*. Rosi 1984 argues that the *UKU.US* were the king’s own troops but there is little evidence for this. The style division is even harder to support since *UKU.US* is on occasion referred to as infantry and horse troops together. All one can say for certain is that both units formed the standing army. For a detailed discussion of the relevant Hittite texts see Beal 1992:37-55.

¹⁷¹ Beal 1992: 104-8.

¹⁷² A passage from the Annals of Mursili states, “The standing army troops (*UKU.US*), who were with me, were too few. So I mobilized the *ERIN.MES NARARI*.” *KBo* 5.8 I 1-4.

¹⁷³ See Wreszinski 1923: pls. 22; 87; 105; 172; 173; 174. Some of these images show all the Hittite infantry using spears.

¹⁷⁴ See Wreszinski 1923: pl. 87.

The Hittite text detailing the king's bodyguard describes only spearmen.¹⁷⁵ These are successively: "Royal spearmen", "Golden-Spear men", "Heavy-spear men", "Bronze Spear men" and "spearmen". Since all the guard units of the king are spearmen it is likely that the spear was the main weapon of prestige among Hittite infantry.

Archers were a common part of the Hittite military. They may have been required to supply their own arrows although allies could be asked to provide these also.¹⁷⁶ However, there is very little evidence for archers on foot fighting in separate units among the rest of the infantry. As far as I am aware, there is only one instance of bowmen in Hittite texts referring, probably, to foot soldiers.¹⁷⁷ Most references to archery and archers are associated with chariots, where the bow was most effective. Since Hittite armies fielded thousands of chariots together it is possible that all the bowmen in their army fought in the chariots and not on foot.

There are numerous references to chariot runners in both texts and on images. The images for the battle of Kadesh in particular show both Egyptian and Hittite infantry alongside the chariots. These runners would have served "to protect the horses from the enemy foot and runners."¹⁷⁸ The *Poem* 84-5 describes the sight awaiting Ramesses at Kadesh as "twenty five hundred chariot teams surrounding him in his road, together with all the runners belonging to the foes of Hatti and the numerous countries which were with him." These runners must have been lightly armed infantry in order to keep pace with the chariots. They certainly had shields to protect the horses and themselves from the missiles of the enemy charioteers. These are almost certainly a distinct unit in the Hittite and Egyptian armies separated from the rest of the infantry. Schulman (1963: 89-91) suggests that these soldiers screened the advance of the chariots and held the ground until the arrival of the regular infantry, just as infantry often accompany tanks in modern warfare. Serving such a specialised role may have led to them being considered as an elite unit within the military. Beal (1992: 202-3) finds no Hittite term that explicitly refers to these runners but does suggest that they may be equated with the *sarikuwa* troops who were part of the standing army but indicated by one text as being neither infantry nor chariotry.¹⁷⁹

¹⁷⁵ *IBoT* 1.36. See Guterbock and Van den Hout 1991.

¹⁷⁶ Archers supplying themselves: *KBo* 3.34 ii 27-29. Ugarit supplying 1600 arrows: *RS* 15.14: 9-16.

¹⁷⁷ This is in the Old Hittite Law code number 54.

¹⁷⁸ Schulman 1963: 90.

¹⁷⁹ On these troops see note 170 above.

The Hittite army may have been subjected to training drills and perhaps experience qualifications. One text (*KBo* 3.34 ii 21-35) describes the training given to charioteers in at least horsemanship and archery. Another (*HKM* 43 1-7) separates off new recruits from the regular army. Some Hittite troops were supported by grants of land in exchange for service as opposed to the wages the standing army received. This style of army maintenance is reminiscent of the feudal system familiar in Medieval Europe. Certainly the Hittite standing army at least was professional and expected to fight year round. Other supplemental units called up to the army when needed would have been less experienced and reliable.

Egypt

Egypt as a state remained isolated from the rest of the Near East for a long time on account of its location, with the Sinai desert separating it from Palestine and Arabia. This isolation meant that it did not have to develop advanced techniques of warfare to overcome its relatively inferior neighbours. It remained an infantry-based power relying on the bow, axe, and mace, as seen in early depictions of the Pharaoh. As early as 3000 BCE infantry was armed with cutting axe and mace as well as, or instead of, a spear. The simple re-curve bow may have been reserved as the weapon of choice of the elite nobility because of the length of time required for training in its use.¹⁸⁰ The infantry of the Old Kingdom resembled bands of militia rather than a professional standing army. Faulkner suggests (1953: 32-47) that most Egyptian soldiers were untrained.¹⁸¹ He concludes that there must have been a small core of professional soldiers even if there is no direct surviving evidence for it.¹⁸²

The siege mural from the tomb of Inty, dating probably to the Old Kingdom (Dynasties 3–6, c. 2649–2150), provides us with a representation of early Egyptian battle tactics.¹⁸³ We see a large-scale barrage of arrows beginning the battle. Once the missiles were exhausted or the moment was right, the Egyptians then launched into a melee armed with axes. Egyptian archery, it seems, was only effective because of the large number of arrows and the unarmoured

¹⁸⁰ See McDermott 2004.

¹⁸¹ “The fully mobilized army therefore included a great many local corps of the nature of a militia, the members of which will presumably have done military service or have had a certain amount of military training, even though but few will have had any actual experience of warfare”

¹⁸² Faulkner 1953: 33 rightly points to the battle reliefs at Old Kingdom temples as evidence for well-trained troops. A siege is a difficult occupation for conscripts or poorly trained militia.

¹⁸³ Partridge 2002: 141-2.

opponents. One Canaanite is shown still fighting with an arrow in the arm, two arrows in the leg and two arrows in the head. The penetrative power of the arrows was very limited. It is not clear if the archers were a separate force from the axemen.¹⁸⁴ Since there is no image of a shield in use by the Egyptians it is possible that the infantry were armed with both bow and axe. If all the infantry had a bow this would explain the large numbers of archers the Egyptians could field, while still relying on axemen for final victory.¹⁸⁵

In the Middle Kingdom (Dynasties 11-14, c. 2055-1650) there was a prevalence of local magnates who maintained a small corps of retainers as a private army. It is possible that these powerful local baronial troops developed out of local militias much like medieval feudal levies. Despite the problems of a powerful barony the Pharaoh could call on a large number of trained and experienced soldiers, if needed, and ones who were garrisoned in certain areas. The king also maintained his own force of regular soldiers who could be conscripted, as two stelai demonstrate.¹⁸⁶ Numerous stelai mention shock troops as being a distinct and honourable regiment within the army.¹⁸⁷ These men must have been the elite warriors and may have been promoted from the other regiments.

We have some evidence for the army being divided into regiments of archers and regiments of close-combat infantry in this period.¹⁸⁸ The famous model soldiers in the tomb of Mesehti at Assyut (2156-2040) are organized into two units of forty men.¹⁸⁹ It is likely that an Egyptian regiment contained archers and spearmen in equal proportion. The melee infantry are now usually armed with spear and shield rather than axe, although there are some references to infantry armed with shield and axe. Clearly the Middle Egyptian army was more organized and, probably, experienced than in the Old Kingdom.

¹⁸⁴ The Egyptian army in the Middle Kingdom was organized into regiments drafted from a specific province. These provincial armies provided troops to the national army while also acting as local militia. See Faulkner 1953.

¹⁸⁵ Herodotus' Egyptian sources seemed to think that mice eating the Assyrian bowstrings made Sennacherib's army useless to campaign against them: Herodotus 2.141.5. This is almost certainly a reflection of the importance of the bow to the Egyptians themselves as well as to their Assyrian enemies.

¹⁸⁶ Berlin 1198; Cairo 20732. For a discussion see Faulkner 1953: 37.

¹⁸⁷ See in particular Gardiner 1947: 113.

¹⁸⁸ Shaw 1991: 31-9; Partridge 2002: 21-74.

¹⁸⁹ Tiradriti 1999: 108-111.

Why the Egyptians adopted the use of the shield is not clear but it is possible that an increase in defensive armour reduced the effectiveness of the archery in demoralizing the enemy.¹⁹⁰ The close-combat troops would then have had to fight an enemy that was not on the point of flight but that was prepared to resist effectively. In this case the shield would have been a necessary addition to aid in the attack of the close-quarter troops.

The increased effectiveness of archery is another possibility. The famous “Tomb of the Warriors” contained sixty men buried as battle casualties in the time of Montuhotep I (2061-2110). Ten of the soldiers showed obvious signs of wounds from ebony-tipped reed arrows.¹⁹¹ There were undoubtedly more wounds that did not show up so clearly. One individual was killed by an arrow that penetrated his chest into his lung and heart showing that Middle Kingdom archery could be very effective against an unarmoured opponent compared with the ineffective earlier arrows, as noted above.

It is likely that the regimentation of archers and close-combat infantry into separate corps created a specialization of each unit leading to different armament including the use of shields. Hamblin 2006 argues that battles in the Old Kingdom involved an arrow barrage followed by a melee once the missiles were used up or the enemy demoralized, as discussed above. He suggests that in these instances it is likely that every infantryman fired his bow before dropping it and charging into the fight with axe and/or spear. Once these two infantry units (archers and melee infantry) were separated and specialized, the unarmoured archers would be protected by the shields of the close-combat troops and remained out of the close-quarter fighting. In turn the close combat troops did not need both hands free to shoot a bow and so could be equipped with shield and offensive weapon.

A shield would also have been useful in sieges when the missiles would cause more damage coming from a greater height. Shields in this situation would also provide protection for the archers and ladder bearers of the besieging army as is the case throughout ancient warfare.

¹⁹⁰ Hamblin 2006: 427 notes the obvious reliance in the use of shields in close combat but offers no reasons as to their adoption in the Middle Kingdom. The pharaoh Senwosret I is praised for trampling the enemy underfoot while grasping his shield (Lichtheim 1975-80: vol 1.225-6; Parkinson 1997: 30-1). The iconography of combat follows this new reliance on the shield in the melee. See Shaw 1991; Partridge 2002. Spalinger 2005 has no detailed discussion of weapons and armaments and mentions the use of shields without examining when and why they were first used on a wide scale.

¹⁹¹ Winlock 1945.

The men in the Tomb of the Warriors, as discussed above, were killed in a siege (Winlock 1945), and sieges were more common than pitched battles in Egypt in the Old and Middle Kingdoms.¹⁹²

On account of the prominence of the Nile in Egyptian geography much of early warfare was linked to naval superiority on that river where the boats transported the infantry to and from battle.¹⁹³ Control of the Nile allowed transport across the river as much as along it, and the flow of the river could be altered to impede the enemy.¹⁹⁴ “The fleet moved the soldiers but the actual armed conflict was to take place upon flat ground.”¹⁹⁵ The navy was the principal military force and “the ordinary warriors, the footsoldiers, were inferior to the sailors...Even though members of the military elite could be from the middle classes, the army ranks remained separate and lower than the naval ranks. The elite warriors were those in the royal navy” (Spalinger 2005: 5-6).

The New Kingdom in Egypt brought new variations of weapons, such as the sword and spear or javelin, as well as the adoption of body armour.¹⁹⁶ The influx of the so-called ‘Sea Peoples’ is often given for a change in warfare in Egypt to close-combat massed infantry.¹⁹⁷

The twelfth century sees the appearance of new weapons such as the Naue II slashing sword and the javelin as well as defensive armour like the waistlength corselet, greaves,

¹⁹² Spalinger 2005; Hamblin 2006.

¹⁹³ See in particular Berlev 1967.

¹⁹⁴ Perdikkas’ disastrous attempt to cross the river and attack Ptolemy shows the continual importance of the Nile in Egyptian warfare (Diodorus 18.33-5).

¹⁹⁵ Spalinger 2005: 4. Discussing the war inscriptions of Pharaoh Kamose, the last King of the XVIIth Dynasty (ca. 1560), as a source for the Egyptian army Spalinger concludes that “...No chariot encounters are described (as one might expect) nor is there any indication of how the native Egyptian army was organized...Kamose stresses his capture of Apophis’ chariots and fleet outside of Avaris, but little else is revealed concerning the make-up of either army.” Apophis was one of the later kings of the so-called Hyksos who carved out a kingdom in northern Egypt around 1700.

¹⁹⁶ For a good detailed discussion of the weapons in the Egyptian army and their evolutions see Partridge 2002 and recently Spalinger 2005. Also see Yadin 1963. On the social changes see Gnirs 1996. On the organization of the New Kingdom military see the seminal Schulman 1968; Yoyotte & Lopez 1969; Kadry 1982. For a more general view of the Egyptian army throughout see Shaw 1991; & 1996; Gnirs 1999. The most comprehensive study is still the multi-volume work of Avdiev 1959, but parts of it are now a little out of date.

¹⁹⁷ On the Sea Peoples see in particular Dever 1992; Sandars 1985. On the change in warfare see for example Drews 1993.

and the round shield. On this basis, it has been suggested that the introduction of mass infantry tactics allowed the raiders and pirates – barbarian hill people” – to overwhelm the chariot forces employed by the Late Bronze Age kingdoms. (Hall 2007: 52)

However, as argued above, infantry were always a core part of the Egyptian army just as they were in Sumer and among the Hittites. In fact there is significant doubt about the likelihood of an invasion of Egypt by Libyans and other ‘western’ Sea Peoples. The first attack defeated by Merneptah in 1208 and depicted at Karnak included peoples, such as the Peleset and Shekelesh, who had already been serving as mercenaries in the armies of the Hittites and Egyptians.¹⁹⁸ The previous use of Sea Peoples’ infantry suggests that the attack cannot have been the result of widespread migration or a new wave of settlers. Moreover it is possible that Ramesses III invented the latter invasion of the sea raiders in 1179, as depicted at Medinet Habu,¹⁹⁹ “out of a series of minor local clashes and even that he claimed the earlier victories of Merneptah for himself.”²⁰⁰ If this is true then it is likely that the new technologies and infantry tactics spread in the usual way of mutual contact. The belief that the new weapons led to new warfare styles is prevalent “though can only really be linked to external raiders if one assumes that chariot warfare and mass infantry tactics were each the exclusive preserve of different populations.”²⁰¹

Egypt in the New Kingdom did use foreigners in the army.²⁰² Those most often depicted in this period were a group of mercenaries called the Sherden. These soldiers are differentiated from the Egyptian troops “by means of their round shields, long swords that are wide close to the haft, and their cap-like helmets surmounted by two prongs and a small sphere” (Spalinger 2005: 209). It is not clear exactly when these troops were first introduced but they do not appear on the battle reliefs of Seti and are first clearly distinguished in the reliefs of the reign of Ramesses II.²⁰³ Another group of foreigners who fought at Kadesh are the Nr’n, or Nearin, and are often equated

¹⁹⁸ For the military aspects of this battle see in particular Manassa 2003.

¹⁹⁹ See in particular Spalinger 1980 for Medinet Habu.

²⁰⁰ Hall 2007: 52.

²⁰¹ Hall 2007: 52.

²⁰² Spalinger 2005: 7 is correct to distinguish these troops from mercenaries fighting for pay.

²⁰³ For the inscriptions of Seti see Murnane 1985. For the Kadesh inscriptions see Gardiner 1960.

with Canaanite, or other Semitic, mercenaries.²⁰⁴ However, they are not distinguished on the relief from the Egyptian soldiers and so their foreign nature is uncertain.

It seems, therefore, that much of the Egyptian infantry's organization in the New Kingdom was carried over from the Middle Kingdom. The corps of shock infantry troops, in particular, retained its important position.²⁰⁵ The new infantry weapons eventually found their way into the Egyptian military but did not prompt any change in warfare style. The light horse-drawn chariot is the one technology that did significantly alter Egyptian warfare, just as it did in most other eastern civilizations.

Chariots

Hittites

By the mid-eighteenth century the chariot began to be used more extensively in battle. Suppiluliuma, the Hittite king, described his army as, "Princes and high ranking officers, with infantry and [chario]try."²⁰⁶ One text sees a general, after defeating an army of 500, claim to have captured twelve charioteers, who were important enough to warrant a prisoner exchange for two officers.²⁰⁷ If we include other charioteers who were not captured we have a ratio of chariots to infantry somewhere between 1:35 and 1:40. This is the same as the ratio shown on the Anitta inscription where the enemy king escapes his destroyed city with 1400 men and 40 chariot teams.²⁰⁸ The Hittites became synonymous with extensive chariot armies and fielded 3,500 at the battle of Kadesh in the thirteenth century.²⁰⁹

The chariots of Hittite royal army were provided by the official of the storehouse.²¹⁰ This suggests that there was a central arsenal for the army, or at least for the standing army, although

²⁰⁴ See Zuhdi 1978; Schulman 1962; Schulman 1981. Schulman and Rainey 1973 both argue that the N'rn were Egyptians. Zuhdi argues they were Canaanites from Amurru, and Goedicke 1966 argues that they were other Semitic mercenaries called Apiru.

²⁰⁵ These shock troops stormed the breach at the second siege of Kadesh and their leader was duly promoted: Sethe 1906: 894.

²⁰⁶ Nougayrol 1956: 49.

²⁰⁷ Heimpel 2003: 417.

²⁰⁸ Bryce 1983: 27.

²⁰⁹ For a good summary see Gurney 1966 and for the military organization in particular see Beal 1992.

²¹⁰ *KUB* 13.3 iii 9-13.

there is very little evidence for government run armament manufacture and distribution.²¹¹ Some charioteers were expected to provide their own equipment or at least owned their own chariot and horses.²¹²

Hittite chariots are shown on the battle reliefs of the Egyptian pharaoh Seti I.²¹³ In each chariot is an archer and a shield bearer. The latter probably uses his free hand to drive the chariot. At Kadesh Ramses II's reliefs emphasize that Hittite chariots contained three men as opposed to the Egyptian custom of two and show the Hittite King's chariot containing a quiver for arrows.²¹⁴ At some point between the two pharaohs the Hittites added a third warrior to the complement of a chariot but it is not clear when this occurred. On the Kadesh reliefs one of the Hittite charioteers holds a spear or javelin perhaps as long as eight feet. It is not clear how these spears were used in battle and the Hittite texts provide no connection between chariots and spears. The main armament of a chariot warrior was the bow and remained so despite the increased number of soldiers riding in the chariot.²¹⁵

There may also have been an elite chariot unit in the Hittite military. This unit may have been the bodyguard for the king in battle. Since he rode in a chariot in war his infantry bodyguard of spearmen could not have accompanied him. Each unit of bodyguards, chariot and infantry, were given the honorary term "golden" in Hittite texts. They were not armed differently but were certainly recruited from the better charioteers or from among the nobility and the king's own family.²¹⁶

The Egyptian reliefs, of the battle of Kadesh in particular, show the Hittite charioteers wearing a long ankle-length garment with different stripes that probably represents scale armour.²¹⁷ Such scales have been excavated at Bogazkoy in quantity.²¹⁸ This evidence is supported by a few Hittite references to armour in the texts. These texts make mention of a head

²¹¹ See Beal 1992.

²¹² *KBo* 22.55; *KBo* 5.7.

²¹³ Murnane 1985

²¹⁴ Gardiner 1960

²¹⁵ Beal 1992: 162-172.

²¹⁶ Guterbock and Van den Hout 1991. See also Beal 1992.

²¹⁷ Gurney 1966.

²¹⁸ Beal 1992; Bryce 2006.

covering piece of armour, or a gorget.²¹⁹ This is used for chariot horses as well as the scale armour.²²⁰

The Hittites, and later the Egyptians, may have owed their reliance on chariotry to the influx of Indo-Aryans called the Hurrians. These people became the leaders of the Mitanni Empire in Syria.²²¹ The Hurrians were experienced horsemen and composite bowmen. Their Empire, which covered much of Mesopotamia, formed the buffer between the Hittites and Egypt. Both the Hittite Empire and the Egyptian New Kingdom had to adopt and perfect the use of chariots and the composite bow in order to face the influence of the Mitannian military. “In the course of the history of Mitanni, this military elite...was transmuted into a kind of hereditary aristocracy” (Willhelm 1989: 19) who ruled over a local population, who were perhaps ethnically different.²²²

The best evidence for the Mitanni society comes from the Nuzi texts discovered in three cities on the eastern edge of Hurrian control: Nuzi, Kurruhanni, and Arrapha. Just as in the Hittite Empire, the palace was central to Mitanni life.²²³ Alongside central administration and court life, the palace also dictated the collection and dispersion of goods for trade, as was the case in contemporary Mycenaean Greece. Raw materials were sent to the palace and

its virtual monopoly in trade meant that it organised the import of metals (apart from precious metals, principally copper, but also tin and iron) which were then mostly transformed into military equipment by the palace’s own craftsmen (Willhelm 1989: 45-6).

The military elite lived in the environs of the palace, and the central government organized and controlled the local armament industry:

The palace possessed an arsenal where armour for warriors and horses and various kinds of weaponry were stored. In the case of war, the contingents were apparently armed and equipped by the palace; only members of the chariot troops were responsible for the

²¹⁹ Houwink ten Cate 1984. See also Bryce 1983.

²²⁰ Beal 1992.

²²¹ Willhelm 1989; Redford 1992.

²²² See O’Callaghan 1950/51.

²²³ Willhelm 1989: 42-48.

upkeep of their own horses and chariots ... and most likely had their own weapons. (Willhelm 1989: 46).

Although our evidence of the Mitanni in war is sparse, we can see the effects of their military expertise through its decisive impact on their neighbours. The Mitanni supported the opposing side to the Egyptians at Megiddo and were hostile to Egypt until the two powers signed a peace treaty at the end of the fifteenth century.²²⁴ The Mitanni were also included in the long list of allied states who fought at the battle of Kadesh under the command of the Hittite King Muwatallis. The Hittites eventually became the overlords after the collapse of the Mitanni Empire a little before Kadesh.²²⁵ After the Hittites overcame the Mitanni the chariot class, Maryannu, were incorporated into the Hittite army. This class of warrior was somewhere below the aristocracy but above normal citizens and always maintained its Hurrian connection.²²⁶

Egypt

Until the influx of the Hyksos into Egypt around 1800 the concept of chariot warfare did not exist in Egypt and neither did the use of the composite bow.²²⁷ The pharaohs quickly had to adopt the same tactics and weaponry as their new enemies or face losing the whole country. That they re-established Egyptian dominance and eliminated the Hyksos threat is a testament to their adaptability and perseverance.²²⁸ It is no coincidence that the success of the pharaohs in overcoming the Hyksos allowed them to establish Egypt as the major Empire in the East until the coming of the Neo-Assyrians in the tenth century.

The army of the so-called New Kingdom, ushered in by the XVIIIth Dynasty's defeat of the Hyksos, relied on chariots alongside the infantry, and the close combat troops retained their

²²⁴ Redford, 1992: 158-64.

²²⁵ See Gardiner 1960. For a great comparison with Hittite, Mitanni, and Egyptian armies see the military system of the state of Ugarit: Rainey 1965.

²²⁶ O'Callaghan 1950/51. See also Beal 1992: 178-184.

²²⁷ There has been much debate concerning the nature of the arrival of the Hyksos. The old established view as propounded by Winlock 1955 is of a large-scale military invasion based on the success of the eastern technology unknown to the Egyptians that was used by the Mitanni, Hittites, Babylonians and Assyrians. The prevalent view now is of a semi-peaceful immigration of large numbers of people whose new technology began to threaten the established powers of the Pharaohs. See Redford 1970; Booth 2005.

²²⁸ The Second Intermediate Period is the name given to the period of Hyksos domination and covers most of the XIVth, XVth, XVIth and XVIIth Dynasties of Egypt (ca. 1750-1560).

importance. Once chariots were adopted by the Egyptians from their Asiatic neighbours they became the mode of fighting of the warrior elite, replacing the navy.

Egyptian chariots in Dynasties XVII and XVIII were light and small with four spokes but seem to have been replaced later by larger more sturdy chariots with six spokes.²²⁹ The steadily growing reliance on the chariot in Egyptian, and eastern, warfare is firmly integrated with the use of the composite bow. Even while Egyptian warfare was still confined to the Nile Delta, where there was little space to use a chariot effectively, the composite bow gained in importance. Its greater power over other types of bows used earlier meant that an arrow could penetrate simple armour at close range and significantly increase the distance arrows could fly. The consequent adoption of body armour of leather and metal plates brought the Egyptians up to the level of technology enjoyed by the Western Asiatic powers.

The composite bow began as five pieces of plain or laminated wood, a central grip, two arms and two tips. Once glued together, this timber “skeleton” was then steamed into a curve, opposite to that it would assume when strung. And steamed strips of horn were glued to the “belly.” It was then bent into a complete circle, again against its strung shape, and tendons were glued to its “back”. It was then left to “cure”. And only when its elements had been untied and strung for the first time. Stringing a composite bow, against its natural relaxed shape, required both strength and dexterity.²³⁰

The bow is made from a combination of wood, sinew and bone. It took a significant amount of time and energy to build such a bow and large scale industries would have been required to furnish such bows for whole armies. As a result the composite bow became the weapon of the elite and those who could afford to have one made for them. States would have had to spend significant amounts of resources to equip their army. This is perhaps the reason why infantry archers are not attested in the Hittite sources. Archers using the composite bow would have been a valuable commodity and would have fought in the equally valuable chariots rather than on foot.

The combination of chariot and archer was a very effective method of combat since the archer could range over a great distance while easily remaining out of the close-quarter combat.

²²⁹ On the chariot see in particular Littauer & Crouwel 1979; Littauer & Crouwel 1985; Johnson 1992; Anthony 1995. Still the best summary is Keegan 1993: 155-182.

²³⁰ Keegan 1993: 162-3.

The Egyptian pharaohs and elite warriors quickly moved from being naval captains to chariot-borne archers in order to maintain their ceremonially superior positions in the military.²³¹ This Egyptian use of the chariot for archers is in contrast with the Egyptian representations of Hittite chariots transporting heavy infantry armed with spears. As discussed above, the Hittite chariot was a larger vehicle carrying three men but the soldiers still used the bow. The famous battle of Kadesh between these two powers is a prime example of their different styles of chariot warfare.

Early eastern uses of Cavalry

“As an arm of the military, cavalry does not figure in texts or images before the first millennium” (Postgate 2000: 98). There is some evidence for the use of cavalry by the Hittites and Egyptians in the Bronze Age.²³² This is also true for Mycenaean Greece as will be discussed later. A number of seals from Mesopotamia seemingly show riders with helmets and in a military context.²³³ In Egypt there are a number of examples of cavalry. The battle reliefs of Seti I at Karnak show seven mounted Syrians and Hittites, five of whom ride horses fitted for riding and are armed with bows and/or shields.²³⁴ The reliefs of the battle of Kadesh show four Egyptian horsemen armed with bows and quivers. Three of these riders are explicitly marked as “scout.”²³⁵ Scouting remained the principal use of cavalry in warfare even after their use as shock assault troops.

Schulman (1957: 270) argues that the Egyptians maintained a small force of light cavalry primarily to be used as scouts, and perhaps in pursuit of the enemy over rough terrain in particular. If this is the case then it is probable that the Hittites did the same since military style is often copied by neighbouring states. Little emphasis is placed on this cavalry unit in a military context in any state of this period and so we cannot make any firm conclusions regarding the use of cavalry in war in the Bronze Age.

Combined Arms

²³¹ The many portrayals of pharaohs in battle firing arrows from a chariot demonstrate this fact. For one of the earliest examples, that of Ahmose, see Harvey 1998: 303-372; Harvey 1994: 3-5 and Spalinger 2005: 8-24.

²³² See for example Postgate 1988: No. 99; Akkermans 1998: 253-4 Fig. 10; Mayer 1995: 456

²³³ Moorey 1970.

²³⁴ Murnane 1985; Spalinger 1985.

²³⁵ Schulman 1957.

The armies of the Hittites relied on chariots in great number. These chariots carried three men armed with bows and spears, and these soldiers were able to fight in hand-to-hand warfare if forced from their vehicle. The largest force in Hittite armies was the infantry. These were primarily spearmen, but may have included archers. The level of integration of infantry and chariots is difficult to determine. The only evidence for the Hittite army in battle is at Kadesh where the king's strategy involved the use of his chariot force only, as discussed below. It is impossible to determine from this battle, or any other sources, how infantry would fight alongside the chariots. All we can say for certain is that the Hittites did field large numbers of chariots and infantry, both missile and heavy. The two types of soldier must have been used together in a system of combined arms but the tactical details are lost to us.

The army of Egypt went through a number of changes and was constantly forced to adapt to new military innovations. By the Egyptian heyday of the New Kingdom the army was very similar in style and function to most of the other contemporary armies, in particular the Hittites. The chariot force was the elite unit of the army. The chariot archers would normally stay out of hand-to-hand combat, but were armoured well enough to engage effectively at close quarters if necessary, as in the battle of Kadesh. The mass of Egyptian infantry was a mixture of archers, axemen, and spearmen with varying degrees of professionalism and armour. An increased use of foreign troops, such as the Royal Bodyguard of Sherden, became the standard practice in Egypt, just as in Assyria. The Egyptian army was very able and, just like the Hittites and most other contemporary states, met its match only in the advanced and integrated armies of Neo-Assyria.

There are few descriptions of battles involving Hittites or Egyptians that can tell us about the actual deployment and use of chariots and infantry in war. A few, however, do describe the composition of the army. In the Harris Papyrus Ramesses III addresses "the princes, and leaders of the land, the infantry and chariotry, the Sherden, the numerous archers, and all the citizens of the land of Egypt."²³⁶ Here we can see that the archers are listed as separate from the infantry, and the chariotry and the Royal bodyguard of Sherden also receive a separate listing. On a stele Thutmose describes his forces as he prepares for battle against a Nubian prince: "The chariotry was in battle lines beside him, his infantry was with him, the strong-of-arm consisting of the nfrw who were (usually) beside him on the flanks."²³⁷ This provides us perhaps with a standard

²³⁶ Breasted 1927: No. 397.

²³⁷ As quoted in Schulman 1963: 76.

deployment of the Egyptian army: chariots drawn up in battle lines and the infantry around the pharaoh, presumably in the centre, with the flanks protected by the best close-quarter infantry. It is not clear if the chariots are to the sides of the infantry or in front of them. Unfortunately it is impossible to determine the precise tactics of the battle. Nevertheless the army deployment suggests that the Egyptians intended to make use of chariots and infantry in conjunction. This is the most crucial part for the search for the development of combined arms.

Against combined arms: overreliance on the chariot in Egypt – The battle of Megiddo

The first major battle of the New Kingdom for which we have detailed evidence is the famous battle of Megiddo. In fact Megiddo is the first battle in history that is well documented in surviving sources. According to Nelson (1913: 6), the battle took place on 19th April, 1479. The Pharaoh Thutmose III led an army against a coalition of rebels in Syria headed by the Prince of Kadesh. Thutmose was so successful and so proud of his achievements in this, his first campaign as sole ruler, that not only did he record the details of the battle in the official war diary (which has survived) but also had the details officially inscribed on the walls at Karnak.²³⁸ It is possible to reconstruct the events of the campaign and the battle from the Egyptian evidence, although as always some details remain obscure.²³⁹

It is not clear exactly how many troops Thutmose had in his army.²⁴⁰ Thutmose held a meeting with his officers to decide which of the three routes to approach Megiddo.²⁴¹ He chose the risky middle route through the narrow Aruna Pass while sending chariot forces down the other two routes. The enemy had posted forces at the two easier routes and so were caught off guard when the Egyptians went through the Pass. There is still a debate whether or not the

²³⁸ The text of the war diary is often referred to as the “Annals”. For the best English translation see Lichtheim 1976: 29-35. “It was the custom in the Egyptian armies of the Empire to keep a regular diary of the course of a campaign, a task which was entrusted to the *imy-r ss msr* ‘chief military scribe,’ copies of these diaries were deposited in the archives of the temple of Amen-Re at Thebes, and Tuthmosis III caused extracts from the records of his campaigns to be inscribed on the temple walls.” Faulkner 1942: 2. The battle is mentioned on a number of stelai (Pylon VII at Karnak; Karnak Temple of Ptah; Gebel Barkal; Armant) but none provides the details of the Annals.

²³⁹ There have been many modern reconstructions of the battle. See in particular Nelson 1913; Faulkner 1942; Goedicke 2000; Redford 2003.

²⁴⁰ Redford 2003: 197 argues for 10,000 men but Spalinger (2005: 86-90 also 99 note 22) believes it was more likely 5000 based on the travel times through the Aruna Pass.

²⁴¹ See Faulkner 1942: 3-4.

Syrians posted troops in the pass and were fought off by a skirmish.²⁴² Although it would have been strategically foolish for them not to attempt to hold the pass, the Syrians probably did not have enough men to hold all three travel routes in force. They probably decided to leave the pass unguarded assuming that Thutmose would avoid the most difficult route, which would cause his army to advance in a very narrow, and vulnerable, column.²⁴³

Nevertheless the battle was fought a short distance in front of Megiddo on the day after Thutmose emerged from the Pass. The Egyptians won convincingly and the enemy fled, abandoning all their chariots, numbering 924.²⁴⁴ The survivors were hauled up into the city of Megiddo by its inhabitants while the Egyptian army stopped to plunder the enemy camp, much to the annoyance of Thutmose. As the *Annals* recall (as quoted in Faulkner 1942: 4):

Would that His Majesty's soldiers had not devoted themselves to looting the goods of the foe! They would have [captured] Megiddo then and there while the wretched foe of Kadesh and the wretched foe of this city were being dragged up scrambling to get them into their city, for fear of His Majesty entered [into their bodies] and their arms were weakened.

The city fell after a siege and Thutmose succeeded in asserting Egyptian authority over the princes of Syria.

It is possible that the force of the Syrians was very small and may have comprised chariots alone. Only 340 live prisoners and 83 hands are listed as booty along with 200 leather corselets, 924 chariots and 2,238 horses of varying kinds as well as an unspecified number of colts. This indicates that perhaps only 423 enemy soldiers were overcome by Thutmose's attack. The sources state that the Syrians were hauled up into the city while the Egyptians plundered the camp. The number of captured chariots suggests that the Syrian army numbered at least 1850. 1400 men seems a large number to be hauled up into the city by ropes alone. Perhaps Megiddo opened its gates to the fleeing army while it was safe to do so and those men left outside after the precautionary closure were hauled up by ropes.

²⁴² A.J. Spalinger 2005: 92; Faulkner 1942: 7-8; Redford 2003: 27-29.

²⁴³ Yeivin 1950.

²⁴⁴ Faulkner 1942: 13 argues that the Syrians were caught by surprise in mid-maneuver by the Egyptian chariots but Spalinger 2005: 91 rightly states that there is no evidence for that in the one-sided Egyptian sources.

The details of the battle itself are elusive and, according to Spalinger (2005: 91), “it remains impossible to ascertain the reasons for the Egyptian success except to emphasize the qualities of leadership, the numerical superiority of men and weapons, and the morale of the Egyptian army.” These conclusions also seem to be rather tentative considering the type, quality and quantity of evidence available. Certainly the Egyptians won easily but the reasons are open for debate.

If we assume the Syrians were caught off guard by Thutmose’s arrival through the small pass, the forces that were guarding the other entrances on their flanks would have had to rush to the centre to give battle. Infantry could not have covered the distance in time. Therefore, it is possible that Thutmose was opposed only by chariots. Had the two forces met in a regular battle the result may have been different. The strategic and tactical circumstances were against the Syrians as soon as they were surprised by the arrival Thutmose’s force through the pass. The number and nature of combatants on each side is impossible to determine for certain, as is the relative level of each side’s armament or training.

That Thutmose decided to advance through the pass, against the advice of his generals, demonstrates his confidence in his army and himself rather than necessarily any strategic brilliance.²⁴⁵ The element of surprise proved crucial in catching the enemy off guard and certainly brought about the victory but there is no way to be certain this was Thutmose’s intention.²⁴⁶ The battle, then, serves to illustrate more the Egyptian and Syrian reliance on chariots, and Thutmose’s self-confidence, rather than the nature of Egyptian battle tactics.

The search for combined arms in early battle - Kadesh

The only sources that describe an actual battle involving chariots and infantry in significant detail are concerned with the battle of Kadesh. This battle illustrates the difference between the

²⁴⁵ Faulkner 1942 argues that the Egyptians won at Megiddo precisely because of Thutmose’s strategic ability. In my view the evidence is too scarce to support this conclusion and Faulkner confuses self-confidence for strategic ability. However, if Thutmose knew that the pass was unguarded then he correctly realized the decisive importance of surprise and did display great tactical ability. If he did not, he exposed unnecessarily his whole force to the possibility of a devastating ambush in a confined valley which would have had disastrous results for the army and the campaign. Again the evidence in the sources is too scarce to argue for one side or the other.

²⁴⁶ Surprise is a key strategic tool for generals in all periods but can often lead to disaster for the attacking side as much as the defenders. For the Canaanite and Hittite use of strategy see Yeivin 1950. For the use of surprise in Greek warfare as a positive and negative factor in battle see in particular Roisman 1993.

armies of the Hittites and the Egyptians, as well as the battle tactics and army organization of the pharaohs to a certain degree. It is the first detailed recording of combined arms in battle, but still the emphasis is on one type of warfare alone. Chariots dominate the armies of both sides and it seems that the Hittites did not send any infantry into the battle for whatever reason. Although both armies comprised infantry and chariots (and perhaps cavalry), the battle plan of either side never achieved a complete integration of each unit type.

For 300 years the Hittites in Anatolia and the Egyptians were bitter rivals. The two largest empires of the time, they constantly clashed over control of Syria and the Levant. The battle of Megiddo was an attempt by Egypt to wrest control of that area away from Hittite overlordship, which worked for a time. Two centuries later the two powers clashed for the final time at Kadesh by the River Orontes in 1286/5.²⁴⁷

There are many sources that describe the battle. Most sources are from Egypt detailing the apparent victory of Ramesses II. The Egyptian propaganda machine was very keen to present Kadesh because of the heroic actions of the Pharaoh that saved his army from complete destruction. These mainly comprise reliefs on various temples and buildings in Egypt with accompanying inscriptions.²⁴⁸ The two written sources in the form of temple inscriptions, the *Poem* and the shorter *Bulletin*, provide details of times and locations but the military aspects of the combatants are best seen on the reliefs themselves.²⁴⁹ All of the Egyptian sources present a very one-sided view but can provide us with enough information to reconstruct the events of the

²⁴⁷ For a good discussion of the state of play in Asia before Kadesh see Murnane 1985. The precise dating of the battle is difficult on account of chronological problems in dating Egyptian history. Dates suggested are 1300, 1286 or 1275/1274 but the main scholarly consensus is for the latter.

²⁴⁸ There are many surviving depictions. The earliest is probably that at Abydos but this is fragmentary. Two versions exist at Karnak, two more are at the Pharaoh's death temple, the Ramesseum, three versions are at Luxor and a more condensed version is found at Abu Simbel in Nubia. See Gardiner 1960; and Spalinger 1985. On Abydos see Spalinger 2003; On Abu Simbel see Spalinger 1980.

²⁴⁹ See Breasted 1903; Wilson 1927; and recently Kitchen 1999. Also see Gardiner 1960 for the *Bulletin* in particular and Spalinger 2002 for later papyrus versions of the battle. For the texts of each inscription see Breasted 1927: vol. 3.306ff and Gardiner 1960.

battle.²⁵⁰ A cuneiform letter, treaty, and historical account and perhaps a letter from a general in Ugarit are all of the Hittite sources that mention Kadesh.²⁵¹

Ramesses marched to Kadesh with his army separated into four independent divisions: Amun, Re, Ptah, and Seth.²⁵² A fifth division referred to as the N'rn or the Nearin may have been detached en route or called for as reinforcements.²⁵³ The Sherden fought as part of the Royal Bodyguard with what was primarily an Egyptian army.²⁵⁴ Around eleven kilometers away from the city, Ramesses was told by some Bedouin that the Hittite army was still distant in Aleppo and so he proceeded without joining his four divisions.²⁵⁵ Ramesses, personally leading the advance division of Amun, arrived at Kadesh and made camp to wait for the other divisions.²⁵⁶ While there he learned from captured Hittite scouts the real position of the Hittite army and hurriedly sent messengers to speed along the other three Egyptian divisions.²⁵⁷

The sources only provide numbers for the Hittite army of 18-19,000 men, of which between 7,500 and 8,500 of them were infantry and 10,500 were charioteers, three men to a chariot.²⁵⁸ The Egyptian army probably numbered 5,000 men a division and so totaled 20,000.²⁵⁹

²⁵⁰ Many scholars have dealt with the battle of Kadesh. Some of the most important are: Yeivin 1950; Faulkner 1958; Goedicke 1966; and 1985a. Also see Schulman 1962; Ockinga 1987; Santosuosso 1996. The most recent summary is Healey 2000 but it focuses more on the Egyptians than the Hittites.

²⁵¹ See Gotze 1929; Edel 1949; Pritchard 1969: 319. On the Ugarit letter see Nougayrol 1968; Schaeffer 1968.

²⁵² *Poem* 57-63. All of the references to the *Poem* and the *Bulletin* come from the standard translation of the texts found in Gardiner 1960.

²⁵³ The nature of this division is discussed briefly above. Its role in the battle is discussed below.

²⁵⁴ The armaments and foreign nature of the Sherden are discussed above. The Sherden were foreigners who were given land in Egypt in return for military service: Spalinger 2005: 7.

²⁵⁵ *Bulletin* 9-30. There is some debate amongst scholars whether this false report was believed by Ramesses. Montet 1981: 237 and Goedicke 1985a: 84 claim that the Hittites and Egyptians had prearranged to meet for battle at Kadesh, but this is untenable since all the accounts of the battle show Ramesses' surprise at the location of the Hittite army and his shock at the attack of the Hittite chariots.

²⁵⁶ *Poem* 75 ff. and *Captions* 1.

²⁵⁷ *Bulletin* 32-52 and *Captions* 8. *Bulletin* 72-75: "command was given to the Vizier to hurry the army of His Majesty as they marched on the road to the south of the town of Shabtuna." It is possible that the order to advance was only sent to the closest division, that of Ptah. See Santosuosso 1996: 438.

²⁵⁸ *Poem* 40-53; 82-7; 146-52 and *Bulletin* 21-25. The *Relief Captions* describe 18,000 (*Caption* 43) and 19,000 (*Caption* 44).

Numbers for armies provided in ancient sources are almost always severely exaggerated for a number of reasons.²⁶⁰ In this case the Egyptian estimates of the size of the enemy army must have been inflated on order to show Ramesses' heroic actions in a better light. In this case the Hittite army probably numbered around 15,000.²⁶¹

Without getting into the debate on the distances and locations of the other three divisions we can briefly summarise the events of the battle. The first force of Hittite chariots, numbering 2,500 according to the sources, drove across a ford of the river and charged into the right flank of the unprepared division of Re.²⁶² The Egyptians were taken completely by surprise and the chariots and infantry fled in panic towards the Egyptian camp.²⁶³ The Hittites wheeled to their right and advanced on Ramesses' camp outside the city of Kadesh penetrating it, on account of the confusion caused by the fleeing troops of Re, and headed for the Pharaoh himself.²⁶⁴

Ramesses realized the threat and personally charged into the midst of the Hittite chariots, accompanied by his bodyguard and the remnants of his two divisions. The Hittite charioteers had begun to dismount in order to take up booty from the Egyptian camp while their overall momentum had been dissipated by the many obstacles of the camp itself. The Egyptian counter attack caught the Hittites off guard and caused significant casualties. The tide was turned in Egyptian favour when a fresh group of soldiers arrived from the west. This division is called the Nr'n in the sources and may have been Egyptian or Canaanite infantry.²⁶⁵ Their arrival spurred on the Egyptians and after six successive charges Ramesses finally forced the Hittites into retreating.²⁶⁶

²⁵⁹ Breasted 1903: 88. Although there is very little evidence for this at Kadesh it is likely based on comparative evidence of Egyptian expeditions numbering 5,000. See Faulkner 1953: 42-3.

²⁶⁰ For a good discussion of the exaggeration of ancient sources regarding troop totals see Maurice 1930. As a comparison see Plumpe 1938 for Xerxes' invasion of Greece and Milns 1976 for Arrian's troop totals.

²⁶¹ Santosuosso 1996: 437.

²⁶² *Poem* 55-71, *Bulletin* 26-27; 51-52; 64-65.

²⁶³ *Poem* 70 ff. and *Bulletin* 75 ff.

²⁶⁴ *Bulletin* 82-4.

²⁶⁵ Schulman 1981: 16-18; Rainey 1973: 281; Zuhdi 1978: 141-42; Goedicke 1966. They are mentioned in the *Poem* 63-65 and the *Relief Captions* 11. On the images they are shown in the same dress as the Egyptians, suggesting they were not mercenary troops.

²⁶⁶ *Poem* 221.

The Hittites fled back towards the ford. The Hittite King, Muwatallis, who was still with his infantry on the other side of the river, sent another thousand chariots over the ford to support a resumption of the attack on the Egyptian camp.²⁶⁷ This second wave pushed back the Egyptians until reinforcements arrived for Ramesses from the south in the form of the division of Ptah. Their approach threatened to surround the Hittites and they were forced to abandon their chariots and swim across the river to the safety of their own camp. A number of Hittites were eventually taken prisoner by the now victorious Egyptians.²⁶⁸ According to the *Poem 278-280* the two sides probably fought an inconclusive but bloody battle the next day and the Egyptians then left the area.²⁶⁹

The *Poem 295ff.* also claims that Muwatallis sued for peace after the battle but this should be discounted in view of the Hittite reconquest of the Levant after the Egyptian withdrawal. This is another case of Egyptian propaganda seeking to show that Ramesses was successful in the war, rather than mention a strategic withdrawal after an inconclusive battle. Muwatallis' successor signed a peace treaty with Ramesses a few years after the battle.²⁷⁰

The battle of Kadesh is the first occasion where we can fully examine the battle tactics and campaign strategy of the Egyptians and the Hittites through a number of sources. The first thing we can see is that both powers relied on a mixture of infantry and chariots in their army. The main striking force was the chariot corps. At Megiddo and Kadesh the Egyptians expected to win because of their superiority in chariots, both in technology and skill. At Kadesh the Hittite battle plan revolved exclusively around their chariots.

Yadin suggests that Kadesh demonstrates the difference between the uses of each nation's chariots.²⁷¹ Egyptian chariots contained two men, a driver and an archer, in the New Kingdom. The Hittite chariot usually housed three men, who were perhaps armed with spears as well as bows.²⁷² Yadin argues that they acted as mounted infantry and designed the tactics of the battle to bring them into hand-to-hand contact with the enemy. The battle turned when the

²⁶⁷ *Poem 89; 131; 146-155.*

²⁶⁸ *Captions 53-59; 61 -77.*

²⁶⁹ Santosuosso 1966: 442 rightly notes that the text does not say that the "bloody operation" was a battle with the Hittites and could equally have been Ramesses decimating his army for cowardice.

²⁷⁰ For the details of the treaty see Langdon and Gardiner 1920.

²⁷¹ Yadin 1963: 103-10.

²⁷² *Poem 68-70; 87.*

Egyptian chariot-archers could use their greater range to wound the horses and men of the Hittites. Santosuosso (1966: 442) is right to discount Yadin's arguments since "the Hittites led a confederate host that must have included all types of chariots, even if the reliefs emphasize the Hittite chariot carrying three men against the Egyptian two." Moreover Beal 1992 argues that Hittite sources emphasize the bow as the principal chariot weapon and do not associate the spear with chariots at all.

The battle turned for the Egyptians because of the arrival of fresh infantry to attack the Hittites in the flank and rear while the chariots were impeded by the camp. The Hittite battle plan did not integrate infantry with the chariots. It is not clear whether this was always the Hittite tactic or was rather a special plan designed on account of the importance of the battle strategically. Yeivin rightly notes similarities between the Canaanite strategy at Megiddo and that of the Hittites at Kadesh.²⁷³ Both intended an ambush of chariots to tip the battle in their favour but one worked and the other did not. We have no other well documented examples of the Hittite army in action and so it is virtually impossible to propose any set form of strategy. What we can see is that the chariot was the main corps in battle, and the infantry, at least in open plains, was left to a subsidiary role.

At Kadesh Ramesses was forced to use infantry and chariots in his counterattack, and the arrival of infantry, not chariots, turned the battle in his favour. The very fact that he was fighting inside or around his camp suggests that infantry would be at least as effective as chariots at repelling the Hittite assault. Although the Hittite charioteers were better equipped for hand-to-hand combat they would have been unable to match the Egyptian spearmen in such a confined space. The second wave of Hittite chariots fared just as badly because they too proved inadequate at defeating a combined chariot and infantry assault without infantry support. Whether Ramesses would have fought a battle successfully integrating chariots and infantry without being forced to do so is impossible to determine. The fact that he was able to do so in a crisis shows his ability as a general as much as the desperation forced by his tactical position.²⁷⁴

Muwatallis failed to win the battle of Kadesh because he did not lead his infantry into the battle to support his initially successful chariots. Why he kept his infantry on the other side of the river is not clear, but whatever the reason, this cost him a resounding victory. Burne suggests that

²⁷³ Yeivin 1950.

²⁷⁴ For more on Ramesses' generalship see Healey 2000.

the ford used by the chariots was too deep for infantry to cross.²⁷⁵ If this is true then Muwatallis would have known that in advance and never intended to use his infantry in the battle. He must have been expecting to fight a full battle the next day after an initial battering of the Egyptians with chariots. If the river was easily fordable, the location of Ramesses' camp would have been disastrous even if he still believed that the Hittite army was far away. The site was chosen because it was only approachable from the north, west and south but was protected in the east by the river.

The Hittite strategy must have been to attack the Egyptian army twice, first unexpectedly with chariots and then later with the full army in a more open location, as Helck suggests.²⁷⁶ Spalinger (2005: 214) is surely mistaken when he argues that Muwatallis must have known about the fifth Egyptian division of the Nr'n through advanced reconnaissance. That he sent spies to Ramesses is true but that he knew exactly where Ramesses' army was at all times is not. Muwatallis would not have sent a reserve of 1000 chariots into the battle if he had known another strong force was approaching, especially if his strategy relied on a surprise attack.

Since this battle is the only one that is described in detail in our sources we cannot draw any firm conclusions about usual battle strategy.²⁷⁷ What we can see from other Egyptian reliefs is that the chariot corps was the principal striking force in battle and the infantry followed up their attack, either before or after a prolonged missile barrage.²⁷⁸ This was probably also true for the Hittites since the armament of their charioteers suggests they were used to close-quarter combat.²⁷⁹ Both states adopted the rudimentary principles of combined arms, using the different types of unit at their disposal, but both states relied on the chariot alone first and foremost.

²⁷⁵ Burne 1921.

²⁷⁶ Helck 1971: 214-15.

²⁷⁷ Yeivin goes too far to suggest that in a defensive situation the Canaanites and the Hittites would always plan to mount an ambush of chariots against the enemy while they were still on the march. His proposal (1950: 106) of four theoretical components to this strategy is based solely on his attractive connection between the strategies visible at Megiddo and Kadesh. However, this is a tenuous link simply because there is no evidence outlining exactly what was the Canaanite strategy at Megiddo, since all the sources for the battle give the Egyptian perspective alone.

²⁷⁸ The reliefs that show Merneptah's campaign against Libya shows that even fighting an enemy who did not use many chariots, the Egyptians relied on theirs for victory. See in particular Manassa 2003.

²⁷⁹ The common equation of the use of chariots with the modern use of armoured vehicles in war is not necessarily true. Horses will not charge into a densely packed formation of infantry unless they are fitted with blinkers.

Neo-Assyria and the development of cavalry

Cavalry probably existed in the armies of the Hittites and Egyptians, as discussed above, but did not play any important battlefield roles. That changed from the eighth century onwards. As the skills at riding improved the armament given to the cavalymen was increased creating the first heavy cavalry. However, heavy infantry and archers, whether mounted or on foot, still remained the main force of an army.

Sources

One of the main problems with interpreting the evidence for the Assyrian army is the nature of the sources. The annals of the Assyrian kings were intended as propaganda, but as noted above this does not reduce their usefulness as sources of the armament, units and tactics in use in the army. Throughout we see many recurring themes, often expressed in stock statements. One of the most common, and also the one that concerns combined arms directly, is the description of a king cutting a road through the mountains for the use of his army. This motif is used whenever a king mounts an expedition into mountainous terrain. As we shall see, Tiglathpileser I (1115-1076), Assurnasirpal II (883-859), and Sargon II (722-705) all used variations on the theme. The nature of this stock motif makes it difficult to determine the truth to such statements.

The best example of the impact of this problem is the account of Sargon II, in his eighth campaign against Urartu. He states that he had his men carve a road through the mountains using bronze pickaxes.²⁸⁰ Sargon's men certainly were using iron tools and the reference to bronze here probably points to the use of an earlier account from the annals of his predecessors. Moreover Sargon's army may not have contained a large contingent of chariots and so a road would not necessarily have had to be created for the passage of the army. Tiglathpileser I, on at least one occasion, was happy to march his army over the mountains leaving his chariots behind.

Faulkner's assertion is incorrect that "In a field action it seems to have been the chariotry who took the first shock of battle, the infantry advancing behind them to exploit a tactical success or to stem the enemy's advance if matters went awry, somewhat as in modern warfare the infantry operate behind a screen of armoured vehicles. The chariotry also charged the enemy at the moment of victory, so as to turn defeat into rout, and it is doubtless this phase that we see in those familiar pictures where Pharaoh charges in his chariot over a carpet of dead and dying." (1953: 43) Chariots were principally used to attack disordered infantry whether before or after an infantry melee or to attack from a distance.

²⁸⁰ Luckenbill 1926: vol. 2, 75, no. 142

The likelihood is that Sargon felt compelled to include a standard description of road cutting in his account in order to emulate his predecessors, whether or not such an undertaking occurred.

Furthermore, the palace reliefs in Assyria were intended for propaganda as well as entertainment.²⁸¹ The images had to be realistic enough to be believable but they were certainly intended to highlight the successes of the kings and Assyria itself. Despite the difficulty of analysing such highly stylised accounts we can find enough reliable evidence in the Annals, and on reliefs, to attempt a reconstruction of the basic aspects of Assyrian warfare.

Infantry

The Assyrian army relied primarily on its infantry for success. The infantry itself was divided into separate units, at the very least between veterans and newer recruits.²⁸² The veterans were possibly professionals, and the whole army of Tiglathpileser I is described as comprising “valiant warriors, who wage relentless war to the finish,” perhaps revealing their professional nature.²⁸³

Repeatedly in the annals we hear of kings leaving their chariots to fight successfully on foot. Tiglathpileser I proudly states that he fought on foot. “In Mount Aruma, a difficult region, where my chariots could not pass, I left the chariots and took my place at the head of my warriors.”²⁸⁴ At the start of this campaign he had set off, as he says, “with thirty of my chariots,” and carved a road in the mountainous terrain for them to accompany him. He qualifies these thirty chariots as those “which advance at the side of my veterans,”²⁸⁵ showing that they were a small group of expert chariots, probably his personal bodyguard, but not those vital for the military effort.

The veterans were infantry and would be expected to be able to fight independently of the chariots.²⁸⁶ Tiglathpileser I states that in the next year, fighting in the region “between the mountains of Idni and Aia, . . . which were impassable for my chariots, I left the chariots idle, and

²⁸¹ See Laato 1995; Postgate 2000.

²⁸² Luckenbill 1926: vol. 1, 76, No. 224.

²⁸³ Luckenbill 1926: vol. 1, 76, No. 224.

²⁸⁴ Luckenbill 1926: vol. 1, 76 No. 224.

²⁸⁵ Luckenbill 1926: vol. 1, 76 No. 224.

²⁸⁶ Perhaps this is further evidence of infantry officers riding in chariots as discussed below. The veteran officers of Tiglathpileser I would usually fight in chariots but in rough terrain would abandon the vehicles and fulfill their duties on foot instead.

traversed the steep mountains (on foot).”²⁸⁷ Without chariots his army entirely comprised infantry, and they were able to deliver the victory in the campaign.

It is difficult to determine the nature of Assyrian infantry from the extant images and texts. As is true of the depictions of Hittite warriors, Assyrians are usually shown wearing long garments with striped bands suggesting the use of scale armour and the reliefs on the palace of Sennacherib show infantry wearing armour and helmets and using shields.²⁸⁸ Even bowmen were armoured and equipped with shields. In the account of Assurbanipal’s school days he recalls,

I mounted my steed...I held the bow, I let fly the arrow, the sign of my valour. I hurled heavy lances like a javelin. Holding the reins like a driver, I made the wheels go round. I learned to handle the *aritu* and the *kababu* shields like a heavy armed Bowman.²⁸⁹

The two types of shield are difficult to place, but certainly the heavy bowmen were protected with shield and armour while shooting. Assurbanipal makes no mention of a spear when using shields, suggesting even the close quarter infantry were primarily archers. The Assyrians, just as the Egyptians and the later Persians, maintained a force of spearmen but used them as guards for the archers rather than as the main thrust of the infantry force.²⁹⁰

Archery was the most important skill to the Neo-Assyrians. The Assyrian king was expected to be able to ride a horse as well as drive his chariot, but archery was the sign of valour. Tiglathpileser I proudly states that he excelled in hunting with his “mighty bow ... iron spear, and ... sharp darts,” showing the bow was a royal weapon in Middle Assyria.²⁹¹ Since it is mentioned first in the list of royal arms it was possibly the most revered. Royalty throughout the Near and Middle East viewed the bow as their weapon of office.²⁹² Egyptian pharaohs are shown

²⁸⁷ Luckenbill 1926: vol. 1, 78, No. 229.

²⁸⁸ Laato 1995.

²⁸⁹ Luckenbill 1926: vol. 2, 379, No. 986.

²⁹⁰ The Egyptians and Mitanni, contemporary societies to Old and Middle Assyria, principally relied on archers alongside their chariot corps. See Porada 1945 for the reliefs of Sennacherib showing many more archers than spearmen attacking a city, the latter protecting the former.

²⁹¹ Luckenbill 1926: vol. 1, 86 No. 247. Adadnirari II states (Luckenbill 1926: vol. 1, 116 No. 375) that when hunting he used the javelin, both in his chariot and on foot, but makes no mention of the bow. Perhaps it was understood that he used the bow but hunting with the javelin required more skill and so is more praiseworthy.

²⁹² See for example the eulogy of Cyrus the Younger in Xenophon’s *Anabasis* 1.9.3-5 where Cyrus is praised for excelling at the use of the bow and javelin. The use of these weapons was important for all Persian aristocrats.

with the bow even though Egypt was one of the last states to adopt it as an important weapon in war.²⁹³ This is a notable difference from the Hittites, who regarded the spear as the weapon of status, as discussed above.

Sargon II in his attack on the Babylonian Aramaeans states that, “His warriors, his horses, broken to the yoke, I decimated with arrows, and him I pierced through the hand with the point of my javelin.”²⁹⁴ Although this may refer to Sargon’s own missile weapons it may also show that the enemy was defeated by the arrows of the Assyrian army as a whole. Sennacherib notes that 80,000 bowmen were sent to Sumer and Akkad as aid for a rebel king.²⁹⁵ This is probably an exaggerated number but shows the importance of bowmen in battle.

When furnishing an army for a newly installed governor of Meliddu, Sargon states, “His throne, 150 chariots, 1,500 horsemen, 20,000 bowmen, 10,000 shield bearers, bearers of the lance, I selected from among them and put them under his control.”²⁹⁶ This may have been the usual composition of an Assyrian provincial army. We see chariots to cavalry in the ratio of 1:10 exactly as at Zamua, as noted below. We also see twice as many bowmen as spearmen in the infantry force. For the Assyrian style of battle, archers remained more important than close-quarter infantry.

Assurbanipal carried off as booty from his conquest of Elam, “the chiefs of the bowmen, the “second” (men of the chariots), the drivers, the “third”-riders, the horsemen, the (light-armed?) bowmen, the captains and (heavy-armed?) bowmen of the whole army”.²⁹⁷ It is clear that at Elam the infantry entirely consisted of archers. These may have been differentiated

Xenophon states that “all the sons of the noblest Persians are educated at the King's court.... Here, then, Cyrus was ... the most diligent in practising, military accomplishments, alike the use of the bow and of the javelin.”

²⁹³ Partridge 2002.

²⁹⁴ Luckenbill 1926: vol. 2, 20, No. 39. Sennacherib (705-681) (Luckenbill 1926: vol. 2, 126, No. 253) describes his own arming for battle in an attack on Babylonia. “I put on my coat of mail. My helmet, emblem of victory, I placed upon my head. My great battle chariot, which brings low the foe, I hurriedly mounted in the anger of my heart. The mighty bow...I seized in my hands; the javelin, piercing to the life, I grasped.” In his chariot Sargon used only missile weapons as was usual.

²⁹⁵ Luckenbill 1926: vol. 2, 129, No. 257.

²⁹⁶ Luckenbill 1926: vol. 2, 23, No. 46. A variant on the same text (Luckenbill 1926: vol. 2, 33, No. 64) mentions only 1,000 shield bearers and bearers of the lance.

²⁹⁷ Luckenbill 1926: vol. 2, 311, No. 811.

between heavy-armed and light-armed, as the editor of the text suggests. The Neo-Assyrian infantry were primarily archers and it is likely that this was also true of earlier Assyrian infantry.

Cavalry

In the transition from Middle Assyria to Neo-Assyria, sometime between 1100 and 700, there was a significant change in the composition of the Assyrian army and those of their contemporaries.²⁹⁸ This change focused on the implementation of cavalry as an attacking force rather than simply as scouts.

Unfortunately we do not have any information about the precise nature of the development of cavalry in battle. The first source that mentions cavalry in a military setting is from the reign of Tukulti-Ninurta II, an Assyrian king in the early ninth century. “On the second day I ascended Mt Isrun after them on my own two feet, on the Mountain of Isrun one cannot cross either in my chariots or cavalry.”²⁹⁹ It is not clear whether Assyria was the first state to implement mounted soldiers in an offensive capacity. Our earliest evidence is Assyrian, but this may be due to the fact that many more Assyrian documents survived than those of any of their contemporaries.

It is only a short step from light cavalry armed as scouts to horse archers or armoured cavalry. Certainly the Steppe cultures were accustomed to using cavalry in battle long before the Assyrians but we do not have any information of how. The ability of Scythian horse archers in the sixth century came from a culture revolving around the horse and must have developed from centuries of practice in riding and shooting. It is likely that the uses of cavalry as scouts in the Near East led to better armed and armoured horsemen being used in different military capacities. Horse archery may have been copied, or even imported, from the cultures across the Zagros mountains. Unfortunately, we have no evidence from non-Assyrian sources and so we cannot draw any firm conclusions.

Perhaps a clue to the origins of the first use of heavy cavalry comes in Sargon II’s eighth campaign in Urartu. He states that the

people who live in that district are without equal in all of Urartu in their knowledge of riding-horses. For years they had been catching the young colts of (wild) horses, native to

²⁹⁸ I count Neo-Assyria beginning with the accession of Adadnirari II in 912. Although there was no hiatus between the two periods, with his accession the Empire of Assyria became more widespread and influential.

²⁹⁹ Sweet 1987: 173, 37-8.

his wide land, and raising them for his royal army. But they are not caught as far over as Subi, a district which the people of Urartu call Mannaeans, nor are their herds seen there. They do not saddle them but (whether) going forward, turning to one side, or turning around, (as the tactics) of battle require, they are (never) seen to break the yoke.³⁰⁰

If these men of Mannaea were such experts in raising cavalry horses then it is very likely that they were among the first to experiment with using cavalry in battle. As Dalley (1985: 42) states, “This indicates that the Urartians themselves became masters of the arts of cavalry by exploiting the special horses and rearing skills of the Mann[a]eans who lived adjacent to Urartu.”

Moreover the Assyrian horse lists record that the Assyrians used two different breeds of horse in the army, one for the chariots and one for the cavalry. Dalley (1985: 43) suggests that, “[t]he cavalry horses are usually referred to as mesaya, “from Mesu”, which is in Iran; and we may suppose that Mesu is on the borders of Urartu among the Mann[a]eans where, as we have seen, the best cavalry horses and riders were to be found.” If the Mannaeans were the first people to use cavalry in battle, their proximity to Assyria explains why our first evidence of cavalry is Assyrian. Assyrians would have had much contact with the neighbouring state and could not fail to appreciate the value of heavy cavalry in a military context. Once the idea had arrived it was only a small process to mount heavy infantry on horses alongside the light cavalry already in use.

Regardless of who first invented cavalry, the Assyrians were quick to appreciate the tactical advantages and benefits of well-armed soldiers mounted on horses rather than chariots. Tukulti-Ninurta II’s son, Assurnasirpal II (883-859), mentions using cavalry as part of an ambush, and preferred them to chariots for an attack reliant on stealth more than open force of impact.³⁰¹ He also states that on leaving Tushhan the “chariots and picked cavalry I took with me, and on rafts I crossed the Tigris” before fighting a battle for two days.³⁰² In this case he chose a rapid attack force of his best mobile troops. The battle may have lasted for two days because he was outnumbered and had to constantly maneuver with his army, lacking infantry. However, he goes on to capture and sack the city, which would be difficult to accomplish without a sizable army and infantry support. His choice of only picked cavalry shows that by this

³⁰⁰ Luckenbill 1926: vol. 2, 84 No. 158.

³⁰¹ Sweet 1987: 207, 70

³⁰² Luckenbill 1926: vol. 1, 156, no. 463.

time the Assyrian army had a sufficiently large cavalry contingent to be able to select the best for a specific task.

A number of the opponents of Assurnasirpal II seem to have lacked cavalry. The accounts of the booty taken from them or the forces defeated refer only to chariots.³⁰³ On other occasions his enemies did field chariots and cavalry units. For example, on one raid towards Carchemish and the Mediterranean, Assurnasirpal II received tribute from numerous cities and took their soldiers with him as auxiliaries in the Assyrian army.³⁰⁴ Clearly other Near Eastern states also had cavalry and chariots in their armies, perhaps even in equal proportion.³⁰⁵ Cavalry developed as a militarily offensive arm almost everywhere in the ninth century after the initial creation of mounted warriors, while each state still maintained a corps of light cavalry to use as mounted messengers.³⁰⁶

Once the use of cavalry was widespread the chariot in many cases became less important as the principal assault force in an army. Postgate observes that “[b]y the reign of Sargon...the cavalry had taken over as the elite arm of the army.”³⁰⁷ Archival texts that provide lists of garrisoned troops, such as at Zamua, show the increased dependence on cavalry over chariots, but the latter still remain even after the full-scale adoption of the cavalry as the mobile arm of the Neo-Assyrian army.³⁰⁸

Chariots

Chariots were crucial in the armies of Old and Middle Assyria just as in those of their western contemporaries. The king always used a chariot, and the other aristocratic elites fought in

³⁰³ See for example, (chariots and horses broken to the yoke as tribute) Luckenbill 1926: vol. 1, 160, no. 470; (an army without cavalry) 162, no. 476.

³⁰⁴ “The chariots, the cavalymen, and the footsoldiers of the Bahianeans I took with me.... The chariots, the cavalymen, and the footsoldiers of the Ahuni I took with me.” “The chariots, the cavalymen, and the footsoldiers of the city of Carchemish I took with me.” “The chariots, the cavalymen, and the footsoldiers of the land of Hattina I took with me, and hostages I received from him.” Luckenbill 1926: vol. 1, 164, no. 475; 165, no. 476; 166, no. 477.

³⁰⁵ See Dalley 1985: 37-8 for details on the changing ratios of cavalry and chariots in various ninth and eighth century armies.

³⁰⁶ Sargon used a specific term to differentiate his mounted messengers from his cavalry squadrons, Dalley and Postgate 1984: 34.

³⁰⁷ Postgate 2000: 99.

³⁰⁸ *Nimrud Letter* 89. See Postgate 2000: 89-93.

chariots as the principal assault unit in the army. Tiglathpileser I (c. 1100) captured from the enemy “one hundred and twenty of their armoured chariots”³⁰⁹ and more must have escaped the battle. In his account of a battle with the King of Karduniash he “drew up the line of [chariots against Marduk-nadin-ahi]” and “smote him.”³¹⁰ Exactly how the line of chariots interacted with the infantry in the battle is not revealed, either in the annals or on the reliefs. Nevertheless chariots were as important to the Old and Middle Assyrian armies as they were to the armies of their contemporaries such as the Hittites, Mitanni and Egyptians.

Tiglathpileser I states, “I took my chariots and my warriors and over the steep mountain and through their wearisome paths I hewed a way with pickaxes of bronze, and I made passable a road for the passage of my chariot and my troops.”³¹¹ Clearly the chariots were important enough to the army to warrant carving a road through the hillside, although this motif appears regularly in the annals and must be viewed with skepticism on account of the propagandistic nature of the accounts, as discussed above.

During the conversion to a cavalry-focused army, chariots were still deployed in significant numbers, particularly in flat and open terrain that allowed chariots the space to maneuver in battle. In areas of Mesopotamia, Egypt and the Levant, where the large open plains provided chariots the space and freedom to outflank and attack the enemy unhindered, chariots were maintained in large numbers. In the Assyrian annals we hear of chariots being deployed in their hundreds in battles of the ninth century. For example Shalmaneser III (859-824), states that after a battle with Hazael of Aram (c. 840), “1,121 of his chariots, 470 of his cavalry, together with his camp, I captured from him.”³¹² He may have taken so many chariots because he seized the camp, and we must suppose there were many more cavalry involved in the battle than the 470 that were captured. Cavalry would have been able to escape more easily than chariots especially if the turning point of the battle left little time for the chariots to turn and flee. Nevertheless, if true, this is a huge number of chariots to put into the field at a time when cavalry was becoming more important.

³⁰⁹ Luckenbill 1926: vol. 1, 81, No. 236.

³¹⁰ Luckenbill 1926: vol. 1, 96, No. 296. The text in the square brackets is suggested and I am not qualified to comment on the likelihood of the reconstruction.

³¹¹ Luckenbill 1926: vol. 1, 74-75, No. 222.

³¹² Luckenbill 1926: vol. 1, 205, no. 575.

Shamsi Adad V (823-810) states that “5,000 of his hordes I cut down, 2,000 I captured alive, 100 of his chariots, 200 of his cavalry, his royal tent, his camp bed, I took from him.”³¹³ In this case the ratio of cavalry to chariots is 2:1 and more of the enemy’s cavalry may have escaped suggesting an even greater ratio. A ratio of roughly 2:1 for cavalry to chariots is confirmed by Shalmaneser III who states that he had 2,002 chariots and 5,542 cavalry.³¹⁴ As cavalry became more crucial the ratio of cavalry to chariots grew finally supplanting chariots almost entirely.

In the description of the garrison at Zamua, ten chariots are the first unit listed and are followed by 97 cavalry horses. Despite this 1:10 ratio, chariots still existed and are mentioned first and so must still have had some practical value. When Shalmaneser III invaded the mountainous region of Urartu (832) and the enemy king fled to Mount Adduri, Shalmaneser “climbed the mountain after him; fought a terrible battle in the midst of the mountains; 3,400 of his warriors I slew with the sword...His chariots, his cavalry, his horses, his mules, his colts, his goods, his spoil, his property, in large quantities I brought out of the mountain.”³¹⁵ Even though the region was mountainous and difficult terrain for the deployment of chariots, both sides used them in significant numbers alongside their cavalry squadrons.

In his attack on Karkar (853), Shalmaneser III was opposed by a coalition army. Aram had furnished 1,200 chariots, 1,200 cavalry and 20,000 soldiers; Hamath: 700 chariots, 700 cavalry and 10,000 (or 20,000); Ahab the Israelite: 2,000 chariots and 10,000 soldiers; Irkanataeans: 10 chariots and 10,000 soldiers; and Shianea: 30 chariots and an unclear number of soldiers in the thousands.³¹⁶ These rounded numbers are estimates, but reveal the relative ratios of chariots to cavalry and soldiers. In the smaller states of the Levant, chariots were used without cavalry, it seems, but in small numbers compared with the size of the army. In the larger states the ratios of chariots to cavalry are 1:1.

Perhaps the most interesting is the contingent sent by Ahab of Israel. A force of 2,000 chariots in the new era of cavalry is very large especially when the accompanying troops are 10,000 and do not include cavalry. Clearly in Israel the chariot force was still more important in

³¹³ Luckenbill 1926: vol. 1, 259, no. 726.

³¹⁴ Luckenbill 1926: vol. 1, 223, no. 611. See Elat 1975: 27.

³¹⁵ Luckenbill 1926: vol. 1, 219, no. 605.

³¹⁶ Luckenbill 1926: vol. 1, 223, no. 611.

battle than cavalry. Egypt and Ethiopia, supporting a rebellion of Ekron against Sennacherib (705-681), still used chariots.³¹⁷ The states in the Levant and Africa were slow in adopting cavalry and relied almost entirely on chariots in large numbers probably because the terrain did not hamper chariot based warfare.

After Sargon captured Carchemish in 716, he incorporated into the Royal corps fifty chariots, 200 cavalry and 300 foot-soldiers, from the defeated enemy army.³¹⁸ Sargon's account of his capture of Sumeria also states that he incorporated a unit of 200 Sumerian chariots into the Royal army.³¹⁹ He took 100 chariots from Tabal and 200 chariots and 600 cavalry from Hamath.³²⁰ Chariots still maintained a relatively high degree of practical use where the topography was apposite, even towards the end of the eighth century. This should not be so surprising when we consider that Darius III used over 50 chariots on a flat battlefield at Gaugamela against Alexander in 331.³²¹

Cavalry vs. Chariot

In many states cavalry did replace chariots entirely. One of the enemies of Shalmaneser III, "Marduk-Mudammik, King of Namri, trusted in the numbers of his hosts and rode forth against me with his cavalry and (foot) soldiers to offer battle and fight. By the river Namrite, in front of me he drew up the battle line. I defeated him, I seized his cavalry."³²² Shalmaneser does not mention his enemy's chariots and so we can assume that there were none. Given the importance of chariots at this time (843), both ideologically and militarily, it is odd to leave them out if there were any. Moreover the Assyrian kings usually delight in stating how many chariots they took from their enemies because the chariot was such a potent symbol of power and status. To my

³¹⁷ Luckenbill 1926: vol. 2, 119 no. 240. They "called upon the Egyptian kings, the bowmen, chariots and horses of the king of Meluhha (Ethiopia)...The Egyptian charioteers and princes, together with the charioteers of the Ehtiopian king, my hands took alive in the midst of the battle."

³¹⁸ Luckenbill 1926: vol. 1, 4, no. 8.

³¹⁹ See Dalley 1985: 36. As Dalley (1985: 48) states "The prestige of Samaria at that time was due to its development of chariotry without cavalry, possibly the only Levantine state of which this was true, over more than 150 years" so its dependence on chariots well after the adoption of cavalry may be the exception.

³²⁰ Luckenbill 1926: vol. 1, 27, no. 55. Another text mentions 300 chariots and 600 cavalry, "bearers of shield and lance" that were taken by Sargon from Hamath: Luckenbill 1926: vol. 2, 102, no. 183.

³²¹ On these chariots in the battle see Heckel et al. 2010.

³²² Luckenbill 1926: vol. 1, 235, no. 637.

knowledge, this is the first instance of an army consisting of cavalry and infantry without chariots. Perhaps Namri was the first state to abandon the use of chariots in favour of cavalry even though cavalry was first used by the Mannaeans, as discussed above, or perhaps the terrain was such that chariots were useless in battle.

Sargon II, in the eighth century, was opposed by a coalition backed by Mitatti of Zikirtu. He “gave them his warriors with their cavalry, and aid was (thus) provided for them.”³²³ No mention is made of chariots here. The terrain of Zikirtu near Lake Urmia is mountainous but Sargon took chariots with him on his campaign in the region showing it was not too far unsuitable for their use. Perhaps chariots were not provided as support for the rebels but it is more likely that chariots were not needed because cavalry were more important. Later in an attack by Sargon II on Chaldea, the enemy king reinforced his border states, “600 cavalry and 4,000 of his picked troops, who march at the front of his host, he assigned to them and brought courage to their hearts.”³²⁴ This reinforcement was with his best men and again there is no mention of chariots.

Cavalry also eventually replaced chariots as the Royal guard unit in Neo-Assyria. In an account of his attack on Mutallum, Sargon II states, “with my battle chariot and cavalry, who never leave the place of danger at my side, I took the road against him.”³²⁵ In Sargon II’s eighth campaign, which will be discussed in more detail below, he set off accompanied by a bodyguard of cavalry and Sargon states that he fought “with my solitary personal chariot”.³²⁶ As Reade concludes, “one body of cavalry...forms the core of the royal bodyguard from the reign of Sargon on.”³²⁷ This may be due to the increased regularity that the Neo-Assyrian army had to fight on uneven terrain where chariots would be of little use. It is more likely, however, that the greater flexibility and proximity of cavalry when fighting as a bodyguard unit prompted Sargon to replace his chariot guard.

³²³ Luckenbill 1926: vol. 2, 3, no. 6.

³²⁴ Luckenbill 1926: vol. 2, 15, no. 31.

³²⁵ Luckenbill 1926: vol. 2, 32, no. 64.

³²⁶ Thureau-Dangin 1912: 131.

³²⁷ Reade 1972: 103. The images on these reliefs provide evidence for the armament of the Assyrian army, as discussed below, but do not reveal the tactics used in battle and therefore are of less use when examining the Assyrian use of combined arms.

Postgate (2000: 98) rightly suggests that the chariot may also have been maintained as a mobile command post for infantry and cavalry units. Some reliefs show a chariot behind lines of infantry and cavalry.³²⁸ Using a chariot as a command post provided the commanding officer with a good view of the field and he would be able to maintain a close contact with other units and both cavalry and infantry regiments. A tablet from Fort Shalmaneser assigns 32 horse teams to Assyrian infantry officers. The horse *teams* do not necessarily point towards the use of a chariot but certainly indicate that officers were mounted in some form.³²⁹ Yadin also argued that the officers of the Neo-Assyrian army of Assurbanipal (668-627) were mounted, drawing attention to one relief in particular.³³⁰ It is likely that Assyrian officers were mounted, first in chariots and then on horses, in order to allow better communication and facilitation of coordinated movement.

The chariot eventually came to be reserved in the Neo-Assyrian army for the use of the senior officers and members of the Royal family.³³¹ Chariots became the ultimate status symbol for kings after the implementation of cavalry. Sargon II, as discussed below, brought along his chariot in his campaign in the mountains of Urartu and in his battle with the enemy the opposing monarchs alone rode in a chariot. One of the stock motifs of the Assyrian annals, that the king rules the land touched by his chariot, is maintained throughout, long after chariots were superseded by cavalry in the army.³³²

³²⁸ See for example Barnett 1976: Pl. XXXVI Slab 18, Pl. LXVII top left, Pl. LXIX

³²⁹ I have argued elsewhere (Wrightson 2010) that infantry officers commanding a unit of 256 in the army of Alexander III of Macedon were mounted behind the phalanx. If they were also in the Assyrian army perhaps we can propose that that was the usual form of command in many other armies of the ancient world and not just in these two isolated cases.

³³⁰ Yadin 1965:458. See also Barnett 1976: Pl. XXXIV, Cf. also Pl. LXVII. Admittedly I have only seen reproductions of this relief but in my opinion there is nothing to prove that the image shows a mounted officer commanding infantry. There are two horsemen pictured. The first holds a spear and the reins in his left hand. He may be gesturing forwards with his right hand, but this is not clear. The second horseman fires his bow from his horse and has a dagger at his waist. Since Assyrian cavalry are often pictured in pairs even in the time of Assurbanipal it is possible that the two horsemen pictured represent a normal cavalry team. As noted above, later cavalry teams were armed in the same way suggesting that the first rider is indeed an officer and the second horseman is a single horse archer.

³³¹ Luckenbill 1926: vol. 2, 82, no. 154.

³³² Tadmoor 1997.

Postgate (2000: 96) rightly emphasizes that “the annals are propaganda and the reliefs are propaganda in stone, and we have to enquire from other sources to establish the practical as opposed to symbolic worth of chariots in warfare.” As a result it is difficult to use evidence as recorded in the annals to determine the tactical uses of chariots in the Neo-Assyrian army.³³³ The evidence from contemporary reliefs conversely shows the growing reliance on cavalry.

The many Neo-Assyrian reliefs reveal changes in the style of riding and armament of cavalry depicted. In the ninth-century reliefs of Assurnasirpal II (883-859) cavalymen fight in pairs with one shooting a bow while the other holds the reins of both horses.³³⁴ Under his successor Shalmaneser III (859-824), the same system operates, except that the second man also holds a spear in his free hand.

By the eighth century, during the reign of Tiglathpileser III (745-727), the two cavalry men still fight in a pair but are identically armed. They each have a bow but more usually are shown charging with spear and shield. Noble noted the improved riding style of the men depicted, who now sat securely towards the back of the horse with their legs stretched out in front.³³⁵

This development continues under Sargon II where we see cavalymen in pairs but also singly.³³⁶ The process culminates in the more familiar independent cavalryman as depicted in the seventh-century reliefs of Assurbanipal (668-627).³³⁷ He too fights with spear and shield while occasionally also carrying a bow.³³⁸ As Dalley (1985: 38) states, “a revolution in equestrian tactics had taken place by 709 B.C. in the army of Assyria.” This led to Assyrian cavalry fighting

³³³ On propaganda in the annals see for example: Tadmor 1997; Liverani 1995: 2352-2366; Fales 1982.

³³⁴ “In 9th-century battle scenes, Assyrian mounted troops operate in pairs, at a gallop, side by side; each pair consists of a warrior and a squire, the squire controlling the reins of both horses. These scenes show military riding in Assyria growing out of the use of the war chariot. The chariot complement warrior and driver-is simply transferred to the backs of its team, the men's respective functions remaining the same.” Littauer & Crowel 1979: 134-5.

³³⁵ Noble 1990: 65

³³⁶ For example see: Albenda 1986: Pl. 120 (paired) & Pl. 102 (singly).

³³⁷ See for example Yadin 1965: 458-9.

³³⁸ On a few occasions we still see cavalry armed exclusively with a bow (for example Barnett et al. 1998: No. 328 b, Pl.294). Perhaps there was two distinct corps of cavalry in the Neo-Assyrian army, horse archers and assault cavalry.

in pairs using bows for ranged attacks before closing on the enemy using spears and shield in close quarter combat.

Neo-Assyrian Combined arms - Sargon II's Eighth Campaign

No text provides details about the precise deployment, structure or tactics used by the Neo-Assyrian army in battle. Most of the military focus in the Annals concerns Sargon II and his various campaigns and conquests. The majority of these accounts describe the integration into the army of the forces of conquered territories. Although we hear of battles where the Assyrians were victorious, we are given no other information. As a result, it is difficult to produce a detailed account of the tactics of the Assyrian army.³³⁹ We have to piece together all these varied accounts to create a picture of the army as a whole.

The best source to determine the use of combined arms is an account of Sargon's eighth military campaign against Urartu in 714.³⁴⁰ Before he left on the campaign Sargon states that he held a review of his army, "I made a count of the horses and chariots."³⁴¹ Chariots were still important components of Sargon's army. Once Sargon arrived in mountainous territory,

its road was too rough for chariots to mount, bad for horses, and too steep to march foot soldiers...I had (my men) carry mighty bronze pickaxes in my equipment, and they shattered the side of the high mountain...making a good road. I kept at the head of my army and made my chariots, cavalry and infantry fly over that peak...I had the labourers and sappers follow behind them.³⁴²

Again Sargon uses the common motif of carving a road through the mountain for his chariots just as his predecessors did. He still refers to bronze pickaxes when his army must have used iron tools, clearly an anachronism.

When Sargon finally forced the Urartians to give battle, the enemy king, "assembled his (picked) fighters, strong in age, (on) their prancing riding horses he mounted them and gave them (their) weapons...In a defile of that mountain he drew up the battle line" and waited for

³³⁹ See Saggs 1963; Reade 1972; Malbran-Labat 1982; Dalley 1985; Noble 1990; Postgate 2000.

³⁴⁰ The account of this campaign is preserved in a letter from Sargon to the god Ashur found in the town of Assur, now in the Louvre. For the full text see Luckenbill 1926: vol. 2, 73-99, nos. 139-178. For discussions of the campaign see in particular: Rigg 1942; Tadmor 1958; Saggs 1963; Fales 1991; Kravitz 2003.

³⁴¹ Luckenbill 1926: vol. 2, 74, no. 142.

³⁴² Luckenbill 1926: vol. 2, 75, no. 142.

Sargon's approach.³⁴³ No mention is made of chariots here. Perhaps because of the terrain the Urartians did not bring any, but Sargon had his chariots. This may account for the mention of "riding horses" in order to differentiate them from chariot horses. However, we do not find this qualification of horses in any other description apart from records of the two different types of horses used for chariots and cavalry in the Horse Lists, as discussed above. This is an Assyrian account so they may have ignored the enemy chariots, but since the annals mention enemy chariots with regularity elsewhere this is unlikely.

After the customary prayer to Assur, Sargon states,

I was not afraid of his masses of troops, I despised his horses, I did not cast a glance at the multitude of his mail-clad warriors. With my single chariot and the horsemen who go at my side, who never leave me either in a hostile or friendly region, the troop, the command of Sinahiusur, I plunged into his midst...his warriors, the mainstay of his army, bearers of bow and lance, I slaughtered about his feet...His noblemen, counsellors who stand before him, I shattered their arms in battle; them and their horses I captured...Him I shut up in his crowded camp and cut down from under him his draft horses with arrow and javelin. To save his life he abandoned his chariot, mounted a mare and fled before his army.³⁴⁴

As befits their symbolic importance, the two kings were the only men who fought in chariots. Sargon's bodyguard was of cavalry and he personally led the charge into the enemy line. The main weapons of the enemy, and of the Assyrians, were the bow and lance. All of the Urartian nobility fought as cavalry, perhaps forming the Royal bodyguard alongside their king. This battle was a clash of two almost identical armies, both reliant on their heavy cavalry units for victory. The attack on the camp was conducted at long range using arrows and javelins, perhaps the principal weapons of the Assyrian army. These weapons were certainly of more use in flushing an enemy out of his camp than spear and shield might have been. Again we see a qualification of a type of horse. Draft horses may here refer to mules and other horses that were used to carry the camp necessities and equipment. It could also refer to the horses pulling his chariot since Sargon states that the draft horses were shot from underneath him.

³⁴³ Luckenbill 1926: vol. 2, 80, no. 152.

³⁴⁴ Luckenbill 1926: vol. 2, 82, no. 154.

When Sargon returned home he set out against Urzana, which had rebelled, “with a single one of my chariots and 1,000 fierce horsemen, bearers of bow, shield, and lance, my brave warriors, trained for battle,” and went into the mountainous region. There in

a strait passage, where the foot soldiers passed sideways, I prepared for the passage of my army...My chariot came up with ropes, while I, with (several) mounts of horses, took the lead of my army. My warriors and horses, who go at my side, narrowed down to a single file and made their wearisome way.³⁴⁵

Sargon only took one chariot for himself and relied on a strong corps of cavalry for success.

The cavalryman had completely supplanted the chariot warrior. Sargon’s army, and that of the enemy king, comprised cavalry and infantry fighting in combination. Only Sargon fought in a chariot. Unfortunately there is no way to determine the level of combined arms or the specific tactics Sargon used in this battle. Suffice it to say that there must have been a certain amount of coordination in battle between infantry and cavalry, and thus combined arms.

Combined arms Conclusions

The Old and Middle Assyrians, like all their contemporaries, relied on chariots for shock or missile attack at least partly in conjunction with the infantry. The Neo-Assyrians began using cavalry as an attack force, mounting infantry on horses instead of in chariots. They continued to use light cavalry as scouts or messengers and used heavy cavalry, often in conjunction with chariots, to strike at the weak point of the enemy battle line. These heavy cavalry troops were usually armed with shield, spear, and bow and armoured with the traditional Assyrian mail coat and helmet. The first heavy cavalry unit in history, it was the ancestor of the cataphracts of the later near-eastern empires.

Assyrian infantry was a mixture of missile troops and light and heavy infantry. There were certainly more archers than spearmen in the infantry corps. The professional corps of Assyrian heavy infantry was made up of heavily armoured bowmen, with mail coat, helmet, and two different sizes of shield for protection. We have no detailed description of Assyrian battle tactics, but the pre-eminence of the bow suggests that massed archery was the primary method of warfare.

Against a mass of disordered infantry a concerted attack of chariots would usually prompt a headlong retreat. Against well-disciplined and ordered infantry, chariots are usually

³⁴⁵ Luckenbill 1926: vol. 2, 93-4, no. 170.

unsuccessful and vulnerable to the attacks of determined light infantry, as the Romans showed against Antiochus III at Magnesia.³⁴⁶ Since Assyrian cavalry units were developed and used along the same lines as chariots, the concept of attacking in a compact formation was never considered. The Assyrian army was so successful against all its contemporary enemies that these deficiencies were never exposed.

Unfortunately many of the details of Assyrian battles have not been recorded in the same quantity or quality as for the Greeks and so we must beware of judging them too harshly based on extant evidence. The existence of Assyrian training manuals for military physicians suggests that a high degree of training was given to the various corps of the army.³⁴⁷ It is entirely possible that training manuals also existed for other branches of the army, similar to the tactical manuals of the Romans and the Hittite manual on horses. The successful use of sappers and an engineering corps to accompany the army on campaign shows that the logistics of war were well cared for by the Assyrians.³⁴⁸ They were used to using siege towers and battering rams against cities proving that their military system was very technologically capable. The Assyrian army was certainly the best trained and equipped in the world and used expertly all of the resources, tactics, and innovations available at the time.

The Neo-Assyrian army was the first in the ancient world to use a military system of combined arms. Later technological advancements in warfare in both armaments and tactics meant that improvements could be made on the Assyrian way of war. These later innovations were not successfully incorporated into a system of combined arms until the Macedonian armies of the fourth century. In fact very few armies between the Neo-Assyrians and the Macedonians used combined arms at all despite its obvious advantages.

The Persian Empire and its (mis)use of a combined arms army

The Persian Empire, despite its size and the lessons of the Assyrian Empire, failed to adopt a complete system of combined arms. Since the Persian king controlled so many different territories, which had to supply troops to the Royal army, the Persian military consisted of many types of unit. However the one thing that prevented their military system from being truly one of

³⁴⁶ Livy, 37.37-44; Appian, *Syrian Wars* 30-6.

³⁴⁷ Jastrow 1914; Dawson 2010.

³⁴⁸ Luckenbill 1926: vol. 2, 75, no. 142.

combined arms is that never were all the types of unit integrated successfully to mutually support each other. Instead, each unit fought semi-independently and the Persian commanders relied on the elite Persian aristocratic cavalry to give them victory, and to a lesser extent the professional royal bodyguard of 10,000 Immortals, as we will see.

Sources

Unfortunately most of the sources that detail the army of the Persian Empire are written from a western perspective. For the most part these focus on the Persian invasion of Greece, and later the Macedonian conquest of Persia. It is very difficult to paint a true picture of the Persian military system without encountering western bias towards heavy infantry focused warfare.

Images that adorn Persian temples and buildings can provide significant detail of the armaments and dress of individuals and units but never show their use in battle.³⁴⁹ Persian written sources take the form of royal inscriptions and commands along similar lines to those of earlier Mesopotamian civilizations, such as the Hittites and Assyria. Because of this it is necessary to engage with the western sources and attempt to piece information together despite their biased representations.

Xenophon's account of the Persian army of Cyrus the Great in the *Cyropaedia* is written from a philosophical perspective drawing more on the author's own knowledge and idealization of the Spartan army than on any historical reality. Herodotus' account of the Persians before and during the Persian invasion of Greece is clearly slanted towards explaining Greek superiority over barbarians. The surviving histories of Alexander's campaign in Persia were written so long after the event that any specific details they present are shrouded in uncertainty.

Nevertheless it is possible to create a detailed picture of the makeup of the Persian army and the tactics employed on the battlefield. This is especially true on occasions where the western bias of the author does not affect the details. In Herodotus, for example, descriptions of battles fought between two barbarian armies are not treated with the disdain shown for those involving Greek hoplites and are perhaps more reliable as a result.

Infantry

The Persian army was so large that most of the units that were summoned did not even join the fight. Either the battle was won before reinforcements were needed or the whole force began to

³⁴⁹ Root 1979; Root 1989; Garrison 2000.

flee and every unit joined the rout.³⁵⁰ Herodotus (9.68) states that after the battle of Plataea most of the contingents in the Persian army,

made their escape without striking a blow or doing any service whatever. It is perfectly obvious that everything depended on the Persians: the rest of Mardonius' army took to their heels simply because they saw the Persians in retreat, and before they had even come to grips with the enemy.

Infantry were the largest force in the Persian army. Herodotus (3.25) states that Cambyses took a force of 50,000 infantry excluding his Greek mercenaries against Ethiopia. In Darius' invasion of Scythia (Herodotus 4.128) the Scythian cavalry repeatedly overcame their Persian counterparts with their arrows but were forced to retreat once the Persian cavalry were supported at close quarters by the infantry.³⁵¹ In the Persian retreat the Scythian horsemen overtook them because "the greater part of the Persian army was travelling on foot" (Herodotus 4.136).

Persian archers were the most important "national" infantry unit.³⁵² The three divisions of fief holdings in the Persian administrations system were chariots, cavalry, and archers.³⁵³ Just as in Assyria, the bow was the principal weapon of Persian Royalty since Darius I boasted of his abilities with the bow on foot and on horseback, just as Assyrian kings did.³⁵⁴ Darius I also minted coins for his kingdom featuring a kneeling archer, crowned and robed. Nimchuk (2002: 63), in discussing the ideological motivation for his minting of Archer coins, states, "This figure

³⁵⁰ See Sekunda 1992; Head 1992; Gabriel 2002; Anglim et al. 2003; Holland 2007. For a list of the Persian troops at Issus as an example of the many types and origins of units see: Arrian 3.11.3-7. The Persian army defeated a Carian revolt because of an eventual weight of numbers, not through martial supremacy (Herodotus, 4.119).

³⁵¹ Cavalry, especially lightly armoured missile cavalry, once static in close combat was vulnerable to infantry whether light or heavy. Numerous battles throughout history demonstrate this. Perhaps the best is the vulnerability of the French knights once their charge was stopped by the English arrows Bennett et al. 2005.

³⁵² For the effectiveness and range of Persian archery see: McLeod 1965; 1970; & 1972; Blyth 1977.

³⁵³ For the cavalry fiefs see, Rahe 1980. As Cook states (1983: 102-3), "They had already begun to be granted some years before Darius I came to the throne, and the chariot fiefs may have been something of an anachronism almost from the outset. But until it became usual to make monetary payments in lieu of service, cavalry were certainly to be raised from fiefs."

³⁵⁴ DNB 8h: Kent 1953: 140; Schmitt 1991; Garrison 2000: 134-36.

is now generally accepted as representing the notion of the Achaemenid king and Achaemenid kingship”.³⁵⁵

This obsession with archery meant that any national Persian troops were armed with the bow as their principal weapon. Against unarmoured, or poorly armoured opponents, massed archery was very successful when combined with assaults by heavy cavalry. This was the style of warfare practised by the Assyrians, as we have seen, and neighbouring states, such as Media and Scythia, used the same system.

The emphasis on archery in eastern armies can be seen in Herodotus’ description of the battle between the Neo-Assyrian army of Sennacherib and the Egyptians (2.141). There field mice swarmed over Sennacherib’s camp and ate all the quivers, bow strings, and shield handles, leaving them with no arms to fight the battle. Even if this account is fictitious it demonstrates Herodotus’ belief that archery was the main method of warfare for non-Greeks.³⁵⁶ His belief is emphasized in the Persian attack on the Scythian Massagetae. This invasion culminated in a battle described by Herodotus as beginning with “the two armies coming to a halt within range of each other and exchanging shots with bows and arrows until their arrows were used up; after which there was a long period of close fighting with spears and daggers, neither side being willing to retreat.”³⁵⁷ Both sides relied first and foremost on archery and when that failed resorted to seemingly disorganised close-quarter combat until one side turned and fled.

Herodotus (1.103) states that it was not until the reign of the Median King Cyaxares that the army was divided into separate units of archers, spearmen and cavalry—a prerequisite for combined arms in battle. Previously all the soldiers in the army were mixed together en masse.

³⁵⁵ Nimchuk 2002. See also: Root 1979; 1989: 46; & 1991. She states (1991: 16) that this figure is, “a quintessentially Persian, Achaemenid, manifestation of imperial power.”

³⁵⁶ Herodotus (3.39) suggests that Polycrates’ force of a thousand bowmen was the reason for his many naval successes. To Herodotus archery was an important skill even for Greeks.

³⁵⁷ Herodotus 1.214. It is certainly possible that Herodotus has invented this battle and the ensuing death of Cyrus. He is the only source that follows this version of the King’s death, although Diodorus (2.44), possibly using the same source as Herodotus or Herodotus himself, states he was captured after a defeat to the Massagetae. Nevertheless Herodotus thinks it likely enough, as do his Persian sources, that a battle between the Scythians and Persians may well have occurred in this style. The Scythians are described by Herodotus (4.46) as being “accustomed, one and all, to fight on horseback with bows and arrows,” emphasizing their expertise in archery more than the Persians.

Fighting in this way allowed for a reliance on archery. Arrows would take their toll on a large mass of soldiers in an unregimented army and there was no need to develop or use different tactics. After the regimentation of the army Persian tactics still relied on massed archery from both infantry and cavalry. Only after the enemy had been sufficiently weakened by the missile barrage did the Persians engage in hand-to-hand combat. Cook (1983: 103) concludes that “usually the Persian infantry seems to have expected to make short work of an enemy who had already been harassed and softened up by cavalry and missiles.”

As a consequence of the emphasis on archers as well as their many successes, the Persians never really used heavy infantry. Most of the levies in the Persian army were light infantry.³⁵⁸ The majority of these used bows or javelins, but were armed with small shields and swords or daggers for close-quarter combat. The only Persian unit of heavy infantry was the Royal Bodyguard of 10,000. This unit was nicknamed the Immortals by the Greek historians because their total number was never lower than 10,000 (Herodotus, 7.83). These men were armed with bows first and foremost but were accustomed to use shields and spears if necessary. They were heavily armoured in the long coat of mail and helmet.

³⁵⁸ In Herodotus' list of units in Xerxes' army (7.61-81) the Cissians, Hyrcanians, Bactrians, Indians, Arians, Parthians, Chorasmians, Sogdians, Gandarians, Dadicae, Caspians, Sarangians, Pactyans, Utians, Myci, Paricanians, Arabians, Ethiopians and men from the islands of the Persian Gulf all were equipped as infantry archers. The Sacae were armed with bows as well as a large battle-axe. The Libyans, Paphlagonians, Ligyans, Matieni, Mariandynians, Syrians, Phrygians, Mysians, Thracians, Pisidians, Cabalians, Milyans, and Marians were all principally armed as javelin men. Other light infantry, that is, using short spears and small swords like *peltasts*, were the Colchians, Alarodians, and Saspies. Infantry armed with non-hoplite heavier shields, weapons, or armour were the Moschians and Assyrians. The latter could be called heavy infantry because of their bronze helmets, shields, long swords and linen corselets. Other than the Greek hoplites collected in Greece, principally from Boeotia, the Lydians were armed in the Greek manner. For the cavalry the Persians, Medes, Cissians, Indians, Bactrians, Caspians, Paricanians, and Caspeirians were armed as archers. The Arabians were archers on camels and the Libyans used javelins on horseback. Of the marines the Phoenicians, Cilicians, and Lycians were armed as javelin men with Persians, Medes and Sacae acting as archer marines. The Egyptians were armed as heavy infantry with large shields, boarding spears and heavy axes. Many other marines were armed as hoplites: Cyprians, Pamphylians, Asiatic Dorians, Carians, Ionians, Pelasgians, Aeolians and men from the towns on the Hellespont and Bosphorus.

The deployment of the Persian infantry usually consisted of a line of spearmen holding large shields at the front protecting a number of archers and missile troops behind.³⁵⁹ That is not to say that the Persian spearmen were not well armoured soldiers, who were highly skilled in individual combat. Persian spearmen, just as their Assyrian counterparts, were very able close-quarter warriors. However, very rarely were they required to fight in a close formation. Each soldier fought independently in the melee protecting his section of the shield wall supported by the archers and light infantry behind him. At the battle of Mycale Herodotus states (9.102),

The Persians, as long as their line of shields remained intact, successfully repelled all attacks and had by no means the worst of things;...They [the Athenians] burst through the line of shields and fell upon the enemy in a mass assault. For a time, indeed, the assault was held, but in the end the Persians were forced to retreat within the protection of the barricade.

The Persians were very able individual warriors at close quarters, especially protected behind their shield wall, but against an organized and disciplined mass of well-armoured heavy infantry their shortcomings could be exposed. The concept of individual heroism permeated the Persian military society. Nobles strived to excel at fighting as individuals with the bow, javelin and spear.³⁶⁰ The Immortals, an elite Persian unit of infantry, were well armed individuals who could fight effectively as archers or spearmen in close quarters. But they did not fight in any tactical formation.³⁶¹ At Thermopylae the Greek hoplites held off repeated Persian assaults for two days and successfully repulsed the Immortals without suffering too many casualties. Even

³⁵⁹ Herodotus 9.62 in describing the battle of Plataea provides the best example of the barricade of shields in front of the archers. He also states that when the Spartans charged the barricade, the archers stopped firing missiles and prepared to meet them face to face with whatever weapon they had at hand.

³⁶⁰ Cf. Xenophon *Anabasis* 1.9.3-5 who describes the competitive nature of the Persian nobles' education and its focus on the use of the bow and javelin in war, and horse riding in particular.

³⁶¹ According to Herodotus (7.103-5) Xerxes boasts to Demaratus that in his bodyguard there are Persians who would willingly fight individually against three Greeks together. Demaratus replies that the Spartans are individually a match for any soldier "but fighting together they are the best soldiers in the world." They are encouraged to always remain in formation and this is their advantage (cf. Curtius 3 where Charidemus is chastened for falling out of formation). As we shall see below a hoplite, and the phalanx in general, is only effective as long as the unit maintains its cohesion. Once it is broken it is vulnerable and easily defeated, as the Romans showed at Pydna (Plutarch, *Aemilius Paullus* 16-22; Livy 44.40-42).

this elite unit of well-armed infantry was not a match for true heavy infantry fighting in a compact formation.³⁶² As a result the Immortals were almost always employed as missile troops alongside the rest of the Persian infantry and joined the melee as spearmen only when archery became less effective.

At the battle of Marathon, Herodotus states that the Persians and Sacae put up the most resistance to the Athenian hoplites, perhaps because these were the main infantry units that could, and did, fight ably in hand-to-hand combat if required, and therefore were the men whom the veterans would remember most clearly.³⁶³ Herodotus (7.61) outlines the armaments of these two units when describing the forces arrayed by Xerxes in 480, and shows they were well equipped for melee fighting. They were also used as marines in Xerxes' navy alongside hoplites from Ionia, suggesting they could act as heavy infantry when required.

Other than mercenary hoplites, there were a number of Greek subject states that supplied heavy infantry to the Persian army, but these were from maritime powers for the most part, and therefore these hoplites would probably have been used strictly as marines. The Egyptians (when they were used on land rather than as marines), the Assyrians, and the Sacae were the only units of non-hoplite heavy infantry in the regular army according to Herodotus' description (7.61-81). Even the Assyrians and Sacae used the bow first before fighting in the melee with axes or spears.

Herodotus (7.61) states that the Persians (and the Medians) were armed with "large wicker shields, quivers slung below them, short spears, powerful bows with cane arrows, and daggers swinging from belts beside the right thigh." According to Herodotus, there is no

³⁶² It is true that other factors aided the Greeks, such as the narrow confines of the pass that prevented the weight of Persian numbers being decisive and the walls of the fortification. Nevertheless in this situation the Immortals fought the hoplites on relatively even terms where numbers and other units could not assist the Immortals and they were soundly beaten in hand-to-hand combat.

³⁶³ Shrimpton, (1980: 29) claims that the Sacae and Persians mentioned by Herodotus were cavalry only using Plataea as his primary example. He seeks to prove the cavalry were involved in the Persian army in the battle. But the cavalry would have disrupted the Persian battle lines if they fought in the middle of the infantry. Moreover both Persians and Sacae are listed by Herodotus as fighting as marines in Xerxes' navy. They can hardly have done so if they were cavalry. The Scythians in battle with the Persians of Cyrus and Darius used infantry just as much as cavalry in a similar manner to the Persians. Undoubtedly Herodotus is correct that Sacae fought as both infantry and cavalry in the Persian army and those mentioned at Marathon in the centre of the Persian line were infantry.

differentiation between units and all Persians, that is all ethnically Persian soldiers, were armed in the same way.³⁶⁴

As for defensive armour, the Persian style of scaled bronze or iron sewn onto a leather or linen jerkin (“a coat of mail looking like the scales of a fish” as Herodotus (7.61) describes it) was effective enough against arrows and light infantry. Until Darius’ attack on Greece, the Persian military had not encountered well-armed, organized infantry en masse.³⁶⁵ Against the concerted thrust of a hoplite’s spear Persian wicker shield and body armour offered significantly less protection than a bronze breastplate and *hoplon*.

The majority of Persian armies were infantry raised from a number of different states under Achaemenid control. All of these different national units were arrayed in the battle line and fought in the same manner, using a barrage of arrows to weaken the enemy before closing for hand-to-hand warfare. The Persian style of infantry combat did allow for the regimentation of archers and spearmen, after Cyaxares if we believe Herodotus 1.103, but still relied on massed archery first and foremost, rather than using tactics involving spearmen and archers in combination.

Cavalry

The most important unit in the Persian army was the elite cavalry, as the following evidence reveals. Croesus, the King of Lydia, according to Herodotus, intended to defeat the Persian army because his cavalry was superior.³⁶⁶ This suggests that the battle was intended to be decided by a clash of cavalry, only for Croesus to be undone by Cyrus’ use of camels.

³⁶⁴ Head 1992.

³⁶⁵ We noted above the existence of hoplite mercenaries in the Assyrian army and without doubt early Persian armies also made use of hoplites from subject Hellenic populations such as the Ionian Greek cities of Asia Minor. But as Briant (2002: 783-800) has shown, these hoplites were never implemented into the Persian army in large numbers and until Marathon an enemy force had never comprised entirely hoplites. Even in the Ionian Revolt the rebel armies made use of local Ionian cavalry units. In the decisive battle at Salamis on Cyprus the rebel army was defeated when a significant number of men changed sides, not least the war-chariots from Salamis (Herodotus, 4.112-4). Without a mobile force to oppose the Persian cavalry the rebel hoplites were easily routed despite the abilities of their heavy armed infantry. The Greeks took more than a century to learn the lesson that even hoplites must be supported by cavalry in order to succeed in an open pitched battle against a mixed army.

³⁶⁶ Herodotus 1.80. It is possible that Croesus’ cavalry were heavy cavalry intended for close-quarter combat against the missile cavalry preferred by the Persians, but there is no evidence for this.

The importance of the Persian heavy cavalry is clear. The Royal bodyguard unit under Xerxes was listed by Herodotus (7.40-42) as comprising

a thousand horsemen, picked out from all Persia, followed by a thousand similarly picked spearmen with spears reversed....Then came the king himself, Behind him marched a thousand spearmen, their weapons pointing upwards in the usual way—all men of the best and noblest Persian blood; then a thousand picked Persian cavalry, then—again chosen for quality out of all that remained—a body of Persian infantry ten thousand strong....The ten thousand infantry were followed by a squadron of ten thousand Persian horse.

The cavalry were principally armed with the bow but could also use clubs and their javelins as spears in close-quarter combat.³⁶⁷ A list of the required equipment for a cavalry fief holder at Uruk under Darius II in 422 includes, “horse and harness, saddle-cloth, iron cuirass, helmet with felt neck guard, shield, 130 arrows, an iron shield attachment, and an iron club and two javelins”.³⁶⁸ The heavy cavalry were well armoured wearing mail coat and helmet as well as using a shield. The bow is obviously understood to have been used and there is a noticeable omission of a sword.

The main tactics of the Persian cavalry, as the battle of Plataea demonstrates as discussed below (Herodotus 9.49), was to wheel in front of the enemy lines discharging their missiles. Persian armies contained levies from throughout the Empire and so included many different units of cavalry. However, most units were either light cavalry, such as Scythian horse archers, accustomed to using missiles, or heavy cavalry that relied on firing arrows before closing in to fight with the spear or axe. As a result all of the cavalry in the Persian army was utilised tactically in the same way.

The heavy cavalry were so well armed that they could also function as close combat troops, either acting as shock troops in a charge or fighting hand-to-hand in a static engagement. At the battle of Plataea (Herodotus 9.49) the cavalry engaged in a bitter hand-to-hand struggle over the body of their fallen commander, charging repeatedly at the Greek line, but the Greek hoplites eventually forced them to retreat. At the battle of Malene the Greek rebels under

³⁶⁷ Herodotus (9.49) notes at the battle of Plataea that the Persian cavalry, armed with the bow, “were not easy to come to grips with.”

³⁶⁸ Cook 1983: 102.

Histiaeus were defeated only when the Persian cavalry attacked them in the rear after arriving late at the battlefield (Herodotus 6.29). It is possible, as Hammond states, that the cavalry engaged the Greeks at close quarters. However Herodotus (6.29) does not state that the cavalry charged into the Greek lines, but suggests more simply that their arrival is what sparked the Greek flight. Their very presence at the rear of cavalry would be enough to cause panic in the ranks of Greek hoplites, and any missiles fired from that position would cause significant casualties.

Nefedkin 2006 convincingly argues that after the wars with Greece the Persian cavalry changed to adopt shock assault tactics and were regularly armed with a thrusting spear, or *pelte*, for this purpose. These shock tactics were certainly favoured by the Persian cavalry in the armies of Darius III in the fourth century, as discussed below, and proved a match for the Macedonian and Thessalian cavalry of Alexander.³⁶⁹ Exactly when these tactics were adopted is difficult to determine, but clearly the ineffectiveness of arrows against Greek hoplites prompted a tactical shift in the military mindset of the Persians.

Although they had the ability to engage the enemy at close quarters the Persian cavalry usually relied on firing missiles from a distance, just as did the infantry until the fourth century when they began to use the tactics of the charge into close quarter combat. The Persian cavalry was always the most important unit in the Persian army before and after the adoption of assault tactics.

Combined arms

Even though a Persian army contained many types of soldier, from light and heavy infantry through to elephants and camel riders, never did a Persian battle plan try to integrate all the different types of unit to their mutual benefit.³⁷⁰ In fact the very nature of Persian armies prevented a concerted battle plan. Persian royal armies were composed of levies from every

³⁶⁹ See in particular the battles of the Granicus (Arrian *Anabasis* 1.12-16; Diodorus 17.19-21; Justin 11.6), Issus (Arrian *Anabasis* 2.7-11; Curtius 3.8-11; Diodorus 17.32-34; Justin 11.9) and Gaugamela (Arrian *Anabasis* 3.8-15; Curtius 4.9; Diodorus 17.56-61).

³⁷⁰ Briant (2002: 582) states that “throughout Achaemenid history, the mobilization of a royal army proved to be the rarest exception.” More often than not a local levy of troops added to the Satrapal army proved sufficient to overcome rebellions throughout the kingdom. These armies relied on cavalry and missile troops to an even greater extent than the Royal army since the professional units were not present. If the levies were inexperienced the army relied even more on the core of satrapal troops accompanying the general.

province in the Empire.³⁷¹ These levies would not have had significant military experience and would be conscripted out of necessity.

Most of the soldiers did not fight as professionals. Limited previous training coupled with little time to enact training regimes before battle meant that the quality of individual units varied considerably. The fighting efficiency of the army relied on the core of professional Persian troops and the Royal Bodyguard. Some of the other units would have been experienced and used to war, but many others would have joined the army through compulsion rather than experience or choice. The nature of these troops as levies also suggests a large, but ineffective army. The battle of Pharsalus between Caesar and Pompey aptly demonstrates the superiority of veteran troops against raw recruits pressed into service, even when outnumbered four or five to one.³⁷²

Moreover the Persian Empire never sought to impose a single cultural identity onto conquered populations with the result that subsequent military levies of non-Persians were armed in the traditional local style.³⁷³ If a Persian royal army fought in Asia Minor, then it would contain more hoplites from Ionia, but if it was required to attack the Scythians, then Bactrian cavalry would predominate. Without a permanent standing army in constant use, as in Neo-Assyria, the Persians had to rely on untried assortments of regional troops, much to their tactical detriment.

The Persians themselves realised the deficiency in their armies when they fought the Greek hoplites, to the extent that they began to employ Greek hoplites as mercenaries in greater number than before.³⁷⁴ Briant (2002: 783-800) is probably right that Greek accounts exaggerate

³⁷¹ For example Herodotus (7.21) states that Xerxes' army prepared over four years for the invasion of Greece, "some nations provided ships, others formed infantry units; from some cavalry was requisitioned, from others horse- transports and crews; from others, again, triremes for floating bridges, or provisions and naval craft of various kinds." Persian documents detail the system of conscription and the difficulties it placed on landowners. See Briant 2002: 597-602 for a brief analysis of this problem.

³⁷² Caesar, *Civil War* 3.85-99; Cassius Dio 41.52-61; Appian, *Civil Wars* 2.70-82; Plutarch, *Caesar* 42-45; Plutarch, *Pompey* 68-72

³⁷³ Briant 2002.

³⁷⁴ Herodotus (2.163) notes that in Egypt the Pharaoh Apries took battle against Egyptian rebels with 30,000 Carian and Ionian mercenaries. The total is certainly too large a force but it does show the reliance on foreign mercenaries in Near Eastern kingdoms. Herodotus (3.1) elsewhere states that Cambyses invaded Egypt at the head of an army taken from various subject peoples including Ionian and Aeolian Greeks. In the ensuing battle (3.11) the Greek and

the martial deficiencies of Persian armies and overemphasize their reliance on hoplite mercenaries. Nonetheless the repeated defeats of the Persian army at the hands of armies reliant on a core of heavy infantry show that these martial deficiencies were real even if exaggerated.

If the Greek historians are right that mercenary hoplites always fought in the front ranks of Persian armies, this is perhaps more to do with the fact that dead mercenaries cost nothing, and less to do with Persian acceptance of Greek superiority. Nevertheless mercenaries, in particular Greek hoplites, were employed in great numbers an attempt to escape from a reliance on untried conscripted levies and to increase the number of heavy infantry in the army. In the fourth century the Persians even experimented with training their own unit of hoplites, the so-called Cardaces.³⁷⁵

In battle the Persian archers, on horse and foot, would bombard the enemy for a long period of time. This barrage of missiles was intended to disrupt the formation of the enemy and cause enough confusion that a charge of infantry and cavalry would precipitate the victory. This is similar to the tactics used by the Neo-Assyrians, as discussed above. The Persian military system simply continued the style of warfare used for centuries in Mesopotamia.

Battles were won by constantly sending a barrage of missiles at the enemy while their elite aristocratic heavy cavalry charged into the disordered ranks to precipitate the rout, using their superior numbers to overwhelm the enemy. Against light or undisciplined infantry this tactic proved very successful. However when the Persians came up against opposing armies that were superior in one or more styles of warfare, or who could not be broken by missiles and a cavalry charge, they did not know how to adapt to win. The Persian army was tactically deficient and ultimately defeated because it did not utilise the principle of combined arms in using each unit in the most tactically efficient way—cavalry as missile troops and for close combat in combination, missile infantry as a support arm, and crucially heavy infantry as the main thrust of the army.

Carian mercenaries in the Egyptian army fought valiantly for their employer against the fellow Greeks in the Persian camp.

³⁷⁵ For a detailed discussion of the Cardaces see: Tarn 1948: 180-182; Bosworth 1980: 208; Briant 1999.

Persian armies exposed without using combined arms properly - Marathon

The battle of Marathon has proved considerably difficult for scholars to reconstruct based primarily on Herodotus' account and the topography of the battlefield.³⁷⁶ The details of the battle as provided by Herodotus and the other sources obviously give all the credit to the Greeks. All our sources are Greek and seek to magnify their victory. Certainly the troop totals on each side have been altered accordingly and probably some of the specifics of the conflict have also. The main details of the encounter we can accept as fact, but the minutiae of individual involvements are perhaps more uncertain. In order to examine the tactics used by the Persian army in the battle, the main concern here, it is important first to discuss the make up of the army itself.

The Persian expeditionary force took a little longer than a year to assemble.³⁷⁷ It was perhaps four times smaller than the force assembled by Xerxes ten years later. If his army ranged from 250,000 to 400,000 men then the force under the command of Datis and Artaphernes in the Aegean in 490 will have numbered anywhere from a very conservative 20,000 to the 90,000 mentioned in the epigram attributed to Simonides.³⁷⁸ Herodotus does not give a total for the army but states that (6.95) the Persian fleet numbered 600 ships and Hammond (1968: 32) estimates it may have totalled as many as 1000.³⁷⁹ Unfortunately Herodotus does not specify the type of ships in the fleet and so we do not know how many transports and how many triremes there were. Whatever the exact number, the whole force had to have been large enough to besiege and capture a number of islands in the Aegean—not least the whole of Eretria where, according to

³⁷⁶ Many scholars have written on Marathon. The most influential has been: Hammond 1968. The best of the more recent books is Krentz 2010. Some of the other works most relevant to our concerns here are: Balcer 1989; & 1995; Burn 1962; Cawkwell 2004; Cook 1983; Doenges 1998; Donlan & Thompson 1976; & 1979; Evans 1984; & 1993; Lloyd 2004; Massaro 1978; Shrimpton 1980; van der Veer 1982. My primary concern here is to examine the battle from a perspective of tactics and the use of combined arms in the battle. Other scholars have debated the merits of various theories concerning all aspects of the battle, such as the route the Athenians took to Marathon, the location of the battle in the plain and the position and size of the Persian fleet in the bay. I will present my interpretation of these problems only where it is important for determining the events of the battle itself.

³⁷⁷ Herodotus (6.95) states that Darius had requisitioned horse transports the year before. Since cavalry was crucial to the Persian military these vessels would have been first on the list of logistical organization for the invasion.

³⁷⁸ Hignett 1963: 71 suggests 20,000 for the Persian army; Meyer 1944: 306 favours an even smaller force.

³⁷⁹ In my view many of the Persian infantry could have been the rowers of the warships, therefore reducing the total number of vessels required for the army, which Hammond does not take into account. On troops in triremes see in particular Coates 1993.

Herodotus (6.101), both sides suffered many casualties—and still have enough men left to defeat Athens.³⁸⁰

There are no reliable numbers provided for the Persian army, either infantry or cavalry, so any calculations are very rough estimates. Although Herodotus' numbers for Xerxes' expedition to Greece are notoriously exaggerated, he lists 80,000 cavalry alongside 1.7 million infantry.³⁸¹ Both numbers are too large but the relative strengths may be reliable. There we see a ratio of 20:1 of infantry to cavalry. If the Persians at Marathon had only 20,000 infantry, then we can propose a cavalry force of 1000.

It is possible that the Persians fielded the rowers and men from the navy to fight in the army. These would have been equipped as light troops, limiting their effectiveness against hoplites. Hammond (1968: 33) is right that the Persians were landlubbers, but Herodotus is explicit that the army contained men from all the Persians' subject states. Many of the ships were supplied by maritime states, such as those from Phoenicia, and it is likely that many of the soldiers were from the same areas. This was not a royal army led by the king himself and so did not require large contingents from the eastern subjects. Moreover Datis enlisted troops from all the islands in the Aegean as tribute (Herodotus, 6.99). These men must have been Ionian Greeks comfortable with rowing a trireme and fighting as marines or infantry.

If we assume 200 men as the crew for a trireme, and that the Persian fleet contained over 200 warships, the Persians had at least 40,000 rowers alone.³⁸² To believe that all these men sat idle in their ships when the Persian army took the field against the Athenians seems ridiculous. The Persians, not needing the fleet to fight a naval battle after their victory at Lade, would have expected to mobilize many of the rowers as infantry on land in the campaign. In fact their nature as light armed rowers suggests why the Athenian hoplites, though outnumbered, could inflict such heavy casualties. At Pylos, as discussed below, Demosthenes successfully created and defended a fortified position in enemy territory using the crews and marines of only five triremes. Rowers certainly could be used in battle with considerable success.³⁸³

³⁸⁰ Hammond 1968: 32 is right that the Persians cannot have been certain that the other Greek poleis would not come to Athens' aid and had to plan to face an allied force perhaps as large as the one fielded by the Greeks at Plataea.

³⁸¹ See in particular Head 1985. See for example Munro 1902; Maurice 1930; Plumpe 1938.

³⁸² Coates 1993.

³⁸³ Thrasyllos armed 5,000 of his rowers as peltasts in the Peloponnesian War (Antiphon 2; Xenophon, *Hellenika* 1.2.1).

The Greek force consisted of Athenians and Plataeans. The Plataeans numbered 1000. Herodotus 6.108 states they came with every available man. Nepos (*Miltiades* 5) and Justin (2.9) both total the Plataeans at 1000. The precise troop totals of the Athenian army are not provided by Herodotus. Pausanias states that the Athenian force was less than 10,000 (4.25.5) and not more than 9,000 (10.20.2). Nepos (*Miltiades* 5) numbers the Athenians at 9,000 and Justin (2.9) totals them at 10,000.

Men must also have been left behind to defend Athens. These were probably the older soldiers and those who were not ready to leave the city at a moment's notice.³⁸⁴ The Athenians almost certainly had a cavalry force in 490 through those in the *hippeis* class.³⁸⁵ These men would surely have been taken along to Marathon to fight on terrain chosen by the Persians on account of its suitability for cavalry action.

Herodotus 6.112 states that the Greek hoplites charged with no support from cavalry or archers. Many scholars use this as proof that the Athenian contingent comprised only hoplites. Herodotus does not state this. The charge may well have involved just hoplites, as is discussed below, but he never states there were no cavalry or archers supporting the Athenian army. Moreover he clarifies his position (6.112) stating that "that was what they imagined". He is referring to the Persians' view that the rush of hoplites appeared like a suicidal charge, but he may mean that the Persians imagined that the Greek attack was conducted without cavalry or infantry support.

Pausanias 1.32.3 states that the Athenians mobilised slaves to support their army. These slaves can hardly have fought as hoplites and must have been used as supporting light infantry in the battle.³⁸⁶ Van Wees 2005: 180 argues that

³⁸⁴ As Hammond (1968: 34 note 98) rightly notes there must have been more Athenian hoplites than those at Marathon. Those hoplites that lived in the outlying villages of Attica would have been mobilized to defend the polis but could not have been ready to leave in time for the march to Marathon. Some of them may have joined the Athenian army in the field but most were almost certainly used as the home defense force.

³⁸⁵ Xenophon was a member of the cavalry force in Athens at the end of the fifth century and it is difficult to believe that men such as Xenophon began to serve as cavalry only after the prevalence of hoplite warfare in Greece. Surely cavalrymen, as a class distinction throughout Athenian history, always served as such in war (Bugh 1988). See also Evans 1986. For the social system of cavalry in Athens see Spence 1993.

³⁸⁶ Notopoulos 1941; Hunt 1998.

the Athenians went so far as to mobilise their slaves for this battle, so there was surely a levy of all available manpower to meet the threat, as one would expect, including poor citizens who fought with any weapons they could lay their hands on.³⁸⁷

The problem is that none of these poor citizens are recorded as fighting in the battle in any source and there is nothing to describe the equipment of the freed slaves. For this study of combined arms, it is necessary to speculate on their battlefield use.

The Athenian freed slaves were buried with the Plataeans, separate from the Athenians (Pausanias 1.32.3). Since the Plataeans were probably buried where they were stationed on the left wing of the Greeks (Herodotus 6.111), it seems logical that the slaves also fought on this wing.³⁸⁸ Finley suggests that this is the first instance of the Athenians using freed slaves in battle, as did Pausanias 1.32.3.³⁸⁹ Slaves and any other light infantry present would have been very useful at keeping the Persian cavalry away while the hoplites closed the distance to the Persian infantry.

In my view it is in the context of a flank guard that the freed slaves played their part in the battle. The Greeks clearly realised the importance of protecting the flanks of a hoplite phalanx against the larger and cavalry-reliant Persian army. The Greek alliance chose to resist the invasion of Xerxes at Thermopylae partly because the terrain would neutralise Persian numbers and prevent the tactical deployment of their cavalry. The non-hoplites in the Greek army would not have had much to do in the battle once the hoplites came to close quarters with the Persians and this may be why they are ignored in Herodotus' account.

It is hard to believe that the Athenians did not bring *any* cavalry with them to a battlefield well suited for horses and to oppose an army reliant on its cavalry. That we do not hear about

³⁸⁷ Hunt 1998: 26-8 argues that slaves were mobilized but not the free poor. This seems unlikely considering the extraordinary nature of freeing slaves to fight when a significant resource of manpower already existed among the poorer citizens. The use of freed slaves in the Athenian navy at the end of the Peloponnesian War was only instigated because total Athenian manpower was low after the defeat in Sicily.

³⁸⁸ See Hammond 1968: 30. It is unlikely those burying the Plataeans after the battle would move all the bodies to a new point on the battlefield and the burial mound of the Plataeans must have been located where the majority of the dead Plataeans fell, just as the Athenian burial mound was located at the point where most Athenians fell (Pausanias 1.29.4). If the slaves were buried with the Plataeans on the left wing, either the bodies of the slaves were moved to this location or the majority of them also fell here. In my view the latter is the more likely.

³⁸⁹ Finley 1980: 99. See also Snodgrass 1999: 79-84 n. 85.

them in the historical accounts is not surprising since the political climate at the time, which focused on democracy overcoming barbarian tyranny, sought to place all the credit for victory on the hoplites alone. This is probably also the reason for Herodotus' omission of the armed slaves in the Greek army.

The topography of the battlefield and the preliminaries to the battle have been discussed at length elsewhere and are not of direct concern here. Suffice it to say that the Greek line was drawn up in the foothills protecting their flanks with topographical features, namely a marsh and a hillside.³⁹⁰ The Persians formed up opposite them at a corresponding angle, undoubtedly hoping their cavalry on their right flank would overcome the obstacles of the wooded foothills and be able to attack the exposed Greek left flank.³⁹¹

As far as we can reconstruct them, the events of the battle were as follows.³⁹² The Greeks drew up for battle and were opposed by the Persians. The Greeks then cut down trees on the slopes of the hills and constructed log barriers on their flanks to prevent attacks by the Persian cavalry. Whether or not Miltiades did await his own day of command to initiate the attack, a delay almost certainly did occur between the arrival of the Athenians at Marathon and the battle. The Persians were restless and somewhat overconfident on account of the Greek delay, but were probably fearful of more Greek reinforcements arriving from Sparta or elsewhere. Once the Greeks, having strengthened their wings, attacked at dawn, they proceeded hastily to close the distance between themselves and the Persians before the latter's arrows could take their toll.

Once they came to grips with the enemy, the Greeks on the reinforced flanks were victorious and turned inwards to relieve the beleaguered centre. At close quarters the Greek hoplites proved superior to the Persian infantry and forced them to flee headlong towards their

³⁹⁰ For the most detailed discussion of the topography see Hammond 1968: 14-26. Hammond also provides detailed maps of the battlefield (1968: 19-21). His orientation of the Greek line based on the Persian's being parallel to the sea is wrong since the Persians would have orientated their line to match that of the Greeks, which was drawn up cautiously between the two rises in terrain of Mount Agriliki and Mount Kotroni. This would also have allowed the Persian line to keep its camp and ships at its rear for ease of supply.

³⁹¹ Contrary to Hammond's opinion (1968: 19) the Persian line was not parallel to the sea but was at an angle to it, with the river that runs through the plain to the rear. This would allow their cavalry freedom of movement in the plain while also allowing easy access to their camp at the other end of the bay.

³⁹² The basis of this reconstruction is Herodotus' account 6.102-117. A number of controversies will be discussed in more detail below to add to this brief summary of the battle.

ships. After the battle turned in favour of the Greeks, the pursuit of the Persians began in earnest. The Persian army made its way back to the ships as fast as it could. The Greeks chased them over the plain, killing many that were hindered by the large marsh beside the Persian camp.³⁹³ The fighting continued right up to the Persian ships, where two of the Athenian generals, and Aeschylus' brother were killed. Only six ships were captured intact on the beach (Herodotus 6.115), but Herodotus does not mention how many escaped.

Herodotus 6.117 lists over 6,400 Persian casualties. Almost all of these must have been among the infantry and the largest proportion was those overtaken in the marsh. Although the number seems high compared with the 192 Athenian dead (Herodotus 6.117), in most battles where one side is routed, and has to cover much ground to reach safety,³⁹⁴ casualties are disproportionately high.³⁹⁵ If the Athenians did have cavalry this would have added to the success of their pursuit of the Persian infantry. Hoplites would normally be outrun easily by the more lightly armoured Persian infantry, even if they did know the terrain better.

Most vessels of the Persian navy left without anything close to their full complement aboard. The rush to escape would have caused such urgency that every ship would have left as soon as it was able. Very few ships were left behind because of this disorderly departure. The 6,400 Persian casualties would account for all the missing men in each ship to the extent that six ships remained completely unused.³⁹⁶

There are a number of points that require further consideration from a combined arms perspective.

The first problem is the Greek formation of an extended line with a weakened centre (Herodotus 6.111). Certainly this deployment was adopted in an effort to match the greater

³⁹³ The Persian cavalry, if they were present, were the first to escape, and had time to board the ships and sail away, with or without their horses. The distance covered across the plain would have taken much time for the infantry but very little for the cavalry at the gallop. The existence of cavalry will be discussed below.

³⁹⁴ *Stelai* were put up on the burial mound for the Athenian dead and the names of the individuals inscribed. As Hammond 1968: 14 states, "The *stelai* stood there in the time of Herodotus and Thucydides, so that the number of names could have been checked by anyone." We should accept Herodotus' statement that 192 Athenian hoplites died at Marathon.

³⁹⁵ For tables of proportional battle casualties in ancient battles see Gabriel and Boose 1994: 28.

³⁹⁶ Whether these were warships or transports is rather irrelevant. They were probably whichever ships were closest to the shore or those furthest away from the retreating soldiers, who would board whatever ship was nearest to them.

length of the Persian battle line. It is also possible that this formation was in part decided on through a concern for the vulnerability of the Greek flanks and rear to the Persian cavalry. A fast and unexpected attack by the Greeks would leave little time for the cavalry to inhibit them and weight of numbers would allow the hoplites to succeed against the Persian infantry, while simultaneously warding off cavalry attacks. Even as many as 2,500 Persian cavalry would have had little impact on 10,000 hoplites attacking at speed. The arrows of the Persians would not have been numerous enough to halt the Greek charge. At Thermopylae it took a number of hours for fewer than 1000 hoplites to succumb to the missile bombardment of a significantly larger Persian army.³⁹⁷ All the Persian cavalry could do was fire their arrows into the Greek force until the hoplites clashed with the Persian infantry. Once the battle became a melee the Persian cavalry may have joined the conflict until they saw the cause was lost, when they fled.

It is possible that the Persians did not make use of their cavalry in the battle itself. But the cavalry was the principal force in the Persian army and would have been deployed in a large enough number to make it worth the expense and effort of ferrying the horses across the Aegean. The Persians chose to land at Marathon because it was the most suitable place for cavalry action (Herodotus 6.102). With this in mind it is highly unlikely that the cavalry were not used to some extent in the battle. The Stoa Poecile does depict the Persian commanders fighting on horseback and they cannot have been alone.³⁹⁸ Even in joining the melee a rider would be easily unhorsed by a hoplite (cf. Herodotus' anecdote (5.111) about the Persian general at Cyprian Salamis in the Ionian revolt who had trained his horse to lash out with its hooves against infantry). The fact that Herodotus makes no mention of the Persian cavalry in the battle does not prove they were not present, or that their number was small enough to be insignificant.

Burn, among others, uses the absence of the cavalry in Herodotus to suggest that the battle did not commence until the Persians had begun to embark the cavalry on the ships.³⁹⁹ The evidence for this is circumstantial at best and rests on the speed of the Persian navy's departure and the lack of cavalry mentioned in Herodotus and the few shown on the mural in the Stoa Poecile in Athens. The argument is untenable. If the Persians intended a withdrawal of the whole army they would have been better served strategically to load the cavalry last so that they could

³⁹⁷ See Blythe 1977 for the effectiveness of Persian archery.

³⁹⁸ Pausanias 1.15.3 describes the images on the Stoa.

³⁹⁹ Burn 1962. The most recent statement of this idea is Billows 2010.

use their mobility in the plain to cover the movement of the infantry. Moreover cavalry would not have been much use in a ship borne attack on Athens and would have been better served to ride the short distance from Marathon to Athens in order to combine with an infantry assault from the fleet. The cavalry would have been the first soldiers to reach the ships once the Persian army began to be routed and would probably have had time to embark and leave before the rest of the infantry and the pursuing Greek hoplites arrived.

News of the imminent arrival of the Spartan reinforcements may have caused the Persians to assume that the Athenians would not attack. But it did not prompt them to begin the process of loading their army onto the ships in order to leave Marathon. The Persians chose to land at Marathon intending to fight a battle there and they would have remained confident in their ability to defeat the Greek army with or without the Spartan contingent. The fact that the Persian army maintained its position opposite the Greek line proves that they intended to face whatever army the Greeks arrayed against them.

Hammond 1968 argues that the cavalry were absent from the fighting because they had not returned from overnight pasture when the Athenians attacked at dawn. He even suggests their absence is the reason that Miltiades initiated the Athenian attack. Burn (1969: 118-120) is right that this takes it too far, but the alternative to Hammond's argument is not that the cavalry were not present at all. In my view the cavalry were present but played such a small role in the outcome of the battle that the Greek sources simply ignored their contribution.

Shrimpton (1980: 22-37) has argued that the Athenians were stationed opposite the Persians at Plataea because their hoplites were the only ones among the allied Greeks who knew how to fight against cavalry, having learned how to do so at Marathon ten years earlier (cf. Herodotus 6.27). The Persian cavalry must have been present at Marathon to make the Greek deployment at Plataea relevant. The Persians were caught off guard by the Greek attack and this surprise would have led to a delay in the attack of the Persian cavalry, but it does not prove their complete absence from the field. The cavalry were probably stationed on the right flank of the Persian line, and may have even precipitated the Athenian charge.

It is possible that the Persian cavalry prompted the Greek charge by wheeling in front of them while discharging their missiles. It would have been very foolish of the Persians to remain drawn up for battle opposite the Greeks for a number of days without harassing the Greeks with their cavalry. Perhaps it was a daily occurrence, which usually was ignored by the Greeks. These

cavalry forays may have been the direct catalyst for the creation of defensive barricades by the Greeks.⁴⁰⁰

Once the Athenians had resolved to attack, perhaps they launched their charge at the moment when the Persian cavalry began to harass them and caught them unawares. Shrimpton (1980: 35) may be right when he states that the Persian cavalry were still resting behind the lines when the Greek attack began a little before dawn. By the time they armed themselves and rode out the Greeks were already well advanced. If this is true the Persian cavalry had little time to attack before the Greeks came to grips with the infantry. Perhaps the Persians were so surprised that the Greeks were attacking at all, especially without much cavalry support, that their response was slow enough to allow the Greeks to close the distance between the armies quickly without much resistance, thus giving the impression that they ran the whole way.

As Storch 2001 has demonstrated, the Greek charge was not prompted by a Persian missile barrage. Certainly the Persians loosed a considerable number of arrows in the battle. The area around the burial mound on the plain at Marathon revealed a large number of arrows. As outlined above, archery was the main method of warfare in Persian armies and most of their infantry at Marathon were archers.⁴⁰¹ All the Persian army principally relied on arrows and must have done so at Marathon.

Herodotus' account emphasizes that Marathon was the first occasion where battle was joined at a run. This is certainly not the case. What may have influenced Herodotus is the overall speed of the Greek advance. A rapid attack would save the Greeks from a long and irritating barrage of missiles from the infantry and the cavalry. The Greeks would have been able to cover in two or three minutes the 200 yards where they would be under fire from the Persian archers.⁴⁰² Even if the Persians were unprepared they would have had time to arm and ready themselves, sending the cavalry to attack the Greeks with their missiles. Storch rightly stresses that Herodotus never explicitly states that the Athenians ran in order to get through the Persian

⁴⁰⁰ The barricades certainly could not have been set up in order to protect the Greek charge. Construction of such an extensive obstacle would have exposed its builders to the whole Persian army and its vast array of missiles. The barricades were intended to protect the Greek army while it was still passively situated opposite the Persian forces.

⁴⁰¹ See Forsdyke 1919-20.

⁴⁰² Donlan & Thompson 1976 & 1979.

missile bombardment.⁴⁰³ That does not prove that there was no missile bombardment, just that it was not the main reason for the Greek tactic. The charge would have drastically reduced the length of time the Greeks were exposed to the Persian missiles.

The total distance between the armies as given by Herodotus is roughly a mile. Shrimpton (1980: 26) estimates that it would have taken the Greeks between fifteen and twenty minutes to cover the distance to the Persian line. Moreover the standard Persian deployment involved a static shield wall behind which the archers could fire their missiles in relative safety. The static nature of the Persian infantry line allowed the Greeks the freedom to determine when exactly to break out into a run. Although the Olympic Games in Greece included a race conducted in full hoplite armour, a mile was too far for a whole army to cover at a run and maintain order especially in the dense phalanx formation. What is more likely is that the Greeks covered the distance at the double; a rapid march culminating in a final charge at the run when they were within about a hundred metres of the enemy.

If the Greek charge was conducted at speed, regardless of how far the soldiers ran, it is likely that the hoplite formation was more open than at first imagined. A hoplite phalanx in close order could not run at any speed without losing formation. The Macedonian phalanx was unable to attack very rapidly precisely because maintaining formation was so important. If the Greeks attacked at speed at Marathon the hoplites cannot have overlapped their shield with the soldier next to them. Rather we must understand the Greek army fighting in the open style of battle as suggested by Van Wees 2005.⁴⁰⁴ This would also explain the novelty of the speed of the attack at Marathon in the eyes of later Greeks. Classical hoplite phalanxes were not able to charge at a run just as the later Macedonians could not do so.

⁴⁰³ Storch 2001.

⁴⁰⁴ Herodotus' anecdote (5.111) about a groom and hoplite general together fighting as a team to defeat a Persian cavalryman and his rearing horse suggests the same. That the hoplite's groom was not only present but fighting alongside his master shows that they did not fight in a tight phalanx formation. The groom is not called a hoplite by Herodotus and his actions do not suggest he was armed as such. This event occurred in the land battle of Salamis on Cyprus in the Ionian Revolt. It is very unlikely that styles had changed significantly only five years later at Marathon. The Athenians at Marathon fought in a more open formation perhaps also attended by their grooms. The Spartan hoplites at Plataea were attended by helots (Herodotus 6.28.2), just as at Cyprian Salamis, suggesting that even in 479 the close phalanx formation had not been adopted.

Combined Arms Conclusions

At Marathon the Greeks were probably supported by light infantry in the form of freed slaves, and possibly also some cavalry. Nevertheless the Greeks did not *intend* to use combined arms fully in battle and relied on hoplites alone for the victory, to the extent that the very existence of light infantry and cavalry in the Greek army is denied. The Persians fielded an army that consisted of many types of unit but they were unable to use them all to their best advantage, the main principle of combined arms.⁴⁰⁵ The Persian cavalry was present in the battle but rendered ineffective by the Greek tactic of unexpectedly attacking the static Persian battle line at speed. The Greeks were victorious principally because their heavy infantry proved superior in close-quarter situations to any units in the Persian army. Either the Greeks had not yet adopted a classical phalanx formation, or they abandoned it in favour of speed of attack. Once their superiority of numbers was nullified by the extended Greek wings, the predominantly lightly armed Persian army was forced to flee. Neither side used combined arms fully even if the Persians did field different types of unit.⁴⁰⁶

Marathon was a significant victory for the Greeks that prevented Athens and other Greek *poleis* from becoming part of the Persian Empire. The battle was won through superior armament and speed of action rather than an innate superiority of the Greek hoplite over his barbarian opponents. We may never fully understand many of the specific details of the battle itself or the wider campaign, but it is possible to see that combined arms was not used fully by the Greeks or the Persians in the battle even though the plain of Marathon provided suitable terrain to do so.

⁴⁰⁵ Here it is important to note that the process of armies using combined arms is a continuum and that there are different levels of sophistication. In this case the Persian army did use a form of combined arms, by fielding cavalry, missile infantry and heavy infantry separately, but their tactics did not allow for the optimum use of each type of unit in battle. Had the Persians used integrated warfare, the full realisation of combined arms, the Greek reliance on hoplites should have been exposed, as it was by the integrated army of Philip II at Chaeroneia (Diodorus 16.85-6).

⁴⁰⁶ It is possible that the Persian army would have won if they had used combined arms properly opposing the Greek phalanx with heavy infantry, in particular their own hoplites, while using missile infantry and cavalry to harass the flanks and rear of the Greek line. In this case, if the Greek hoplites had been delayed for long enough, the Persian arrows may have caused more casualties among the Greeks and the Persian cavalry could have charged into the vulnerable rear of the Greek line. As discussed above, at the battle of Malene the very sight of Persian cavalry in the rear prompted the retreat of the phalanx of the Greek rebels (Herodotus 6.29) and the same thing would likely have occurred at Marathon.

Nevertheless the success at Marathon of the Greek heavy infantry phalanx exposed the deficiency of the Persian army in heavy infantry. It should have led Xerxes, in his invasion of Greece ten years later, to use combined arms in a more sophisticated fashion, fully integrating all his thousands of soldiers—cavalry, missile troops and other infantry—in order to neutralise and overcome the Greek hoplites.

Chapter 2: Greece before the hoplite phalanx

Other civilisations, contemporaries of Mycenaean and Dark Age Greece, relied principally on infantry in warfare, as discussed above. Cavalry and chariots were expensive to maintain and infantry could usually be equipped more quickly and simply. The armies of the Sumerians, Hittites, Egyptians, Assyrians, and Persians all relied on the charioteers or cavalry as their elite warriors, but usually the flight of one side's infantry precipitated the defeat. In their retreat the vulnerable infantry were then chased down by the victor's mobile units. It was the conduct and reliability of the infantry that almost always determined the winning and losing side in battle. This chapter will examine Mycenaean, and Homeric warfare in turn assessing the use of combined arms before the adoption of the hoplite phalanx.

Mycenaean warfare: Sources

Since the textual evidence for Mycenaean Greece is in the form of the administrative Linear B texts, no details are provided concerning the organisation or deployment of armies. We can, however, find evidence from these written sources about the prevalence of different weapons and their inclusion in armament lists. This can tell us much about the make up of Mycenaean armies in terms of the ratio of infantry to chariots and the types of armament relied upon.

Perhaps the best spring of information for Mycenaean warfare is the various images on frescoes or pottery. These reveal the use of weapons as well as the styles of battle. However, there are a number of problems of interpretation with these visual sources. Every depiction is created by artists and is limited by the ability of each painter in presenting his intended image. For example, it was easier to show a person in a side-on view rather than from the front. Furthermore it is impossible to determine the intention of the artist. What we think we are seeing may not actually be what was intended. Nor is it possible to always distinguish from reality images showing mythological or fictitious people or events.⁴⁰⁷ Despite these problems the images do provide important details on the armament of soldiers in the Mycenaean age, whether real or imaginary, and to some extent can allow for a reconstruction of battle tactics, or at the very least combat practices.

Infantry

⁴⁰⁷ In this case it is often possible to find important information on war and other military concerns despite the mythological nature of the images.

The little evidence we have of early Greek armies, shows that infantry were indeed the main battlefield force, armed in various ways, supported by the elite in chariots. Infantry were quick and easy to put into the field and required relatively little training or equipment to fight. This reserved the special place in war for those aristocrats with the time and resources to devote to excelling in battle. The mass of infantry were for the most part untrained and ill equipped, since weapons and armour were too expensive to be regularly handed out in quantity. This meant that the elite were the experts in battle, and probably the most important warriors, just as the aristocratic heroes were in the Homeric epics.

The everyday soldier at this time would have fought with whatever armour and weapons he had at his disposal. The expert warriors were the aristocrats and their immediate bodyguards and courtiers. The king was head,

surrounded by court officials, who were partly military leaders and partly administrative officials, [part] of a wider circle of nobility owning large estates worked by their tenants, [and this circle comprised] a nobility some of whom formed the chariotry, while some were the mayors of the towns and villages, and were responsible for the craftsmen and land-workers in their districts.⁴⁰⁸

The large number of swords found dating to the early period of Mycenaean Greece suggests the pre-eminence of this weapon over the spear in warfare of this period.⁴⁰⁹ Whether the fencing duels shown on the frescoes at Pylos depict sport, battle, or perhaps funeral games, the sword was certainly the weapon of the elite. Two rings from the shaft graves at Mycenae show men fighting with swords and figure-of-eight shields, perhaps again in a duel, but a third shows four men fighting.⁴¹⁰ This must surely be a battle. Two of the men wear boar's tusk helmets, all four grasp swords and one cowers under a body shield. Later the influence of the famous Naue Type II sword altered close combat throughout the Mediterranean and the Near East providing a

⁴⁰⁸ Webster 1958: 22.

⁴⁰⁹ Driessen and Macdonald 1984: 58 state that fifteenth-century images in Knossos reveal that "swords were more prestigious than other weapons".

⁴¹⁰ *CMS* I: 22 no. 11; 23 no. 12; 27 no. 16.

slashing and thrusting weapon instead of one or the other.⁴¹¹ Including Cyprus, 38 of these swords have been found in the Greek world dating probably to the early twelfth century.⁴¹²

While the elite used swords other infantry probably used spears. What is left of the “battle scene” fresco at Pylos shows soldiers wearing boar’s tusk helmets fighting opponents wearing animal skins.⁴¹³ One soldier uses a spear while others use short thrusting swords. According to Snodgrass 1964: 16, “the spear is as often shown in contemporary battle-scenes as the sword, and is almost universal in hunting-scenes,” showing clearly that both swords and spears were in use in Mycenaean warfare.

The fresco of the ships at Akrotiri clearly depicts a group of spearmen heading into battle (Ferrill 1986: 94). They are armed with long pikes and wear helmets. The large rectangular coverings over their torsos are probably body shields, but could equally be studded defensive cloaks, similar to those seen on the Standard of Ur. Ferrill (1986: 94) uses this fresco as evidence for an Egyptian influence on Minoan warfare largely because of the similarity of the ships painted to those used by the contemporary pharaohs. Contrary to Ferrill’s belief, the fact that later Egyptian infantry used a long spear does not prove that those pictured at Akrotiri were Egyptian. There is no evidence for contemporary infantry in Egypt using the pike in an area where warfare revolved around the bow primarily. These Minoan spearmen must be of a western origin. The eruption of the volcano that destroyed Akrotiri provides a *terminus ante quem* for the

⁴¹¹ See Sandars 1985. As he discusses in detail, the ‘Sea Peoples’ allied to the Libyans who attacked Egypt in 1182 and 1176 were armed with long swords as the reliefs of Medinet Habu show. Either the new sword had not spread to the Libyans and their allies or it took a number of years to gain favour over other swords. Merneptah the Egyptian Pharaoh took over 9000 of these long swords from the Libyan invaders after their defeat. The sword was certainly the main weapon of the Libyan army but not of the Naue Type II. This disproves the idea that the attacks of the Libyans and the Sea Peoples revolutionized warfare from chariots to infantry in close combat. The Egyptian chariot based army was able to defeat the invaders repeatedly and could not have done so had the armies of the pharaohs also included infantry accustomed to hand-to-hand warfare. For further information on this sword see any work detailing arms and armour of the twelfth to ninth centuries. It appears throughout Europe from the mid-fifteenth century on and in Greece and the East from *circa* 1200. For Greece see Snodgrass 1999. For Iran see Khorasani 2006. For the ancient world in general see Carey et al. 2006. See also Drews 1993: 199-208.

⁴¹² Catling 1968.

⁴¹³ Lang 1969.

fresco of around 1600.⁴¹⁴ This demonstrates the existence of spearmen in Greek warfare well before the later Mycenaean images such as the Warrior Vase, as discussed below.

At some point towards the end of the Mycenaean period it is probable that swords were replaced by spears entirely, and body shields were replaced by hand-grip shields and body armour, as we can see from artistic evidence from the late thirteenth or early twelfth centuries. The figure of eight and tower shields are commonly represented in early Mycenaean warfare.⁴¹⁵ A silver vase from the shaft graves in Mycenae depicts spearmen protected by tower shields.⁴¹⁶ The famous lion hunt dagger shows men using both types of shield and spears.⁴¹⁷ These early depictions differ from the soldiers shown on the Warrior Vase who all carry round hand-grip shields and spears, and wear Boar's tusk helmets (Drews 1993: 162). However this vase is from the end of the Mycenaean period, the late thirteenth or early twelfth century.⁴¹⁸ As a result this evidence may reveal a change in the style of fighting from rectangular, or figure of eight, body shield to round shield.⁴¹⁹

What prompted this change is not clear. It is very possible that spears began to be used as the primary weapon because they were easier and cheaper to make than swords (requiring less metal and less time being worked in the smithy), and therefore available to a greater number of warriors.⁴²⁰ Perhaps as armour became better and more affordable it was thought more reliable or

⁴¹⁴ Radiocarbon dating and comparative evidence from elsewhere suggest the eruption occurred between 1645 and 1600 challenging the established archaeological chronology of the Minoan civilization: Warren et al. 2006; Manning et al. 2006. Tree Rings in both Ireland and Sweden date a climactic Europe-wide event to 1628: Baillie 1990; Grudd et al. 2000.

⁴¹⁵ Lorimer 1950: 134-46 especially figs. 1-8.

⁴¹⁶ Snodgrass 1964: 20.

⁴¹⁷ Snodgrass 1964: 17, and plate 2.

⁴¹⁸ Vermeule and Karageorghis 1982: 130-4.

⁴¹⁹ Drews 1993: 174-80. He argues that close-combat infantry fighting did not exist in battles before the introduction of the small shield and defensive armour for the soldier on foot. He believes that almost all Bronze Age battles were fought between chariots alone. His argument is based on scant evidence and ignores earlier Egyptian and Hittite references to infantry in battle. The new weapons were introduced, but as improvements to rearm the already existent infantry forces. This may have begun the movement away from chariot focused warfare but this was a drawn out process, as most far-reaching developments are, and the chariot remained the elite unit in armies until it was replaced by cavalry in the ninth or eighth century. See below for a fuller discussion.

⁴²⁰ Bradford 2001.

manageable as a defence than the cumbersome body shield and so smaller round shields were used instead.⁴²¹ Snodgrass 1964: 28 describes this change in armament as “the disappearance of the air of luxury which hung over the previous centuries.” Whatever the reason, there was a shift to the use of spears and smaller shields and it significantly influenced the development of later Greek arms, armour, and tactics.

Towards the end of the Mycenaean period it is possible that the Greeks adopted infantry armed with spear and shield fighting *in formation*, similar to the contemporary armies of the east. Snodgrass states that the soldiers depicted on the Warrior Vase are

organized forces, in uniform equipment. The men on the reverse side have their spears raised, on the point of joining battle, but they are in step and move in unison. There could be no clearer portrayal of the change from excessive individual splendour of the Shaft-grave princes to a standardized army.⁴²²

Drews 1993 is right when he cautions against using the evidence on the Warrior Vase to determine earlier military practices. Infantry certainly existed in earlier Mycenaean warfare, contrary to Drews’ view, as discussed below. However, there are probably few early representations of infantry because

if foot soldiers were employed in Mycenaean armies they were probably lightly armed and presumably of too low a status to be represented in pictorial scenes, which tend instead to focus on more unusual—and perhaps mythical—scenes of individual combat....the new attention given to humble foot warriors could be a consequence of the disappearance of an elite class rather than an indication for an entirely novel mode of combat.⁴²³

Just as in contemporary eastern cultures, the bow was a ubiquitous weapon in Minoan and Mycenaean society. A tablet in Knossos notes two stores of 6,010 and 2,530 arrows, and a large number of arrowheads was found in a tomb near Pylos.⁴²⁴ Contemporary Alalakh, a state

⁴²¹ Drews 1993 argues that the small shield and spear was introduced in the thirteenth century from Sardinia using the Egyptian descriptions of the Sea Peoples as evidence. This is problematic since it is not clear who the Sea Peoples were despite similarities in the Egyptian names with modern places, see Sandars 1985.

⁴²² Snodgrass 1999: 33.

⁴²³ Hall 2007: 52.

⁴²⁴ KN R 0482. Marinatos 1955.

near Ugarit in Phoenicia, (AL 227) records 1,500 copper arrowheads made by its smiths. Nobles certainly used the bow in war in Greece. It is also likely that the non-aristocrats who had some experience in battle were predominantly archers, and as such were useful in war.

However, even 6,000 arrows as a supply for an army could only furnish a unit of sixty with 100 arrows for each man. This is far too small a number to provide for an army reliant on archery. “The number of arrows suggests that archers were by no means unimportant in the Mycenaean age, and they may have been second only to the chariotry as they clearly were at Ugarit and Alalakh.”⁴²⁵ Archers certainly existed but in relatively small numbers. In fact the similar comparative ratio of archers and charioteers in the Mycenaean armies suggests that archers were another elite among the army. Perhaps both were one and the same. This lends credence to the argument that chariot users in Mycenaean Greece, at least early on, were archers just as their eastern contemporaries.

Drews 1993 deduces from the number of heads of javelins that have been found in Late Mycenaean Greece that the Mycenaean palaces were defeated by barbarian invaders using javelins. Certainly the destruction of the palace at Ugarit in Asia Minor in the twelfth century reveals javelins interspersed amongst the debris, but there is no way to be sure if they belonged to defenders or attackers.⁴²⁶ It is also possible that a number of arrow heads, or even spear heads, that have been identified should in fact be connected with javelins as Drews argues (1993: 186-7). However, there is no evidence to show the fall of the Mycenaeans resulted from the use of javelins against chariots. Other infantry could have overcome an enemy using javelins even without the support of chariots. The javelin was almost certainly used by the Mycenaeans. The fresco from Pylos showing the “Black” soldiers depicts their officer armed with two javelins.⁴²⁷ The javelin was not necessarily a new weapon and many of the ‘unseen’ Mycenaean infantry may have used it in battle alongside, or instead of, a spear.

The main core of armies in Mycenaean Greece must have been the infantry armed in whatever fashion. Those who could afford armour would have had protection in battle but the majority would probably be unarmoured or reliant on shields. In turn the little armour on show in Mycenaean armies would have increased the effectiveness, and thus the importance, of the elite

⁴²⁵ Webster 1958: 21.

⁴²⁶ Chavane 1987: 357.

⁴²⁷ Evans 1928: 755-7.

fighting either as heavy infantry or as (chariot) archers. As armour became more available the shield size reduced and so must have the effectiveness of chariot warriors and archers leading to the Greek reliance on heavy infantry in battle.

Chariots

Textual and archaeological evidence for warfare in Mycenaean Greece reveals that there was a warlike core of aristocrats and wealthy individuals who could afford to be heavily armoured and ride in chariots.⁴²⁸ The Dendra suit of armour is too heavy and cumbersome for someone fighting on foot.⁴²⁹ Since the armour comes down to the knees it would have been very difficult for the wearer to walk or run (Drews 1993: 175). This suggests it was intended for a chariot warrior alone. Tablets from Knossos describe the distribution of a knee length corselet to each charioteer.⁴³⁰

Linear B tablets from Pylos show a distinction between chariotry and infantry.⁴³¹ Some of the men listed as chariot troops are not nobles, as a census list shows.⁴³² These individuals may have had to provide chariots as part of a “feudal” style system⁴³³ in return for holding tenure on certain amounts of land, just as others had to do in Knossos.⁴³⁴ The tablets in Knossos record over 400 chariots in various states of assembly and more than 500 pairs of wheels.⁴³⁵ If designed for military action on a small island such as Crete, this shows the importance of chariots to the elite.

However, there is no reliable evidence for a definite military function for these chariots, even in contemporary images, since “such pictorial representations as survive from this earlier period in Greece invariably portray chariots in a more ceremonial role.”⁴³⁶ It is likely that

⁴²⁸ Drews 1993: 104–34.

⁴²⁹ Verdelis 1957.

⁴³⁰ Catling 1977: 107.

⁴³¹ Using Webster’s (1958: 5) annotation system for Linear B and A tablets: PY An 654/14.

⁴³² PY Sn 64; PY An 218. See also Ventris & Chadwick 1956: 175.

⁴³³ Although the purist may find fault with the assertion, I use the term feudal to refer to a type of state-sponsored administrative system where service to the king or overlord is given in return for grants of parcels of land in a reciprocal arrangement. This is similar, though certainly not identical, to the organization system of feudal Europe.

⁴³⁴ KN Sd 0403; KN Sf 0420. Ventris, 1956: 360.

⁴³⁵ Ventris 1956: 365; 371.

⁴³⁶ Hall 2007: 53. See Uchitel 1988.

chariots in Mycenaean Greece and Minoan Crete were owned as obvious displays of wealth and status within society.⁴³⁷ This would provide a clear reason for the mention of chariots on a Cretan census list. In a way similar to the Athenian property class *hippeis*, individuals identified as chariot class may not have actually owned any chariots, but could have afforded to do so if needed. According to Snodgrass 1964: 20, in Mycenaean Greece chariots “probably served purposes of prestige as much as anything,” and so images of them cannot be taken solely as proof of their use in battle.

It is likely that the use of the chariot in Mycenaean warfare changed throughout the period. As new arms, armour and tactics spread into Greece, warfare was altered to accommodate them. Just as in Sumer where the early chariots were used in pursuit and pre-battle harassment, so early chariots in Greece probably were used in the same fashion. As the chariot became more reliable and the bow a more effective weapon it is very possible that chariot borne archers became a mainstay of Mycenaean battles.

This change in chariot usage over time is alluded to by Homer in *The Iliad* (4.308). Nestor gives advice that the chariots should form line and charge the Trojans just as men of earlier times (*proteroi*) used to fight. Chariots were rarely used for a mass charge on an enemy infantry even in the open spaces of Mesopotamia as discussed above, and so it is unlikely they did so in Greece. Nevertheless this shows that Homer and his audience were aware that the uses of chariots in battle could change through time.

Such finds as the Dendra suit of scale armour, expensive items designed for the elite, show not only the wealth of Mycenaean Greece but also the military focus of the ruling chieftains.⁴³⁸ Just as in the Mitanni kingdom, the palaces in Mycenaean Greece were armament depots for the army’s use. Tablets from Pylos record helmets and corselets, those from Knossos helmets, corselets, and armoured shirts.⁴³⁹ It is likely that these record the armour used by the elites, and so for use in chariots.

When infantry armour reduced the effectiveness of arrows and the vulnerability of the foot soldier the military elites had to adapt. Later uses of chariots, just as described in the

⁴³⁷ This view of chariot ownership also applies to other chariot societies: Piggot 1986.

⁴³⁸ Astrom 1977.

⁴³⁹ PY Sh; KN G 5670; J 693; L 7514; K 740; V 789. Tablets from contemporary Ugarit also record the collection of scale corselets.

Homeric epics, were probably to function as transports ferrying the heavy infantry to, from and around the battlefield.⁴⁴⁰ This is precisely the function of cavalry in the Dark Ages, as discussed below. Just as in Assyria the first use of cavalry was in the same style as chariots, so in Greece when the horse was ridden it was used as contemporary chariots, namely for heavy infantry transport.

Cavalry

There is some evidence for cavalry in Mycenaean Greece. Hood 1953 discusses a terracotta figurine that probably represents an armoured cavalryman and is dated to around 1300. Fragments of other figurines exist from elsewhere in Greece suggesting that cavalry did play some part in Mycenaean warfare. It is impossible to determine the extent of the military roles of cavalry in this period. They may have been reserved for scouting, just as in contemporary Mesopotamia as discussed above. Nevertheless the existence of some form of mounted soldiers in Mycenaean warfare must be acknowledged.

Combined arms

The principal difference between Mycenaean warfare and that of contemporary Mesopotamia or Egypt is that the topography of Greece did not allow extensive chariot maneuvering on the battlefield.⁴⁴¹ Despite this obvious fact Drews 1993 argued that there is little evidence for infantry battle in the Late Bronze Age anywhere. He uses the lack of infantry in the battle of Kadesh as a prime example ignoring the obvious fact that the Hittite attack failed precisely because it was unsupported by infantry. As discussed above, the battle at Megiddo was a battle fought solely between chariots because of the speed of the Egyptian advance outstripping the pace of infantry. Drew's argument is certainly untenable. Chariots were the weapons of the elite and so battles recording victories mention only the chariots as being important.⁴⁴²

Moreover the greatest number of chariots fielded even by the largest Bronze Age states is 3500. If, as Drews suggests, this was the only national military force used in battle the total manpower of the state is ignored when the size of the army could be quadrupled by using infantry. Drews even makes note of the surprising fact that only 1000 chariots attested at

⁴⁴⁰ Littauer 1972.

⁴⁴¹ Snodgrass 1964: 20.

⁴⁴² This same situation occurs in the sources of the Crusades where the Knights receive all the attention while the infantry are largely ignored despite the crucial role they played in battle: Jones 1987: 134-141.

Knossos are required to protect a population nearing 100,000 but still concludes that armies consisted exclusively of chariots. The conclusions of Driessen and Macdonald, who, along with Drews, argue for this lack of infantry mobilised en masse in the Bronze Age, are far too reliant on the lack of references to infantry in the scanty textual evidence.⁴⁴³ Rather, infantry certainly were the most numerous type of soldier on a Bronze Age battlefield. The infantry are ignored in descriptions and depictions of battles because the chariotry was formed from the elite members of society and therefore always sought to take credit for the victory.

It is possible that the Mycenaean nobleman was conveyed by chariot to the battle only to fight on foot as a very well-armed infantryman, as they are in the Homeric epics as discussed below. However, there is little to prove conclusively that this was the normal practice.⁴⁴⁴ There are enough flat areas in Greece to support chariot maneuver warfare. This is more pertinent if we consider that the Classical hoplite phalanxes usually chose to fight on level ground that was equally well suited to chariots. However, none of the many scenes represented in Mycenaean art conclusively depict a chariot being used in battle. Three stelai from the shaft graves at Mycenae show a noble in his chariot fighting an infantry opponent but this may be idealized in order to draw attention to the status and prowess of the buried individual.⁴⁴⁵ Many more images show battles conducted on foot.

Combined arms was probably used in Mycenaean Greece with chariots and infantry in battle together but the specific tactics used remain obscure. I agree with Ferrill (1986: 97) that “there is nothing to prevent us assuming that Mycenaean armies were much like those of the ancient Near East, and that they relied primarily on the use of massed chariots with infantry support.”

⁴⁴³ Driessen and Macdonald 1984. Driessen and Drews both argue for the infantry used in the Bronze Age being exclusively mercenaries. Certainly the “Captain of the Blacks” fresco at Knossos probably indicates foreign mercenaries but to assume that no national troops were used is excessive. The standing army of both the Egyptians and the Hittites relied first and foremost on native troops and this core was supplemented by the use of mercenaries or allies. This is the same system used by the Neo-Assyrians and Persians later. Mycenaean rulers also must have realized that they could field larger armies for less if they mobilized locals rather than foreign mercenaries.

⁴⁴⁴ See Greenhalgh 1973.

⁴⁴⁵ Snodgrass 1964: 20.

Homeric Warfare

There is still a debate today whether the warfare depicted in Homer represents Mycenaean practice or that of the poet's own time (c. 750-700), or perhaps somewhere in between.⁴⁴⁶ It is very difficult to determine the style of warfare used without any definitive statement to that effect by the poet himself, which has led Pritchett to conclude: "Doubtless many periods of warfare are represented in the *Iliad*" (1985: 30). We see the events of a war fought in the Mycenaean period narrated by a much later poet, but since the style of warfare described could have occurred at either time period we cannot draw any firm conclusions.⁴⁴⁷ This longstanding debate is not crucial here since the primary concern is an analysis of combined arms warfare.⁴⁴⁸

Since it is clear that Homeric battles were infantry based it is not necessary to wade deeply into the debate of the precise era of warfare and culture represented in Homer. Suffice it to say that whatever period, or amalgamation of battle styles, Homer describes he is not describing a combined arms army integrating close-combat infantry and missile troops with chariots or cavalry. However, the close combat infantry do fight alongside and intermingled with missile troops and this will be the focus of the following discussion.

It is difficult to garner any comprehensive picture of the overall style of battle in Homer since his focus, and that of his audience, is on the individual heroes. Nevertheless it is necessary to examine briefly the style of infantry warfare shown in Homer in order to demonstrate the lack of combined arms integrating cavalry and/or chariots in Greece between the Mycenaean period and the Peloponnesian War.

Sources

⁴⁴⁶ One of the earliest discussions is Lorimer 1947. See in particular Snodgrass 1965; Pritchett 1985: 7-33; Singor 1991.

⁴⁴⁷ See in particular Van Wees 1992 for a detailed discussion of the influence on warfare in the Homeric epics of Homer, his audience and epic style. Latacz 1977 is still a good discussion of hoplites in the *Iliad*.

⁴⁴⁸ Kirk 1968. Van Wees 2005 argues that warfare in Homer is that of the poet's time with a few archaizing elements of armour. I agree that archaic and dark age Greek warfare involved open battles where missiles and close quarter combat occurred at the same time. It is perhaps going too far to conclude that Mycenaean war was even more open since there is so little evidence at all for Mycenaean battle tactics. Rather we should conclude that armour was inferior in Mycenaean times but the style of battle may have changed very little by Homer's time despite the beginning of the introduction of the so-called hoplite panoply. As discussed below, hoplite tactics were not introduced in Greece until after the composition of the Homeric epics.

The main sources for any discussion of Homeric warfare are obviously the two epic poems, *The Iliad* and *The Odyssey*. Epic poets may have described the past in detail but they also had to take into account the familiarities of their audience; “the society depicted by Homer, for all its apparent remoteness in time, had to make sense to a contemporary audience”.⁴⁴⁹ Homer’s narration of battle scenes and the descriptions of armour and armaments reveal as much about the information expected to be understood by his audience as the poet himself. He spends little time detailing large-scale battle tactics and the actions of the mass of troops because his audience would be expected to know that already. Such scenes are also not required for his focus on the heroic deeds of his individual characters.

His principal concern, and the main interest of his audience, was the deeds of the heroes. Once battle was joined the fighting became a melee and the level of organization within each army was very low, as shown by van Wees.⁴⁵⁰ Homer does not want to describe the specific tactics of battle in the *Iliad* because it would take away from his narrative, and he does not need to do so since his audience would understand how battle worked.

The nature of Homeric warfare cannot be categorized as either mere myth or history, but becomes comprehensible only through knowledge about the conditions of oral poetry and epic delivery, in which in an era of nascent literacy oral bards sang to mostly aristocratic and reactionary audiences folk tales that evolved over centuries.⁴⁵¹

Infantry

The main question regarding infantry in the Homeric epics is whether hoplites are described. A Greek hoplite was a heavy infantryman, usually wearing a bronze helmet and breastplate. Primarily made of bronze to begin with, the breastplate was eventually replaced with the lighter, but just as durable, leather cuirass. Arm guards, and greaves to cover the shins were optional extras for the wealthier soldiers. The main armaments were a nine-foot spear, or *dory*, and a wooden shield faced with bronze called a *hoplon*. This shield was three feet in diameter, and

⁴⁴⁹ Hall 2007: 26.

⁴⁵⁰ Van Wees 1986. In describing why Homer’s descriptions do not focus on the actions of the immediate retinues of individual heroes van Wees (1986: 300) states that, “We must conclude that contingents and their leaders disappear in battle because they are alien to the poet’s conception of army organisation.”

⁴⁵¹ Hanson 2007: 19. See also Latacz 1977 and Van Wees 1992.

convex so that it could rest on the fighting man's left shoulder. These armaments together are referred to as the hoplite panoply.⁴⁵²

The hoplite panoply is alluded to occasionally in the *Iliad*. Hector wears the hoplite bronze corselet he took from Patroclus when he is killed by Achilles' spear thrust into his throat, the only part of him exposed (*Iliad* 22.320-9). The bronze also gleamed on the breast of Achilles as he ran (*Iliad* 22.32). Paris puts on greaves and corselet as well as a horse-plumed, well-wrought helmet and carries a heavy and sturdy shield to face Menelaus, who also arms himself in the same manner (*Iliad* 3.330-340). The fullest description is the arming of Agamemnon in Book 11 of *The Iliad* where he clearly uses a hoplite panoply (*Iliad* 11.15-45). This includes a bronze embossed shield that covers two men on each side, perhaps a reference to the width of the *hoplon* or at the very least to a large, heroically sized, hand-grip shield.

Hoplite warfare tactics of the dense phalanx also may appear. The Greeks, ready for inspection, bristle with shields and spears in blue-black phalanxes (*Iliad* 4.274) and the Greeks with shining armour clash with the Trojans, a fight of bronze-corseleted men (*Iliad* 8.60-65). But, as discussed extensively by van Wees, none of Homer's descriptions necessarily imply the hoplite phalanx familiar from the classical period.⁴⁵³

There are certainly aspects of the warfare described in Homer that remind us of hoplite battle, but these allusions are interspersed with numerous references to Mycenaean and pre-hoplite era weapons and armour. Priam in his appeal to Hector bemoans the time "when some man by thrust or cast of the sharp bronze hath reft my limbs of life" (*Iliad* 22.67-8) and that a young man "slain in battle, that he lie mangled by the sharp bronze" is prey to dogs (*Iliad* 22.72-3). These are just two instances of the many that show Homer referring to bronze tipped weapons rather than iron ones, perhaps artistically but certainly anachronistically. Homer's military descriptions are confusing at best since they amalgamate hoplite arms and armour and aspects of

⁴⁵² Any work on Classical Greek warfare describes a hoplite. See Snodgrass 1964 and 1999 for an examination of the archaeological history of the different armaments. For a good summary of the use of these weapons in battle see Anderson 1991.

⁴⁵³ Most recently Van Wees 2005. See also 1986; 1988; 1992; 1994; 1997.

pre-hoplite warfare. Some problems also come when trying to determine whether the pre-hoplite warfare he describes details Mycenaean battle or fighting styles in Archaic Greece.⁴⁵⁴

An example of the junction of various historical fighting styles is the argument for Hector using a body-shield (*Iliad* 6.117-8) when he withdraws from the fighting.⁴⁵⁵ Homer states that his neck and ankles were tired from the black hide beating on them. This must refer to the body shield even though Homer (*Iliad* 6.118) states his pain was from the hard leather rim that ran around the bossed shield, a type of hand-grip shield addition. Another example (*Iliad* 7.238-240) is Hector stating that he knows “well how to wield to right, and well how to wield to left my shield of seasoned hide, which I deem a sturdy thing to wield in a fight” showing that Homer is describing the use of the tactics of a hand-grip shield rather than the less maneuverable *hoplon* even though elsewhere (*Iliad* 13.803-4) Hector’s shield is described as round and bronze faced.

It is also at the end of the Geometric period that the hand-grip round shield is replaced by the large, circular, and convex shield associated with Classical hoplites. Hoplite tactics are implied in Homer but there are no clear references to the *hoplon* as separate from the more general bronze faced, round hand-grip shield. Hoplite shields are represented on Attic vases from the 730s,⁴⁵⁶ and we should conclude that the implementation of hoplite warfare was a gradual process throughout the last few decades of the eighth century, as discussed below. That no reference is made to the *hoplon* explicitly in Homer shows that its use was not favoured above the hand-grip shield at the time of the composition of the poems and the concept of a hoplite using a *hoplon* in a phalanx did not exist as such even if the armaments did.

⁴⁵⁴ I agree with Van Wees 2005 that Homer did not know the hoplite phalanx since this was not implemented until 650. However the hoplite panoply was prevalent in his day and it is this that prompted allusions to hoplites in the Homeric epics. The problem for historians and commentators comes amid confusion as to whether equipment or tactics define a hoplite. I believe the hoplite existed as a type of heavy infantry before the implementation of phalanx tactics into Greek warfare and the tactics did not cause the invention of the hoplite panoply. This view will be discussed in more detail in the next chapter.

⁴⁵⁵ Van Wees 2005 argues that Homer views tower shields as impenetrable and not to describe earlier armaments. This is possible but not certain and so I include the different terms for shields as evidence of ambiguity in Homer. Lorimer 1950 distances these shields from the *hoplon* as does Hanson 1991a who argues that hoplites, and the phalanx, are described by Homer. As will be seen below, this is the only part of Van Wees’ interpretation of Homeric warfare with which I do not fully agree.

⁴⁵⁶ Snodgrass 1999.

Differences also occur in attacking weapons. Heroes in Homer's works use swords, single thrusting spears and throwing spears. This is different from the hoplite reliance on the thrusting spear, with a sword as a last resort. However the *Iliad* always depicts heroes fighting with swords only after they have used spears or other weapons first. For example, Hector, having thrown his spear at Achilles, draws his sword, "a great sword and a mighty" (*Iliad* 22.307), only after his appeal to the imaginary Deiphobus to give him another spear is unsuccessful (*Iliad* 22.294-5). Menelaus breaks his sword on Paris' shield after the exchange of throwing spears (*Iliad* 3.360-4). The sword was the weapon of last resort to a Homeric hero, just as it was to hoplites. This is despite many of the heroes in the Homeric epics having elaborate swords.

The throwing spear became common in the early Geometric period (c. 750) and scenes in art often show spears flying through the air.⁴⁵⁷ Agamemnon arms himself with two spears (*Iliad* 11.44) but fights with a thrusting spear (*Iliad* 11.95-99) first before throwing his spear and using a sword (*Iliad* 11.107-9). Paris has two spears at the start of book three (*Iliad* 3.19) but he and Menelaus throw only one spear each in their duel before Menelaus charged at Paris with a sword (*Iliad* 3.345-365). Achilles, when he defeats Hector, throws his spear, but in order to kill his opponent later with a spear thrust, is made to have Athena return his thrown spear to him (*Iliad* 22.273-7). Telemachos fetches two spears each in preparation for the attack on the suitors only for them to be shown using a single thrusting spear later (*Odyssey* 22, 110; 144; 292). Van Wees (2005: 251-2) argues that the use of weapons in Homer mirrors their use in Archaic Greek warfare, and I agree.⁴⁵⁸

Images of infantry in Greek art in the ninth and eighth centuries show the prominent use of swords rather than spears.⁴⁵⁹ Large numbers of swords have been found in graves from this period.⁴⁶⁰ Infantry are also shown using throwing spears and bows, sometimes while also wearing a helmet and using a shield.⁴⁶¹ After 700 the spear was used in favour of the sword eventually becoming the main weapon of the hoplite.⁴⁶²

⁴⁵⁷ The evidence and importance of two throwing spears will be discussed in detail in the next chapter.

⁴⁵⁸ *Contra* Hanson 1991a who argues for the hoplite phalanx existing in the *Iliad* alongside Mycenaean elements.

⁴⁵⁹ Van Wees 1994: 144 table 1.

⁴⁶⁰ Snodgrass 1964: 180.

⁴⁶¹ Ahlberg 1971.

⁴⁶² Van Wees 2005: 251 "The spear clearly developed from being primarily a missile in the eighth century, via becoming as much a thrusting weapon as a missile in the early seventh, to taking on its classical role as exclusively a

Another problem is the number of references to iron. Homer only mentions an iron sword five times in his works, clearly showing he is describing the Bronze Age when iron was still a precious metal. However iron can be seen in each poem, for example the description of a smith working iron (*Iliad* 18.475) and iron drawing a man to battle (*Odyssey* 16.294). By the eighth century iron was the main metal for weapons, although bronze was retained for facing shields and constructing armour.⁴⁶³ Homer knew that his characters lived in an age before iron and so usually described them in terms of bronze.⁴⁶⁴

The bow is not as common a weapon in Homer as melee armaments and yet on occasion is afforded greater importance in war than hand-to-hand weapons. Philoctetes had to be brought to Troy in order for his expertise with the bow to bring the Greeks victory (*Iliad* 2.720; cf. Sophocles, *Philoctetes*). Paris rejoices in shooting Diomedes in the foot during his *aristeia* and is the only one who forces him to leave the battlefield (*Iliad* 6.375-9). Even the greatest hero, Achilles, is killed by an arrow in his foot although this is never mentioned by Homer (Ovid, *Metamorphoses* 12.580-619). Odysseus fights the suitors armed with a single spear and hand-grip shield (*Odyssey* 16.295; 22.292-3) but is more renowned for his prowess as an archer who can string a huge bow (*Odyssey* Book 21; cf. 8.215-25), a distinctly Mycenaean theme. These few examples show that the bow still held significant importance in the warfare described in the Homeric epics.⁴⁶⁵

It is, however, difficult to determine whether archery features in Homer because it still played a part in battles of the poet's own time or because Homer wanted his audience to appreciate its role in earlier Mycenaean warfare.⁴⁶⁶ The bow certainly remained a useful weapon in Greek warfare but the tendency of Greeks to alienate or belittle archers has led to the belief that they were not used in warfare. Snodgrass (1964: 141–56 and 1999: 80–4) has argued that

hand-weapon by the end of the seventh century – and what we find in Homer corresponds to the middle phase of the evolution, to be dated c. 700-640 BC.”

⁴⁶³ Snodgrass 1999.

⁴⁶⁴ This evidence is often used to prove Homer described different periods (eg. Lorimer 1950). Van Wees 2005 does not address this problem.

⁴⁶⁵ See Hijmans 1976 and most recently Sutherland 2011.

⁴⁶⁶ Ahlberg 1971: 107, states “Archers are more distinctly connected with sea fights than with fighting on land and then mostly as defenders of a ship.” *Contra* Hijmans 1976, who believes that archery is more important to the action in the *Iliad* than is generally accepted.

archery disappeared in Greece in the Dark Ages on account of the relatively few arrows that have been excavated. But Van Wees (1994: 144) shows that a third of weapons pictured in Greek Art between 850 and 700 are drawn bows suggesting a continued reliance on archery in battle.

Archers are occasionally portrayed by Homer as cowardly soldiers who fight unheroically from a safe distance. Homer has Diomedes berate Paris with a number of abuses the first of which is ‘you archer!’ (*Iliad* 11.385). This depreciative view of archery is prevalent in Classical Greek histories as Hornblower (2007: 40-1) summarises succinctly,

Later writers voice much the same attitude. Thucydides describes the mocking by Athenian allies of some Spartan prisoners taken to Athens: ‘Did all the brave gentlemen among you die, then?’, implying that the survivors were cowards. One Spartan replies ‘the spindle, meaning the arrow, would be a fine weapon if it could tell brave men from cowards’ (4.40.2). Part of the point of this good retort consists in the feminine associations of ‘spindle’ (*atratkon*). Manly hoplites, unlike marginal archers, stand their ground and fight at close quarters on behalf of their polis.

Despite this tendency to denigrate the role of the archer in battle in Greece, archery must have been used, especially to protect the city, even if sieges were rare until the fourth century. Archers were also very successful on board ships where they could pick off the unarmoured sailors at will or force immobilized crews to surrender.⁴⁶⁷ Athens records the deaths of barbarian archers alongside citizen dead with no apparent distinction in status or importance in war.⁴⁶⁸ Certainly archery was not as important in hoplite warfare but in Homer’s time, and certainly in the historical setting of the Trojan War, archers must have been part of battle. As Van Wees (2005: 252) states, “Homer, in other words, is aware of the older, more prominent, role of archers, but is also familiar with the archaic practice”.

The armaments of the infantry in Homer represent a mixture of different fighting styles. As a result soldiers are described using a variety of different weapons from bows and throwing spears to spears and swords. It is impossible to draw conclusions about any standard armament or tactical practice of Homer’s time.⁴⁶⁹ The same is true of Homer as a source for Mycenaean

⁴⁶⁷ Jordan 1975: 208-9. Cf. Thucydides 1.50.1.

⁴⁶⁸ Bradeen 1974: nos. 14.35, 17.27, and 22.252

⁴⁶⁹ We may be able to state that the absence of the *hoplon* from Homer’s poems does demonstrate that they were composed before the addition of this type of shield to the panoply of a hoplite.

warfare. Instead we must conclude that infantry were the principal force in the warfare described by Homer, armed in a variety of ways, and that specialized archers and other missile troops, if there were any, fought dispersed among the ranks of other infantry.

Chariots

Homer principally describes chariots being used to convey heroes to the front lines to collect their trophies, but he also records reminiscences of chariot battles.⁴⁷⁰ Nestor tells his chariots to keep in line as they advance (*Iliad* 4.300) and Hector repeatedly orders the chariots to charge at the Greeks (e.g. *Iliad* 15.346; 16.833). It is possible that until one side broke ranks chariots did indeed convey men to the front as well as, or instead of, functioning as manoeuvrable firing platforms.⁴⁷¹ Once one side retreated, chariots were used to save the fleeing heroes or to enable a faster and more destructive pursuit of the defeated.⁴⁷²

Here it is likely that we have references in Homer to two styles of warfare that used chariots differently. Chariots perhaps were still used for transport to the battlefield in Homer's time and after, as the mid-seventh-century Chigi vase suggests as discussed below, but they may also be an anachronistic addition by the poet in order to take the audience back to an age of chariot supremacy. Suffice it to say that chariots in Homer do not fight alongside the infantry and therefore are never used in a system of combined arms.

The well-armed elite fought on foot and as a result the chariot was not a significant feature of Greek warfare.⁴⁷³ It certainly was never integrated into the battle tactics of Greek warfare after the Mycenaean period and was quickly abandoned even by the elite in favour of riding the cheaper and more practical horse. As discussed below, the Archaic Greek use of horses was as heavy infantry transports in the same way as Homer describes the use of the chariot.

Cavalry

⁴⁷⁰ On chariots in Homer see in particular Anderson 1975; Greenhalgh 1973: 7-17; Kirk, 1985: 360-3.

⁴⁷¹ See Anderson 1965.

⁴⁷² See Littauer 1972; Hooker 1976: 90; Greenhalgh 1982: 89.

⁴⁷³ Later, as argued by Hanson 1983, the heavy infantryman was common because of the growth in urbanisation centred on sedentary agriculture in Greece. However, in Mesopotamia, where agriculture was first employed on a large scale, archers still remained more important than heavy armed infantry.

In Homer there are no references to cavalry. There are images of armoured men riding horses in Dark Age Greece, however, the probable time of the composition of the poems. Greenhalgh (1973: 40-61) has shown that it is very likely that the images of such heavily armed cavalrymen depicted soldiers who would ride to battle attended by a squire and dismount to fight. This is proven by the fact that most of the weapons excavated from the Proto-Geometric and Geometric periods involve hand-to-hand combat, something that did not become common cavalry practice in the Near East until the eighth or seventh centuries (see above).

Worley argues (1994: 21–3) that cavalry did fight in battle on horseback in Dark Age Greece, as they did in contemporary Assyria, and that their importance in warfare in Greece is overlooked, but his argument is based on comparative evidence rather than any Greek evidence. It is possible that once the hoplite phalanx was created existing cavalry forces were hastily abandoned everywhere and as a result have left us little evidence of their use. Perhaps the Spartan unit called the *hippies*—described by Lazenby 1985: 10-12 as an elite unit of hoplites in the classical period—is a remnant of this earlier system of an aristocratic cavalry. Aristotle (*Politics* 1297b) stated that early Greek fighting between poleis involved the cavalry, *hippeis*, of each side because the infantry were not yet ordered into a phalanx and without this formation hoplites are useless supporting this conclusion. However, cavalry as used in the east, as scouts or as mounted archers, are never shown in images of early Greek warfare. It is enough to conclude that cavalry played a very limited role, if at all, in the warfare in Greece from the fall of the Mycenaeans through to the late eighth century and perhaps even later.⁴⁷⁴

Combined Arms

Whether Homer describes hoplite warfare or Mycenaean warfare, or something in between, it is clear, as van Wees (2005: 157) states, that his

battle narrative cuts back and forth between close-ups of the deeds of a few men somewhere along the front and panoramic images of the entire mass of men in action,

⁴⁷⁴ The nature of cavalry in Greece will be discussed in more detail in the next chapter. Spence 1993 argues that cavalry in Athens were limited by social and ideological factors limited although Worley 1994 believes cavalry were more important in Greek warfare than is often accepted. Gaebel 2002 argues for an increase in the use of cavalry through the classical period but agrees that their use was limited in the Dark Ages.

exchanging missiles and trading blows....In the fluid, open-order action of the epic, mass fighting takes place at close range and long range at the same time.⁴⁷⁵

Van Wees (2005: 153-165) has shown that Homeric warfare involved missiles and hand-to-hand combat at different times. The heroes in Homer almost always fight as heavy infantry in hand-to-hand combat, while also throwing their spears, and the rest of the army probably did the same. Fighting style varied during the ebb and flow of the battle, sometimes involving missile duels and sometimes close-quarter melees in separate parts of the field.⁴⁷⁶ The soldiers wandered in and out of the battle and even heroes are shown in the rear ranks resting or encouraging others to fight.

To the modern reader, unfamiliar with the kind of fighting described by the poet, the panoramic scene of 'shields clashing' at the beginning of the first battle (4.446-56) may suggest a collision of two close-order phalanxes, while the missiles which fly all morning at the beginning of the third battle (11.90-1) may sound like long range skirmishing. But to audiences who understood how the heroes fought it would have been obvious that such images simply represented two sides of the same coin. (Van Wees 2005: 157)

It is likely that this style of battle was usual in Homer's time before the advent of a hoplite phalanx, which saw a more regimented fighting style. Nevertheless Homeric warfare does not involve any use of combined arms tactics of infantry and chariots in combination. The missile infantry fight alongside the close combat troops without any apparent regimentation or even differentiation between the two.

⁴⁷⁵ Van Wees 2005. See also Van Wees 1994.

⁴⁷⁶ This is similar to some battles in the English Wars of the Roses in the fifteenth century. The battle of Tewkesbury lasted over a day and the battle of Towton lasted for over 12 hours Bennett et al. 2005. Clearly in battles of this length soldiers, especially heavily armoured knights, had to fight in relays to preserve their effectiveness, just as the Roman legions did. Van Wees 2005 uses the warfare practiced in Papua New Guinea as evidence for this style of battle. There are no clear examples of this in the ancient world since information is scarce concerning Greek battle tactics before the classical period and after the implementation of the hoplite phalanx Greek warfare was distinctly different. Since most of the fullest sources for battles in the ancient world are Greek and Roman our understanding of ancient warfare is focused on the decisive hand-to-hand engagements they describe. As Drews 1993: 97 summarises, "Warfare in the preclassical world is a subject on which we evidently will never know very much.... we can imagine at least the outlines of battles fought by Archaic Greeks and Romans. But beyond ca. 700 questions begin to multiply, and about the second millennium we are grossly ignorant."

The army familiar to Homer's audience had little in the way of hierarchical organization and is thought to have been united under the command of the local leader,

The epic army, then, is an organizational compromise. If the poet had wanted to retain the real life unity of the army under one man's authority, he would have had to forget about regional leaders and the notion of regions as political entities.⁴⁷⁷

Battles at this time involved armies commanded by the king, or general, fighting en masse in a disorganized melee of infantry (Van Wees 2005). Van Wees rightly conjectures that any concept of military hierarchy came into place with the implementation of military alliances between *poleis* in the sixth century.⁴⁷⁸ The well-armed, perhaps chariot driven, aristocrats fought independently throughout the battle separated from the rest of the infantry.⁴⁷⁹ Crucially for the purpose of this study all soldiers fought alternately as missile or close combat infantry. This makes it very difficult to propose any tactical use of combined arms.

There was no idea of units fighting collectively or independently, and certainly no integration of cavalry and/or chariots into the army. All types of non-aristocratic soldier fought side by side, and it was every man for himself. Once the close order of the phalanx was implemented a hierarchical command structure became necessary in order to maintain strict discipline within the formation. Before this any use of combined arms in warfare was accidental as the infantry fought using missiles and melee weapons at their discretion. That Odysseus is famed for use of the bow but fights the suitors as a spearman (*Odyssey* Books 21 and 22) demonstrates that there was no differential in Homeric warfare between missile troops and close-

⁴⁷⁷ Van Wees 1986: 301, "This would have meant, first, a serious loss of status for all the great heroes.... Second, it would have meant imposing political unity both on heroic Greece and on Asia Minor—a rather bold move. If, on the other hand, he had wanted to retain the legendary regions and regional leadership, he would have had to forsake the unified command and divide the army—or rather, construct a divided army by putting several ordinary armies side by side, and adding an imaginary level of command for the most powerful of the commanders."

⁴⁷⁸ Van Wees 1986: 302, "Homeric warfare should also pre-date the development of symmachies. In times when battles were regularly fought by alliances of states, each contributing its own contingent and its own commander, no poet would have had any conceptual difficulties with the organisation of the Greek army before Troy."

⁴⁷⁹ This style of battle is similar to medieval Europe where nobles bring their personal retinues to battle but do not necessarily fight alongside their retainers. Instead the nobles may fight alongside each other as a concentrated cavalry force, just as in the French armies at Agincourt, Crecy and Poitiers. See Bennett et al. 2005.

quarter combat infantry. Therefore battle in Homer cannot be said to demonstrate the use of combined arms.

Combined arms conclusions

Evidence for the type of warfare in the Mycenaean and Homeric periods of Greece is scarce and difficult to determine. It is clear that changes in armament and armour occurred but exactly when, where, and how is largely unknown. Chariots were the vehicle of the elite in Mycenaean Greece and existed in large numbers even on Crete. Chariot warriors were heavily armoured and probably armed with bows and/or javelins, although it is possible that the terrain of Greece may have caused them to dismount and fight as heavy armed infantrymen among other lighter-armed peasants, as they did in Homer's time.

The concept of combined arms probably existed in Mycenaean Greece to a limited degree, and battle was a mix of chariots and infantry, albeit with seemingly little in the way of unit specific tactics. It is impossible, however, to determine the level of the use of combined arms. Charioteers were the wealthy aristocratic core who could afford horses, chariots and composite bows. An army probably comprised chariots and infantry, but the tactics used will probably always remain unknown.

At the end of the Mycenaean period and in the subsequent Dark Ages, early heavy infantry, usually the wealthier members of society who could afford good armour, were carried into battle in their chariots to fight in the general melee alongside archers and other less well armoured men. Throughout Homeric Greece, warfare was principally waged on foot, and the elite unit was the heavy infantryman.

This is a distinct contrast to other contemporary cultures in the east where the mounted soldier, either on horse or chariot, always remained the elite in battle. The topography in Greece prevented the dominance of fluid chariot warfare in battle and may have forced the elite to fight on foot alongside their less wealthy peers. As a result combined arms was not used by the Greeks for an extensive period after the Mycenaean era and "In comparison with the sophisticated military machine of the Assyrian Empire, Greek warfare was decidedly backward." (Ferrill 1986: 99)

Chapter 3: Historical development of Combined Arms: Greece

Primary sources

Before we can begin any discussion on the history of Greece from the seventh century to the battle of Ipsus in 301 we must first discuss the quality of the sources from which we draw our information. Whether the source is a historical account, such as Thucydides' *Peloponnesian War*, or a biography, such as one of Plutarch's various *Lives*, we have to assess the reliability of the account. The nature and purpose of the source, the bias of the author, the origin of the source, the purpose of the information—all these have to be assessed to determine the value of the piece of history.

In view of the large time period this study covers it is necessary to use many types of source. But very few of these accounts are concerned specifically with military information. Even a history of Alexander that describes his battles in detail, such as Arrian's *Anabasis*, was intended more to glorify the man and his achievements than to examine thoroughly the mechanics of his campaign. The biographies of Plutarch provide a significant amount of character detail, but were never written for the purpose of pure history. As a result we have to use every type of available source whatever its form and function. Our ability to reliably reconstruct the tactics and events of a particular battle is significantly reduced as a result of all these factors.⁴⁸⁰ As Hans van Wees (2005: 2) succinctly summarises,

the problem with the study of Greek warfare of any period is that so many ancient authors tell us about military ideals, of which they often needed to remind themselves and their audiences, whereas so few of them tell us about the humdrum military realities with which they were only too familiar. If there is one common failing in modern work on the subject, it is that it underestimates how wide the gap between ideal and reality could be.

Despite the many problems of historiography associated with our sources, the accuracy of most ancient historical accounts, in Greece in particular, was considerable in terms of many of the specific details of a battle. It is likely that locals went to observe battles nearby as a function of human curiosity, just as schoolchildren flock to observe the fight in the playground, or

⁴⁸⁰ The more military focused accounts of the tactical manuals provide few particulars of tactics on the battlefield. Our examination of the development of combined arms does not allow for a detailed focus on logistics, training, and internal army hierarchical organization. As a result, very little evidence from the tactical manuals is required, and so I will not focus on the historiography of this type of source.

villagers follow the fire engine or police car to the scene of an accident.⁴⁸¹ Much of the information in our primary sources is reliable, especially if it is corroborated elsewhere by archaeology or contemporary inscriptions. In my view we must be careful not to hinder the effectiveness of modern historical interpretations on account of too many limits placed on the reliability of our sources through an obsession with historiography.⁴⁸²

In this chapter, I will engage in a detailed discussion of sources only where the purpose, nature, or any other aspect of the historiography impacts considerably the analysis of combined arms or a particular battle. Each section will begin with a discussion of the merits of all the primary sources relevant to that particular period.

Archaic Greece

Archaic warfare in Greece saw the development of the hoplite that is familiar from the Classical period. The focus of this section, just as that dealing with early Greek warfare, is on the nature of the tactics employed by hoplites, the existence of the phalanx formation and the level of integration in battle of light infantry with the hoplite.

Sources

There are few contemporary written sources for this period of Greek history and those that exist are poetical. Classical writers that cover the period, such as Herodotus, summarize the history without providing their sources.⁴⁸³ Fortunately the archaic poems that survive, such as those by Archilochus and Tyrtaeus, are military in theme and at least provide solid evidence for the mindset and culture of battle in Greece if not specific tactical details.⁴⁸⁴ The historiographic

⁴⁸¹ Homer's descriptions of Helen identifying to Priam the Greek leaders as they both watched the battle from the city walls is perhaps the earliest example (*Iliad* 3.145-245). Women often accompanied the Persian army on campaign (Xenophon *Cyropaedia* 3.3.67; 4.1.17, 2.2) and Justin (1.6.13-14) records an instance of the women condemning their men as cowards for turning to flee while the battle was still raging. In the more modern era there are numerous examples of an audience for battles, such as the yachts of British tourists watching a naval battle in the Balkans during the Crimean War (Ponting 2004: 45), Russian families eating their picnics during the Crimean War (Royle 2000: 219), or prominent Americans travelling in coaches from Washington to watch the First Battle of Manassas (or Bull Run) in the American Civil War (Commager 1995: 106-9).

⁴⁸² For a good discussion of all the controversies surrounding the use of ancient sources to reconstruct the events of battles see Sabin 2009: 3-15.

⁴⁸³ Perhaps the best example is Aristotle's assertion that early Greek warfare revolved around the use of cavalry but the archaeological evidence for this suggests otherwise. See Greenhalgh 1973.

⁴⁸⁴ Van Wees 2005: 166-177.

difficulties of these sources, such as their poetic nature and the problems of determining exact dates of origins, in this instance do not prevent using them to examine Archaic Greek warfare.

Images on pots provide a great deal of information about armaments and troop types in Archaic Greece. Hoplites, archers, light infantry and chariots all appear in various guises in these images, as discussed below. As with most artistic representations it is difficult to determine the intended image of the artist or to disentangle mythological, or non-contemporary, scenes from the current reality of the painter. For military tactics this is problematic. As discussed above, the Homeric epics confuse our understanding of both Dark Age and Mycenaean warfare because the intention of the author is not explicitly clear. Images have no other context to aid analysis and thus blur the timelines of the adoption of certain weapons or units.

Nevertheless the images and written sources can provide important information regarding warfare in the Archaic period. That hoplites are shown wearing the familiar classical Greek panoply allows us to see the growth in the importance of heavy infantry in Greece. The repeated representations of archers and other missile troops, often alongside hoplites, show that the hoplite phalanx had not fully developed, as discussed in more detail below.

Infantry

The principal question concerning early Greek hoplites is when the phalanx formation was adopted; the so-called hoplite revolution. This problem has concerned scholars for decades. Although this debate is not crucial for an analysis of the use of combined arms, it does have some impact on the roles of missile troops and tactics in battle. Generally opinion is divided into two schools of thought. The first hypothesis argues that phalanx tactics were adopted suddenly around 700 with the invention of the double grip for the concave shield, the *hoplon*.⁴⁸⁵ The second, and more generally accepted, theory emphasizes that the individual armaments of the hoplite panoply were adopted gradually over a number of decades as proven by the distribution of archaeological finds.⁴⁸⁶

Victor Davis Hanson (1991a) presents an alternate view that the adoption of phalanx tactics in the eighth century or earlier caused the invention of the new shield grip and its concave nature as well as the use of a butt spike. He argues that the double grip and concave shield were

⁴⁸⁵ Lorimer 1950 first argued this theory. Cartledge 1977 and Greenhalgh 1973 expand on the arguments.

⁴⁸⁶ This view is well argued by Snodgrass 1965. See also Donlan 1970; Garland 1975; Salmon 1977. On the archaeological finds see Snodgrass 1964: 59-60.

unnecessary in non-formation battle and must have been invented to aid in the success of the phalanx. He begins his argument (1991a: 64) stating that tactics prompt new inventions in armament and thus the new shield and butt spike “were representative of the response of technology to a pre-existing practice throughout Greece to fight in massed array.” His interpretation of the evidence is based solely on the assumption that tactics usually prompt new weapons technology and not the other way around. He concludes (1991a: 74) that

Military technology in the Greek world – despite what most scholars think – usually *reacted* [his italics] to the demands of the changing battlefield in the form of new or improved weapons.

Hanson (1991a: 79 n. 5) admits

True, on occasion, an innovative breakthrough (e.g. gunpowder, rifling) can sometimes suggest new tactical implications, but this is rarer, and is usually a matter of modifying, rather than creating, tactics.⁴⁸⁷

Yet there are many examples where this is not true. In my opinion history is full of examples of new weapons prompting the adoption of new tactics, and that

a fundamental change in weaponry, equipment, or technology, be it the adoption of gunpowder, the rifle musket, the airplane, the tank, or the atomic bomb, will affect the traditional modes of fighting and reverberate throughout the institutional framework.⁴⁸⁸

⁴⁸⁷ Hanson continues to say that musketry may have come from a desire for greater missile velocity and First World War fighter planes developed from a need for new aerial combat methods. The latter is probably true but gunpowder had to have been invented for musketry to be used at all, and the aeroplane had to have been designed for aerial combat to exist in the first place. He is right that weapons do not arrive “without some consideration for the battlefield” but to argue that almost all new weapons come in response to already existing tactics is taking things too far. Hanson’s misunderstanding of other comparative examples continues to his dismissal of aristocrats, wearing the hoplite panoply, riding horses to battle only to fight on foot. Hanson asks (1991a: 84 n. 28) “Are we to believe a knight would ‘suit up’ in the panoply, dismount (so unlike his medieval cousin), and then stab away or cast with his spear in single combat on the ground against non-hoplites, with such liabilities as reduced vision, comfort, and mobility?” Not only does this practice appear in Homer, but Hanson’s reference to medieval knights is wrong. In fourteenth and fifteenth century England it was standard practice for the knights, including royalty, to dismount and fight on foot Bennett et al. 2005. To give just one example, the Earl of Warwick, nicknamed the Kingmaker, was killed at the battle of Barnet in 1471 because he was fighting on foot in the front lines and did not have a chance to reach his horse at the rear of the battlefield once the battle was lost: Hicks 1998.

⁴⁸⁸ Matloff 1969: 3.

To give just a few examples in ancient warfare, the chariot must have been invented before the tactics of its use in battle; the latter cannot occur until the former exists. The same can be said for massed archery occurring only after the invention of the bow. Perhaps a more relevant example is that the tactics of a shock cavalry charge in a wedge formation could not be used until horsemen were armed and sufficiently proficient at riding to be able to directly assault the enemy line. Admittedly subsequently the perfection of tactics on the battlefield often led to modifications of weapons but revolutionary inventions have to come before the tactics to use them.

Infantry in early Greece fought in hand-to-hand warfare using armour, helmets and large shields but not in a phalanx formation, as discussed above. The spearmen of Egypt had large body shields (see above) and the spearmen on the Warrior Vase in Mycenae use similar shields. The concave nature of the *hoplon* does not automatically require soldiers engaged in hand-to-hand combat to fight in a phalanx formation. In fact the extra weight that requires the new grip and shape probably aided an offensive use of the shield individually as well as deflecting missiles.⁴⁸⁹

The large hoplite double-grip shield, the *hoplon*, was adopted probably sometime between 750 and 700 but its use did not alone force the implementation of hoplite phalanx tactics.⁴⁹⁰ A large shield can be used offensively by an individual warrior, just as the Romans used their large, and concave, *scutum*.⁴⁹¹ The *secutor* fighting as a Roman gladiator was trained to fight as an individual relying on his large shield for victory.⁴⁹² Reliance on formation developed in order to get the best results out of the new shield but the one does not necessarily presuppose the other.

Luraghi has shown that Greek soldiers wearing the hoplite panoply were employed as mercenaries in Asia by the end of the eighth century.⁴⁹³ Assyrian documents, the first dating to *circa* 738, show Ionian military involvement within the Assyrian Empire that had to be countered (Luraghi 2006). This culminated in Sennacherib's invasion of Cilicia in 696 when he

⁴⁸⁹ Van Wees 2005. See also Anderson 1991: 15; Lazenby and Whitehead 2006.

⁴⁹⁰ Snodgrass 1964; Snodgrass 1999; Everson 2004.

⁴⁹¹ Anglim et al. 2003.

⁴⁹² Wisdom 2001.

⁴⁹³ Luraghi 2006. Mercenaries existed in Minoan Knossos also. See Driessen and Macdonald 1984.

incorporated Ionian Greeks into the royal Assyrian army.⁴⁹⁴ Clearly hoplites were common throughout the Greek world by the early seventh century. Hoplites and the many advantages of heavy armed infantrymen were appreciated by the Assyrians and other states lacking their own close-quarter heavy infantry units.⁴⁹⁵

Luraghi (2006: 36-7) discusses a Phoenician bowl, of a type usually dated to between 710 and 675, which shows hoplites fighting alongside Assyrian archers in a siege in Asia. This bowl was found in a chamber tomb on Cyprus near Amathus.⁴⁹⁶ The four hoplites pictured attacking the city, seem to be marching in step in a phalanx formation. Other hoplites defend the city. Luraghi (2006: 37) concludes that, “this is the earliest depiction of a hoplite phalanx.” I do not agree that we see a phalanx, since such a formation would be useless in a siege.⁴⁹⁷ Nevertheless hoplites were employed in Near Eastern armies demonstrating their abilities as effective heavy infantry.

Snodgrass 1965 has argued that archaeological evidence of finds and images proves that the hoplite phalanx did not occur before 650 and van Wees has more recently argued that hoplites fighting in a close-order phalanx did not occur until just before the Persian Wars at the end of the sixth century.⁴⁹⁸ Certainly a number of images in Greek art show hoplites armed with two spears, which may be fitted with a throwing-loop.⁴⁹⁹ Archilochus (F 139.6 West) and

⁴⁹⁴ Berossus *FgrHist* 680 F 7, 31 and Abydenus *FgrHist* 685 F 5, 6.

⁴⁹⁵ The use of hoplites as mercenaries in the Near East very soon after the adoption of the hoplite panoply demonstrates that the hoplite was the most effective heavy infantry soldier available anywhere at the time. This supports the argument made earlier that eastern armies were deficient in heavy infantry despite using combined arms.

⁴⁹⁶ Myres 1933.

⁴⁹⁷ The hoplites depicted are clearly shown to be attacking the city walls.

⁴⁹⁸ Snodgrass 1965: 110, “the adoption of the ‘hoplite panoply’ was a long drawn out, piecemeal process, which did not at first entail any radical change in tactics”. See also van Wees 2005: 166-184. In particular 177, “the Greek style of fighting throughout the sixth century remained much the same as in the time of Tyrtaeus. The first hints of change come only at the end of the century: mounted hoplites begin to fade from the vase-painters’ repertoire, soon followed by hoplites with throwing spears and Boeotian shields, and from about 500 BC Spartan archer figurines no longer kneel in combat pose, but instead stand up straight, with their bows unstrung....The strict separation of hoplites, light-armed, and horsemen characteristic of the classical phalanx, therefore, may not have emerged until the very end of the archaic period.”

⁴⁹⁹ Van Wees 2000a: 147-9.

Callinus (F 1.14 West) refer to battle as combat using javelins. If soldiers equipped with the hoplite panoply used throwing spears they cannot have fought in a tight formation and so the hoplite must have existed before the tactics of the phalanx, as is the commonly held view.

Archers are also shown to fight side by side with hoplites, but are shown as unarmoured light infantry.⁵⁰⁰ This is a clear difference from the archers in Homer and Dark Age images, who are just as armoured as those fighting with swords and thrusting spears. The number of archers seen in Greek art of the seventh and sixth centuries is low but this is symptomatic of their reduced status in society and war.⁵⁰¹ Arrowheads appear in enough quantity from this period to prove the use of archery never disappeared entirely in Greek warfare, contrary to Snodgrass' assertion.⁵⁰²

The fact that archers and light infantry are shown fighting alongside the heavy armed hoplites, suggests that battle was fought in an open formation. Perhaps the best example of this is the well known Chigi Vase, a Corinthian jug from around 640.⁵⁰³ This vase has numerous scenes depicted, one of which is a battle scene showing a line of spearmen armed as hoplites going into battle. However these hoplites carry two spears rather than one, and are accompanied by a chariot behind. If this is not a mythological scene and does depict contemporary warfare, then we must conclude that chariots and two spears were the complement of hoplites still in the mid-seventh century.

The image could be dismissed as referring to the *Iliad*, hence the chariot and two spears, but it is more likely, as van Wees has suggested,⁵⁰⁴ that it depicts contemporary warfare. It certainly does not represent a hoplite phalanx in close quarter combat.⁵⁰⁵ The phalanx warfare of the fifth century had not yet been implemented and heavy armed hoplites fought alongside light infantry in a more open order of battle. The wealthy elite may still have been conveyed to battle on horses or in chariots, as they were in Homeric warfare.⁵⁰⁶

⁵⁰⁰ Snodgrass 1964: fig. 15; Van Wees 2000a: 152-4.

⁵⁰¹ This aspect of archers in Greek warfare is discussed above.

⁵⁰² Snodgrass 1964: 250; 1999: 81.

⁵⁰³ See in particular Hurwit 2002:14-16.

⁵⁰⁴ Van Wees 2000a: 134-9.

⁵⁰⁵ Lorimer 1947; Snodgrass 1964: 138; Cartledge 1977; Salmon 1977; Krentz 1985a.

⁵⁰⁶ Greenhalgh 1973.

Tyrtaeus' poetry reveals that towards the end of the seventh century hoplites abandoned the use of throwing spears and preferred fighting hand-to-hand with a single spear and sword. The best example is the often quoted passage (8.29-34):

Go near, strike with a long spear or a sword at close range, and kill a man. Set foot against foot, press shield against shield, fling crest against crest, helmet against helmet, and chest against chest, and fight a man, gripping the hilt of a sword or a long spear.

Missile infantry still fight alongside the hoplites but are clearly now visibly distinguished from hoplites in battle, though not tactically, noticeably lacking in any defensive armour: "You, light-armed, squatting under a shield here and there, must throw great rocks and hurl smooth javelins while you stand close by the heavy-armed." (Tyrtaeus 8.35-8)

The lack of tactical separation between light and heavy infantry in Greek armies is proven by Herodotus' assertion (1.103.1) that the Median king Cyaxares was the first to tactically separate spearmen, archers and cavalry. To Herodotus' readers this would be understandable if their own knowledge of earlier Greek warfare revealed no such division. This continues the practice evident in Homeric battle descriptions, as discussed above.

What we know of the Messenian Wars between Sparta and Messenia show this style of warfare remained. The Battle of the Trench, where the Spartans forced their men to stand and fight lest they fall into a trench behind their lines, would have been named differently had a phalanx operated without need for ditch in the rear.⁵⁰⁷

Sixth century evidence is scarce but images on pots show hoplites fighting in small groups sometimes joined by archers or horses.⁵⁰⁸ Nothing suggests the existence of a regular formation and the separation of light infantry from the phalanx. These images are often dismissed as heroic or mythological anachronisms without citing any convincing evidence for this view.⁵⁰⁹

Significant numbers of Athenian pots in the sixth century show archers in combination with hoplites. Van Wees (2005: 175) estimates that archers "featured on some 750 surviving vases,...and on about a hundred vases they take an active part in battle or ambush amongst the

⁵⁰⁷ See the scholiast to Aristotle, *Nicomachean Ethics* 1116a36-b1; Tyrtaeus F 9.23.5, 23a.19 West; Pausanias 4.6.2, 17.2-7.

⁵⁰⁸ Van Wees 2005: 174-7 provides a good discussion of the specific images.

⁵⁰⁹ See for example Cartledge 1977.

heavy infantry.” Most of these Athenian images show ‘barbarian’ archers distinguished by their foreign dress. These Scythian archers were probably employed as mercenaries in the Athenian army but they were not necessarily separated tactically in battle.⁵¹⁰ Clearly light infantry retained some importance in Greek warfare throughout the archaic period and representations of them fighting among hoplites suggest the phalanx was not yet established.

Once the Greeks adopted the hoplite panoply as the main equipment for a heavy infantryman, the tactics specific to heavy infantry began to develop naturally. It is usual for a soldier on the battlefield to seek the protection afforded to him by his neighbour’s shield. Homer often describes groups of men fighting together and emphasizes the benefit of fighting side by side. “We may do some good even if there are only two of us, for even the poorest fighters can display combined prowess” (*Iliad* 13.236-7). As Greek warfare moved to favour hand-to-hand combat soldiers began to cooperate in battle and this in turn led to the development of the phalanx formation.

It was possibly not until the Persian Wars that the Greeks became reliant on the close formation of the phalanx.⁵¹¹ Even then Herodotus (9.28-9) describes the helots fighting as light infantry alongside their Spartan masters in great numbers at Plataea, showing that rarely were light infantry completely absent in Greek battles. Rather hoplites became the most important type of soldier and the roles in battle of the other types of unit were subordinated to a great degree.

Chariots

Many late sixth-century pots show the chariot being used to transport a hoplite to or from battle.⁵¹² Among these “one remarkable painting shows three lines of seven running hoplites, each group about to be joined by an eighth running hoplite whose horses are galloping beside him. The horses are envisaged as mingling with the infantry in the epic manner.”⁵¹³ These images have been suggested as representing myths anachronistically.⁵¹⁴ Van Wees (2005: 176-7) argues that these pots depict contemporary practice and that the chariot was used to transport

⁵¹⁰ Van Wees 2005: 175-6.

⁵¹¹ Van Wees 2005: 177-183. His argument is convincing that Herodotus emphasized the role of helots at Plataea because it was unusual to his readers. This will be discussed in more detail in the case study of Plataea.

⁵¹² See Webster 1972: 190-5 for a list of pots displaying chariots and hoplites together.

⁵¹³ Van Wees 2005:177.

⁵¹⁴ Lissarague 1990.

hoplites to and from battle as late as the early fifth century. If these images do depict contemporary practice then the compact hoplite phalanx as seen in the Peloponnesian War did not become common until well into the fifth century. The hoplite panoply was adopted perhaps as many as two centuries earlier than the phalanx formation. Nevertheless chariots were never used in a combined arms tactic in battle in conjunction with infantry.

Cavalry

A number of images show hoplites riding horses in Archaic Greece. Greenhalgh 1973 provides the fullest discussion of these images. He concludes that horses were used as transports to and from the battle for the wealthier individuals in the same way as chariots were earlier. A number of the hoplites riding horses carry two spears rather than the hoplite's customary one.⁵¹⁵ This is further evidence of open order battle in Archaic Greek warfare where the elites rely on throwing spears. The use of cavalry in Archaic Greece was never combined with the infantry and so is not important for the discussion of combined arms.

Combined Arms

As Van Wees (2005: 166) states, "Archaic infantry combat was in many ways closer to Homer's heroic clashes than to the battles of the classical period." Greek warfare in this period made no use of cavalry or chariots and it is probable that missile troops were distributed among the heavy close combat infantry, just as they were in Homeric/Dark Age warfare. The principal difference is that light infantry in Archaic Greece were unarmoured in contrast to the heavily armoured hoplite. Hoplites still made use of throwing spears but rarely used bows, as the heavily armoured heroes did in Homer. Archers and slingers gradually became a visibly distinct group of infantry although they were not tactically separated.

This lack of tactical separation of units in Archaic Greece precludes the existence of combined arms warfare. Distinct units can only be combined in battle if they are regarded as separate entities to begin with. "The strict separation of hoplites, light-armed, and horsemen characteristic of the classical phalanx, therefore, may not have emerged until the very end of the archaic period."⁵¹⁶ Although missile and heavy infantry fought together in battle there certainly was no idea of united action or a coordinated and combined tactical military action. Just as with

⁵¹⁵ Greenhalgh 1973: figs. 47, 53, 60, 66, 71, 73, 74.

⁵¹⁶ Van Wees 2005: 177.

Homeric warfare any use of combined arms was purely accidental arising from the existence of both missile and heavy infantry in the army.

Regardless of the lack of tactical separation between hoplites and light infantry, the hoplite, as the embodiment of heavy infantry, was quickly appreciated as a vital component in battle. It is the creation of a heavy infantryman able to excel in close quarter combat that prompted other states to utilize Greek mercenaries, not the phalanx tactics and organization that appeared later. Even a few hoplites fighting among the usual forces of the Assyrian Empire would have significantly improved the offensive capabilities of Assyrian infantry in battles and sieges because of their superior arms. The hoplite was the first heavy infantryman fielded in large numbers in the west and Near East despite the lack of combined arms in Greece. The success of the hoplites led the Eastern states to incorporate them into the army and make up for their own lack of heavy infantry, a crucial stage in the development of combined arms.

Persia vs. Greece: The advantages of the heavy infantryman

The nature of the Persian army has been discussed in detail above. It involved a degree of combined arms, using cavalry and infantry in battle, but the level of tactical integration to get the best out of each unit type was minimal. When the Persian forces came up against the Greek hoplites for the first time at Marathon the Eastern lack of heavy infantry contributed greatly to their defeat. This chapter will expand on this event focusing on the later Persian invasion of Greece by Xerxes. The battle of Plataea is the main case study and will be discussed in chapter 4. Here it will suffice to examine other evidence for the advantages of the Greek hoplite army over the Persian force focusing on each side's use of combined arms.

Sources

The best source for the Persian Wars is Herodotus. It is the only written account that gives full details of the conflict as a whole with a focus on the battles themselves. Herodotus is also the only near contemporary account. Diodorus gives a brief history of the wars but rarely provides any specifics of the battles that are not already supplied by Herodotus. Plutarch in various lives adds some information but he is rarely concerned with the details of battles and so is of little concern here. All these sources are Greek and obviously present events in a biased way in favour of the victors. Without a Persian perspective it is difficult, perhaps impossible, to thoroughly distance any historical interpretation from the Greek ideal.

The problem with all of the extant sources is that they never provide a focus on the tactical aspects of battles. Instead the specific units arrayed for battle and their commanders are enumerated with only a brief outline of their armament and battlefield position. This problem is amplified by the considerable hoplite focus of the writers of fifth century Greek history. Even though Herodotus interviewed survivors and eye-witnesses, he was still writing in the Classical period when the hoplite phalanx was the preeminent formation of heavy infantry.

On account of this overriding concern for hoplites and their superiority it is difficult to examine the importance, or often even the existence, of other types of soldier in Greek armies. This is exactly what is important in order to determine the extent of the use of combined arms in battle. Despite these problems it is possible to find enough information to make relatively secure conclusions about combined arms in the Persian Wars.

Infantry

Before the Peloponnesian War, post-Archaic Greek warfare was almost entirely focused on hoplite battles. Virtually all poleis in Greece relied on their hoplites. They very rarely cultivated any other type of soldier.⁵¹⁷ As discussed above, the evidence for Greek warfare in the seventh and sixth centuries does not show any clear delineation of light infantry from hoplites in battle. There was also no concept of cavalry as an offensive arm in early Greek warfare.

The Persians found Greek hoplites superior to their own heavy infantry and more resistant to archery than any army they had come across before. At the battle of Marathon the Persian missiles did little damage, not simply because the Athenian hoplites ran to cover the final hundred metres when they were in range of the infantry.⁵¹⁸ Conversely, at Thermopylae, the

⁵¹⁷ Aetolians often produced peltasts, due more to the geography of the region than to a desire to advance warfare techniques (cf. Thucydides 3.94.3-5), but they were never a force in the political climate of Greece (Best 1969). Thrace was on the fringes of the Greek world but even so eventually the importance of Thracian peltasts was adapted into Greek warfare as a whole (Webber 2011). Rhodes produced slingers and siege experts while Crete developed expert archers, but again neither island significantly influenced anything to draw other states away from the traditional hoplite army (Anglim et al. 2002). Thebes is perhaps the only city that was open to branching out its military forces, and traditionally had a strong cavalry force to accompany its hoplite army, but it was not until the fourth century that they actually attempted to utilise both together in harmony in a battle (Sankey 1877). As discussed below the use of cavalry at Delium did not stem from a concerted battle plan to combine cavalry and infantry but was the reaction of an alert general to the situation at hand (Thucydides 4.90-96).

⁵¹⁸ See above for a full discussion of Marathon.

Greeks were finished off by a hail of missiles from the Persians (Herodotus 7.225.3), and Herodotus famously preserves the anecdote that the missiles would be so numerous that they would block out the sun (7.226.2). At Plataea, as discussed below, the Persian missiles did not sufficiently impact the Greek force to prevent their charge or their final victory (Herodotus 9.24, 9.49, and in particular 9.60-62).⁵¹⁹

Herodotus (9.62.3-63.2) is clear that the Greek hoplites won at Plataea because of their superior armour and skill in hand-to-hand combat. The battle of Thermopylae (Herodotus 7.207-224) is a good example of the relative strengths of Persian and Greek heavy infantry. At this battle the Greeks were able to hold a fortified position for two days before they were defeated when isolated and outflanked. Cavalry was not able to maneuver in the confined terrain and so the Persian attack rested on their infantry. Herodotus is clear that the Greek hoplites were easily able to repel repeated Persian assaults. The most telling event is the defeat of the Immortals (7.211). As discussed above, this was the best unit of heavy infantry in the Persian army and trained to excel in individual combat both at range with arrows and javelins and at close quarters. Although the Greeks were aided by the fortification walls, clearly the hoplites were abler soldiers in hand-to-hand combat than any Persian heavy infantry forces.⁵²⁰

At Thermopylae the weight of Persian numbers only told on the Greeks once the Persians were led around the back of the Greek position, allowing them to be attacked on more than one front simultaneously (Herodotus 7.225). Even then, had Leonidas not sent home the majority of the allies (Herodotus 7.219.2-220), the Greek hoplites could have held their position for longer, such was their advantage over the Persian army in terrain not suitable for the full deployment of Xerxes' forces.⁵²¹ One of the two reasons given by Herodotus for the Greek's success against the Immortals is that they could not make use of their great numbers on account of the terrain (7.211.2).

⁵¹⁹ Plataea will be discussed in more detail as a case study in chapter 4. For the effectiveness of Persian missiles against a hoplite's armour see Blythe 1977.

⁵²⁰ This is certainly true regardless of whether the Greeks used a phalanx formation at Thermopylae. The walls suggest they did not have to do so, as does the fighting lasting throughout the day (Herodotus 7.210.2). Herodotus states the Greeks used the tactic of a feigned withdrawal to defeat the Persians suggesting a less rigid formation (7.211.3). See Cartledge 2006.

⁵²¹ How 1923; Starr 1962.

At Cunaxa in 401 the opposing armies were both primarily Persian in style, but Cyrus the Younger's army relied on its core of 10,000 Greek hoplite mercenaries for victory, whereas Artaxerxes' royal army appears to have not had any hoplites, and this lack of heavy infantry was easily exposed.⁵²² Despite the withdrawal of the rest of Cyrus' army, the Greek phalanx extracted itself from the battlefield without any significant casualties, such was their military dominance.⁵²³ Cunaxa definitively confirmed the superiority of the hoplite phalanx over other Near Eastern heavy infantry but showed that the phalanx had to be supported by cavalry and light infantry, as discussed in more detail below.

There was no considered attempt to use combined arms in Greek warfare but it is unlikely that light infantry were excluded from battle.⁵²⁴ According to Van Wees 2005: 61-2

we know enough to say that great numbers of poor light-armed citizens almost always fought alongside the heavy infantry, and that in various ways cavalry, personal attendants, mercenaries and other 'helpers' all played a vital military role in ensuring the success of a campaign, and indeed victory in battle.

As discussed above, at Marathon there is no definitive evidence that light infantry or cavalry were used alongside hoplites against a Persian army that used some level of combined arms, but we can infer their presence.⁵²⁵ At Plataea Herodotus is clear that there was one light-armed soldier for every non-Spartan hoplite (9.29.2), and these men were expected to fight (9.30). The actions in the battle of these light infantry troops are not attested anywhere, apart from archers assisting the Megarians (9.22) and that the Spartans and Tegeans stood alone waiting for battle both hoplites and light-armed together (9.61.2). Exactly how the hoplites and light infantry fought in the battles of the Persian Wars is impossible to determine.

⁵²² The Greek mercenaries were stationed on the right flank protected by a river. To their left were Cyrus and his bodyguard and the rest of the Persian infantry and cavalry. Artaxerxes' army significantly outnumbered Cyrus'. In the battle the Greeks easily routed the Persians opposite them and continued in pursuit. Unfortunately, Cyrus was killed while charging his brother's bodyguard, meaning that the whole campaign was for nothing (Xenophon *Anabasis* 1.8; Plutarch *Artaxerxes* 11). See also: Lee 2007; Lane Fox 2004.

⁵²³ On casualties in Greek battles see in particular Krentz 1985; Rubincam 1991.

⁵²⁴ Van Wees 2005: 61-5 argues that they were present in all Greek conflicts but were ignored in any accounts of the battles except under special circumstances.

⁵²⁵ As discussed above, there is some evidence that light infantry in the form of freed slaves fought at Marathon and it is possible that some Athenian cavalry did also.

Herodotus also records seven helots were stationed with every Spartan. Hunt 1997 argues that the Spartan formation in this battle was one hoplite in the front rank followed by seven helot attendants armed as light infantry. Isocrates 6.99 states that at the battle of Dipaea a few years later (c. 471) the Spartans fought in a formation only “one shield deep.” As Van Wees 2005: 181-2 states, at both battles

the Spartans were vastly outnumbered by their opponents, so they may have been forced to adopt the shallowest of hoplite formations in order to match the length of the enemy line, and to rely on a mass mobilisation of helots in order to fill out their ranks.

If this formation was used then the Spartans certainly were not fighting in a phalanx and in fact formed their own version of the Persian shield wall. Hanson 2000: 211-2 has argued that the Greeks did not fight in a phalanx during the Persian Wars because they fought against a non-Greek enemy. This is unlikely since the phalanx was used in the fourth century against Persian armies and Herodotus, as Van Wees (2005: 298 n. 58) points out, emphasizes the Spartan victory was gained through their own strengths not innovative tactics (9.62-5).

Nevertheless that Herodotus records the existence at Plataea of so many lightly-armed soldiers suggests that combined arms was used to some degree. There is no evidence for any degree of tactical coordination and once again the use of combined arms tactics may have been an accidental result of fielding light infantry and hoplites rather than specific design. After Marathon and the Persian Wars any contributions of non-hoplites in battles were forgotten. “Within a generation, these non-hoplites had been written out of the picture.”⁵²⁶

Cavalry

The Persians did not adequately make use of their numbers or superior cavalry⁵²⁷ and were unable to adapt to find a way of defeating the Greeks.⁵²⁸ The Greek army at Marathon, relying on its hoplites, should have been exposed on the flanks to the Persian cavalry, as was the case at Chaeronea (Diodorus, 16.85-86; Polyaeus, 4.2.2; Plutarch, *Alexander 12 & Demosthenes 20*) at

⁵²⁶ Van Wees 2005: 180. See also Van Wees 2005: 62 and Hunt 1998: 26-8 for the possibilities of a general levy of free poor in Athens. See below for a full discussion of the absence of non-hoplites in accounts of Greek warfare.

⁵²⁷ At Marathon, as discussed above, there is a debate that the cavalry were present in the battle, in large part because Herodotus does not state explicitly that they were involved in the fighting.

⁵²⁸ The Greeks on the other hand had no qualms about altering their tactics to face the Persians. At the battle of Marathon the Athenians strengthened their wings and lengthened the line, a sensible tactic to use in the face of a large enemy army.

the hands of the Macedonians.⁵²⁹ At Plataea, as discussed below, the Persian cavalry harassed the Greek army with missiles for an entire day without being able to demoralise or defeat the resilient hoplites (Herodotus 9.49-51).⁵³⁰ Because the Persian style of warfare favoured using missiles rather than hand-to-hand conflict, the Persians were not used to abandoning their bows and charging at close quarters the exposed flanks and rear of the Greek lines before the hoplites could win the inevitable hand-to-hand confrontation.

Combined Arms

The battles of Marathon, Thermopylae and Plataea demonstrate the inability of the Persian army to deal with an enemy that was significantly superior at close-quarter combat and resistant to a missile barrage. At both Plataea and Marathon, and also at Mycale (9.102), once the Greek hoplites were able to close on the Persian infantry and break through the shield wall they easily won the battle.

The Persians lacked a reliable heavy infantry force and were unable to adapt their battle plans to make adequate use of their many resources and troop types. The battles of the Persian War show that a cavalry force reliant on attacking with missiles at a distance is often unable to win a battle on its own if the accompanying infantry is severely outclassed in the general melee of combat. Had the Persians been able to prevent the Greek hoplites coming to grips with them at close quarters, it is possible that the Persian missiles would have taken their toll. However the time required would have been lengthy, since at Pylos and Sphacteria it took over a day for the Athenians to force the Spartan hoplites to surrender despite a huge numerical advantage (Xenophon, *Hellenica* 4.5.11-17; Diodorus 14.91.2; Plutarch, *Agessilaus* 22.2).⁵³¹ Moreover since the Persian deployment of their infantry involved a static shield wall, as discussed above, the archers and other missile troops were unable to avoid any advance by Greek hoplites and so were forced into hand-to-hand combat. The Greeks were able to rely on their heavy infantry always defeating Persian infantry, and the Persians failed to find a way to adapt their battle plan to address this problem, despite having many types of unit in their army.

⁵²⁹ At the battle of Marathon, as discussed above, the freed Athenian slaves were probably placed on the left flank of the Greek line in order to contain the Persian cavalry.

⁵³⁰ For the resilience of the armour of the Greeks see Blythe 1977.

⁵³¹ At Lechaeum (Thucydides 4.26-39) Iphicrates' peltasts were able to defeat Spartan hoplites, but the number of forces involved on each side was small and did not involve archers protected behind a static shield wall.

It is important to note that the only times in any of the battles of the Persian Wars where Greek hoplites were hard pressed by forces of the Persian army was at Plataea where the Thebans fought hard against the Athenians (Herodotus 9.67), and the Theban cavalry rode down the Megarian and Philasian forces (Herodotus 9.69).⁵³² There were units in the vast armies of the Persians that could have successfully opposed the Greek hoplites but Persian generals did not alter their battle tactics to make use of them. As a result the Persian military system was never able to make full use of an integrated system of combined arms despite fielding many different units.

The Peloponnesian War: Combined arms innovation on the battlefield in Greece

Before the Peloponnesian War, after Greek hoplite armies had resoundingly defeated the mixed army of the Persians, there was no necessity for the Greeks to change their style of warfare. Because of their success against the Persians, the Greeks wrongly believed that a successful military was built solely on having a very strong heavy infantry division at the expense of other types of unit.⁵³³ Even the Persians themselves sought to recover their military prowess by incorporating an increasing number of Greek hoplite mercenaries into their army instead of making the best use of what they already had.

Sources

There are a number of sources for the Peloponnesian War. The fullest and most detailed is that of Thucydides, but his work ends with the events of 411. This is a contemporary historical account focused on providing a detailed description of the events of the war in chronological order. However the lack of comparative texts mean that it is necessary to rely perhaps too heavily on Thucydides. He was an Athenian who was directly involved in the war in Athens, until his exile after the battle of Amphipolis in 423 but despite his subsequent estrangement from Athens, his

⁵³² This latter incident marks the key difference between the tactics of Theban (and also Thessalian and Macedonian as discussed below) and Persian cavalry. Persians rely on missiles and charge into close combat only as a last resort, whereas the Theban cavalry charged their opponents and rode them down, according to Herodotus, clearly engaging in hand-to-hand combat. Nefedkin 2006 argues that the tactics of the Persian cavalry changed after the Persian Wars to favour hand-to-hand combat over horse archery.

⁵³³ This generalized proposal will be examined in more detail in this section.

account is very Atheno-centric.⁵³⁴ The very fact that we call the war the Peloponnesian War, the same name as the title of his work, shows the huge influence Thucydides' history has had on modern interpretations of events.⁵³⁵

Xenophon in the *Hellenica* began his history of Greece at the point where Thucydides ended. This is the fullest source for the final years of the war. However, most of the battles in the last few years of the war were naval and so not of direct concern here.⁵³⁶ The fragmentary *Hellenica Oxyrhynca* also covers the last few years of the war but does not discuss any battles that are of concern here.⁵³⁷ Diodorus Siculus describes the Peloponnesian War in its entirety but his account often does not discuss battles in many details.⁵³⁸ Plutarch's various biographies of the individuals involved in the Peloponnesian War add some information but he is rarely concerned with detailed battle descriptions.⁵³⁹

It is very difficult to find a Spartan view of the war and virtually impossible to examine the war from the perspectives of other Greek poleis. Nevertheless for the purpose of this study focused on the development of combined arms in land battles, and so the first part of the Peloponnesian War up to the end of the Athenian expedition to Syracuse in 411, Thucydides' accounts of battles are suitably detailed and reliable enough to enable a reconstruction of tactical developments and practices.⁵⁴⁰ The latter part of the war saw more naval than land battles. On the occasion where battles are important for this discussion all the available sources are used and analysed accordingly.

Infantry

⁵³⁴ It is not necessary here to delve into the controversies of the historiography of Thucydides. On his work see for example Adcock 1963; Stahl 1966. On other historiographic problems with Thucydides' work see for example Hunter 1973; Hornblower 1991-2008.

⁵³⁵ See for example Cawkwell 1997; Morpeth 2006.

⁵³⁶ See Tuplin 1986; Lee 2009.

⁵³⁷ On this text see in particular Bruce 1967; McKechnie and Kern 1988.

⁵³⁸ On Diodorus' history as a comparison to Thucydides see Green 2006. For Diodorus' sources see Drews 1962.

⁵³⁹ Tracy 1942; Wardman 1971; Stadter 1992;

⁵⁴⁰ Cobet 1996. On the reliability of Thucydides' battle casualty figures see Rubincam 1991. For Thucydides' description of the battle of Pylos see Wilson 1979 and for the Sicilian expedition in particular see Liebeschütz 1968; Luginbill 1997.

Most early fifth century battles in Greece were fought between hoplites on either side with little concern for other types of soldier.⁵⁴¹ The mountainous topography of Greece contributed to this by reducing the importance, or impact of cavalry, as discussed above. It is noticeable that in areas where there was virtually no flat land, such as Aetolia, hoplites were spurned in favour of light armed peltasts.⁵⁴² And in areas where land was more suited to horses, such as Thessaly, Macedonia and even Boeotia, states did use cavalry in battle alongside hoplites.⁵⁴³ Other factors led to the eminent position of hoplites in Greek warfare, such as agriculture, democracy, and the lack of imperialistic ideas of warfare, but none of these directly impact the development of combined arms and so will not be discussed here.⁵⁴⁴

During the Peloponnesian War, as Athens, Sparta and their allies started to campaign with more frequency in unfamiliar, and somewhat inhospitable terrain, Greek generals were forced to use light infantry and cavalry alongside hoplites. As Tritle states, “[s]uch a combination of arms would become more common as the war progressed.”⁵⁴⁵ Forced somewhat into using other units the Greeks began to develop the tactics necessary for the successful application of combined arms in battle. It was only occasions where hoplites were defeated by light infantry or cavalry, or both, that prompted the Greeks to appreciate the limitations of hoplite armies.

The first step on the road to combined arms in Greece was taken by the Chalcidians against the Athenians. This was the battle of Spartolus in 429, the first occasion in the Peloponnesian War where a battle was decided by light infantry (Thucydides 2.79).⁵⁴⁶ This was a

⁵⁴¹ Much has been written about the Greek penchant for hoplite warfare. For a description of hoplites with images see Sekunda 2000. The best analyses of hoplite warfare are Hanson 1989; 1991b; 1999b; Van Wees 2000b; 2005; De Souza 2008 and most recently Matthew 2012. For Sparta in particular see Cartledge 1977; Trundle 2001.

⁵⁴² Best 1969. For the style of warfare practiced in Aetolia as viewed by Messenians at Naupactus see Thucydides 3.94.3-5. For northern Greek uses of light infantry see Griffith 1981 and Webber 2011.

⁵⁴³ I already noted above the exploits of the Theban cavalry at Plataea. For Macedonian cavalry see Hammond 1989a; Hammond 1998; Moreno Hernandez 2004; and for Thessalian cavalry see Westlake 1935.

⁵⁴⁴ All these topics and more have been discussed elsewhere. For agriculture see in particular Hanson 1983. For the influence of political ideals on Greek warfare see Salmon 1977; Ridley 1979; Hanson 1989; Bowden 1995; Hanson 1996; Rosivach 2002. For imperialism see Cawkwell 1989; Hanson 2000; Krentz 2002; Christ 2004.

⁵⁴⁵ Tritle 2010: 53.

⁵⁴⁶ The Athenian contingent marching against the Chalcidians was 2,000 hoplites and 200 cavalry. The citizens of Spartolus, after receiving reinforcements from Olynthus, sallied out to fight the Athenians. The Chalcidian hoplites were quickly routed but their cavalry and light troops easily routed the Athenian cavalry. After receiving

resounding success for lightly armed missile troops in defeating hoplites using hit-and-run tactics and demonstrates the expertise of Thracians in that style of guerrilla warfare.⁵⁴⁷ The devastating defeat certainly disheartened the Athenians but the Chalcidians were never important politically in the Peloponnesian War and so the advances towards combined arms seen in this battle were never exploited.

Despite this defeat, the Athenians took many years to fully appreciate the advantages of light infantry alongside the hoplite phalanx. Demosthenes, the principal Athenian general open to experiment with military innovations, suffered a similar defeat at Aegitium in 426 at the hands of the Aetolians (Thucydides 3.97-98) and this prompted him to move away from hoplite only armies.⁵⁴⁸ The Aetolians, after losing the city of Aegitium to Demosthenes, retreated to the surrounding hills. The arrival of Aetolian reinforcements prompted them to attack, using the missile troops to harass the Athenian hoplites. The peltasts ran down to throw their javelins and fled back uphill again when the Athenians advanced. These hit and run tactics caused a number of casualties and the Athenians fled once the captain of their archers was killed. In their retreat, many of the Athenians were caught in a wood which the Aetolians promptly set alight.

This defeat is often cited as being the education of Demosthenes in demonstrating to him the effectiveness of light infantry against hoplites on unfamiliar or rugged terrain. But this was only the start of his education as a general, as Roisman (1993: 27) rightly concludes,

Demosthenes had other lessons to learn in Aetolia, such as the dangers of overambitious goals and convoluted plans, the inability of a surprise attack to overcome problems of deficient intelligence and manpower, and the commander's duty to be sensitive to the cost of human lives.

Aegitium was a devastating blow to Athenian manpower and Demosthenes rightly did not immediately return to Athens almost certainly for fear of exile.⁵⁴⁹ He certainly applied the

reinforcements of more light infantry from Olynthus the Chalcidian missile infantry attacked the Athenian hoplites using hit and run tactics, falling back when the Athenians charged only to attack again when they fell back. These tactics added to repeated charges by their cavalry caused the Athenians to retreat which turned quickly into a rout. Over 430 Athenian hoplites died along with all of their generals.

⁵⁴⁷ See Webber 2011.

⁵⁴⁸ For more on Demosthenes' generalship see in particular Roisman 1993.

⁵⁴⁹ Roisman 1993.

lessons he learned from this defeat in his subsequent battles in the area and it may have indeed influenced his continued use of light infantry in various military enterprises.⁵⁵⁰

Once the Athenians in particular began to use light infantry in battle, their generals experimented with innovative tactics such as surprise attacks or night raids on the enemy camp. Demosthenes was the first Greek general to begin to use tricks to overcome numerical, strategic, or armament inferiority, while also making use of light infantry alongside hoplites. At the battle of Olpae in 426/5 (Thucydides 3.107-108), he did not expect to defeat the allied Ambraciot and Peloponnesian army without using his own hoplites. But he employed a surprise flanking maneuver, involving concealed light infantry and hoplites, in order to overcome the Spartan hoplites' superiority in ability and numbers.

Demosthenes was greatly outnumbered and outflanked by a Peloponnesian and Ambraciot army. Offering battle with his own small hoplite phalanx he waited until the battle was swinging the way of the Peloponnesians before unleashing a small force of hoplites and light infantry which he had hidden in a wood on his right flank. The shock to the Peloponnesian left flank of an attack from behind, and the death of the Spartan general Eurylochos, was enough to send them into headlong flight. The men of the other Peloponnesian flank, who had won and pursued their opponents, returned to the field to be unexpectedly set upon by the waiting forces of Demosthenes.

Demosthenes was the first Greek general to design a battle plan reliant on a combined arms force, recognising the ability of a mixed infantry force in exposing the weak flanks of a hoplite army. As Tritle (2010: 79) states, “[a]t Olpae Demosthenes would not only smash his assembled enemies and so clear his name and record but establish himself as a brilliant tactician, successfully combining lightly and heavily armed troops.”

Roisman (1993: 29) in contrast argues that “[i]t is questionable whether the light infantry contributed much to the fighting against the heavily armed enemy soldiers after the initial surprise. Their role was too limited to set an example for future generals.” Certainly the example was not learned, but to say that the actions of the light infantry were not decisive enough to set an example is severely depreciating Demosthenes' innovative battle plan. The resounding victory over such a superior hoplite force—superior in terms of both number and abilities—perfectly demonstrates the possibilities of combined arms in battle. Demosthenes should be credited with

⁵⁵⁰ See Krentz 2000.

this innovation regardless of the actual amount of fighting done by the light infantry alongside the hoplites.

It is possible that Demosthenes simply adopted the ambush at the suggestion of his Acarnanian allies, but he should still take the plaudits for adapting the plan to an army of light infantry and hoplites on a battlefield. As Roisman (1993: 29) concludes, “[w]e should not deny Demosthenes his share of the credit for the victory at Olpae.” Demosthenes’ other actions in Acarnania did demonstrate that he was an innovative general ahead of his time,⁵⁵¹ despite Roisman’s contrary belief.

After the battle of Olpae Demosthenes came to a secret agreement with the new Peloponnesian commander to allow him to withdraw his men unmolested if he did so without the Ambraciots (Thucydides 3.109). He then marched out to intercept a relief force of Ambraciots headed for Olpae (Thucydides 3.110). His men occupied a hill across the valley from the hill on which the enemy camped (Thucydides 3.112.1). Demosthenes attacked their camp at night with half the army after sending the other half behind the hill to cut off their retreat. When he attacked they were all still asleep in camp. At the vanguard of his army he placed Messenians with orders to address the Ambraciot sentries in their own dialect so as not to raise suspicion. Those who were not killed in their beds fell into the arms of the other half of Demosthenes’ army (Thucydides 3.112).

At Idomene, Demosthenes’ attack on the enemy army while they were still asleep in camp was one of the first battles in Greek warfare to be conducted at night and Demosthenes relied entirely on surprise to achieve his victory. His use of local knowledge was indispensable, but perhaps more important was his decision to have his soldiers speak in the dialect of the enemy in order to cause greater consternation.⁵⁵² As Roisman (1993, p. 31) states, “Idomene was a triumph, perhaps Demosthenes’ greatest.” Idomene and Olpae both demonstrate Demosthenes’

⁵⁵¹ Lendon 2010: 233 “Thucydides did not much like Demosthenes and subtly belittles his achievements.” According to Woodcock 1928: 93-108 Thucydides did not give credit to Demosthenes for his achievements. Lendon 2010: 236 argues that Thucydides may have lost a relative at the battle of Aegitium and therefore never forgave Demosthenes. Roisman 1993: 11-22 argues otherwise but without being able to suitably disprove Woodcock.

⁵⁵² Krentz 2000.

ability to make use of local knowledge in formulating innovative tactics to overcome tactical or strategic weaknesses.⁵⁵³

Demosthenes was not alone in implementing dawn assaults, and others did so particularly during sieges. At the siege of Megara in 424 Demosthenes used a night attack by light infantry as a vanguard to create a bridgehead into the city's long walls, which was quickly consolidated by hoplites (Thucydides, 4.66-8). Although the light infantry did not win the battle they were instrumental in gaining the upper hand over the defenders. Roisman (1993: 42) suggests that this plan may have been created by the Megarian traitors rather than Demosthenes. Nevertheless the success of the light infantry in creating the bridgehead is notable and innovative.

In 423 Brasidas used light infantry as the vanguard for an assault on the city of Torone (Thucydides, 4.110-3). Like Demosthenes at Megara, he secretly had the light infantry enter the city just after dawn to spread panic among the defenders and followed them in, when the main gate was opened, using his hoplites to secure the walls. Whether Brasidas had learned of Demosthenes' earlier attack on Megara is unclear but the similarities between the two sieges are considerable. Brasidas certainly appreciated the possibilities offered by light infantry and used them just as successfully as his Athenian counterpart.⁵⁵⁴

Such tactics were not dependent upon the use of combined arms, but were easier to accomplish with a mixed army. The speed and quietness of light infantry is perfectly suited for leading a surprise attack on a fortified position, especially at night when the noise of the attack has to be at its least.⁵⁵⁵ The security of knowing that they were not expected to hold the captured ground themselves, but to hand it over to more suitable heavy infantry hoplites, gave the light infantry the enthusiasm to pursue their task with vigour. Demosthenes' crushing defeat while

⁵⁵³ For Olpae and Idomene see Hammond 1936-7.

⁵⁵⁴ Alcibiades' capture of Selymbria in 408 (Xenophon, *Hellenica* 1.3.10; Diodorus, 13.66.4; Plutarch, *Alcibiades* 30.3-10) also used the surprise installation of a small force of peltasts at night supported later by hoplites. Clearly the practice became common among the better generals by the end of the war. For Demosthenes, and Brasidas' use of light infantry in sieges see Best 1969.

⁵⁵⁵ Xenophon reports that the Thracians north of the Hellespont often attacked their enemy at night *Anabasis* 7.2.22. Herodotus (7.45.1) provides the first instance of a Thracian night attack in 492 when they caused significant losses to Mardonius' Persian army. Nonetheless it took a long time for other Greeks to adopt this practice. Alexander was possibly encouraged to attempt a night attack against Darius at Gaugamela but he reportedly refused to steal his victory (Arrian 3.10.1-3; Plutarch, *Alexander* 31; Curtius 4.13).

leading a full army in a night attack against Syracuse (Thucydides 7.43-4), aptly demonstrates that a small force of light infantry operating independently was not only useful but necessary for this type of night operation.⁵⁵⁶ Larger forces would easily fall prey to confusion and the difficulties of coordinated movement at night, especially in unfamiliar territory.

Light infantry also proved very capable of defending a fortified position against hoplites.⁵⁵⁷ The number of failed attacks on Aetolia demonstrates that fact.⁵⁵⁸ The best example is Demosthenes' defence of Pylos (Thucydides 4.3-14) with the rowers from his fleet of five ships and a handful of hoplite marines against Spartan assaults from both land and sea.

Demosthenes planned to create a fortified position in Spartan-occupied territory (Thucydides 4.3.1) but he was unable to persuade the other naval commanders of the merits of his plan, perhaps because he was only serving on the expedition as a volunteer at his own request.⁵⁵⁹ When a storm forced the whole navy to land at Pylos (4.3.1), the other generals eventually allowed Demosthenes to carry out the construction of an improvised fort (4.3.2), although Thucydides suggests it was because the soldiers themselves were bored and wanted something to do (4.4). Once the storm cleared, the rest of the navy sailed on leaving Demosthenes with only the crews from five ships (4.5.2). He was also reinforced by the crews of two Messenian ships.⁵⁶⁰

⁵⁵⁶ For a full discussion of the Athenian campaign against Syracuse with a particular focus on Demosthenes' generalship see chapter 4.

⁵⁵⁷ This is an interesting contrast to the inability of the Persian infantry to capture the fortified position of Thermopylae against hoplites (Herodotus 7.210-225), as discussed above.

⁵⁵⁸ The best example of such failed attacks is the battle of Aegitium in 426, as discussed above (Thucydides 3.97-98).

⁵⁵⁹ Lendon 2010: 252. Strassler 1990: 113 argues that the Athenian fleet brought tools for this purpose. Thucydides 4.3.1-3 only suggests that Demosthenes planned on raiding Spartan territory and had been given discretion by the Athenians to do so (4.2.4). See also Thucydides 4.8-9. Whether he intended to create a fort or not the fact that he did was a significant advance in innovative generalship. See also Adcock 1947; Holladay 1978; Strassler 1988; Strassler 1990.

⁵⁶⁰ Thucydides 4.9.1. When Demosthenes asked for assistance from the Athenian navy it came accompanied by ships from Naupactus (4.13.2). Since Naupactus was the city home of the ex-helot Messenians who had asked Demosthenes to attack Aegitium (3.94.3) the arrival of these two Messenian ships could have been in response to a direct request from Demosthenes rather than the simple accident as Thucydides claims. Moreover Thucydides states that Demosthenes always intended to place a Messenian garrison at Pylos, probably in order to encourage their

Demosthenes' success in defending his position against repeated attacks by Spartan hoplites from both land and sea, shows the resilience of light infantry in favourable situations, especially when defending a fortified position (Thucydides 4.8-23).⁵⁶¹ This reliance on light infantry was a significant development. For the first time, Demosthenes proved that hoplites were not always required in Greek warfare and, more importantly, were not always successful.

Perhaps the most important use in Classical Greek warfare of light infantry in battle was at Sphacteria, where the Athenians defeated a Spartan hoplite army with only missile troops (Thucydides 4.26-39). This should have been the impetus for further Athenian experiments with alternatives to hoplite only armies during the Peloponnesian War; not least because Athenian hoplites were inferior to Spartans and the numerous states in the Athenian Empire provided access to large numbers of light infantry.

Kleon was the lead general in the Athenian assault on the marooned Spartans on the island of Sphacteria (4.28.4), but he was quick to have Demosthenes join him in command (4.29.1). Thucydides argues that it was contempt for Nicias and the other generals that prompted him to take no Athenians in his expeditionary force (4.28). Instead he took men from Lemnos and Imbria, who were at Athens, with some peltasts and four hundred archers to join the light infantry of Demosthenes' fleet still at Pylos.⁵⁶² Best (1969: 21) argues that it was at Demosthenes' insistence that the Athenian force was composed entirely of light infantry.

Demosthenes' first action in the attack on Sphacteria probably was to burn the forest on the island.⁵⁶³ Once this was achieved Kleon and Demosthenes were so sure of victory that they

fellow Messanian helots to revolt from Sparta and come to Pylos for safety and freedom (4.3.1). Best 1969: 23-4 argues well for Demosthenes' friendly Messenian relations and original intentions.

⁵⁶¹ Since this is a siege situation rather than a pitched battle it is not of direct concern for our focus on combined arms and so will not be dealt with in detail. The Spartans launched an attack both from land and sea with an experienced hoplite force against the fortified position held by Demosthenes' small band of light infantry and marines. Even the heroic exertions of Brasidas in leading the naval assault on the beach were not enough to dislodge Demosthenes' force and the Spartans were forced to retreat in disorder after a counterattack by the Athenian navy.

⁵⁶² Thucydides 4.31.1-4. On the Athenian troops and the various problems with Thucydides' account see in particular Wilson 1979: 104-5; Lazenby 2004: 76-7.

⁵⁶³ Thucydides (4.30.2) states that the fire was started accidentally although indicating the more probable event, that Demosthenes must have learned from the loss of so many hoplites in the fire started by the Aetolians at Aegitium. Roisman (1993: 38) disagrees and argues for an accidental fire, but his arguments are all circumstantial. Thucydides mentions that Demosthenes blamed his defeat at Aegitium on the fire (4.30.1) He was too good a general not to

proposed terms of surrender to the Spartans, which were quickly refused.⁵⁶⁴ During the night Demosthenes landed hoplites at two points on the island to quietly overwhelm the Spartan sentry posts (4.31.1). This they achieved easily, catching the Spartans still asleep (4.32.1). Then all the light infantry landed and in groups of 200 (4.32.2-4) harassed the Spartans all day with missiles (4.33-4).⁵⁶⁵ The Spartans were forced to retire to the acropolis as the best protection from the missiles (4.35). Once some Athenian auxiliaries assailed the Spartans in the fortress from the heights overlooking their position (4.36) the surviving hoplites agreed to surrender after the Athenian generals called a halt to the missile barrage (4.37-8). Of the 420 hoplites on the island 392 surrendered, the rest were killed (4.38.5).

Roisman goes too far in his efforts to account for Demosthenes' luck at Pylos and Sphacteria stating (1993: 40) that "Demosthenes' contribution to the Athenian victory at Pylos, then, has been overestimated." He is right that Demosthenes could not foresee the Spartan response to his creation of a fort at Pylos, but that should not take anything away from its success. Likewise his defeat of the Spartans on Sphacteria using only light infantry was planned, even if the surrender of the Spartans was not. Whether or not Thucydides minimized Demosthenes' generalship out of enmity or in order to promote luck in his success is somewhat irrelevant. Demosthenes showed innovative generalship in defending his fort with primarily light infantry and in using the same lightly armed soldiers to defeat the Spartans on Sphacteria. Roisman is wrong to lessen his abilities when stating (1993: 41) that "Demosthenes demonstrated good but not exceptional or revolutionary generalship at Pylos." He is, however, correct to conclude that "[h]e was successful because he had adequate intelligence, time to plan, some luck and used surprise tactics on a careful and limited basis." Surely these traits themselves

notice the advantages for the Spartans of the cover offered by the wood and would have taken steps to remove this significant obstacle to the success of his plan to defeat hoplites with peltasts alone. Once the smoke cleared Demosthenes could see for himself exactly how many hoplites he had to deal with. See also: Woodcock 1928: 101; Stahl 1966: 151; Hunter 1973: 72. For the traditional view of Demosthenes' innovative generalship see for example Kagan 1974.

⁵⁶⁴ Thucydides, 4.30.4. The terms were relatively lenient offering gentle imprisonment while an agreement was reached to return the Spartans home.

⁵⁶⁵ Thucydides 4.32.2 states that the light infantry were all the crews of 70 triremes apart from the bottom set of rowers (around 9000 sailors), 800 archers, 800 javelinmen, an unspecified number of Messenian reinforcements and those around Pylos who were not required to garrison the fort, probably around 12-15,000 men.

demonstrate Demosthenes' innovative generalship. Roisman's monograph after all is focused specifically on Demosthenes' somewhat revolutionary idea to use surprise in battle.

The fact that it took over ten thousand light infantry a whole day to force the 420 hoplites to surrender, having killed only 128 of them (4.38.5), demonstrates just how ineffective missiles were against hoplite armour, as discussed above. It was still a great coup for Kleon and Demosthenes and their reliance on light infantry, but despite the victory none of the other Athenian commanders were inclined to use peltasts in any significant numbers. Perhaps the Athenians were disheartened by the time and numbers required to achieve victory without hoplites. Before his departure the Athenian Assembly laughed at Kleon's assertion that he would defeat the Spartan hoplites on Sphacteria using only light troops, showing their disdain for the abilities of such troops next to hoplites.⁵⁶⁶ It was probably not just the Athenians who were so disparaging of light infantry, and the Greek reliance on hoplites in battle never really went away.

Hoplites remained the main force used in Greek armies in the Peloponnesian War but some generals did attempt to use innovative tactics. At Delium the Thebans began experimenting with different tactical dispositions of the phalanx (Thucydides 4.90-96). The formation was drawn up twenty-five men deep (4.93.4), but this was not the factor that decided the battle. The cavalry were the crucial unit and their use will be discussed in detail below. Thucydides (4.93.3) does state that the Thebans fielded a combined arms army involving seven thousand heavy infantry, over ten thousand light infantry, one thousand cavalry, and five hundred peltasts. The Athenian army did not have any light infantry, but did field a few cavalry (4.94.1). The light infantry and cavalry were placed on the wings of the army and although the army involved different units, the tactical deployment of the army still relied on the hoplite phalanx in the centre (4.93.4). Thucydides states that the terrain prevented the troops on the wings from entering the battle (4.96.2). Delium, however, does demonstrate a new willingness to adapt battle tactics among the Thebans, which culminated in the innovations of the later generals Pelopidas and Epaminondas, as discussed below. Combined arms was used in terms of the units in the army but the tactical deployment and use still favoured a hoplite confrontation.

Cavalry

⁵⁶⁶ Thucydides, 4.28.5. They may have laughed at Kleon's overconfidence rather than the composition of the army but the fact that they did not think Kleon would succeed with such an army is clear.

Cavalry took longer to be integrated into the Greek way of war. It is no coincidence that the first instance of cavalry winning a battle against hoplites was an accident—a reaction to the events of the battle rather than a deliberate ploy.⁵⁶⁷ The decisive factor at the battle of Delium in 424 (Thucydides 4.90-96), was an unoccupied force of Boeotian cavalry that Pagondas ordered secretly around a hill in the Athenian rear to fall on them unexpectedly (4.96.5). The Athenians feared the arrival of another army and fled in disorder. The Theban cavalry turned the retreat into a rout and cut down over a thousand Athenians, ten percent of their available hoplite manpower (4.96.8).

Although the combination of cavalry and hoplites together proved successful at Delium, it seems that that was not the original battle plan.⁵⁶⁸ It was very much the case of individual initiative on the part of Pagondas, although

it is not beyond the bounds of possibility and more probable that the *hipparch* (cavalry commander) of the squadrons on the right, finding his men unengaged because of the topography, used his initiative to counter the threatening development on the Boiotian left by leading the cavalry upstream to a fordable point and behind the hill to make his surprise attack.⁵⁶⁹

Delium demonstrates the ability of cavalry not only to pursue a retreating enemy but to deliver victory with a direct charge at exposed flanks or rear.⁵⁷⁰ These valuable lessons were not learned in Greece until the disaster at Chaeronea nearly a century later when inflicted on them by the Macedonian cavalry led by Alexander.⁵⁷¹

Aside from Thessaly and the north Boeotia was the one area of Greece where the topography actually suited the use of cavalry and as a result the Thebans often fielded units of cavalry in battle as did Macedonians and Thessalians.

⁵⁶⁷ Before the battle the Athenian general left a body of 300 cavalry in the rear to fall on the Boeotians but the Thebans sent some cavalry to prevent them doing so. On the battle see in particular Lendon 2005: 78-90.

⁵⁶⁸ Lendon 2010: 307 notes that Pagondas' battle plan rested on the depth of the Theban phalanx at 25 ranks.

⁵⁶⁹ Hutchinson 2006: 49.

⁵⁷⁰ As discussed above the simple appearance of cavalry in the rear of the Greek hoplite phalanx at Malene prompted a wholesale retreat (Herodotus 6.29).

⁵⁷¹ Diodorus, 16.85-86; Polyaeus, 4.2.2; Plutarch, *Alexander* 12 & *Demosthenes* 20. This battle will be discussed in detail below. Cavalry featured in other battles but none were as decisive in Greek politics than Chaeronea.

To fight effectively on horseback required expertise at mounting quickly, riding in formation, wielding the sword or spear and throwing the javelin from horseback – and all without stirrups. All these skills were much easier to acquire for riders. Northern states, such as Macedonia, Thessaly and even Boeotia, possessed large aristocracies with strong horseback-riding traditions. Indeed, Thessaly and Macedonia rarely mobilized substantial hoplite armies, but were able to recruit nobles, and sometimes also their retainers, for cavalry service (Hunt 2007: 134-5).

Thucydides (2.100) discusses the excellence of Macedonian cavalry against the Thracians in 429. He states they were armed with cuirasses and overran all those against whom they charged until they were overwhelmed by the numbers of the enemy. This shows that, just as the Thebans, Macedonian cavalry favoured charging into hand-to-hand conflict rather than relying on missiles as the Persian horsemen did.

Other Greek states had some cavalry but usually “used the cavalry of allies or hired mercenaries.”⁵⁷² As a result they rarely had enough to use in combined arms tactics in battle. Athens, in particular, made use of its extensive empire and “deliberate policy” to furnish its cavalry forces, since “the countryside did not support a large enough class of rural nobility to field a large cavalry.”⁵⁷³ Towards the end of the Peloponnesian War Athens even went so far as to provide a partial subsidy for those who would serve as cavalry in the army, giving “a loan for the purchase of a horse, an allowance for the horse’s maintenance and reimbursed the value of horses lost in combat.”⁵⁷⁴ This force of cavalry had to go through regular training regimes and practice battles (Xenophon, *On the Cavalry commander* 1.13, 1.18, and especially 3.2–14).⁵⁷⁵

Spence 1993 argues that social factors limited the importance of Athenian cavalry. Worley 1994 and Gaebel 2002 argue that the importance of cavalry in Athens increased during the Peloponnesian War, however only 30 horsemen were sent on the original Athenian expedition to Sicily despite the Syracusan excellence in cavalry and the open terrain of Sicily

⁵⁷² Hunt 2007: 135. He states that “some states, especially in the Peloponnesian, which lacked a strong tradition of aristocratic horsemanship did without cavalry in the classical period.”

⁵⁷³ Hunt 2007: 135. See also Bugh 1988: 221-3.

⁵⁷⁴ Hunt 2007: 135.

⁵⁷⁵ See also Worley 1994: 75 and Bugh 1988

suiting cavalry deployment.⁵⁷⁶ As Hunt (2007: 119) summarizes, for most states “Greek warfare in the classical period was dominated by infantry and not cavalry.” The development towards a true system of combined arms did not begin until other types of unit were integrated into the original battle plan on an equal level.

Combined arms

This willingness to experiment with arms and tactics was crucial in the development of combined arms and a move away from a reliance on the supposed invulnerability of a hoplite phalanx alone. The most talented Spartan general, Brasidas, “[a]s gifted a military commander as the Spartans ever produced,” led a Spartan invasion of Athenian territory in the Chalcidice.⁵⁷⁷ He was forced to adapt his plans to succeed in Thrace precisely because his army was a combined force in terrain well suited for such armies. Thucydides (5.6) states that Brasidas commanded two thousand heavy infantry, at least 2,500 light infantry and three hundred cavalry. Brasidas’ victory at Amphipolis completely expelled the Athenian army from the area, but in the battle most of the fighting was done by the hoplites until the Athenians fled when the cavalry and light infantry came to the fore.⁵⁷⁸ It was Brasidas’ use of a surprise attack on Cleon’s exposed flank that won the victory not any coordinated use of combined arms. Unfortunately for the Spartans, Brasidas died from the wounds he received in the battle. Although Brasidas was hailed as a hero and deified in Amphipolis,⁵⁷⁹ the Spartans did not follow up his innovative generalship, just as the Athenians ignored Demosthenes’ successes.

⁵⁷⁶ This campaign is discussed in detail below in chapter 4. Athens was later forced to send more cavalry and procure allies, as discussed below.

⁵⁷⁷ Tritle 2010: 95.

⁵⁷⁸ Thucydides 5.6-11. The Athenians held the advantage in hoplites and the Athenian general Cleon tried to use that to defeat Brasidas, besieging the city. Brasidas refused Cleon’s offer of battle in front of the city. Cleon despaired deciding to withdraw to await expected reinforcements. In marching off Cleon’s unprotected right flank passed close to the city. Brasidas took his opportunity and charged out of the city with some of his hoplites. They fell upon the Athenians in disorder with devastating effect. The Athenian left wing fled when attacked by the rest of Brasidas’ army that had sallied out of a different gate. Cleon fled and was cut down by the chasing peltasts. Some Athenian hoplites made a stand on a hill until they were overcome by the volume of missiles of Brasidas’ peltasts and they too fled. The approaching Athenian reinforcements, led by the historian Thucydides, did not even bother to try to rectify the situation, to the famous historian’s personal cost.

⁵⁷⁹ See Habicht 1970.

Brasidas also demonstrated how to defend against a combined arms attack when deficient in light infantry and cavalry. At Lynceus in 423 Brasidas was abandoned by his ally, Perdiccas, King of Macedon, and left without cavalry (Thucydides, 4.125). Threatened by the Illyrians, who had numerous cavalry and light infantry, Brasidas formed his hoplites into a hollow square and placed his few light infantry inside.⁵⁸⁰ His small force successfully beat off the Illyrians, who were surprised at the vigour of their defence, and turned instead to attack Perdiccas' Macedonians. As Best (1969: 30) rightly conjectures, the departure of most of the Illyrians to deal with the Macedonians is what saved Brasidas, whose men would have become exhausted and easy prey for missiles and cavalry. Nevertheless his use of the hollow square was a perfect solution to ward off cavalry attacks. Keeping the light infantry inside the square, instead of having them protect his flanks and rear and act as the vanguard, was an interesting decision. It perhaps suggests that he was harassed more by cavalry than missile troops, since a defensive square that maintains formation is almost impossible for cavalry to break.⁵⁸¹ The Ten Thousand Greek mercenaries who retreated from Cunaxa also formed their hoplites into a square on the march through hostile territory since they had few cavalry to protect their flanks (Xenophon, *Anabasis* 3.2.36).⁵⁸²

Syracuse was probably the first state in the Greek world in the Classical period to develop an effective combined arms army. The tyrants of Syracuse had developed large armies containing many types of unit. The Syracusan cavalry was experienced in war though probably

⁵⁸⁰ He placed his youngest hoplites in the front ranks since they were more able to run out and engage the enemy's light infantry. Brasidas stood in the rear line with 300 picked men ready to fight a way through for this slow moving square. The Illyrians occupied the valley ahead of Brasidas expecting to catch him in the defiles but Brasidas sent 300 picked men to capture the first hill and he successfully led his army after them.

⁵⁸¹ The many instances of infantry squares fending off cavalry in the eighteenth and nineteenth centuries show the effectiveness of this tactic. In fact the German cavalry regiment that successfully charged and broke 3 French infantry squares at Waterloo was so praised because it was such a rare achievement.

⁵⁸² Lee 2007. There are numerous other examples of this in the *Anabasis* (for example 3.3.6, 3.4.19). In fact the Greek mercenaries decided that the square was an inappropriate formation for crossing bridges or narrow gorges. Therefore they created a more flexible tactical formation where they detailed 600 men in companies of 100 to hold back and then fill the square again once over or through the difficult passage (3.4.19-23). On this spontaneous reorganization see Aupperle 1996.

also made up of the aristocrats.⁵⁸³ The flat plains of Sicily were well suited to cavalry maneuvers, and the Syracusans' Greek heritage led to the usual reliance on a strong core of hoplites.⁵⁸⁴ Hippocrates, tyrant of Gela before Gelon, also introduced the use of mercenary light infantry in his army (Polyaenus 5.6). At Himera, Gelon had 10,000 mercenaries in his army (Diodorus 11.72). The frequent wars with the cavalry forces of Carthage and the light infantry of the native Sicels influenced the implementation and perfection of an army able to cope with a more mobile style of warfare reliant on cavalry and missile troops.⁵⁸⁵ The Carthaginians themselves fielded large armies of mixed forces reliant on a core of aristocratic cavalry alongside their numerous mercenaries.⁵⁸⁶

At the onset of the Persian Wars, the Greek embassy to Gelon, the tyrant of Syracuse, was unsuccessful, despite his offer to provide 20,000 hoplites, 2000 cavalry, 2000 archers, 2000 slingers, and 2000 light horsemen (Herodotus 7.158). The Greeks turned down his offer because he wanted overall command on either land or sea, but his army, if we believe Herodotus, is the first to use combined-arms. Unfortunately there is little detail on the tactical deployment of these Sicilian mixed armies. At the battle of Himera, where according to Diodorus Gelon's army numbered 50,000 infantry and 5000 horsemen, the Syracusan cavalry did not take part in the battle since they were ordered to infiltrate the Carthaginian camp and set fire to their fleet (Diodorus 11.21-22). Syracuse was unusual in the Greek world because of its willingness and ability to field mixed armies but their example did not influence Greece proper. As Champion

⁵⁸³ Gelon was cavalry commander under Hippocrates (Herodotus 7.154). It was Gelon's handling of the aristocratic cavalry at Gela that subdued the mob and allowed him to become tyrant: Champion 2010. Pindar (*Nemean Odes* 9.39.4) records the bravery of a member of the Gelan cavalry in battle against Syracuse. Before the battle of Himera the Syracusan cavalry captured a number of Carthaginian prisoners out foraging gaining complete control of the area (Diodorus 11.21.2).

⁵⁸⁴ At the battle of Himera it was the Syracusan hoplites who routed the Carthaginian infantry (Diodorus 11.22.3).

⁵⁸⁵ Champion 2010. See also Dunbabin 1948.

⁵⁸⁶ Polybius (6.52) criticises the later Carthaginian armies for neglecting citizen soldiers in favour of mercenaries to the detrimental effect of their reliability in battle. Diodorus 11.20 and Herodotus 7.165 both state that the Carthaginians brought an army of 300,000 against Gelon and Syracuse. Green (2006: 46-7, 74) in his commentary to Diodorus suggests that a misinterpretation of numerical representation led to Greek historians overestimating troop totals by a factor of ten, so here 300,000 should be 30,000, a much more likely number for a ship-borne invasion force.

2010: 37 summarizes, the “large numbers of cavalry and supporting missile troops also show how much more tactically advanced the Sicilians were than their kinsmen in Greece.”

As discussed above, Greek hoplite armies had always fought in the confined spaces of Greece, and had rarely been exposed to the difficulties of protecting the flank of a hoplite phalanx on an open battlefield. The Athenian siege of Syracuse demonstrates the ability of some Greek generals to adopt the use of combined arms in certain situations.⁵⁸⁷ It is of even more interest because it marks the death of Demosthenes, the first great innovator in combined arms tactics in Greece, at the hands of a well-organized multifaceted army. The Athenians originally sent only 30 cavalry in the army to capture Syracuse despite the inclusion of 480 archers and 700 slingers (Thucydides 6.43). That they took so many light infantry shows that by 415 Athens had come to appreciate the benefits of such troops alongside hoplites, probably thanks to the exploits of Demosthenes, as discussed above. But considering the strength of the Syracusan cavalry force and the open terrain of Sicily this is a far too inadequate number of horsemen for Athens to field.⁵⁸⁸

Gylippus’ ability to adapt his tactics to the troops and situation at hand led to the resounding successes of the Syracusan army. Even with arguably their greatest general at the helm, the hoplite focused army of the Athenians was unable to cope with an enemy reliant on heavy cavalry, fighting on terrain well suited for horses. The Syracusan victory over Athens showed that a hoplite army, without an adequate force of horsemen to protect the flank, was very vulnerable on an open plain against a strong cavalry force. This is one of the main principles of the system of combined arms, using one unit to protect the weaknesses of the other and to attack the Achilles’ heel of the enemy.⁵⁸⁹

The Athenian defeat at Syracuse had crucial repercussions for the outcome of the Peloponnesian War and critically weakened the military capabilities of Athens, indirectly contributing to the eventual Athenian defeat. But the battles for the city perfectly demonstrate the benefits of using combined arms in battle, and the deficiencies of hoplite armies. The hoplite

⁵⁸⁷ The siege and the various engagements around Syracuse will be discussed in more detail as a case study in chapter 4 below.

⁵⁸⁸ Van Wees 2005: 59

⁵⁸⁹ Xenophon (*On the cavalry commander* 4.13-14) stated that it is always preferable to attack the enemy’s weak point no matter how hard the task, rather than more dangerously opposing a stronger force.

phalanx was an excellent formation of heavy infantry in battle, but when exposed on the flanks and rear by cavalry in particular, it was very vulnerable.⁵⁹⁰ Cavalry took a long time to be incorporated into the Greek style of warfare and only really came of age after the Macedonian conquest of Greece in the mid-fourth century.

Combined arms conclusions

The Peloponnesian War saw many developments in the use of combined arms in Greece, both in defence and attack. But no state fully realized the importance of using combined arms in battle. Demosthenes was the first general in Greece to begin to experiment with the tactics and basic principles of the theory of combined arms, and to develop strategies to overcome an enemy's superiority. "Demosthenes clearly possessed a basic understanding of tactics and recognized that combining different types of troops (peltasts, hoplites and archers) and the weapons they carried could produce striking results."⁵⁹¹

On the Spartan side the general Brasidas was the foremost innovator, but the innate Spartan military conservatism prevented him having any long-lasting effect on the style of warfare conducted. Hoplites remained the principal force in Greek armies despite the many examples of their weaknesses when unsupported. It took other states on the fringes of the Greek world to fully develop and utilise a combined army, first Syracuse, as we saw above, and then Macedon.

After the Peloponnesian War: The integration of light infantry and cavalry

The defeat at Syracuse put the Athenians on the back foot and for the last few years of the Peloponnesian War the significant battles were almost all naval and so not of concern here. It is possible that in the last few years of the war Athens had developed its own force of peltasts so that it did not have to rely on mercenaries.⁵⁹² The Athenians were beginning to learn their lesson that an army had to contain some troops other than hoplites in order to win.

This was especially true on terrain that was disadvantageous to the hoplite phalanx, in particular the wide open plains of Sicily, as discussed above, Asia Minor and Thessaly. During

⁵⁹⁰ This is similar to the disaster suffered by the Roman legions at Carrhae where the heavy infantry were easily exposed by repeated attacks of light and heavy cavalry (Cassius Dio 40.20; Plutarch, *Crassus* 23).

⁵⁹¹ Tritle 2010: 81.

⁵⁹² See Best 1969: 36-46.

the Spartan hegemony the Ten Thousand mercenaries of Xenophon and the Spartan army of Agesilaus both were forced to create mixed armies, as discussed below. This need for non-hoplite troops contributed to the growing importance of mercenaries or foreign allied troops in fourth century armies.⁵⁹³

Sources

There are few detailed, military focused accounts of the early fourth century. Most information comes from the various works of Xenophon. His continuance of the historical narrative of Thucydides in the *Hellenica* is by far the fullest source of the history of this period. His account of his own trials in the expedition of Cyrus as detailed in the *Anabasis* provides the earliest firsthand account of a military expedition. His technical treatises, *On Horsemanship* and *On the cavalry commander*, provide a number of details about the training and tactics of Greek cavalry. Since there is so little other detailed evidence available for this period specifically concerned with military matters it is necessary to take the evidence of Xenophon on face value despite the associated problems of historiography.⁵⁹⁴

Diodorus also provides an account of the early fourth century and occasionally adds information not in Xenophon, for example concerning Iphicrates' reform of peltasts as discussed below.⁵⁹⁵ The fragmentary *Hellenica Oxyrhynca* also covers this period. The only battle of concern here that it discusses is Sardis in 395.⁵⁹⁶ This section will focus on combined arms in Greece up to the Corinthian War.

Infantry

⁵⁹³ The history, importance, ethnicity, training and recruitment of mercenaries have all been discussed in detail elsewhere and are not of primary concern here. See Parke 1933; Griffith 1935; Russell 1942; Miller 1984; Whitehead 1991; Krasilnikoff 1992; McKechnie 1994; Yalichev 1997; Trundle 2004.

⁵⁹⁴ Much has been written on the reliability of Xenophon's various works. Of importance here are Anderson 1970; Cawkwell 1972; Anderson 1974a; Gray 1979; Nickel 1979; Gray 1980; Tuplin 1986; Dillery 1995; Hutchinson 2000; Lane Fox 2004b; Waterfield 2006; Christesen 2006; Lee 2007; Lee 2009; Pascual 2009.

⁵⁹⁵ On Diodorus' battle descriptions see in particular Hammond 1937; Sinclair 1966; Gray 1980; Westlake 1987; Green 2006. Another source is the fragmentary *Hellenica Oxyrhynca* but this does not detail any of the battles of concern here. On this work see in particular Bruce 1967; Harding 1987; McKechnie and Kern 1988; Tuplin 2004.

⁵⁹⁶ See in particular Gray 1979. See also Anderson 1974b; De Voto 1988; Wylie 1992. This battle is important for Agesilaus' campaign in Asia Minor but adds little to the development of combined arms and so is not dealt with in detail here.

After the Peloponnesian War, at the battle of Munychia in 403 (Xenophon, *Hellenica* 2.4.13-19; Diodorus 14.33.2-3), Thrasybulus opposed an allied hoplite army of Athenian oligarchs and Spartans with a small number of working class Athenian hoplites and a mass of light infantry. Thrasybulus took position on the high ground and forced the enemy to attack uphill along a small road where they could only mass fifty deep. He had the missile troops harass the Spartans over the heads of the Athenian hoplites in front. The missiles caused great casualties among the Spartans and the downhill attack of Thrasybulus' hoplites forced them into retreat. This tactic of light infantry firing over hoplites and using the advantages of the slope of the hill was new to a Greek battlefield and won the battle for Thrasybulus.⁵⁹⁷ The Spartan army fielded few light infantry and suffered greatly as a result.

It is important to note that Thrasybulus' army still relied on its hoplites to form the first line of defence in the battle, however his tactical flexibility demonstrates that the Greeks were moving away from hoplite phalanx warfare. A few days earlier Thrasybulus' small force of 700 men attacked the enemy camp at night catching them asleep and killing many of them (Xenophon, *Hellenica* 2.4.5-7). This is reminiscent of Demosthenes' tactic at Idomene, as discussed above. Finally the process of using different troops in combination, while also attempting innovative tactics, was taking root.

Outside of Greece light infantry were vital to the success of an army. Xenophon in his account of the march of the Ten Thousand often mentions light infantry, from slingers through to Thracian peltasts armed with shield and spear.⁵⁹⁸ At the outset of the expedition, the various Greek mercenary commanders brought light infantry along with hoplites (1.2.3, 1.2.6, 1.2.9). The total light infantry of Greek mercenaries was around 2,000 according to Xenophon (1.2.9).⁵⁹⁹ These light infantry troops were removed from the Greek hoplites by Cyrus to fight

⁵⁹⁷ As discussed above the Spartan deployment only one shield deep at Dipaea (Isocrates 6.99) was probably a one off incident.

⁵⁹⁸ For a full discussion of Xenophon's varied terminology for light troops and their different uses on the march see Best 1969: 36-78. Roy 1967 argues that the light infantry furnished by the mercenary commanders were local levies not mercenaries. Nevertheless a number of the Greek commanders saw the importance of bringing light infantry to the expedition alongside their hoplites.

⁵⁹⁹ The actual total was nearer 2,300 adding up all the troops brought by each commander. At Babylon the Greek army was counted and Xenophon (1.7.10) lists 2500 light infantry. Parke 1933: 41-2 argues that this number should be accepted despite the discrepancy with the totals given to each commander by Xenophon.

among the similar Persian troops at Cunaxa (1.8.5, 1.10.3). On other occasions the light infantry fought as one unit rather than commanded by the individual Greek commanders (4.1.6, 3.4.42-3, 4.8.15-18). Clearly the Greeks knew of the tactical importance of light infantry in battle in combination with hoplites.

Yet the original force of light infantry among the Greek mercenaries was not sufficient for their tactical purposes, especially after the defection of the rest of Cyrus' army. Xenophon (3.3.15-16) argued to his fellow commanders that it was a military necessity to furnish a reliable force of cavalry and light infantry, especially slingers, in order to combat the large numbers of Persian missile troops and cavalry.⁶⁰⁰ The Greek mercenaries employed two hundred (3.3.20) Rhodians from the army as slingers, suggesting that these men originally fought as hoplites (3.3.16). It is clear that Xenophon did not believe that an army of only hoplites would make it through Asia Minor safely (3.3.12-16).

By 401 any force of hoplites was expected to be accompanied by light infantry to protect its flanks on the march and to serve as scouts and attendants. As Best (1969: 75) concludes in his review of peltasts among the Ten Thousand, "at the end of the fifth century B.C. the peltasts were certainly integrated completely as a special fighting body in the Greek armies." The lessons of Demosthenes and Brasidas had taken root and the days of hoplite-only Greek armies had passed.

Cavalry

Greek armies by the fourth century had moved away from relying solely on hoplites. Light infantry became a necessary complement to any army in Greece or abroad. However, it still remained for Greek armies to integrate cavalry units fully into their armies. The Ten Thousand were forced to form a unit of cavalry to protect them on the march, but it numbered only fifty and contributed little to their successful retreat (Xenophon, *Anabasis* 3.3.19-20).

In Thrace, the Greeks joined the army of Seuthes in order to receive good pay and provisions before the arrival of winter (7.3.13-14). After this the Greek light infantry and the cavalry force, now numbering forty, united with Seuthes' Thracian forces in tactical deployments (for example 7.3.40, 7.3.46). In his speech arguing for the Greeks to leave Seuthes, Xenophon (7.6.25-27) states that it had been a military necessity for the Greeks to join Seuthes because they

⁶⁰⁰ Xenophon (3.3.15) bemoans the fact that the Cretan archers and javelin men of the Greeks do not have the range to inflict damage on the Persians.

had no good force of cavalry or light infantry with which to ward off or capture the enemy when opposed by large numbers of each in an open country. He goes on to say (7.6.29) that after Seuthes' cavalry joined them they never saw a force of enemy whereas before the local horsemen and light infantry harassed their march preventing the Greeks from sending out foraging parties. Clearly Xenophon realised the importance of having significant numbers of light infantry and cavalry in an army in open terrain.⁶⁰¹

Best supposes that the inclusion of cavalry and light infantry in the army was the usual Greek practice. He states (1969: 75) that Xenophon's argument "implies that contingents of cavalry and peltasts must normally have been fixed components of Greek armies (which was also the case through Asia Minor) and that in Thrace the Greeks were severely handicapped by their absence." It is true that, in Thrace, it was a military necessity for an army to have cavalry, but his suggestion that it was normal in Greece itself is false. Best believes that the unit of cavalrymen that was formed by the Ten Thousand was sufficient to make their army combined. He ignores the fact that the Greek mercenary army had no accompaniment of cavalry until Xenophon formed this small unit out of necessity, as discussed above.⁶⁰² In his desire to focus on the effectiveness of the peltasts among the Ten Thousand, Best has completely ignored the lack of effective cavalry.

Roy's conclusion is probably correct that when the Greek force combined with the Thracian army "[i]t had now reached its highest point of structural and tactical efficiency."⁶⁰³ Best believes Roy is wrong because the tactical combination of the Greek hoplites and peltasts on their march was excellent. However, in none of the battles he discusses does the small unit of cavalry play any significant role, and they could not do so being so few in number.

⁶⁰¹ That Xenophon appreciated the military need for cavalry in Thrace should not be surprising considering his own expertise in cavalry as evinced by his publication of two works on horses, *On Horsemanship* and *On the Cavalry Commander*.

⁶⁰² It is possible that Clearchus' force of mercenaries contained a unit of mostly Thracian cavalry numbering more than forty horsemen (Xenophon, *Anabasis* 1.5.13). However, this unit is mentioned only once in the *Anabasis* and is not listed in the original force brought by Clearchus (1.2.9). Certainly after the battle of Cunaxa and Clearchus' subsequent murder this force of cavalry was not present or Xenophon would not have stressed the need to create a separate unit of fifty horsemen from among the hoplite mercenaries. See Roy 1967 for Clearchus raising this cavalry from Thrace.

⁶⁰³ Roy 1967: 295.

The Ten Thousand never had a large enough cavalry force to provide them with tactical efficiency. Since their march was principally through mountains this was not a huge problem, and they were able to rely on their force of light infantry. In Thrace, the flat terrain suited cavalry and Xenophon was quick to notice the tactical deficiency of the Greek army. Greek commanders clearly still had not accepted the necessity of having cavalry as well as light infantry alongside the hoplites in an army regardless of terrain. Contrary to Best's assertion, contingents of cavalry were fixed components of Greek armies only outside of Greece in open terrain that suited cavalry maneuvers.

Combined arms

Xenophon and the Ten Thousand provide us with one important tactical innovation in the use of combined arms in battle. In a skirmish with the Kolchians (Xenophon *Anabasis* 4.8.9-19), the Greeks had to cross a wide mountain ridge held by the enemy. They were going to attack in the traditional hoplite phalanx until Xenophon pointed out the vulnerability of this formation to encirclement by the more numerous and lightly armed Kolchians. Instead the Greeks divided their army into separate units which were to be tactically independent, but to come to the aid of any other unit that required assistance. In this way they could attack over a sufficiently wide front to avoid encirclement and be able to rely on their heavier armed infantry for victory. The army was divided into 80 companies of 100 hoplites and 3 companies of 600 peltasts and archers. In attack formation the two experienced light-armed companies formed the left and right flanks while the third was in advance of the centre of the line. When the Greeks attacked, their flanking peltasts threatened to outflank the Kolchians who withdrew men from the centre to compensate. The third light company of the Greeks at once ran forward in the centre to occupy the hill, followed by a unit of hoplites. The Kolchians saw that they had been outmaneuvered and fled.

The formation adopted by the Greek mercenaries was unusual for Greek warfare at the time. There is no other instance of such a deliberate separation of individual hoplite units in battle. Perhaps the closest is the battle of the Granicus where Alexander's sarissa phalanx crossed the river in its separate battalions loosely connected to each other.⁶⁰⁴ However this plan

⁶⁰⁴ Arrian, *Anabasis* 1.12-16; Diodorus 17.19-21; Plutarch, *Alexander* 16; Justin 11.6. This battle is not one of the case studies used in this study since Issus and Gaugamela serve the same purpose and so the Granicus is not

was adopted only to enable the crossing of a river at a narrow point and they did not intend to fight a battle in such a formation.⁶⁰⁵ The tactical organization used by the Ten Thousand here is very similar to the manipular organization of the army of Republican Rome.⁶⁰⁶ The success of the formation against a less well-armed mass of infantry is clear. The Romans used such a formation to defeat the sarissa phalanx of Perseus at Pydna when the terrain caused the phalanx to lose its cohesion and the Roman maniples were able to penetrate the hedge of sarissas with devastating effect (Plutarch, *Aemilius Paullus* 16-22; Livy 44.40-42).⁶⁰⁷

The Ten Thousand was not the only Greek army to realise the importance of cavalry and light infantry in the army. The Spartan commander in Asia Minor before Agesilaus, Derkyllidas, also incorporated cavalry and peltasts into his army. In his battle formation against Tissaphernes and Pharnabazus (Xenophon, *Hellenica* 3.2.12-20), he placed his peltasts and cavalry on the flanks of his hoplite phalanx. This is the basic formation in a system of combined arms—using light infantry and cavalry to protect the vulnerable flanks of the phalanx, just as in the Boeotian army's disposition at Delium as discussed above (Thucydides 4.90-96).

Agesilaus, the Spartan king, in his expedition into Asia Minor quickly discovered that he could not hope to defeat the Persians in the open terrain with an army of hoplites alone. He sent for levies of cavalry and light troops from the allied cities in the area in order to give himself the varied army required for his expedition (Xenophon, *Hellenica* 3.4.15). Agesilaus realised that outside of Greece there was a need for the most basic use of combined arms: having cavalry,

discussed in detail. For good secondary discussions of the battle see in particular Fuller 1960; Davis 1964; Nikolitsis 1973; Foss 1977; Badian 1977; Hammond 1980; Devine 1988; McCoy 1989; Bosworth 1989.

⁶⁰⁵ In fact Alexander never needed to adopt a separated phalanx formation in battle since his combined arms army always had sufficient flank protection to avoid the encirclement that the Ten Thousand feared. At Gaugamela Alexander also had to attack an army that threatened encirclement but he used a variation of the oblique formation to avoid this (Arrian, *Anabasis* 3.8-15; Curtius 4.9; Diodorus 17. 56-61; Plutarch, *Alexander* 32-33). See below for a full discussion of Gaugamela.

⁶⁰⁶ See Wheeler 1979; Wheeler 1992. See also Wheeler 2004 for the late Empire.

⁶⁰⁷ The causes for the success of the Roman legions against the phalanx is a much debated topic but is unfortunately outside the scope of this study. See Wheeler 1992 in particular. I discuss elsewhere combined arms in the battle of Pydna, as well as that of Cynoscephalae in 197 (Polybius 18.19-26; Livy 33.6-10; Plutarch *Flaminius* 7-8), Wrightson 2013.

missile troops and heavy infantry in the army. Even though he did not deviate from his battle plan of relying on hoplites for victory, he did incorporate the other types of unit into his army.

At the battle of Paktolos in 395, Agesilaus' mixed army crossed the river and was attacked by a force of cavalry alone. Seeing that the enemy had no infantry Agesilaus ordered an attack led by the cavalry, followed by the peltasts and the youngest hoplites, who could move fastest, and followed finally by the rest of the hoplites.⁶⁰⁸ The Persian cavalry held out against the Greek cavalry but were forced to retreat when the peltasts and hoplites came up. This is the first occasion when a Spartan army won a battle through the use of cavalry. Even the most traditional of Greek states was forced to adapt their tactics in certain situations.

All his victories in Asia Minor were won using combined arms, but when Agesilaus returned to Greece to face the threat of the Greek alliance he reverted to a reliance on hoplites alone at the battle of Coroneia.⁶⁰⁹ This is despite Agesilaus' pride at the victory of his cavalry over the Thessalians, a people renowned for their horsemanship.⁶¹⁰ Clearly his pride was not enough to warrant integrating them into his battle plan. However, Xenophon (*Hellenica* 4.3.15) is clear that both sides fielded a combined arms army with hoplites, light infantry and cavalry. Nevertheless the battle was primarily fought and decided by the two hoplite phalanxes.

Best (1969: 85, n. 34) comments that "It is remarkable that horsemen did not play a part in the battle at Koroneia." Best, as discussed above, is under the misapprehension that the use of cavalry in battle was by then commonplace, whereas it was still alien in Greece, especially to Spartans.⁶¹¹ After his campaign in Asia Minor Agesilaus dispensed with combined arms tactics and continued the war in Greece with his battle plans relying solely on hoplites.⁶¹² This Spartan

⁶⁰⁸ Xenophon, *Hellenica* 3.4.22-4; *Agesilaus* 1.31; Plutarch, *Agesilaus* 10.

⁶⁰⁹ Xenophon, *Hellenica* 4.3.15-17; *Agesilaus* 11.9-11.

⁶¹⁰ Xenophon, *Hellenica* 4.3.4-9. Agesilaus adopted the now normal practice of marching with his hoplites in a hollow square with cavalry in front and behind. When attacked in the rear he sent his vanguard of cavalry to join the battle.

⁶¹¹ Best (1969: 84-5) is also wrong when he argues that the decisive charge of Herippidas' phalanx that caused the Argives to break was led by peltasts. Xenophon (*Hellenica* 4.3.15-17) makes it clear that it was the phalanx that charged and states that the Argives fled "when they came within spear-thrusting distance." Best is trying to find evidence for Agesilaus' reliance on peltasts when it is clear that the battle of Coroneia was fought almost exclusively by hoplites, just like all the other Spartan battles.

⁶¹² Westlake 1986.

conservatism eventually contributed to their defeats at the hands of the more innovative Thebans at Leuctra (Plutarch, *Pelopidas* 20-23; Xenophon, *Hellenica* 6.4.8-15; Diodorus 15.53-56) and Mantinea (Xenophon, *Hellenica* 7.5.21-27; Diodorus 15.84-87).⁶¹³ Although Greek armies in the fourth century did often field cavalry and light infantry alongside hoplites, the tactics in battle still remained fixed on the hoplite phalanx. Without battle plans that involved all the types of unit in the army acting together the Greeks could not make the best use of a combined arms army.

Combined Arms Conclusions

Following the Peloponnesian War, Greek generals were confident in adopting different tactics if the situation warranted it. It is this tactical flexibility that allowed the subsequent implementation of integrated warfare. Without it the Greeks would have continued their reliance on the hoplite phalanx. However, in the Greek mind of the early fourth century the use of the tactics of integrated warfare in battle, in this case using hoplites, light infantry and cavalry together, was something that was only important when fighting outside of Greece. To the Greeks, the hoplite was still the bringer of victory in any battle on Greek soil, whether supported by cavalry and light troops on the flanks or not. Since the Spartans were by far the most conservative in adapting their way of war or in adopting new strategies it is not surprising that during the Spartan hegemony Greek warfare remained tactically static.

The Corinthian War & the Theban Hegemony: Light infantry & cavalry tactics

The Corinthian War challenged the traditional Greek mindset of battle based on the hoplite phalanx with a new wave of innovations. The prime mover was Iphicrates, who won renown as a commander of light infantry.⁶¹⁴ Thebes eventually became the dominant state in Greece thanks largely to their two innovative generals Pelopidas and Epaminondas, who were both willing to adapt the tactical use of the phalanx and integrate cavalry and light infantry in battle.

Sources

⁶¹³ These two important battles will be discussed in detail in the next section detailing the Theban contributions to combined arms in Greece.

⁶¹⁴ Surprisingly there are no good secondary sources written about Iphicrates despite his importance in fourth-century warfare. The main accounts are of his role as a mercenary in accounts covering mercenaries as a whole. The three best are: Best 1969; Parke 1933; and Trundle 2004.

The middle of the fourth century is not very well documented in the surviving sources. Xenophon's history, the *Hellenica*, just as Thucydides' account of the Peloponnesian War, is focused almost exclusively on Athens and Sparta. His exclusion of Thebes and Epaminondas in particular is a much debated problem for scholars.⁶¹⁵ Here the reasons for this exclusion are not the concern since it is still possible to reconstruct the tactics of battles from Xenophon's account. Diodorus Siculus' much later account adds a few details but is not concerned with military details.⁶¹⁶ Despite the few sources it is possible to examine the nature of Greek warfare in this period by focusing on the few battles that are described in relative detail. The focus of these sources, in particular Xenophon, is still on hoplites and so it is difficult to examine in detail the tactical uses and importance of light infantry and cavalry.

Infantry

Before examining the specific battles of this period and the level of integration of infantry, it is necessary first to outline Iphicrates' army of light infantry. Iphicrates is credited by Diodorus and Nepos with reorganising the equipment of his professional mercenaries.⁶¹⁷ According to these sources his troops were equipped with the smaller *pelte* instead of the large Greek *aspis*, thus gaining the name peltasts. Their spears were made half as long again or even double the length of the hoplite *dory*. Their swords were also doubled in length. They were given light but sturdy footwear, now termed *Iphicratids*, and linen armour. Diodorus dates these reforms to after 374.

The problem with this information is that it seems to describe a reform of hoplite equipment. This is possibly because of the confusion of Diodorus' and Nepos' source that the reforms involved hoplites. However none of the equipment is necessarily new to Thracian peltasts, including the thrusting spear.⁶¹⁸ Most interesting is the omission of the javelin as necessary equipment. All of Iphicrates' subsequent battles suggest that his peltasts were equipped with javelins. In fact no historical information suggests any change in use or equipment

⁶¹⁵ See among others Westlake 1975; Gray 1980; Tuplin 1986; Tuplin 1987; Tuplin 1993; Dillery 1995.

⁶¹⁶ On Diodorus' battle descriptions see in particular Hammond 1937; Sinclair 1966; Gray 1980; Westlake 1987; Green 2006. Another source is the fragmentary *Hellenica Oxyrrhincia* but this does not detail any of the battles of concern here. On this work see in particular Bruce 1967; Harding 1987; McKechnie and Kern 1988; Tuplin 2004.

⁶¹⁷ Diodorus 15.44.2-4; Nepos, *Iphicrates* 11.1.3-4.

⁶¹⁸ The evidence for Thracian peltasts before Iphicrates having a long sword is vague at best but cannot prove conclusively that he introduced them. See Best 1969: 102-110 for a full discussion of the reforms and previous scholarly interpretations. Also see McKechnie 1994 and most recently Webber 2011.

of peltasts in battle. These reforms may just be a fabrication of Diodorus' source to explain the successes of peltasts against hoplites, as Best 1969 suggests.

During the Corinthian War in 378 Chabrias, the Athenian peltast commander, ordered his troops to kneel and await the attack of Agesilaus' hoplites with their spears.⁶¹⁹ Best 1969 has argued that at this battle Chabrias gave the order to kneel to his hoplite force leaving the peltasts to act as missile troops in support. Parke 1933: 81 argued that this is evidence for the implementation of peltasts changing function to act as spear-armed infantry, but this is not certain. Peltasts could have knelt with their spears until the Spartans came into throwing range and then resumed usual light infantry tactics. This incident is more famous for demonstrating the crumbling aura of Spartan invincibility (see for example Parke 1933: 77) than for the increased use of peltasts in Greek warfare. It does show that Greek light infantry was well trained in the early fourth century and was perhaps even viewed as equal to hoplites.

These reforms, if they happened at all, were probably Iphicrates instituting standard equipment into his force of mercenary peltasts, who would have come from different places and would have used different equipment.⁶²⁰ Under Iphicrates, and his Athenian contemporary Chabrias, peltasts were armed and used in the same way as before. The only difference is that they were no longer solely from Thrace or Thessaly and could come from any Greek city.⁶²¹ Peltasts quickly became the main form of light infantry in an army because of their hybrid nature, as missile and close quarter infantry, and consequent usefulness.

Iphicrates' routing of the Spartan *mora* of 600 hoplites with only peltasts at Lechaeum in 390 demonstrated the vulnerability of hoplites to mobile light infantry, despite the usual Spartan practice of having the youngest hoplites give chase.⁶²² It is this victory more than any other that alerted the Greeks to the restrictions of hoplite-based warfare and the advantages of light infantry. Iphicrates' peltasts killed 250 hoplites out of 600 and proved to be more successful than the 10,000 light infantry who overcame the Spartans at Sphacteria, as discussed above. His later

⁶¹⁹ Diodorus 15.32-33; Polyaeus 2.1.2; Nepos, *Chabrias* 1.2. Agesilaus was so taken aback by the confidence of Chabrias' men that he did not attack.

⁶²⁰ See Whitehead 1991; McKechnie 1994.

⁶²¹ See Parke 1933; Griffith 1935; Miller 1984.

⁶²² Xenophon, *Hellenica* 4.5.11-17; Diodorus, 14.91; Plutarch, *Agesilaus* 22. Konecny 2001. His previous victory at Phlius in 392 should have been the advanced warning the Spartans needed about Iphicrates' abilities as a peltast commander. Xenophon, *Hellenica* 4.4.15; Diodorus, 14.9.

success against the Spartan Anaxibios outside Abydos was similarly effective at destroying a large number of a hoplite force.⁶²³

However, apart from Iphicrates, there were not many generals who tried to experiment in using other troops instead of hoplites.⁶²⁴ He was the first general in the Greek world, after Demosthenes, to rely solely on the abilities of peltasts in battle. However, on account of his lack of major independent command in Greece he was not able to implement his innovations on any large scale. Nevertheless his achievements with mercenary peltasts certainly hastened the development of combined arms.

The Theban generals Pelopidas and Epaminondas also experimented with battle tactics. For the Theban infantry, perhaps the most significant military tactic, introduced by Pelopidas, was the concentration of the 300 members of the Sacred Band⁶²⁵ into one place on the battlefield.⁶²⁶ According to Plutarch, previously the Sacred Band was distributed evenly among the front ranks of the whole phalanx, thus diluting its effectiveness.⁶²⁷ It was this concentration at the front of one wing of the Theban battle line that brought about the defeat of the Spartans at Leuctra (Plutarch, *Pelopidas* 20-23; Xenophon, *Hellenica* 6.4.8-15; Diodorus 15.53-56) and Mantinea (Xenophon, *Hellenica* 7.5.21-27; Diodorus 15.84-87).

⁶²³ Xenophon, *Hellenica* 4.8.33-9. Iphicrates laid an ambush in the mountains and attacked the Spartan column from the rear with his 1200 peltasts. Anaxibios thought Iphicrates had left and so was marching in casual formation. Anaxibios and 12 Spartans fought to the death once they realised the rest of the army was too spread out to aid them and the rest of the rearguard of hoplites was cut down in flight along with many from the centre and vanguard of the column.

⁶²⁴ Of all the generals included in Polyaeus' *Strategems* Iphicrates receives the most attention. Polyaeus includes no fewer than 63 mentions of strategems of Iphicrates while Agesilaus has the next most with 33. Alexander receives 32 and Philip only 22. Dionysius is also mentioned 22 times and Antigonus 21 times. Eumenes only receives 5 mentions. Clearly to the Greeks and Romans Iphicrates was head and shoulders above every other general when it came to innovative generalship.

⁶²⁵ The first professional unit of citizen hoplites equipped and maintained at state expense and consisted of 150 homosexual pairs of hoplites (Plutarch, *Pelopidas* 18). This change to professionalism is another hallmark of the fourth century but in itself is not a necessity for the development of combined arms. For the nature of the Sacred Band see Leitao 2002 and for its use in battle see De Voto 1992.

⁶²⁶ See De Voto 1992.

⁶²⁷ Plutarch, *Pelopidas* 19.3-4

The battle of Leuctra marks the first time that a full Spartan army was defeated in battle through the superiority of the enemy hoplites. Epaminondas' implementation of the oblique formation is an important tactical innovation. The Theban army was outnumbered and so Epaminondas created a means of neutralising the Spartan numbers. The oblique formation also allowed the Thebans to confront the elite Spartiate hoplites with their own elite Sacred Band while holding back their weaker troops. Pelopidas' command of the Sacred Band at Leuctra is what precipitated the victory when he charged the Spartans while they were in the process of a formation change, and caught them unawares.⁶²⁸ Nevertheless the oblique formation was the foundation that allowed Pelopidas the time to defeat the previously invincible Spartan hoplites before the rest of the Theban line was defeated.⁶²⁹ It was such a successful ploy that the Thebans used it effectively again at Mantinea, and Philip and Alexander relied on it as the principal tactic of the Macedonian army.⁶³⁰

The battle of Mantinea in 362 (Xenophon, *Hellenica* 7.5.21-27; Diodorus 15.84-87) marks the end of Spartan military dominance, and also the beginning of the end of the era of the hoplite.⁶³¹ Epaminondas again relied on the oblique formation that had proved so successful at Leuctra massing his hoplites on his right wing fifty deep. He stationed his cavalry in front of his refused wing and posted a small force of cavalry and light infantry on a hill overlooking his left wing to prevent the Spartans turning his flank. The Theban cavalry defeated their opposition and the Theban hoplites overcame the Spartans opposite them. Had Epaminondas not been mortally wounded leading the phalanx the defeat of the Spartans would probably have become a rout. His

⁶²⁸ Plutarch, *Pelopidas* 23. Xenophon, *Hellenica* 6.4.13-15 makes no mention of the formation change or the Sacred Band. He argues that the Spartans were winning the confrontation because they were able to extract the body of Cleombrotus.

⁶²⁹ Jones 1987: 5-6 argues that it was the greater depth of the Theban phalanx that was so crucial at Leuctra. He does not even note the use of the oblique formation. Perhaps the works he used as an expert in the US Civil War summarizing earlier warfare practices did not discuss this tactical deployment.

⁶³⁰ Perhaps the most decisive use of the oblique formation was Philip's defeat of the Greeks at Chaeronea where the Thebans succumbed to their own tactic (Diodorus, 16.85-86; Polyaeus, 4.2.2; Plutarch, *Alexander* 12 & *Demosthenes* 20). On the Sacred Band at Chaeronea see Rahe 1991. This battle will be discussed in more detail below. See Hammond 1938.

⁶³¹ For secondary discussions of the battle see in particular Woodhouse 1918; Pritchett 1969b; Cawkwell 1983; Hamilton 1983; Hamilton 1991; Singor 2002; Cartledge 2003; Rusch 2011.

death led the Spartans to claim a victory despite the tactical supremacy of the Theban army. It was a resounding success for the Thebans and proved again the effectiveness of the oblique formation in battle. But Epaminondas' tactical use of the cavalry in front of his refused flank was purely defensive and did not make the best use of the unit's offensive capabilities. The Thebans possessed excellent cavalry, as discussed below, but still did not use them in an offensive manner in conjunction with their hoplite phalanx and so did not gain full benefit from using combined arms tactics.

Thebes was the polis in Greece proper that seemed most comfortable with experimenting militarily, as their earlier victory at Delium aptly demonstrates.⁶³² They were the first to increase the depth of the phalanx, use new phalanx tactics and continued to use their effective cavalry. But their dependence on the Sacred Band shows that even the Thebans still relied on hoplites for victory.

Cavalry

Jason of Pherae's was the first army in Greece to have a considerable strength in cavalry as well as hoplites. "In cavalry Thessaly had always been extraordinarily strong, and the very unusual proportion in the army of Jason—not far short of one cavalryman to two hoplites—need occasion no surprise; it rather serves to authenticate the army-list."⁶³³ Macedon's successes were based on the ability of their heavy cavalry but they did not enjoy a ratio of infantry to cavalry of 2:1.⁶³⁴ Alexander's battles against Persia often made use of his unit of Thessalian cavalry as equal to the Companions, showing the strengths of the Thessalian horsemen.⁶³⁵

Thebes had a great influence on Greek warfare because it was the one main Greek polis that maintained a relatively strong and reliable cavalry force alongside its hoplites.⁶³⁶ The main Theban general interested in using combined arms was not the well known Epaminondas, but his friend Pelopidas.⁶³⁷ His defeat of the Spartan hoplites at Tegyra may have been the first

⁶³² See: Sankey 1877; Gaebel 2002; Hanson 2010.

⁶³³ Westlake 1935: 108.

⁶³⁴ On the Macedonian cavalry see in particular Hammond 1998. Also see Adcock 1957; Brunt 1963; Milns 1966a; Hammond 1989b; Ashley 1998; Moreno Hernandez 2004.

⁶³⁵ This will be discussed below in the section on Alexander.

⁶³⁶ Sankey 1877; Pascual 2007.

⁶³⁷ See Plutarch, *Pelopidas*. He was schooled in the ways of the hoplite like all Greeks and commanded the Sacred Band under Epaminondas at Leuctra, but he was also the first prominent and successful cavalry commander.

successful frontal charge by cavalry against a hoplite phalanx in Greek warfare.⁶³⁸ Plutarch states that Pelopidas ordered up his cavalry from the rear “to attack” while he formed up his 300 hoplites into close order to cut through the outnumbering enemy. Noticeably Plutarch makes no mention of cavalry after the initial instruction to attack and it is clear Pelopidas was fighting on foot among the phalanx. We cannot conclude for certain that the battle even involved a frontal cavalry charge. Cavalry may have been used to attack the Spartan flanks and to prevent the 300 Theban hoplites from being surrounded. Whatever exactly happened, Tegyra was the first battle where the Spartan hoplite army was defeated severely by a significantly inferior force.

Diodorus (15.37) in discussing the battle simply states:

For as the Lacedaemonians maintained a garrison of many soldiers in Orchomenus and had drawn up their forces against the Thebans, a stiff battle took place in which the Thebans, attacking twice their number, defeated the Lacedaemonians. Never indeed had such a thing occurred before; it had seemed enough if they won with many against few. The result was that the Thebans swelled with pride, became more and more renowned for their valour, and had manifestly put themselves in a position to compete for the supremacy of Greece.

It is this beginning to Theban dominance that has always made Tegyra such an important battle in Greek military history. Nevertheless, after Pelopidas’ exploits, for the first time cavalry came to be viewed as a very effective offensive weapon, even against heavy infantry. Pelopidas’ success here was a significant step on the road of the development of combined arms by combining cavalry and hoplites in attack.

Epaminondas was the instigator of the oblique formation in a hoplite battle, with an accompanying cavalry screen, at the battle of Leuctra, as discussed above. But he never demonstrated any aptitude for using cavalry in an offensive manner to complement the phalanx,

⁶³⁸ Plutarch, *Pelopidas* 17. Plutarch suggests he led a frontal assault on the Spartans, but the difficulty for cavalry to break a phalanx formation from the front makes this doubtful. Whatever tactics he did employ, they worked. Plutarch unfortunately does not provide any further details on how the attack began but simply narrates how the two armies joined battle, particularly around the generals of each side, until the Spartan polemarchs were killed. At this point the Spartans opened a way for the Thebans to continue through but Pelopidas instead continued to attack the clumps of enemy hoplites.

and still relied on his hoplites for victory at both Leuctra and Mantinea.⁶³⁹ This lack of concern for cavalry tactics was probably because both Theban generals, just as most Greeks, fought as hoplites in the phalanx. Unlike Alexander, Philip, and other Macedonian generals, they did not command their armies from horseback, and so may not have appreciated the effectiveness of cavalry.⁶⁴⁰

Combined arms

By 382 even the Spartans were beginning to use armies of mixed units including cavalry, but still only when in foreign territory using foreign troops. At Olynthus the Spartan *harmost* Teleutias was supported by Macedonian and Boeotian cavalry (Xenophon, *Hellenica* 5.2.39-43). When he drew up for battle he placed the phalanx of hoplites in the centre and the allied cavalry on his right flank. In the battle the Olynthian cavalry eventually routed Teleutias' and the neighbouring infantry fled. A reserve squadron of Teleutias' cavalry charged straight for the city gates causing the victorious Olynthians to try to get there first lest they be stranded outside. This reserve cavalry action turned a certain defeat into a victory.

Here we see the advantages of maintaining a reserve of cavalry, and that the phalanx cannot remain intact if its flanks are turned. However this combined arms army involving cavalry was only formed because the Macedonian allied troops were horsemen and the Olynthian enemy were also experts in mounted warfare. The obvious lessons of combined action using all the types of unit available were still not learned by the Spartans, or the other Greek states.

Teleutias' eventual death against the same enemy shows that Greeks were still unfamiliar with how best to manipulate combined arms armies in battle (Xenophon, *Hellenica* 5.3.1-6).⁶⁴¹

⁶³⁹ Leuctra: Plutarch, *Pelopidas* 20 & 23; Xenophon, *Hellenica* 6.4; Diodorus, 15.53-56. Mantinea: Xenophon, *Hellenica* 7.5; Diodorus, 15.84-87.

⁶⁴⁰ On the unusual nature of command from the rear in Macedonian armies see Wrightson 2010.

⁶⁴¹ He advanced to Olynthus to remove the crops and was opposed by Olynthian cavalry that had crossed the river to harass him. Teleutias launched his peltasts to fend them off and the Olynthians retreated over the river. The peltasts pursued them across the river only to be cut down by the Olynthian cavalry. Teleutias crossed the river with the rest of the army ordering the cavalry and peltasts to pursue the Olynthians to the city. Unfortunately they got too close to the missile towers on the city walls and were forced to retreat. The Olynthians sent out their cavalry and peltasts followed by their hoplites who all pressed the disordered Spartan army. Teleutias was killed along with the majority of his army. Teleutias and his army pressed the Olynthians too far, probably out of his personal anger, but by sending peltasts alone against the Olynthian cavalry lacked the required application of a combined arms army.

The Olynthians, on the contrary, demonstrated that they knew well how to utilise a combined force of cavalry, peltasts and hoplites, while also using the terrain to their advantage. Those states that had always had cavalry and peltast forces, as well as hoplites, were better able to employ them through years of practice. This native reliance on light infantry and cavalry is one reason why it was the Macedonians who eventually perfected the tactical manipulation of a combined-arms army.

Perhaps the general who came closest to fully implementing a combined arms system tactically in Greece was Jason of Pherae. Little is known about him, since for the most part Thessaly is excluded from Xenophon's account of Greek history in the *Hellenica*. In the one chapter in which Xenophon does refer to Jason (6.1), he is presented as a successful and feared tyrant. Xenophon states (6.1.19) that once he succeeded in setting himself up as *Tagus* of Thessaly,⁶⁴² "his cavalry, along with that of his allies, came to more than eight thousand, his hoplites were calculated to be no fewer than twenty thousand, and he had enough peltasts to set against all men; for it is a labour even to count their cities."

Jason then had the most powerful army of the day. Even Philip of Macedon's cavalry numbered only 4,000, his phalanx certainly comprised fewer than 20,000 men and Macedon was not renowned for producing peltasts in significant numbers.⁶⁴³ Even if we make allowances for exaggeration on the part of Xenophon, Jason certainly had an army with which he could easily have conquered Greece, and more.⁶⁴⁴ As Westlake comments in his work on Thessaly (1935: 106-7),

[a]t the battles of Nemea and Mantinea, in which an exceptionally large number of combatants were involved, neither side can have exceeded this figure, so that it is remarkable that Jason, backed by military resources of such magnitude, did not at once strike a blow for the hegemony of Greece.

⁶⁴² The *Tagus* was the elected federal commander of all the cities in the Thessalian League and commanded all four districts of Thessaly. Herodotus 5.63 refers to the position as king, and Dionysius 5.74 as archon. See Westlake 1935.

⁶⁴³ Lloyd 1996b; Hammond 1998; Ashley 1998. On Macedonian peltasts see Griffith 1981.

⁶⁴⁴ Xenophon (6.4.32) mentions how Jason's murderers were feted wherever they went in Greece. "By this it was clear how deeply the Greeks feared that Jason would become a tyrant."

Jason also had 6,000 mercenaries as his personal guard, loyal to him and expertly trained. Xenophon (6.4.8) comments that “he maintained about him many mercenaries, both foot-soldiers and horsemen, these moreover being troops which had been trained to the highest efficiency”. With such a large core of professionals his army would have been very capable. From Xenophon we see that Jason trained his whole army rigorously every day and rewarded martial vigour.⁶⁴⁵ Clearly his soldiers were very capable, and would have been considerably better if he had been given time to continue his methods.

It is unfortunate that we know nothing of Jason’s many victories—how he deployed his army or the specific tactics that he used in battle. He may be considered the first Greek general to consistently and successfully make full use of the theory of combined arms. But we cannot conclude anything since the evidence is so scarce. Jason’s assassination prevented almost certain Thessalian domination, since even his inept successors had armies powerful enough to cause significant problems for the other Greek poleis.⁶⁴⁶ Had Jason lived his army would have been expert enough to allow him to become *Hegemon* of Greece, and perhaps even conquer Persia.⁶⁴⁷

Pelopidas’ battles against Alexander of Pherae, the tyrant of Thessaly, showed his abilities at adapting his army and tactics as the situation required. His final crushing victory over

⁶⁴⁵ Xenophon, *Hellenica* 6.1.6: “And he himself—for I must tell you the truth—is exceedingly strong of body and a lover of toil besides. Indeed, he makes trial every day of the men under him, for in full armour he leads them, both on the parade-ground and whenever he is on a campaign anywhere. And whomsoever among his mercenaries he finds to be weaklings he casts out, but whomsoever he sees to be fond of toil and fond of the dangers of war he rewards, some with double pay, others with triple pay, others even with quadruple pay, and with gifts besides, as well as with care in sickness and magnificence in burial; so that all the mercenaries in his service know that martial prowess assures to them a life of greatest honour and abundance.”

⁶⁴⁶ See for example the Theban intervention in Thessaly against Jason’s successor Alexander (Plutarch, *Pelopidas* 31-32; Diodorus 15.80).

⁶⁴⁷ Westlake (1935: 118) is probably right when he states that “[f]ar too much stress has been laid by historians on the intention of Jason to invade Persia.” Jason states that he felt it would be easier to subdue the King of Persia than Greece, as recorded by Xenophon (*Hellenica* 6.1.12), and Isocrates says as much in his letter to Philip (5.119). Jason would certainly have known that he could not have attempted such an expedition without establishing a secure dominion over all the important states in Greece and securing their assistance for the invasion. He may even have had to subdue Macedon before leaving for Persia. But Persia at this time was weak after the King’s Peace and would soon be divided by the Satrap’s Revolt. Jason’s army was certainly strong enough to have conquered Persia had he been able to establish himself in Greece first.

him at Cynoscephalae is a prime example of how to win a battle by holding off the enemy's best troops while winning the battle with your own.⁶⁴⁸ Pelopidas' superior cavalry routed Alexander's while Alexander's mercenary infantry overcame Pelopidas' Thessalian hoplites holding the important strategic hill in the centre of the battlefield. Pelopidas ordered the cavalry to attack Alexander's hoplites while he himself followed behind leading his Theban hoplites. He easily defeated Alexander's infantry using this combination of cavalry and infantry attacks. Unfortunately Pelopidas' martial enthusiasm got the better of him and he was killed trying to slay Alexander, probably preventing further Theban advances in the area of combined arms.

Epaminondas' use of the cavalry screen and the oblique formation are still key components in the development of combined arms. Both serve the defensive aspect in gaining time for the heavy infantry to win the battle, with their flanks protected by the other troops. However the best tactical use of a combined arms army utilises the offensive power of all the types of unit rather than relying on one alone for victory. As a result Pelopidas, not Epaminondas, was the principal Theban innovator when it comes to the use of combined arms by using both cavalry and hoplites as his offence depending on the situation.⁶⁴⁹

The resounding defeat of Sparta by Epaminondas at Leuctra and Mantinea proved that warfare had moved on beyond the limited tactics of traditional hoplite battles, but the tactical use of combined arms on the battlefield was still in its infancy, though at least now past the conception stage. Epaminondas' death at Mantinea undoubtedly left a void in the area of innovative Greek generals and once again slowed down the process of developing combined arms. This allowed the mantle to pass to the Macedonians.

Macedon and Integrated Warfare

The Macedonian army after the accession of Philip II was the first in the Greek world to make full use of combined arms in every battle regardless of terrain. This army

in many ways represented the culmination of classical trends. The Macedonian army was powerful, not only because of the phalangite who replaced the hoplite as the mainstay of

⁶⁴⁸ Plutarch, *Pelopidas* 31-32; Diodorus, 15.80.

⁶⁴⁹ Had Pelopidas had overall command against Sparta instead of Epaminondas he may have tried to use combined arms tactics at Leuctra. This is a case of revisionist history but it was his initiative as the commander of the Sacred Band that won the battle for the Thebans and his earlier victory at Tegyra demonstrated his superior tactical ability.

the infantry, but also because of the coordinated use of different types of military forces: cavalry of different types, peltasts, slingers and archers.... Although Demosthenes claimed that Philip fought in an altogether new and formidable way (Dem. 9.47–52), many of the features of his army were symptomatic of the growing specialization and professionalization of armed forces in the fourth century. (Hunt 2007: 145-6)

Before Philip the Macedonian army probably comprised light infantry variously armed and a large core of aristocratic heavy cavalry; and mercenaries were probably also used.⁶⁵⁰ Philip is criticised by Demosthenes (9.47-52) for instilling into his professional army the discipline and ability to fight year round. It is this professionalism that allowed Philip's army to become so proficient in battle and expert at the use of combined arms.⁶⁵¹

Sources

The references to Macedon before Philip are occasional in Greek sources and occur only when they involved the Greeks directly. Perhaps the best sources for Philip's army are the speeches of Demosthenes.⁶⁵² These are, however, a very one-sided view of his activities and are not concerned with providing any real military details. The works of Diodorus and Justin are limited in military details and probably both based on a now lost history of Theopompus.⁶⁵³ Diodorus is the source for Phillip's early battles, of particular concern here Heraclea Lyncestis as discussed below.

The main histories of Alexander, Curtius Rufus, Diodorus, Arrian, Plutarch and Justin, are all primarily concerned with Alexander's exploits.⁶⁵⁴ As a result they rarely provide details

⁶⁵⁰ On early Macedonia see in particular Edson 1970; Hammond 1989a and Borza 1990. See also Ellis 1980; Griffith 1981; Noguera Borel 1999; Roisman and Worthington 2010.

⁶⁵¹ For secondary accounts of the army of Philip II see: Adcock 1962; Andronicos 1992; Ashley 1998; Hammond 1994; Wrightson 2006; Worthington 2008.

⁶⁵² See Davies 1949; Wooten 2008.

⁶⁵³ On Diodorus and Theopompus see in particular Shrimpton 1991a. See also Hammond 1937; Martin 1981; Martin 1982. On Justin see Heckel and Yardley 1997. On Diodorus' battle descriptions see in particular Hammond 1937; Sinclair 1966; Gray 1980; Westlake 1987; Green 2006.

⁶⁵⁴ For Curtius see Atkinson 1975; Atkinson 1980; Gunderson 1982; Hammond 1983; Currie 1990; Heckel 1994; Atkinson 1994. For Plutarch see Tracy 1942; Wardman 1955; Hamilton 1969; Wardman 1971; Stadter 1992. For Diodorus see Drews 1962; Hamilton 1977; Hammond 1983. For Justin see Hammond 1983; Heckel and Yardley 1997. For Persian sources see Brunt 1962.

about the individual units in his army. Arrian is by far the author most concerned with military matters, and was a soldier himself, but even he focuses his battle description on Alexander at the expense of the rest of the army.⁶⁵⁵ For the fourth century none of the primary historical sources survive and so it is necessary to determine the underlying sources of the extant accounts. For Philip this is probably Theopompus. For Alexander there are the lost histories of Callisthenes, Cleitarchus, Ptolemy and Aristobulus.⁶⁵⁶

Infantry

The sarissa phalanx was an invention of the Macedonians, probably by Philip II in or around 359.⁶⁵⁷ Like the Greek hoplite the Macedonians fought in a phalanx formation. The sarissa was a long pike between fifteen and eighteen feet long, although later kings extended the length to as much as twenty five feet.⁶⁵⁸ The extreme length of the sarissa meant that the sarissas of the first three, four, or five rows of the phalanx would extend beyond the front rank. This extra range of attack gave the phalanx a greater penetrative power making it hard for an attacker with shorter weapons to get within range of the front rank before they themselves were wounded or killed. The numerous lines of spear points that protruded from the front line made the phalanx an impenetrable defensive hedgehog and by advancing with its flanks protected, it became a relentless force.⁶⁵⁹

⁶⁵⁵ See Harrer 1916; Schepens 1971; Bosworth 1980b; Ameling 1984; Bosworth 1988; De Voto 1993. On Arrian's military descriptions see Milns 1978.

⁶⁵⁶ On these lost histories see Hamilton 1961; Drews 1962; Atkinson 1963; Welles 1963; Hamilton 1977; Hammond 1983; Devine 1994; Guthrie 1999.

⁶⁵⁷ On Philip's use of the sarissa see Andronicus 1970; Markle 1977; Markle 1978; Hammond 1980; Mixer 1992; Noguera Borel 1999; Wrightson 2006.

⁶⁵⁸ Theophrastus *Hist. Pl.* 3.12.2 states that the length of the longest Macedonian sarissa was twelve cubits, or eighteen feet, and Asclepiodotus *Tact.* 5.1 states that the shortest was ten cubits, or fifteen feet, long. See Andronikos 1970: 91-107 and Hammond 1980: 53-63. See also Mixer 1992.

⁶⁵⁹ Philip's implementation of the sarissa, while important in allowing a cheaper and more effective phalanx, was only a change in armament and the Macedonian phalanx still remained a heavy infantry unit. Therefore its use is irrelevant to the general process of combined arms which does not require a heavy infantry unit to be specifically armed. I have discussed the sarissa phalanx in detail elsewhere Wrightson 2006; Wrightson 2010. For secondary accounts of the Macedonian phalanx see in particular Adcock 1957; Hammond 1980; Griffith 1981; Markle 1992; Ashley 1998; Noguera Borel 1999; Heckel 2005b.

The various formations that it could employ, especially the wedge,⁶⁶⁰ allowed the phalanx to adapt to most eventualities of terrain or position and to be able to break most, if not all, opposing infantry formations. Even at the battle of Pydna the sarissas of the Macedonians proved unstoppable in a frontal assault (Plutarch, *Aemilius Paullus* 16-22; Livy 44.40-42). It was only the vagaries of the terrain and some poor generalship that allowed the Romans to get within close range of the phalangites. Once the range was closed the Roman maniples hacked their way into the gaps in the phalanx and ended the phalanx's domination of infantry warfare in the Mediterranean.

Alexander added another unit of heavy infantry to the Macedonian army, the *hypaspists*.⁶⁶¹ This unit probably used the hoplite panoply in pitched battles although it was also trained in the use of the heavier sarissa.⁶⁶² As a result the hypaspists were often thought to be light infantry in comparison with the heavy infantry of the sarissa phalanx.⁶⁶³ Their superior training, their excellence, and their proven loyalty meant that Alexander took the hypaspists with

⁶⁶⁰ See Devine 1983.

⁶⁶¹ On the hypaspists and their armament, training and function see in particular Milns 1967; Milns 1971; Ellis 1975; Anson 1981; Anson 1985; Foulon 1996b; Wrightson 2006.

⁶⁶² Heckel 2005b. From the position of the hypaspists as the protective flank guard of the phalanx and their role of acting as a link between the cavalry and the infantry they must have been armed with the spear and larger hoplite shield instead of with the sarissa. The sarissa-armed phalanx would have been vulnerable on its right side where the phalangite was not protected by his shield. Their speed of movement and mobility came from their linen *thorax*, in contrast with the heavy bronze *cuirass* of the traditional hoplite. Their recruitment from among the best troops of the phalanx meant that they were the fittest and most experienced adding to this mobility. Their very name, which means "shield bearer," suggests that their most important weapon was their shield. In sieges the phalangite and the hypaspist both fought with the panoply of a hoplite alongside the cavalry. In his invasion of the Thracians at the Shipka Pass, Alexander is recorded by Arrian (1.1.9) as telling "to his hoplites that whenever the carts tumbled down the slope, those who were on level ground and could break formation were to part right and left, leaving an avenue for the carts, those caught in the narrows were to crouch close together; and some were actually to fall to the ground and link their shields closely together so that when the carts came over them they were likely to bound over them." The Macedonian phalangites could be armed with the hoplite panoply, and they are even described here as hoplites specifically. However this passage may only refer to the hypaspists. At the battle of the Hydaspes the hypaspists may have used the sarissa to attack the elephants (Diodorus 17.88.2). The hypaspist then was trained in the use of both the spear and the sarissa.

⁶⁶³ See Tarn 1949 for the fullest argument as to why the hypaspists were not heavy infantry.

him everywhere.⁶⁶⁴ The hypaspist corps should be distinguished from a hoplite phalanx because they did not fight in a rigid phalanx formation.⁶⁶⁵ As a result they were often used in sieges.⁶⁶⁶

Alexander's first military innovation was not so important in helping win his battles, but it laid the foundation for the future developments of combined arms under his Successors. This was the integration of many types of unit into the Macedonian army. Before Alexander conquered the Persian Empire Macedonian military forces consisted primarily of the Macedonians themselves, although Philip did make use of mercenaries and allied troops.⁶⁶⁷ After Alexander's many conquests, foreign units had to be incorporated in order to maintain his empire.⁶⁶⁸

Arrian describes the enrolling of Persians into the Macedonian phalanx.⁶⁶⁹ In each basic section of this mixed phalanx, twelve Persian troops are sandwiched between four Macedonian junior officers.⁶⁷⁰ This phalanx composition may never have been implemented since we have no other evidence for its existence after Alexander. The foreign troops Alexander primarily used were missile and light infantry and cavalry.⁶⁷¹ He became very reliant on his javelin men from Thrace, called the Agrianes.⁶⁷² This unit of javelin men from the upper Strymon valley is attested fifty times in Arrian and are "used on almost every occasion which called for rapid movement on

⁶⁶⁴ Bosworth 1989: 259-60. A good example is his attack on the Susian Gates Polyaeus 4.3.27.

⁶⁶⁵ The hypaspists always were the link between the right flank of heavy cavalry and the infantry phalanx in the battles of Alexander. Their position as a mobile link advancing with the cavalry at speed when they charged forwards, suggests that the hypaspists may not always have been able to stay in a tight formation. If they were armed with sarissas, breaking formation would have been disastrous.

⁶⁶⁶ The best example is leading the assault into the breach at the siege of Tyre (Arrian, *Anabasis* 2.23.2).

⁶⁶⁷ Hammond 1991; Ashley 1998.

⁶⁶⁸ Hammond 1996b. See also Bosworth 1980a; Bosworth 1989; Bosworth 1994.

⁶⁶⁹ Arrian 7.23.3-4. This unit is called a *dekas*, originally consisting of ten men but increased to sixteen. It is commanded by a *dekadarches* who fights in the front rank. Behind him is a man on double pay, called a *dimoirites*, and behind him is a ten-stater man who gets more than the average soldier but less than the *dimoirites*. Another ten stater man is at the back.

⁶⁷⁰ Bosworth 1989 argues that these were missile troops but that would nullify the effectiveness of a pike phalanx and the mobility of missile troops.

⁶⁷¹ Some light infantry may have been Macedonian but there is little evidence. Perhaps the javelin men of Balaccrus at Gaugamela were such troops (Arrian, *Anabasis* 3.12.3, 3.13.5).

⁶⁷² The Agrianes were in the army of Philip (Bosworth 1989: 12).

difficult terrain” (Bosworth 1989: 263). As discussed below, Alexander made great use of his light infantry units in all his battles as part of his integrated warfare system.⁶⁷³

Cavalry

The Macedonians and northern Greeks had always been adept at using cavalry, as discussed above.⁶⁷⁴ Cavalry were crucial to the success of the Chalcidians at Spartolus (Thucydides 2.79), as discussed above, and the early successes of the Olynthians in their war against Sparta were entirely due to their cavalry.⁶⁷⁵ The main offensive unit of Alexander’s army was the Macedonian Companion cavalry. This unit functioned as heavy cavalry and relied on hand-to-hand combat rather than missiles in battle.⁶⁷⁶

Alexander also made use of his other cavalry units ranging from light armed scouts to allied cavalry.⁶⁷⁷ He often placed his unit of heavy Thessalian cavalry on an equal footing with the Companions (cf. Arrian *Anabasis* 3.15.3), as the battles of Issus and Gaugamela show.⁶⁷⁸ Alexander’s army was fully integrated and made the best use of every type of unit available fulfilling the main principle of combined arms warfare.

Combined Arms

Philip II’s first battle after his accession to the throne of Macedon, at Heraclea Lyncestis in 358, confirms this northern Greek reliance on cavalry.⁶⁷⁹ His resounding victory demonstrated for the first time that a heavy cavalry unit pre-determined to work in tandem with a heavy infantry phalanx could prove very effective offensively on a large scale. King Bardylis of Illyria, fearing

⁶⁷³ See for example at Issus: Arrian *Anabasis* 2.9.2-4. It is not necessary to outline all of the different light infantry units in Alexander’s army. Suffice it to say that he used all unit types from archers to javelin men and they were fully integrated into his battle plans—the most important concern for this study of combined arms.

⁶⁷⁴ For Macedonian cavalry before Philip see Hammond 1998.

⁶⁷⁵ As discussed above, the main victories were both at Olynthus, in 382 and 381, where the Spartan army of Teleutias was routed. Xenophon, *Hellenica* 5.2-3. The Olynthians did use peltasts, cavalry and hoplites in conjunction, but it is clear their main attack force was the cavalry. On each occasion the Olynthians attacked the Spartans with whatever units they had at hand rather than planning a coordinated assault with all three arms.

⁶⁷⁶ Again it is not necessary here to outline all of Alexander’s units in detail. For secondary discussions of Alexander’s cavalry see Hamilton 1956; Brunt 1963; Milns 1966a; Daniel 1992; Ashley 1998.

⁶⁷⁷ The best example is Alexander’s troop dispositions at Gaugamela (Arrian *Anabasis* 3.11.8-12.5).

⁶⁷⁸ Issus (Arrian *Anabasis* 2.7-11; Curtius 3.8-11; Diodorus 17.32-34; Justin 11.9) and Gaugamela (Arrian *Anabasis* 3.8-15; Curtius 4.9; Diodorus 17.56-61). These battles are discussed in detail as case studies in chapter 4.

⁶⁷⁹ Diodorus, 16.4-8; Frontinus, *Strategemata* 2.3.2.

an attack on his flanks by the superior Macedonian cavalry, formed his infantry into a defensive square with his best troops in the centre ready to face the expected frontal assault of the Macedonians. Philip noticed the weakness of the Illyrian formation at the corners where the centre met with the flank and drew up his troops accordingly. He used the oblique formation adopted from the Thebans placing his best infantry, the sarissa phalanx, at the right of his formation opposite the left corner of the Illyrians while refusing his centre and left wing. Philip's cavalry attacked the right flank and rear of the Illyrians while he crushed the corner on the left with his infantry. Eventually his infantry forced the corner to crumple and the Illyrians fled with many of them being cut down by the cavalry in their retreat.

This is a significant development from the protective use of cavalry by Epaminondas, and an important adaptation to the oblique formation. Having both cavalry and infantry attacking simultaneously prevents the enemy from knowing where the decisive attack will be and forces them to defend against both attacks equally, hence the ineffective defensive square adopted by Bardylis. Philip adapted the oblique formation to be doubly offensive while still affording protection to the flanks of his infantry. Nevertheless it took many years for the Macedonians to complete the process of perfecting combined arms.

Philip's final battle against Onomarchus at the Crocus Field shows how far the Macedonian military machine had advanced the system of combined arms in his reign.⁶⁸⁰ Philip still used his phalanx as his main weapon but in this case he protected it with missile infantry while the heavy cavalry units of the Macedonians and his Thessalian allies pounded Onomarchus' flanks. It was a crushing victory and, although sparse, the accounts suggest this was because of the prowess of the heavy cavalry.

⁶⁸⁰ Diodorus, 16.35.3-6; Pausanias, 10.2.3; Strabo, 9.5.14; Philo Judaeus in Eusebius, *Praeparatio Evangelica* 8.14.33. The sources differ about their accounts of events but it is clear that the battle took place on a wide plain by the sea. Philip perhaps used the same tactics as at Chaeronea and crushed the wing by the sea while holding the other wing back. Whatever tactics he used he soundly defeated the Phocians because of his significant cavalry superiority. The retreating Phocians swam out to reach their allied navy under the Athenian Chares that was anchored nearby but many drowned before they reached him. All the sources agree that the casualty figures were high, over six thousand troops of the Phocian army were killed and three thousand taken prisoner. Onomarchus himself died, although the sources disagree on how, and after his death the Phocian cause permanently went into decline. For Philip's campaigns in Thessaly and the Sacred War see Ehrhardt 1967; Markle 1974; Martin 1982; Buckler 1989.

Philip continued to develop his army during his campaigns in Thrace so that by the time he defeated the Greeks at Chaeronea his army was experienced in and effective at the use of combined arms.⁶⁸¹ The victory at Chaeronea was due to Philip's novel battle plan relying on the perfect execution of the feigned retreat and the effective combination of his different units. The pretend withdrawal is one of the most difficult maneuvers to accomplish in the chaos of an ancient battle and Philip's reliance on it, and its perfect execution here, shows both his own tactical genius and the superb training of the Macedonian army.

The tactics of a feigned withdrawal and the oblique battle line were not vital to the use of combined arms; rather they were the demonstration of tactics that could be used to allow the principles of combined arms to succeed. The annihilation of the Sacred Band by the Macedonian cavalry finally ended the hoplite era in Greece and forced the advanced use of combined arms in warfare. The battle of Chaeronea then is a watershed moment in demonstrating the superiority of integrated warfare in battle.

Alexander continued using his father's tactics, which had become standard practice in the professional Macedonian army. Moreover the Macedonian army was now practiced at using combined arms in battle and achieved a great level of tactical integration of units—for the first time an army practised the most sophisticated level of combined arms, integrated warfare. As Hammond 1981: 33 states,

The remarkable feature of the European army which Alexander inherited from his father and led into Asia was its composite nature and the specialized expertise of each part. Alexander had at his disposal almost every known variety of cavalry and infantry, heavy or light, regular or irregular, as well as experts in siegecraft, artillery, road making, bridge-building, surveying and so on. Each unit was the best of its kind, properly equipped and highly trained.

⁶⁸¹ Diodorus, 16.85-86; Polyaeus, 4.2.2; Plutarch, *Alexander* 12 & *Demosthenes* 20. There is only one detailed account of the battle from Polyaeus, who is the only source to mention the feigned withdrawal, though others gloss over the actual events. The battle is discussed in detail as a case study in chapter 4. For Philip in Thrace see Badian 1983; Adams 1997.

Although he was undoubtedly a great general, Alexander advanced the cause of combined arms in only two ways;⁶⁸² the integration of foreign troops in the army, as discussed above, and the use of the hypaspists as a link between the slow attack sarissa phalanx and the rapid charge of the heavy cavalry units.⁶⁸³

The battles of Issus and Gaugamela are the best examples of this.⁶⁸⁴ In both battles we can see the elite nature of the hypaspists and their role as the link between the phalanx and the cavalry. They attacked with Alexander at a rapid pace and protected the exposed right flank of the phalanx. They were positioned on the right of the phalanx and were used by Alexander, along with the Companion cavalry, as the cutting edge of the attack. This gave the cavalry the freedom to attack wherever the enemy was weak, while allowing his phalanx to continue to advance slowly, without having to worry about its flanks. It was a vital addition to the Macedonian army in the advancement of combined arms and allowed cavalry and infantry to attack in the way that they were best suited without needing to worry about a counterattack.

Alexander used the oblique formation in both battles. Although it is not specifically mentioned in any source concerning Issus that he held back his left wing, this seems to have been the best tactic for him to use. By refusing his left he would delay the Persian cavalry, albeit briefly, from overcoming his weaker flank and giving time for his right to win. The break in the Macedonian phalanx that occurred at Issus (Arrian, *Anabasis* 2.10.4-7), although adequately explained by the unequal nature of the terrain, is understandable if the left flank and centre of the Macedonians were to hold back while the oblique right flank attacked rapidly.

At Gaugamela Alexander used the oblique formation by extending his line to the right in order to draw out the Persians and create a weak point in their line (Arrian, *Anabasis* 3.13.1-2, 3.14.1-2). The placement of a reserve phalanx (Arrian, *Anabasis* 3.12) is similar to the defensive

⁶⁸² There is much scholarship on the army of Philip and Alexander. The best analyses are: Adcock 1957; Fuller 1960; Milns 1976; Bosworth 1989; Ashley 1998.

⁶⁸³ Because the Macedonian battle plan under Alexander used a rapid charge of heavy cavalry to press for victory this often left a hole in the battle line where the enemy could expose and attack the weak flanks of the phalanx. The hypaspists, a unit of heavy infantry who were not armed with the sarissa and could move at a faster speed, were used, and maybe even created, by Alexander to bridge this gap. For the hypaspists see: Fuller 1960; Milns 1972; Milns 1976; Markle 1978 & 1982; Bosworth 1989; Heckel 1992 as well as other works cited above.

⁶⁸⁴ Issus (Arrian *Anabasis* 2.7-11; Curtius 3.8-11; Diodorus 17.32-34; Justin 11.9) and Gaugamela (Arrian *Anabasis* 3.8-15; Curtius 4.9; Diodorus 17.56-61). These battles are discussed in detail as case studies in chapter 4.

square that Bardylis adopted at Heraclea Lyncestis except that Alexander went on the offensive and thus won the battle before he could suffer the same fate as the King of Illyria, encirclement and collapse. His positioning of the attack on the right flank is reminiscent of Philip's tactics at Heraclea Lyncestis. After Philip's successes at Heraclea and Chaeronea, the oblique formation became the standard battlefield deployment of Macedonian armies and was used often by Alexander and his successors.

Combined Arms Conclusions

Philip and Alexander had laid down the groundwork for the integrated armies of the Successors and had demonstrated to subsequent generals how to employ the system of combined arms at its greatest level of sophistication, integrated warfare. Unfortunately not many of these generals proved as successful as their illustrious predecessors. Plutarch provides the anecdote that, "Demades, after Alexander had died, likened the Macedonian army to the blinded Cyclops".⁶⁸⁵

The Successors and the battle of Ipsus: War elephants and integrated warfare

The developments to combined arms warfare that the Successor generals themselves made were the continuing advancement of integrating the different styles of unit incorporated by Alexander.⁶⁸⁶ The two generals who did this well were the two most successful of the period: Eumenes and Antigonos.⁶⁸⁷ Perhaps the most important tactical advance in this period was the use of elephants in battle.⁶⁸⁸ The most successful tactical use of elephants in combined arms warfare was achieved at the battle of Ipsus, and so this is the terminal point for this study.

At this battle in 301 the principal last remaining Successor generals fought for supremacy.⁶⁸⁹ The battle reveals the usual adoption of Alexander's traditional Macedonian

⁶⁸⁵ Plutarch, *Galba* 1.4

⁶⁸⁶ Bar Kochva 1976: 203 is right that the achievements in battle tactics of Hellenistic generals are often ignored by scholars in favour of Philip II and Alexander.

⁶⁸⁷ There is really only one book for each general that deals with their military abilities in detail. Eumenes: Anson 2004. Antigonos: Billows 1990. Devine 1985c & 1985d provides a good discussion of these two battles of Eumenes and Antigonos.

⁶⁸⁸ Elephants do not have to be incorporated into an army in order to achieve integrated warfare in battle, but if they are mustered in an army the battle plan should integrate them tactically in the best way possible according to the general principles of combined arms warfare.

⁶⁸⁹ Plutarch, *Demetrius* 28-29; Appian, *Syrian Wars* 55.

tactics of the oblique formation and integrated warfare in offense and defence. However the clear development was the effective use of elephants.⁶⁹⁰ By 301 the Macedonian style armies of the Successor kingdoms had successfully managed to tactically incorporate all styles of unit available in the army and each unit was at its peak level of martial efficiency.

In this section it is not necessary to divide our examination into infantry and cavalry since at the end of the fourth century all armies used combined arms at a great level of tactical integration of heavy and light infantry and cavalry. Instead the focus is on the final developments of combined arms in the fourth century and the perfection of integrated warfare.

Sources

The evidence for warfare in the late fourth century comes almost exclusively from Diodorus.⁶⁹¹ “No historian of Classical Greek or early Hellenistic history can avoid using Diodorus Siculus as a source, and for some periods he is even the most important one. Such is the case for the years after Alexander the Great's death.”⁶⁹² Plutarch's various *Lives* add occasional details but are more concerned with the actions of individuals rather than battles.⁶⁹³ Just as for the histories of Philip and Alexander, it is important to establish the earlier source of both Plutarch and Diodorus. For the Successors this is usually taken to be Hieronymus of Cardia.⁶⁹⁴ In view of the few sources available scholars cannot discount any piece of information that is relevant.

Combined arms

Eumenes' battle at the Hellespont against Craterus and Neoptolemus in 321 demonstrates the level of integrated warfare that was now standard in Greek armies.⁶⁹⁵ It also showed Eumenes' ability to formulate a battle plan to neutralise the strengths of the enemy; a principal aspect of combined arms. He placed light cavalry on one wing supported by a defensive screen of elephants in order to draw off the enemy's heavy cavalry. His own heavy cavalry then attacked on the other wing in strength at the same time as his phalanx in the centre. On this occasion his

⁶⁹⁰ See in particular, Scullard 1974. Also see Kistler 2007; Nossov & Dennis 2008.

⁶⁹¹ For Diodorus see Drews 1962; Hamilton 1977; Hammond 1983; Devine 1985c; Devine 1985d; Landucci Gattoni 2008.

⁶⁹² Meeus 2009.

⁶⁹³ For Plutarch see Tracy 1942; Wardman 1955; Hamilton 1969; Wardman 1971; Stadter 1992.

⁶⁹⁴ See in particular Hornblower 1981.

⁶⁹⁵ Diodorus, 18.29-32; Plutarch, *Eumenes* 7.

tactics resulted in both enemy generals being killed, one by his own hand, and the superior enemy phalanx was forced to retreat since it no longer enjoyed the protection of any cavalry.

Eumenes' use of light cavalry as a defence against heavy cavalry was the key innovation of combined arms here. Previously light and heavy cavalry usually fought against units of a similar armament. In Alexander's battles the Persian heavy cavalry was opposed by the Companions or the Thesalians and the light cavalry by Alexander's allied light horsemen.⁶⁹⁶ This battle also demonstrates the standard use of elephants in battle, as a static flank screen for cavalry.⁶⁹⁷

Passing over other instances of creative generalship as irrelevant to the development of combined arms,⁶⁹⁸ I shall move on to the battles of Paraetacene (Diodorus 19.26-31) and Gabiene (Diodorus 19.39-43; Plutarch, *Eumenes* 16) in order to examine in more detail the early uses of elephants in fourth century battles. In these two battles Eumenes and Antigonus faced each other. Each is dealt with in detail as a case study in chapter 4.

The normal use of elephants in battle was primarily as flank guards held in echelon, as part of the oblique formation. This is the tactic used by both Antigonus and Eumenes at the battles of Paraetacene (Diodorus 19.26-31) and Gabiene (Diodorus 19.39-43; Plutarch, *Eumenes* 16). At the latter, Eumenes' hand was forced into this defensive deployment since a number of his elephants had lost their mahouts in a previous skirmish with Antigonus (Diodorus 19.39). Kistler (2007: 51) stated,

[i]t takes some weeks for an elephant to trust and obey a new mahout, as is commonly known among elephant trainers. These beasts could still stand on the right wing to hinder the enemy horses from a direct charge, carrying new riders, but they were ineffective for any offensive duties without their trusted mahouts.⁶⁹⁹

⁶⁹⁶ At Gaugamela for example Alexander opposed the Scythian horse archers with his allied cavalry rather than the Thesalians or the Companions (Arrian *Anabasis* 3.13.3-4).

⁶⁹⁷ For the standard use of elephants see for example Bar Kochva 1976: 77.

⁶⁹⁸ For the various strategies of the two generals see Polyaeus 4.8.1-5 & 4.6.1-20.

⁶⁹⁹ See also Kruse 1972: 76.

Elephants were able to hold a flank defensively, especially against cavalry unused to pachyderms.⁷⁰⁰ This serves to add an extra defensive element to the battle formation but does not make sufficient use of the offensive power of elephants.

As a screen from behind which to charge with one's cavalry, elephants had proved useful at Paraitakene and Gabiene...but as an attacking force in themselves, elephants were effective in ancient warfare only against enemies who had not encountered them before and were overawed by their size and strength.⁷⁰¹

Eumenes' fate at Gabiene demonstrates that it was very difficult to change the tactical deployment or use of elephants during battle.⁷⁰² Eumenes sought to kill Antigonus and end the war and so decided to charge with his more numerous elephants instead of holding them back defensively. Since they had already been drawn up en echelon in the customary flank guard, Eumenes' elephants arrived into the attack at intervals, thus minimizing their impact (Diodorus 19.42). The elephant-on-elephant battle that ensued went well for Eumenes until his lead elephant was killed. Despite enjoying a significant numerical superiority in elephants, once the lead animal fell the others behind turned to flee. Elephants are by nature herd animals and always follow their leader (Scullard 1974). Gabiene demonstrates that it is easy to defeat a force of elephants by killing the lead animal or forcing it to flee. Only if a commander can ensure the continued advance of the lead elephant will the others fight. This is the one large drawback of using elephants offensively and is the main reason why they were usually used in a defensive manner.

Other examples demonstrate the perils of using elephants in battle. At the battle of the Hydaspes, Porus, the Indian king, stationed elephants across the front of his whole battle line, intermingled with light infantry (Arrian, *Anabasis* 5.8-19; Curtius 8.13-14; Diodorus 17.87-89; Plutarch Alexander 60-62). This was intended to prevent the Macedonian phalanx reaching his inferior infantry and to break up the phalanx. Instead the Macedonians were able to use their sarissas to goad the elephants into turning on their own army causing significant carnage. In 312, Demetrius intended to win the battle of Gaza, against Ptolemy and Seleucus, using his elephants

⁷⁰⁰ Bar Kochva 1976: 137 states that elephants usually panic horses even if they are used to elephants.

⁷⁰¹ Billows 1990: 127.

⁷⁰² This is an important fact to bear in mind when examining Seleucus deployment of his elephant reserve at Ipsus, as discussed below.

to defeat the phalanx (Diodorus 19.80-84; Plutarch, *Demetrius* 5). Unfortunately Ptolemy wanted to capture the animals and devised easily movable chains of iron spikes to trap the elephants in position. This device proved so successful that Ptolemy was able to capture all forty-three of Demetrius' elephants and as a result easily won the battle.⁷⁰³

Macedonian generals were normally reluctant to use elephants offensively because of the possibility that they could be goaded into turning on their own troops.⁷⁰⁴ Pyrrhus' victory over the Romans at Asculum, where his elephants tore through the infantry legions, demonstrates the effectiveness of elephants against an infantry armed with swords rather than spears.⁷⁰⁵ But Pyrrhus was successful for the most part because of the Roman soldiers' fear of the unfamiliar beasts (Plutarch, *Pyrrhus* 21.7).

At the final battle of the campaign at Beneventum Pyrrhus' elephants were initially successful against the Roman legions until they fell foul of the Romans' anti-elephant devices.⁷⁰⁶ The defeat of his elephant charge cost Pyrrhus the battle. His defeat demonstrates that elephants are most effective against an enemy that has not seen them before. Once the enemy devises plans to deal with elephants, pachyderms alone cannot bring victory. In general elephants are much more effective against cavalry than infantry, since horses that are unused to elephants are terrified of them (Kistler 2007). The victories of Pyrrhus over the Romans at Heraclea (Plutarch, *Pyrrhus* 16-17; Zonaras 8.3; Orosius 4.1.8-15), and Antiochus over the Galatians (Lucian, *Zeuxis* 8-12), were both a result of sending elephants against cavalry. However, both kings fought against an enemy that was unused to elephants, and so could rely on the psychological effect of

⁷⁰³ Kistler (2007: 61) summarizes the effectiveness of this device well. "Because elephants are heavy, they cannot simply jump up to free themselves from traps holding two feet: normally they only lift one foot at a time. When two feet are impaled, an elephant is trapped in place. The screaming of the wounded elephants caused the unharmed pachyderms to flee, disrupting Demetrius' own cavalry horses. Ptolemy sent his archers and javelin throwers forward to kill the mahouts, clearly intending to capture, and not kill, the elephants. Seeing this major setback, and fearing that their horses might step on more of these traps, Demetrius' cavalry fled the field, and his infantry joined them in full flight."

⁷⁰⁴ There are many instances of this exact thing happening in battle. The most devastating was in the army of Polyperchon at the siege of Megalopolis where the elephants ran amok after their feet had become impaled upon caltrops (Diodorus 18.71.2-3).

⁷⁰⁵ Plutarch, *Pyrrhus* 21; Dionysius of Halicarnassus 20.1-3; Zonaras 8.5; Orosius 4.1.19-23.

⁷⁰⁶ Plutarch, *Pyrrhus* 24-25; Dionysius of Halicarnassus 20.10-11; Orosius 4.2.3-6.

an elephant charge to disrupt the enemy formation and precipitate a rout. Generals who were used to pachyderms could effectively counter any offensive thrust of elephants, whether in battle or in a siege, reducing the all around effectiveness of elephants in war.

The one confusing aspect of the use of elephants by Hellenistic generals was the preferred option to deploy the elephants in the centre of the battle line directly in front of the phalanx. Porus' defeat at the Hydaspes demonstrated the ineffectiveness of elephants against a sarissa phalanx disciplined enough to face the beasts and use sarissas to blind them or kill their mahouts.⁷⁰⁷ Moreover the elephants would disrupt the formation of the phalanx and reduce its effectiveness at opposing the enemy infantry. Yet even at Ipsus both sides deployed elephants in front of their phalanx (Plutarch, *Demetrius* 28-29; Appian, *Syrian Wars* 55). Perhaps Kistler (2007: 66) is right when he states that, faced with Lysimachus' 100 elephants in the centre, "Antigonos had no choice but to put his seventy-five beasts in front of his infantry, lest his own men panic." Certainly the sight of a hundred elephants charging would frighten even the most disciplined army.

There are no examples of elephants charging Hellenistic infantry phalanxes directly as Bosworth (2002: 166-7) summarises adeptly:

There is no evidence of the beasts attacking enemy infantry, as Porus' elephants had done at the Hydaspes. Perhaps the dangers of their being wounded in the eyes or trunk were too acute....Accordingly, elephants tended to be used against each other or to keep cavalry at bay. Their usefulness was limited, but they clearly had a mystique, a psychological advantage for their army.

Tarn suggests that it was the very frightening experience of facing elephants at the Hydaspes that prompted Seleucus to exchange territory in India for 500 war elephants (Plutarch *Alexander* 62; Strabo 15.2-9, 16.2-10).⁷⁰⁸ Nevertheless had Antigonos adopted Ptolemy's method of defending against an elephant charge at Ipsus, he could have used his elephants elsewhere with much more effectiveness. Armies unused to elephants were vulnerable to them but cavalry

⁷⁰⁷ Arrian, *Anabasis* 5.8-19; Curtius 8.13-14; Diodorus 17.87-89; Plutarch *Alexander* 60-62. For full discussions of the battle see Hamilton 1956; Devine 1987.

⁷⁰⁸ Tarn 1975: 94. See also Tarn 1940.

whose horses grew up around elephants,⁷⁰⁹ and infantry who had opposed the animals before, were able to easily counter offensive actions of elephants.

At Ipsus, Seleucus' trap for Demetrius shows that the best use for elephants is as a flank screen against heavy cavalry, as long as their immovability does not expose the flank of the phalanx (Plutarch, *Demetrius* 29.3). Heavy cavalry, used to close-quarter combat, are largely ineffective against elephants. Without missiles or sarissas to harass and turn the elephants, or kill their mahouts, they could achieve little success. It was Demetrius' inability to return to the battle that cost Antigonos both the victory and his life (Plutarch, *Demetrius* 29).

Fuller mistakenly believes that the adoption of war elephants as a "shock arm" was the "greatest innovation of all" in Hellenistic warfare.⁷¹⁰ Ducrey even goes so far as to blame the demise of Macedonian cavalry on the increased reliance on war elephants:

After the death of Alexander, the cavalry gradually lost its importance as a tactical arm. There are a number of reasons for this: one was the growing weight and size of the phalanx, increasingly monolithic and apparently invincible; another, the appearance and widespread use of the war elephant. Like the cavalry and chariots, the elephants were regarded as a mobile unit, capable of a number of maneuvers, including surprise attacks and. Above all, encirclement.⁷¹¹

This is certainly going too far. The Successor kingdoms could not produce elephants in significant numbers to replace cavalry. Elephants rarely breed in captivity, even with today's methods of artificial insemination (Kistler 2007: 68-69). With the exception of Egypt's elephant capture program⁷¹² and the Seleucid Empire's limited breeding program at Apamea,⁷¹³ Hellenistic kingdoms had to rely upon captured elephants, and once those used by Alexander's immediate Successors died, very few were found to replace them. The demise of the heavy cavalry in the third century has nothing at all to do with the use of war elephants, and much to do

⁷⁰⁹ It is for this reason that the Seleucid Empire set up the national cavalry training facility at Apamea in Syria alongside the elephants (Strabo 16.2.10).

⁷¹⁰ Fuller 1945: 32.

⁷¹¹ Ducrey 1986: 183.

⁷¹² Casson 1993.

⁷¹³ Bar Kochva 1976: 79 argues that the Seleucid elephants in Apamea, and those used in battle, were nearly all bulls and so could not produce a large new herd.

with the over-reliance on the sarissa phalanx and the depletion of the supply of horses and those experienced with riding them in battle, as I argue elsewhere (Wrightson 2013).

The allied generals' execution of the battle plan at Ipsus was perfect in its use of combined arms, employing elephants, infantry, cavalry and missile troops in harmony to attack the enemy's weaknesses while eliminating their own. Ipsus demonstrated the final phase in the perfection of integrated warfare, getting the best use out of elephants. It is clear that "At Ipsus, the elephants played a decisive role," (Kistler 2007: 67) and Gaebel (2002: 226) is perhaps right when he argues that the battle of Ipsus was "the greatest achievement of war elephants in Hellenistic military history."

Combined Arms Conclusions

Elephants briefly transformed warfare in the Hellenistic World but it took time for generals to understand how best to make use of the animals and to overcome their deficiencies—an integral part of the theory of combined arms. It was not until the battle of Ipsus that the allied generals got the best out of every unit, including elephants, while simultaneously protecting the weaknesses of each. Ipsus then is the battle that reveals the effectiveness of integrated warfare in the Greek world and is the culmination of all the developments in combined arms that had occurred before.

Postscript: Field artillery

As discussed above, artillery played only minor roles in the field armies of the ancient world on account of the lack of easily maneuverable light machines. There are only a few examples in any of our extant sources from the whole of the ancient world.⁷¹⁴ There must have been other instances of the use of artillery in battle but unfortunately our lack of military-focused sources has denied us any other accounts.⁷¹⁵ Field artillery is an aspect of combined arms that is not a necessity but one which obviously increases the offensive power of missiles. Since missile troops

⁷¹⁴ Since there are so few instances of field artillery being used in a pitched battle, as opposed to sieges, it is not necessary to enter into a critical analysis of the sources.

⁷¹⁵ Marsden 1969: 164-8 outlines all the instances in the Greek world.

can assume the same role as artillery, and are more mobile, there are few instances of the use of field artillery in the ancient world; their use was reserved for siege warfare.⁷¹⁶

Philip's defeat by Onomarchus, general of the Phocians in the Third Sacred War, marks the first use of artillery in a pitched battle.⁷¹⁷ Polyaeus is the only source who provides the details of this battle. He states,

Onomarchus, drawing up his men in battle order against the Macedonians, occupied a crescent shaped mountain in his rear. After he had concealed stones and stone throwing catapults in the ridges on both sides, he led his forces into the underlying plain. When the Macedonians, coming against them, hurled their javelins, the Phocians pretended to flee into the midst of the mountain. The Macedonians in spirited and quick pursuit pressed against them, but the Phocians by discharging stones from the ridges shattered the Macedonian phalanx. Then Onomarchus signaled the Phocians to turn around and close with the enemy. The Macedonians, with their adversaries attacking them from the rear and throwing stones at them from above, were put to flight and retired with much suffering.⁷¹⁸

Onomarchus was able to use catapults in this battle only because he had time to secretly deploy them well in advance of Philip's arrival and he was able to bait Philip to come within range. Had Philip attacked from a different direction Onomarchus catapults would have been ineffective.

The only other occasions in our period of interest where artillery was used in battle was by Alexander to cover his withdrawal against the Illyrians,⁷¹⁹ and to cover his crossing of the river Jaxartes in Sogdiana against the Scythians.⁷²⁰ There, the few casualties inflicted and the

⁷¹⁶ Marsden 1969: 164-8 notes that there were no mobile catapults until the introduction of the *carroballista* in 100 CE. See Keyser 1994 for Philip and Alexander's use of artillery.

⁷¹⁷ Diodorus 16.34; Polyaeus 2.38.2.

⁷¹⁸ Translated by Krentz and Wheeler 1994.

⁷¹⁹ Arrian, 1.6.8. His war against the Taulantians and Illyrians lasted a few days and involved a number of conflicts. After one battle Alexander was forced to withdraw his army over a river to engage the enemy on the other side. To cover his army he led the archers and Agrianian javelin men to keep the enemy at a distance. When he realized that he needed more firepower he "set up his engines on the bank and ordered every kind of missile to be discharged from them at furthest range" and succeeded in covering his army's withdrawal.

⁷²⁰ Arrian, 4.4.4. Curtius (7.9) states that Alexander placed his artillery on rafts in the middle of the river. The great range of the missiles, as described by Arrian, suggests the machines were set up on the bank. Since they were

impression of the weapons caused the Scythians to flee. On both occasions Alexander used artillery to cover the difficult and lengthy crossing of a river in the face of enemy fire. He needed to force back the enemy using missiles to screen his river crossing.

Clearly Alexander had artillery in his army while on campaign but most of his battles were fought in an offensive manner without giving him the time, or perhaps need, to deploy static artillery to aid his attack. Against the Persians such static artillery would have been vulnerable to the enemy cavalry, since at Gaugamela his baggage was raided behind the main Macedonian battle line (Arrian *Anabasis* 3.14.5-6; Curtius 4.9; Diodorus 17.59.5-8). At the Granicus he did not need to create time for a crossing since the river was shallow enough to allow his army to march over (Arrian, *Anabasis* 1.12-16; Diodorus 17.19-21; Plutarch, *Alexander* 16; Justin 11.6). At Issus he fought the battle as soon as his army arrived at the river Pinarus and so he had no time, or need, to deploy his artillery train, which must have been left behind because of the speed of his march (Arrian *Anabasis* 2.7-11; Curtius 3.8-11; Diodorus 17.32-34; Justin 11.9).

Artillery had its benefits over missile troops but its cumbersome nature prevented widespread use. Onomarchus and Alexander were happy to use artillery when firing from a position where the machines could not easily be attacked or forced to move quickly. Nevertheless it is clear that the Macedonian armies of Philip and Alexander were not averse to using artillery in a battle if it proved beneficial.

intended to only support the crossing until Alexander could land his archers ahead of his other units, the machines would not need to have been taken across the river themselves. Remaining on the bank they could fire over the heads of Alexander's soldiers until the beachhead was established well enough for the archers and Agrianes to take over the missile bombardment.

Chapter 4: Battle Case Studies

Plataea

The first case study for Greek warfare is Xerxes' invasion of Greece and the battle of Plataea.⁷²¹ Here the many controversies surrounding logistics, route, and personalities are not of concern. Instead the focus is on the military and tactical aspects of the campaign, primarily the battle at Plataea. However before examining the battle itself it is necessary to comment on the make up of Xerxes' army in his invasion of Greece in order to see if it relied on combined arms.⁷²² This battle is the first case study for combined arms because for the first time the full Persian Royal Army came up against the largest Greek army ever assembled by the various poleis. As a result Plataea serves as a perfect starting point to determine the level of combined arms in each army, and exhibits the main differences between the styles of warfare of the east and west.

Xerxes' army

The troop totals given by Herodotus for Xerxes' army are certainly too large. Logistically, it would have been impossible for the Persian Empire to support over 1,700,000 men, let alone the innumerable camp followers and attendants. Alexander the Great was able to take an army of over 50,000 men through Asia from Greece, but he still had a number of worries about supplies.⁷²³ The armies of the Successors of Alexander often reached 150,000 men if you include both sides.⁷²⁴ Certainly then Asia Minor and northern Greece were capable of supporting an army of at least 150,000.⁷²⁵

While Xerxes was preparing the expedition's army he also had his logistical corps throughout the Empire preparing provisions for his march and storing it in the most fitting places on his route to Greece (Herodotus 7.25). It is likely that all the cities and peoples under his sway, especially on his line of march, were instructed to use the four-year grace period to begin storing supplies for his large force, not just the Phoenicians and Egyptians Herodotus mentions (7.25). Therefore the army did not have to live off the land. Food items could have been prepared, and

⁷²¹ The main source for the battle is Herodotus. The problems with his account have been discussed above.

⁷²² The Persian army has been discussed in detail above in chapter 1.

⁷²³ See Engels 1978.

⁷²⁴ See the battle of Ipsus below (Plutarch, *Demetrius* 29).

⁷²⁵ Munro 1902 calculates that 180,000 people are the most that the area of Thrace can supply adequately. Maurice 1930, using water availability, rates of march, and 20th-century army reports, calculates that Xerxes' fighting force can have been no more than 150,500 with 60,000 non-combatants accompanying the army.

certain amounts of water could be stored for a while. Xerxes had almost complete naval dominance over Asia Minor and therefore could use his considerable fleet to continuously resupply his army with both water and food.

The Persian logistical corps was very capable. They were able to carve a canal through Mount Athos (Herodotus 7.22.1) wide enough for two triremes side by side (7.24) and build not one, but two bridges of boats across the Hellespont (7.34-36). The Persian Royal Road system and the extensive navy would maintain provisions for the army, and the tales given by Herodotus (7.43) of the army drinking rivers dry are plausible though somewhat exaggerated, if you include all the horses and other animals alongside the soldiers and non-combatants.

Unlike the Successors, Xerxes spent a considerable time gathering his forces. Xerxes spent over four years assembling his force (Herodotus 7.20.1) so the final total of men, goods, and ships had to have been at least four times greater than the normal army that was ready for immediate action. The Persian force at Marathon was probably somewhere between 25,000 and 90,000 men, as discussed above. This army took just over a year to assemble and was not a Royal army involving the bodyguard units. Xerxes' army took over four times as long to gather, suggesting a total between 100,000 and 360,000 men. In view of this, it seems probable that his expedition numbered somewhere between 200,000 and 300,000 men, including camp followers and aides. The actual fighting force was probably on the lower end of the scale although we cannot be certain. This was still by far the largest army ever fielded in Greece at the time and would have been impressive to all observers.

Herodotus 7.82 states that the infantry force of Xerxes' expedition to Greece was organized into six divisions, each commanded by a senior Persian. The army marched in three columns, one of which was led by Xerxes (Herodotus 7.121). Modern divisions are usually 20,000 men and this comparison is used by Maurice 1930 to arrive at his figure of 150,500 fighting troops in the army. This seems a plausible number to me and maintains a ratio of roughly 10:1 for Herodotus' figures to reality.⁷²⁶

The non-combatants accompanying the Persian force were probably very numerous. Herodotus 9.76 states that after Plataea the courtesan of one of the 29 Persian infantry commanders and her attendants were spared by the Spartan commander, Pausanias, because she

⁷²⁶ As discussed above, Green (2006: 46-7, 74) proposes a distortion of 10:1 in Greek historians after a misunderstanding of numerical representation.

was the daughter of his guest friend. The fact that one of the relatively junior Persian officers was accompanied at Plataea by a courtesan, and that she had more than one attendant, demonstrates the large number of camp followers in the Persian force. If we follow the list of attendants accompanying Darius III at Issus,⁷²⁷ Xerxes was followed by a very large retinue. Herodotus 9.82 states that his tent was left behind with Mardonius after Salamis and upon finding it Pausanias ordered Mardonius' chefs to prepare a meal. If we trust Herodotus, Xerxes and his generals enjoyed enormous luxury on campaign with their accompanying families and personal staff perhaps numbering in the hundreds.

The exact number of Xerxes' force is impossible to determine for certain but the makeup of his army was similar to other Persian military levies.⁷²⁸ The Persian units, in particular the Royal Bodyguard units, were very well trained and experienced and were used as the decisive force in battle, as discussed above. The Persian strength was in cavalry and other missile troops depending on the mass of missiles to weaken the enemy lines. As discussed above, most of the Persian infantry were lightly armed and reliant on archery and missiles. Other than the Greek hoplites from allied or subject states, only the Persian and Babylonian infantry were heavily armed and even they still used the bow as their principal weapon.⁷²⁹

Although Herodotus' army totals for infantry and cavalry are far too large, there is no reason to doubt that many if not all the peoples he mentions (7.61-96) did indeed send levies to Xerxes. The vast majority of Xerxes' army was light infantry and the navy boasted more heavy infantry on board ship than serving in the land army. Even the 10,000 Immortals in the Royal Bodyguard were trained as individual warriors and were expected to excel with the bow first and then the spear.

After the defeat at Salamis, Xerxes allowed Mardonius to select the troops he wanted to remain with him in Greece. Herodotus 8.113 lists the following troops: the Persian Immortals, the Persian spearmen, and the picked Persian cavalry also from the bodyguard units, the Medes, Sacae, Bactrians and Indians, both cavalry and infantry. To these he added personally selected men from the other nations. Herodotus gives the total of 300,000 but Mardonius' army probably

⁷²⁷ See Athenaeus 13.608 for a list of Darius' equipment.

⁷²⁸ Herodotus 61-96 is the full list of all the troops martialled for the invasion of Greece.

⁷²⁹ Herodotus 7.61-63.

numbered between 30,000 and 50,000.⁷³⁰ These were the best troops on offer in Xerxes' whole army. Yet even in this force Mardonius had only the Greek contingents for close-quarter heavy infantry. Since, as discussed above, the Persian style of battle did not utilize heavy infantry, this did not matter to Xerxes or Mardonius. They still expected to be able to rely on their excellent cavalry and sheer volume of missiles for victory.

The Greek army

The Greek force at Plataea is outlined by Herodotus 9.28-31.⁷³¹ The totals are 38,700 hoplites and 69,500 light infantry.⁷³² This is a large number of light infantry. Most attention of scholars is given to the Spartan contribution of 5000 hoplites each accompanied by seven helots and how they were used in the battle.⁷³³ 70,000 light infantry is a large number for the Greeks to field if

⁷³⁰ In general a tenth of Herodotus' numbers often proves to be more accurate for actual troop totals (Green 2006: 46-7, 74).

⁷³¹ Beloch and others argue that Herodotus' troop totals are based on known figures or rounded estimates. See Beloch 1916: 2.2.74-77; Anderson 1970: 237-239 *contra* Lazenby 1985: 50-54.

⁷³² He lists in order from the right wing: 10,000 Lacedaimonians accompanied by 35,000 light armed helots. 1500 Tegeans, 5000 Corinthians, 300 Potidaeans, 600 from Orchomenos, 3000 from Sicyon, 800 from Epidaurus, 1000 from Troezen, 200 from Lepreum, 400 from Mycenae and Tiryns, 1000 from Phlius, 300 from Hermion, 600 from Eretria and Styra, 400 from Chalcis, 500 from Ambracia, 800 from Leucas and Anactorium, 200 Palleans, 500 from Aegina, 3000 from Megara, 600 from Plataea, 8000 Athenians all hoplites and another 34,500 light infantry alongside the helots. He also states that 1800 men surviving from Thespieae were present though not fully armed as hoplites. Herodotus also states that during the ten day delay at Plataea the Greek force continually increased with new arrivals.

⁷³³ Hunt 1997 argues that the helots made up ranks two to eight in the Spartan phalanx behind a line of Spartiates. Cornelius 1973 argues that they made up the final six ranks. If this is true it does show that the classical phalanx full of densely packed hoplites was not yet in use in Sparta. Some scholars argue that the helots were at the battle but did not fight, some that they did fight and some that they are added mistakenly by Herodotus. See: Grote 1848: 62; Grundy 1901: 443, 501; Munro 1904: 152-153.; Macan 1908: 352; How and Wells 1912: 298, 364; Beloch 1916: 2.2.78; Hignett 1963: 438; Green 1970: 266; Burn 1984: 505; Garland 1988: 169; Barron 1988: 597; Ducat 1990: 158. Welwei 1974: 123 argues that the helots protected the supply lines and acted as personal attendants. Tritle 2010: 87 argues that many, if not all, hoplites in the Spartan force at Pylos were accompanied by a helot attendant to act as batman, and who "could also serve as light-armed fighters." See also: Lazenby 1993: 228. Cawkwell 1983: 385-400 is probably right when he argues that the Perioikoi fought in the Spartan phalanx behind the Spartiates. On the other hand Cartledge 1979 is certainly incorrect when he dismisses the existence of 35,000 helots at Plataea as a danger to the Spartans since light infantry could easily be used alongside the hoplite phalanx. It is not my concern here to examine the position and use of the helots since we are examining Plataea to determine the cause of the

their phalanx consisted of only hoplites. Nevertheless whether or not Herodotus' numbers are accurate, the Greek phalanx had to fight in a more open style in order to accommodate so many light infantry.⁷³⁴ Unless the light troops fought together as a unit separated from their hoplite countrymen, which Herodotus suggests was not the case, the Greek force was much more mixed in nature than has been generally assumed.

The battle

Before the two opposing forces met at Plataea there was an initial engagement at Erythrae on the slopes of Mount Cithaeron. There the Persian cavalry under Masistius repeatedly attacked the Greek line in order to force them down from their secure defensive position. Herodotus (9.20-3) states that the cavalry attacked in successive squadrons inflicting heavy losses and taunting the Greeks. The Persians fired arrows at the Greeks while wheeling their horses in front of the Greek forces. Each squadron rode up, discharged their missiles and withdrew, to be followed by the next wave (cf. Herodotus 9.18.1). The Persians did not assault the Greeks directly in a close quarter assault. If they had done so they would have been unable to taunt the Greeks or withdraw rapidly to allow the attack of the succeeding squadrons.

Herodotus 9.21.1 does say that they pressed on against the Megarians where the Greek line was most open and vulnerable to cavalry. This must mean where the Persians had the most space to wheel and shoot unheeded by the terrain on the mountain slopes. Masistius was killed after he was thrown to the ground when his horse was shot by a Greek archer (9.22.1-2). Herodotus is clear that the Persians did not notice this had happened until they had moved away since he fell just as they had wheeled about and retired for another charge (9.22.3). These are the tactics of cavalry firing missiles not charging in to fight at hand-to-hand with infantry.

Once the Persians learned that Masistius was killed, Herodotus states that they launched a massed attack from all the squadrons together in order to recover the body (9.23). Such an attack would have involved a cavalry charge at close quarters engaging the Greeks with spears and swords. The battle for Masistius' body was fierce and the Greeks got the upper hand once

Persian defeat rather than the Greek deployment. I agree with Van Wees 2005: 177-183 that the helots were included in an open phalanx formation interspersed among the hoplites, while others protected the flanks and opposed the Persian cavalry as light infantry.

⁷³⁴ Van Wees 2005: 173-7.

reinforcements came up. The Persian cavalry was more than capable of engaging infantry at close quarters with some success.

It must be stated that the 300 Athenians, who suffered greatly from the cavalry charge before the arrival of the Greek support, must have been outnumbered (9.21.3, 9.23.2). They certainly included all the Greek archers (9.22.1). This explains to some degree the ability of the Persian cavalry to contend for Masistius' body. As soon as the main force of Greek hoplites approached the Persians were forced to retreat with significant losses. The principal form of attack of the Persian cavalry was to fire missiles while wheeling their horses in front of the enemy line. Only when they were forced into a direct assault, either through the approach of the enemy or to recover a commander's body, did they engage at close quarters. Once they did so against the Greeks they were unable to match the ability of the hoplites in hand-to-hand combat.

At the main battle of Plataea Mardonius stationed the Persians, as his best troops, opposite the Spartans and Tegeans (9.31.1-2). The other national contingents posted in the front lines, according to Herodotus, were the Medes, the Bactrians, the Indians, the Sacae, and then the Greeks in the Persian army (9.31.3-5). The rest of the units were stationed behind these units (9.32). The Greeks' defensive position on the river Asopus was such that the two armies faced each other for ten days before the final battle was begun.⁷³⁵

All the time the Persian cavalry continually harassed the Greek lines in an attempt to provoke a battle (9.40). Eventually Mardonius decided to attack at dawn (9.42.4). During the night the King of Macedon informed the Greeks of this plan (9.44-45). The Spartans decided the Athenians should face the Persians because they had experience fighting them at Marathon (9.46). Mardonius was informed of the movements and followed the Spartans, who returned to their previous position opposed still by the Persians (9.47). The Persian herald inquiring the cause of Spartan movement was ignored so Mardonius ordered his cavalry to attack (9.48).

On the eleventh day the Persian cavalry launched a larger attack on the Spartans (9.49). The Persian cavalry, as horse archers, proved difficult for the Greeks to handle being unable to fight them at close quarters. The Persians also polluted the spring (9.49.2) providing the Greeks with water forcing them to decide to withdraw during the night to the river Oeroe if the rest of the Persians did not attack (9.50-51). Eventually the Greek line moved out to their new position (9.52-57) prompting Mardonius to order a rapid general advance at speed and in disorder (9.59).

⁷³⁵ Herodotus, 9. 19-70; Plutarch, *Aristides* 11-19; Diodorus, 11.30-32.

The Persian cavalry quickly caught and attacked the Spartans, who were hard pressed and so asked the Athenians for assistance, especially for their archers (9.60). The Athenians were detained by Greek hoplites fighting on the Persian side (9.61.1). The Persian infantry arrived and joined in the missile bombardment of the Spartans. Herodotus 9.61.3 states that

many of them [the Spartans] fell in this time, and more by far were wounded, for the Persians had made a barricade of their wicker shields and from the protection of it were shooting many arrows unsparingly.⁷³⁶

The Spartans (and Tegeans) withstood the missiles of the Persians and waited for favourable omens before launching an attack (9.61.2).

Once they did attack the Persians stopped firing missiles and prepared to fight at close quarters (9.62.1). Eventually the Spartans forced back the Persians once they broke through the wicker shields of the front rank of spearmen (9.62.2). Herodotus 9.62.3 states that the Persians fought bravely, though they were less well armed and trained, and greatly inferior in skill. They fought on until the death of Mardonius and his bodyguard (9.63) even though they were light armed with no armour (9.63.2). The Persians fled to a temporary fort in Theban territory (9.65.1). With the arrival of the Athenians, following their defeat of the Boeotians (9.67), the Greeks forced an entry into the fort and prompted a general retreat (9.70.2-5). The rout spread to the rest of the Persian army despite a large number of troops who had not yet been engaged in the battle thanks largely to Artabazus not really wanting to fight (9.66). Herodotus states that the cavalry was the only unit of the Persians that was not routed and some units actually covered the line of the Persian retreat (9.68).

Combined Arms

What we can see at Plataea is that the Persians relied on cavalry and missiles for victory. The cavalry used harassing tactics throughout the battle only engaging once to recover the body of their general. Herodotus gives no indication that the Persian cavalry entered the melee to fight hand-to-hand once the Greek line closed on the Persian infantry. This may explain why the cavalry escaped the battle relatively unscathed.

When a Persian army fought against an enemy whose line was not broken by the volume of missiles, the Persian infantry was ill equipped for close-quarter combat. The defensive armour of the Greek hoplites was sufficient to protect them during eleven days of constant missile

⁷³⁶ This is my own translation.

bombardment with few casualties. The Persians must have been perturbed by the ineffectiveness of the prolonged missile attack but still relied on their superior numbers for victory.

It is not clear how the many light infantry on the Greek side were used in the battle. They probably fought alongside the hoplites in a more open phalanx formation, as argued by Van Wees 2005. However they were used, the victory was won by the superiority of the Greek hoplites in hand-to-hand combat. The disorganised nature of the final Persian attack may have indirectly allowed the Greeks the freedom to attack and defeat sections of the Persian army individually rather than face the whole force. But the Greeks may have also proved victorious in a general engagement.

*Syracuse*⁷³⁷

The failed Athenian expedition to Sicily was a critical event in the Peloponnesian War causing Athens to lose their best general in Demosthenes, thousands of soldiers and an entire navy. It is the only case study for the Peloponnesian War as it demonstrates well the Athenian army's reliance on hoplites and its inability to cope with the Syracusan combined arms forces reliant on cavalry in terrain well suited to its deployment.

Sources

The principal source for the expedition is Thucydides. Plutarch also gives some information about a few of the battles in his *Life of Nikias*.⁷³⁸ Since there is so little information about this campaign elsewhere it is necessary to rely on Thucydides.⁷³⁹ Fortunately he provides numerous details about the tactics employed in the battles and even comments himself on the crucial final battle of Epipolae, as discussed below.⁷⁴⁰

The Campaign

The Athenian fleet was 134 ships including the transports carrying 5,100 hoplites, 480 archers, of whom 80 were Cretan, 700 slingers, 120 peltasts from Megara and thirty horses on one

⁷³⁷ For the best and most recent secondary discussions of the campaign see in particular Roisman 1993; Hutchinson 2006; Fields 2008; Champion 2010.

⁷³⁸ Plutarch's account of the Athenian attack on Sicily may have been influenced by Sicilian historians: Pearson 1987.

⁷³⁹ For Thucydides' use of the Sicilian sources see Bosworth 1992.

⁷⁴⁰ For Thucydides' battle descriptions with particular reference to Epipolae see in particular Paul 1987.

transport (6.43).⁷⁴¹ Nicias in his speech argued that the Syracusan strength was in cavalry (6.20.4) and that the Athenians should field an army containing many hoplites, but in particular a great number of archers and slingers to counter the enemy cavalry (6.22).⁷⁴² The lack of cavalry in the Athenian army demonstrates their reliance on infantry in battle. In open terrain such as on Sicily light infantry was insufficient to contain the Syracusan cavalry, as the Athenians would discover. Thucydides 6.64 makes clear that the Athenians realised their deficiency in cavalry would be a problem and so were forced to trick the Syracusans in order to land safely in Sicily. It seems to have not occurred to the Athenians that they should field more cavalry in order to match the Syracusan strength, rather than rely on allies in Sicily to do so (cf. 6.21.1).

The first battle for Syracuse was at Olympeium in 415 (Thucydides 6.67-71; Plutarch, *Nicias* 16). The Athenians were able to land unmolested after fooling the Syracusans and prepared for battle choosing a narrow location where the Syracusan cavalry could not fight effectively (6.66).⁷⁴³ The Syracusans had no choice but to send in their hoplites against the Athenian phalanx stationing the cavalry and light infantry on the wings as usual. The engagement began with the light infantry skirmishing between the two armies (6.69.2). Then the hoplite phalanx of either side came to close quarters. Eventually the greater skill and experience of the Athenian forces sent the Syracusans into retreat.

After the battle the Athenian generals decided to use the oncoming winter to send for a strong cavalry force either from Athens or its allies (6.74.2). Thucydides (6.71.2) states that it did not seem possible to continue the war without such forces, again showing the Athenian oversight in not bringing cavalry to begin with. Perhaps the biggest strategic blunder of the Athenians was to abandon their hard won and advantageous position next to Syracuse at Olympeium and move camp first to Naxos on Sicily and then to Catana (6.88.3-5, cf. 7.42.3). The next summer (414) Athens sent cavalry reinforcements to the sum of 250 horsemen without horses and thirty horse

⁷⁴¹ Bugh 1986 (cf. 1988: 12 n. 44) argues that these thirty horsemen were heralds to induce other Sicilian cities to join Athens and not as cavalry.

⁷⁴² Gomme Andrewes and Dover 1970: 257 state that it is noteworthy that Nicias does not intend to transport cavalry and suggest that “it was simply not practicable to transport enough cavalry with their horses to make much difference.” Hornblower 1991-2008: 3.357 (6.21.1) merely remarks that “[i]t is remarkable that Nicias does not actually ask for a large cavalry force, merely for a large infantry force to cope with the cavalry superiority of the enemy.”

⁷⁴³ The site was enclosed by houses, trees and a marsh on one side and by cliffs on the other (6.66.1).

archers (6.94.4).⁷⁴⁴ With this cavalry, once horses were procured, the Athenian army would be able to engage the Syracusans with a combined arms army. However, they would still be deficient in cavalry fighting in terrain that favoured cavalry maneuvers and against an enemy who had horsemen of excellent quality.

The next conflict between the two sides was the first battle of Epipolae (Thucydides 6.97; Plutarch, *Nicias* 17). This place was a flat hill overlooking the city of Syracuse and both sides realised its strategic importance (Thucydides 6.96). The Athenians managed to steal a march on the Syracusans and seized the heights first while the enemy were holding a review of the troops. The Syracusan response was to send soldiers against the Athenians as they were available and having to cover over 3 miles of ground (6.97.3). As a result the Syracusan units attacked individually and were easily beaten back by the Athenians.

Straight after the battle the Athenians received around 400 allied cavalry bringing their total horsemen to six hundred and fifty (6.98.1).⁷⁴⁵ The Athenians began construction of a wall to circumvallate the city. Syracuse sent out its whole army but pulled back the infantry for fear of defeat on account of their disorder. The cavalry remained and harassed the Athenians until a force of hoplites and the Athenian cavalry drove them away (Thucydides 6.98.3-4). The Syracusans began building a counterwall to intersect the Athenian construction (6.99). When the Athenians did not come out to stop them most of the Syracusans went back to the city. The Athenians waited until lunchtime and then sent a rapid attack force of 300 chosen hoplites and other light infantry to seize and destroy the Syracusan wall (6.100.1-3). This they did effectively though suffering a number of casualties.

The next day the Syracusans began another counter wall and again the Athenians sallied to destroy it (6.101.1-3). The Syracusan forces were beaten back until the same Athenian picked force of 300 men strove to cut off their retreat (6.101.4). The Syracusan cavalry and some of the retreating infantry closed on the Athenians and threw them back in disorder on to the Athenian right wing prompting the retreat of another force of Athenian hoplites (6.101.5). The Athenian

⁷⁴⁴ See Hornblower 1991-2008: 3.1061-6 for a good discussion of the troop totals Athenian army including an estimate of battle casualties.

⁷⁴⁵ As Hornblower 1991-2008: 3.527 (6.98.1) emphasizes, even after the reinforcements the Athenian cavalry was still only half the size of the Syracusan force. Diodorus 13.44.1-2 states that 600 cavalry also arrived from Campania thus making both sides virtually equal in cavalry: see Frederiksen 1968.

general Lamachus came to the aid of this wing with hoplites and archers but was killed when stranded across the river (6.101.6). The rest of the Syracusan army came out and succeeded in destroying a large section of the Athenian wall (6.102.1-2). Other Athenian troops came up and the Syracusans retreated into the city (6.102.3-4).

After this, Gylippus, a Spartan general, arrived at Syracuse with a force of seven hundred marines and sailors, a thousand heavy infantry and light troops from Himera with a hundred cavalry, and a thousand other allies (Thucydides 7.1.4-5). Gylippus joined with the Syracusan army and offered battle to the Athenians in the open plain of Epipolae but Nicias, now the sole Athenian general, refused to leave the fortification wall (7.3.3). The next day Gylippus again offered battle while sending a force to take an Athenian fort in secret (7.3.4). The Syracusans and the Athenians continued to build their respective walls, with Gylippus offering battle on Epipolae.

Eventually the Athenian army decided on an engagement and the two sides met at the second battle of Epipolae (Thucydides 7.5-6). The battle was fought in the confined space between the two fortification walls and did not provide enough room for the Syracusan cavalry and light infantry to be of use. As a result the Syracusans fled after sustaining many casualties (7.5.2-3). Gylippus took all the blame for the defeat for not utilising the cavalry in a combined arms manner and vowed to do so in future (7.5.3-4).

Gylippus led out the Syracusans again this time away from the walls onto the plain of Epipolae stationing the cavalry and missile troops on the right wing in the open spaces (7.6.2). At this battle, the Syracusan cavalry attacked the exposed Athenian flank. They easily routed the hoplites there and the retreat spread to the whole army, which fled behind the fortifications (7.6.3). The Syracusan cavalry now controlled the plains preventing the Athenians from venturing too far from their walls (7.11.4).

Nicias wrote to Athens demanding reinforcements or withdrawal (7.10-15). The Athenians sent Demosthenes and Eurymedon (7.16.2). Demosthenes left Athens with 1200 hoplites (7.20.2) without waiting for the expected thirteen hundred Thracian peltasts (7.27.1). Before he arrived Gylippus planned for a combined naval and land attack (7.21). The navy would attack the Athenians in the Great Harbour while Gylippus would attack the three Athenian forts around Plemmyrium (7.22.1). The naval engagement went badly for the Syracusans but Gylippus succeeded in taking all three Athenian forts largely because the defenders were

watching the sea battle and were caught by surprise (7.23). According to Thucydides the capture of the forts was the first and foremost reason for the subsequent destruction of the Athenian army denying them the full control of the harbour and denuding them of many provisions (7.24.3).

Gylippus launched another combined attack on land and sea after the Syracusans refitted their ships to aid them in battle (7.36). The ships set out again in the Great Harbour while Gylippus and the Syracusan troops from Olympeium attacked the Athenian fortifications from both sides (7.37). Each engagement was a stalemate and the Syracusans waited a day before another attack (7.38). This headed the same way until a Syracusan contrivance to move the market to the sea shore and refresh the troops for another unexpected attack in the afternoon (7.39). This worked well and the Syracusans won their first naval victory (7.40-41).

Eventually Demosthenes and Eurymedon arrived with five thousand hoplites, and a large number of light infantry (7.42.1). Demosthenes soon after his arrival determined that whoever controlled Epipolae would control the city (7.42.4-5). He tried to take the Syracusan wall with siege engines and attacks at various points but all his efforts came to nothing (7.43.1-2).

Demosthenes then decided to reverse Athenian fortunes with a full-scale night attack on the Syracusan camp and counter wall (7.43.2).⁷⁴⁶ Demosthenes' initial attack was successful (7.43.5-6) routing various Syracusan forces but as the Athenians pressed on their ranks became disordered (7.43.7). In the darkness the Athenians could not tell friend from foe and so called out their password to everyone (7.44.1-5). The Syracusans were still in formation and, armed with the password, easily overcame the Athenian survivors (7.44.5). Some of the Athenians even began attacking each other (7.44.7). The next morning the Syracusan cavalry mopped up the remaining Athenians (7.44.8).

After this disaster Demosthenes argued for going home to save the army and fleet and use it against the Spartans at Decelea (7.47). Nicias argued they should stay because the Syracusans were in a difficult financial state and therefore likely to succumb at any moment (7.48). Demosthenes argued that it was a strategic necessity to abandon the siege and withdraw into another area where the troops could live off the land free from the Syracusan cavalry (7.49.2). Nicias' argument won until the Syracusans received reinforcements from Sicily and the

⁷⁴⁶ Thucydides (7.44.1) states that this was the only night battle in the war. He is incorrect, but this is the only instance of such a full-scale attack being conducted at night. Its disastrous result for the Athenians is probably the reason for his emphatic statement. See Pritchett 1985: 160-171 for an analysis and list of other Greek night attacks.

Peloponnese (7.50.1-3). The Athenians decided to leave but an eclipse of the moon persuaded the soldiers and Nicias to stay longer (7.50.4).

Gylippus and the Syracusans planned another combined attack on land and sea and the navy practised for a few days (7.51). The attack in the harbour went well and the Syracusans succeeded in killing the Athenian general Eurymedon (7.52). Gylippus took troops to the harbour side to cut off and capture the Athenian sailors but was forced back by Tyrrhenians fighting for Athens (7.53.1-3). The Syracusans were encouraged after this engagement that their navy could match the Athenian.

The Athenians decided that their position was untenable and determined to make a final push for command of the sea by manning the ships with troops from the army, and if they failed to retreat en masse across land after burning the fleet (7.60). The Syracusans noticed what was happening and prepared for the upcoming sea battle (7.65). Some soldiers prepared to capture beached Athenian sailors and the rest of the army was ready to march out against the Athenians (7.70.1). The battle was hard fought but the Syracusans eventually forced the Athenians to fall back (7.70-71).

Demosthenes argued that they should try to force a way out with the fleet again since they still held an advantage in numbers, but the sailors refused despairing after the defeat (7.72). They all then agreed to retreat overland and set about preparing to do so (7.73.1). The Syracusan general Hermocrates tricked the Athenians out of escaping at night by sending news that the roads were blocked (7.73.3-4). The Athenians then stayed an extra day to pack up their belongings before heading out (7.74.1). This delay gave the Syracusans time to set up guards at all the likely routes of escape for the Athenians (7.74.2).

The demoralised Athenian army set off (7.75) marching in a hollow square of hoplites with the baggage and light infantry inside (7.78.1). The Syracusan cavalry and missile troops constantly harassed the Athenian force causing numerous casualties (7.78-79). Demosthenes and Nicias then changed the route of the march and headed off secretly at night but the forces of the two generals became separated (7.80). Gylippus and the Syracusans overcame Demosthenes first surrounding and harassing his men with cavalry attacks and missile barrages (7.81). Demosthenes was forced to surrender while Nicias continued his retreat (7.82). Eventually the Syracusans caught up with Nicias' force too and harassed his march in the same fashion (7.83-84) achieving the same result of the surrender of the army (7.85.1). Demosthenes and Nicias

were killed, contrary to Gylippus' desire, and the rest of the Athenian army were put to work in the stone quarries (7.86.2).

Combined Arms

The Athenian disaster at Syracuse is the perfect example of the difficulties of opposing a combined arms army when lacking in one arm, in this case cavalry. The Syracusan cavalry first used guerrilla tactics to harass the Athenians while they were building the wall to cut off the city. Their control of the countryside limited the actions and foraging of the Athenians. Although led by an experienced Spartan general it was the ability of the Syracusan cavalry that defeated the Athenians and eventually led to the defeat of the whole Athenian expedition. This was perhaps a more important development than the victories of either Demosthenes or Brasidas, and the final second battle of Epipolae demonstrates well the vulnerability of the exposed flank of a hoplite phalanx to a cavalry charge.

The largest disaster, and the most important concern for a study of combined arms, is the failure of Demosthenes' night attack. He organised the Athenian army according to the principles of combined arms as much as possible with cavalry, light infantry, hoplites and siege machinery intended to act together against the Syracusan defensive walls. However, the amount of coordination of a combined arms army in a night action was too great for the largely semi-professional Athenian army even under the command of such a gifted general in Demosthenes.

Demosthenes overreached in his efforts to defeat the Syracusans at night. He had demonstrated twice previously the possibilities of a night attack with only light infantry to capture and hold an enemy position, at Idomene and Megara as discussed above, and he should have stuck with this more limited approach.

To have achieved his objective Demosthenes need not have taken the whole army on this enterprise (7.43.2). It would have been far safer on a night mission to take a smaller force, preferably only Ionians [light infantry], requisite for the task. These could have held their position until daybreak, at which time the remainder of the army could have come up in support....Demosthenes' first and only objective of that night attack should have been to secure a position on the Epipolae from which subsequent attacks could be mounted. In going for a complete victory the very size and composition of his forces produced the scenario for failure.⁷⁴⁷

⁷⁴⁷ Hutchinson 2006: 153. On the benefits of such an attack launched with only light infantry see above.

Demosthenes' execution by the Syracusans after the final Athenian defeat in the harbour of Syracuse robbed Athens of its first military innovator. Demosthenes was undone, as Roisman (1993: 63) states so succinctly, by his "fascination with military surprise, his optimism and self-confidence, and his penchant for quick and radical solutions" and he "ignored the lessons of his failures and selectively applied the lessons of his victories." His willingness to try a night attack with a full army shows his ingenuity, but his defeat shows that he lacked the required leadership and communication to make a coordinated mass attack of a combined arms army at night, a feat which was especially difficult in the ancient world.

*Chaeronea*⁷⁴⁸

Chaeronea was the battle that established Macedonian hegemony over Greece. It also demonstrated the superiority of Philip II's professional and multi-faceted army over the traditional Greek army reliant on a large phalanx of hoplites supported by a small force of light infantry and cavalry. As a case study it aptly demonstrates the advantages of a sophisticated use of combined arms in battle and marks the beginning of the decline of hoplite based armies.

Sources

The main sources for the battle are Diodorus, Plutarch, in his biographies of Demosthenes and Alexander, and Polyaeus.⁷⁴⁹ Polyaeus gives the only account of the tactical details of the battle, and is the only source to mention the feigned withdrawal. As a result most of this reconstruction follows Polyaeus with details added from the other sources.

The Battle

Philip advanced into Boeotia to confront the army of confederated Greek *poleis* led by Athens and Thebes. The two armies met on the plain in front of the city of Chaeronea. The Macedonian army totaled more than 30,000 infantry and 2,000 cavalry (Diodorus 16.85.5). The Greeks probably fielded a similar force, but no source provides detailed numbers.⁷⁵⁰ Diodorus (16.85.6) states that Philip held the advantage in numbers and generalship. The Greeks had drawn up their battle line on an angle, probably so that they had an escape route through the mountains behind

⁷⁴⁸ For secondary discussions of the battle see Hammond 1938; Adcock 1957; Rahe 1981; Ashley 1998; Beck and Buckler 2008. For the battle in the context of the other battles of the Macedonians see Pietrykowski 2009

⁷⁴⁹ Diodorus 16.86; Polyaeus, 4.2.2; Plutarch, *Alexander* 9.2; *Demosthenes* 20.

⁷⁵⁰ For the view that the Greeks had the greater numbers see Hammond 1938.

them. The Theban Sacred Band was placed on the Greek right wing by the river Cephissus, the traditional place for the elite infantry. The Athenians were stationed on the left flank protected by foothills and the citadel of Chaeronea. Philip drew up his forces at an angle to the Greek line. His right wing, led personally by him, was closest to the Athenians and his left, where Alexander was with the heavy cavalry, was refused. Philip had posted his light infantry and missile troops on his right flank in the foothills to prevent a flanking maneuver. This oblique starting formation of Philip mirrored the Theban battle line at Leuctra and Mantinea except that the left wing was refused instead of the right. This is the same formation Philip used in his first battle at Heraclea Lyncestis and became the standard deployment for Macedonian armies of the fourth century.

Philip advanced on the Macedonian right but Alexander remained stationary on the left. The sarissa phalanx held the Greek hoplites in place, protected by light infantry on the flank, and then pretended to withdraw up the hill. The Athenians thought that the Macedonians were retreating and pressed forwards at speed and without direct concern for maintaining formation. The Sacred Band remained where they were, unwilling to expose their flank resting on the river in the face of Alexander's cavalry, with the result that the Greek line was stretched and their formation disrupted. Alexander then attacked the Sacred Band leading the Companion cavalry. Philip, once his retreating phalanx had got onto a slight rise in the ground, attacked the disordered Athenian hoplites and broke them easily. The whole Greek line broke and fled, except for the Sacred Band who fought to the last man.

Polyaenus (4.2.2) details the feigned withdrawal as a key stratagem of Philip. This must have been done in order to create an opening for the heavy cavalry to charge into the Greek phalanx and force the victory. It is not clear whether Alexander exploited a gap that had been created by the extension of the Greek line, or whether he merely attacked them head on. Diodorus (16.86.3) states that Alexander was the first to break the Greek line, and Plutarch (*Alexander* 9.2) states that he is said to have been the first to assault the Sacred Band.

Markle 1978 argues that Philip never armed his infantry with the sarissa and that those excavated at Chaeronea were used by the cavalry against the renowned Sacred Band. Thus when Plutarch (*Pelopidas* 18.5) records that the Sacred Band did not lose a battle until Chaeronea, and that when Philip, surveying the dead there, was amazed at the bodies of the Thebans mixed with the Macedonian sarissas, it was the sarissas of the cavalry. This would explain how Alexander

could break the formation of the Sacred Band by a frontal assault, if that is what he did.⁷⁵¹ However, the practicalities of the use of the cavalry sarissa in a frontal charge at the gallop are disputed.⁷⁵² Plutarch may have assumed that the Companion cavalry used sarissas just as the heavy infantry did.

It is more likely that Alexander's cavalry charged into the gap that occurred between the Sacred Band and the rest of the Greek line. Horses, no matter how well trained, would not charge the phalanx head on⁷⁵³ and the Thebans did not advance because they feared exposing their flank. Alexander's assault would have been more effective against the flanks and rear of the Sacred Band. The haste of the Athenian advance split the Greek line and created the gap.

Combined Arms

The Macedonian army was well trained and able to execute a very difficult tactical maneuver, retreating uphill while in formation and in the face of the enemy. But it was the effectiveness of the Macedonian cavalry led by Alexander charging into the gap in the Greek line that precipitated the defeat. This is the same tactic used by Alexander at all of his battles against the Persians, using tactical maneuvering to create a gap in the enemy line and then launching the heavy cavalry into that gap. At Chaeronea it was the combination of the discipline and steadiness of the heavy infantry phalanx and the offensive rapid attack of the heavy cavalry that was so effective. Philip's army perfectly executed a battle plan reliant on using the simplest form of combined arms to devastating effect—heavy infantry and heavy cavalry in combination.

Issus and Gaugamela

Alexander fought four main battles in his campaign against Persia but Issus and Gaugamela are the two that best allow for an examination of his use of combined arms. At each, Alexander's tactics were almost identical demonstrating the standard formation and actions of the Macedonian army in utilising combined arms in battle, as shown in the battles of Paraetacene and Gabiene below.

⁷⁵¹ See Rahe 1981.

⁷⁵² On the sarissa in the Macedonian army see in particular Andronicus 1970; Markle 1977; Hammond 1980; Mixer 1992; Devine 1996; Noguera Borel 1999; Sekunda 2001b; Heckel 2005b. On the cavalry sarissa in particular see Markle 1978; Manti 1983; Manti 1994; Connolly 2000.

⁷⁵³ Heckel et al. 2010.

Sources

Our sources for the battles are the Alexander histories of Arrian, Diodorus, Curtius and Justin and the biography of Plutarch.⁷⁵⁴ Arrian is the only author that provides a full description of the military details, rather than focusing on the actions of Alexander. Even so at Gaugamela Arrian confuses the details of the specific events of the battle, as discussed below. Nevertheless from these sources it is possible to reconstruct a relatively reliable version of the events of each battle.

*Issus*⁷⁵⁵

Alexander advanced into Cilicia in pursuit of Darius after he had subdued the cities on the coast of Asia Minor. Darius decided against advice to wait for Alexander in the wide open plains of Coele Assyria (Arrian 2.6) and advanced behind him through the Syrian Gates to cut off his supply lines (Arrian 2.7.1). Alexander turned back and the two forces met at the narrow plain of Issus.

Arrian and Curtius are clear that the battle of Issus was fought across a river (Arrian 2.7.1; Curtius 8.13-15) and that the Persians were relying on the cavalry situated on their right wing. Diodorus 17.33.1 states that the Macedonian cavalry was drawn up in front of the line but there is no evidence for this.⁷⁵⁶ It is not clear which river was the river Pinarus that is mentioned in the sources as the place of the battle and it is also possible that Arrian's account of the banks as being precipitous (2.10.1) is because of his confusion with the riverbank at the Granicus.⁷⁵⁷

Darius was stationed in the centre of his line with the two forces of Greek hoplite mercenaries lining the bank on either side. Next to these were the better units of Persian infantry called the Cardaces, but these were probably only light infantry.⁷⁵⁸ The Persian cavalry was on

⁷⁵⁴ Arrian, 2.7-11; Curtius, 3.8.27-3.11; Plutarch, *Life of Alexander* 20; Justin, 11.9.1-10; Diodorus, 17.32-34.

⁷⁵⁵ For secondary discussions of the battle see in particular Murison 1972; Devine 1985a; Devine 1985b; Hammond 1992; English 2011. For the fullest critical source discussion see Bosworth 1980b: 285-313. For the battle in the context of the other battles of the Macedonians see Pietrykowski 2009

⁷⁵⁶ In fact Diodorus suggests that Alexander kept the phalanx in reserve behind the cavalry. He has probably confused Issus with the deployment of the Persians at the Granicus. Or his sources noted that Alexander sent out scouting cavalry while still marching to the battlefield and he thought it was the battle deployment.

⁷⁵⁷ See Devine 1980; Hammond 1992. See also Bosworth 1980b: 203-4.

⁷⁵⁸ The Cardaces were infantry placed on either side of the Greek mercenaries and are said by Arrian to be hoplites. This is unlikely due to the placement of archers in front of their line, which would have been unnecessary and

the right wing by the sea where the terrain was the most open and suitable for a cavalry charge. In the foothills on the other side of the river Darius had left a small force of light infantry and cavalry in order to threaten Alexander's right flank.

Alexander countered the Persian formation by placing all the allied and mercenary cavalry on his left wing under the command of Parmenion, while he led the Companion cavalry against the Persian left. Next to Alexander were the hypaspists and the sarissa phalanx followed behind and to their left, opposite the Persian mercenary Greek infantry. Alexander advanced obliquely hoping to hold back his left wing under Parmenion and prevent it from being overcome by the numerically superior Persian cavalry. The Persian force in the foothills was neutralized by a small force of light infantry and cavalry allowing Alexander the freedom to advance against the main Persian army.

Arrian (2.10.1) states that the river bank up which the Macedonians had to fight was precipitous in many places and was in places reinforced by Persian defences. As the Macedonian phalanx advanced across the river its formation was disrupted because of the blockades. The Greek mercenaries took advantage of this situation and the fight for the banks was fierce.

The Persian cavalry charged at Parmenion's force thus overcoming Alexander's oblique formation. The Macedonian left under Parmenion managed to hold the Persian cavalry, largely on account of the superiority of the Thessalian cavalry. Alexander launched his heavy cavalry in a rapid charge against the Cardaces on the right. After routing them he turned to attack Darius in the centre.⁷⁵⁹ His flight caused the Persian line to disintegrate and the whole army to retreat in disorder, despite the efforts of the Greek mercenaries in the centre and the cavalry on the Persian right wing.

The success of the Greek mercenaries against the Macedonian phalanx seems to have almost tipped the balance of the battle towards the Persians. Arrian states that 120 Macedonians of note died in this part of the battle (2.10.7). Probably other not so notable Macedonians also died demonstrating the vulnerability of a divided and disorganized phalanx. The arrival of

disadvantageous for a hoplite phalanx. For a detailed discussion of the Cardaces see in particular Tarn 1948: 180-182; Bosworth 1980: 208.

⁷⁵⁹ Most of the vulgate sources focus on this event (Diodorus 59.8; Curtius 15.1-2). Alexander's personal prowess is contrasted with the cowardly actions of Darius in Arrian (2.11.4). The famous Alexander Mosaic found in a house in Pompeii emphasizes the later fascination with Alexander's heroic attack on Darius: see Cohen 1997.

Alexander on the flank and rear of the Greeks caused them to retreat thus saving the phalanx from probable defeat.

Alexander clearly adopted the oblique attack again. Although it is not specifically mentioned in any source that he held back his left wing, this seems to have been the best tactic for him to use. By refusing his left he would delay the Persian cavalry, albeit briefly, from overcoming his left and giving time for his right to win. Alexander's positioning of the attack on the right flank is reminiscent of the tactics at Chaeronea, and at Gaugamela. The break in the Macedonian phalanx that occurred in the centre, although adequately explained by the unequal nature of the terrain, is even more understandable if the left flank and centre of the Macedonians were to hold back while the oblique right flank attacked rapidly.

Combined arms

Alexander's army fully integrated all the types of unit available into the battle plan. At Issus, just as at Chaeronea, it was the effective combination of heavy cavalry and heavy infantry acting together that won the battle. The light infantry did little at Issus except for the crucial role of neutralizing the Persian force in the foothills. Nevertheless it is clear that Alexander's army was well trained and completely reliant on using cavalry and infantry together. In fact had the cavalry of Parmenion not fended off the Persian cavalry and Alexander's attack with the Companions not routed the Persian left wing the Macedonian heavy infantry may well have been defeated. Individually the units in Alexander's army were not superior to the Persians, but the collective whole was by far. The battle of Gaugamela aptly demonstrates that.

*Gaugamela*⁷⁶⁰

Alexander after subduing the rest of Phoenicia and Egypt followed Darius into Mesopotamia and Darius met him with a massive army on the vast plain of Gaugamela chosen to enable the Persian numbers to overwhelm Alexander's much smaller force. The sources for the battle of Gaugamela all state that the Persian line was significantly longer than the Macedonian on both sides.⁷⁶¹ Alexander drew both his wings back to compensate and placed the Greek allied infantry

⁷⁶⁰ For a detailed discussion of the battle see Griffith 1947; Marsden 1964; Cawkwell 1965; Devine 1975; Welwei 1979; Devine 1986; Charles 2006; English 2011. For the battle in the context of the other battles of the Macedonians see Pietrykowski 2009

⁷⁶¹ Arrian, 3.8-15; Curtius, 4.9.9-10 and 12-16; Diodorus, 17.56.61; Plutarch, *Life of Alexander* 32-33. See Devine 1989.

in his rear as a last line of defence, in order to prevent encirclement and to fill any gaps that may appear in the phalanx. Darius had leveled the plain so that his scythed chariots could be unimpeded in their attack on the Macedonian lines. Alexander edged his whole line to the right so that his right flank extended beyond the flattened area and beyond the Persian left.

The Persians sent a cavalry squadron to their left so that they were not outflanked and Alexander attacked the resultant hole in the Persian line. His opposition fled and the retreat spread to the whole Persian line. Parmenion on the left was hardly managing to hold the outflanking Persians when his opponents retreated along with the rest of the Persian army. The Persians who attacked the Macedonian baggage in the rear also retreated once the result of the rest of the battle became obvious.

Although stated by the sources, it is unlikely that the phalanx opened its ranks to let through the chariots.⁷⁶² This would be a disastrous move for such a tightly packed formation exposing their vulnerable sides to the scythes on the chariot. Moreover horses would not be able to attack a phalanx frontally on account of the sarissas. What the sources probably refer to instead is that the light infantry and hypaspists parted to make room for the chariots with the intention of attacking them with missiles as they passed through.

Arrian states that some cavalry got through a gap in the Macedonian line to the baggage train, whereas Diodorus, Curtius and Plutarch all say that the cavalry went round the left flank. Arrian seems to be wrong here. If a gap had formed in the Macedonian phalanx it would have been a disaster and the phalangites would have been exposed and vulnerable, as they were at Issus as discussed above. Moreover the Greek infantry were placed behind just for this very eventuality. It is much more likely that the cavalry got round the left wing that was severely overlapped and thus were in behind the Greek infantry, who managed to turn and face the problem.

Alexander once again used the oblique attack extending his line to the right in order to draw out the Persians and create a weak point in their line. This is exactly the same tactic that Epaminondas used at Leuctra forty years previously only here Alexander was facing a much larger army and primarily used his cavalry to attack the gap. The placement of a reserve phalanx is similar to the defensive square that Bardylis adopted at Heraclea Lyncestis only Alexander

⁷⁶² See in particular Heckel, Willekes & Wrightson 2010.

went on the offensive and thus won the battle before he could suffer the same fate as the King of Illyria, encirclement and collapse.

Combined Arms

Alexander was forced to make full use of all his units in order to overcome such a numerical disadvantage. Alexander used a tactical deployment to prevent an outflanking maneuver. He advanced slowly in order to maintain his formation and edged obliquely to the right to escape the leveled ground. He used his light infantry and missile troops to overcome the Persian chariots in particular and used his light cavalry as a flexible force to aid any part of the line where his units were hard-pressed. His heavy infantry phalanx was the glue in the line advancing slowly at an angle to hold down the majority of Darius' army. The hypaspists, a more mobile heavy infantry unit, protected the phalanx's flank and linked it to the heavy cavalry both before and after Alexander's charge into the Persian lines. Where Darius intended to wreak havoc with his scythed chariots Alexander ordered his light infantry to make gaps and overcome the horses and drivers with missiles. The phalanx itself was invulnerable to a frontal attack by scythed chariots if it maintained its formation, hence its slow and methodical advance.

Alexander's whole plan was reliant on an offensive use of heavy cavalry charging at speed into a weak point in the enemy line. When the Persians tried to overcome his right flank Alexander sent reinforcements into the fight to at least match the enemy. In fact it was Alexander's decision to reinforce this skirmish that led to the creation of the gap in Darius' battle line. All of Alexander's units worked together to overcome the numerically superior army of Darius.

Since every type of unit available was in Alexander's army at Gaugamela, and was used in a system of combined arms, this battle marks the first occasion, and perhaps also the best example, of integrated warfare in battle in Greek warfare. However, Alexander did not make use of elephants in his army, as his Successors did, and this unit, if deployed, still had to be utilised in integrated warfare, as discussed below. Nevertheless since the elephant never featured in Greek warfare until after Alexander's victory over the Persian Empire the Macedonian army of Alexander did make use of integrated warfare, the final realisation of combined arms.

Paraetacene and Gabiene

The battles of Paraetacene and Gabiene mark the pinnacle of combined arms in the armies of the Successors. At each battle both opposing armies were very large and fully integrated tactically using all the types of unit available in the late fourth century. As a result each battle is a perfect case study for the state of combined arms in Greek warfare.

Sources

The main source for these battles is Diodorus. Plutarch's life of *Eumenes* briefly discusses the battle of Gabiene but not in much detail. As a result the following reconstructions are based on Diodorus and ultimately on his source the eye-witness testimony of Hieronymus of Cardia.⁷⁶³

Paraetacene (Diodorus 19.26-31)⁷⁶⁴

Eumenes and Antigonus were the most successful generals of Alexander's Successors.⁷⁶⁵ At Paraetacene each general had different strengths and planned on using them in the battle.⁷⁶⁶ Eumenes had more elephants and a superior phalanx reliant on a core of veterans of Alexander. Eumenes intended to use the elephants, with light troops, as a screen on his left wing opposite Antigonus' elite cavalry, while he used his heavy cavalry and superior phalanx to defeat Antigonus elsewhere.

Eumenes drew up his line as follows from the left: light cavalry fronted by elephants and light infantry, the veteran phalanx with elephants in front, heavy cavalry with an advance and rear guard of squadrons of Eumenes' slaves or pages. Antigonus, drawing up his battle in oblique formation all fronted by his elephants, wanted his elite cavalry on the right wing to win before his inferior phalanx succumbed to Eumenes' veterans. Antigonus' line was as follows from the left: light cavalry, the phalanx, heavy cavalry with an advance and rear guard of light cavalry troops of Antigonus' slaves and the 30 best elephants in an echelon line.

In the battle itself Peithon, the commander of Antigonus' left wing, insubordinately attacked first and engaged Eumenes' right wing relying on his cavalry's numerical superiority. Peithon's maneuverability did great damage until Eumenes counterattacked with light cavalry and light infantry and routed Peithon's troops. At almost the same time the two phalanxes met in

⁷⁶³ See Hornblower 1981.

⁷⁶⁴ The most concise secondary discussion of the battle is Devine 1985c. For the battle in the context of the other battles of the Successors see Pietrykowski 2011.

⁷⁶⁵ See Anson 2004; Billows 1990.

⁷⁶⁶ Diodorus 19.26-31.

the centre where Eumenes' veteran troops won, easily overcame the numerically superior troops of Antigonos. Antigonos counterattacked through a gap between Eumenes' phalanx and left wing routing the surprised and isolated cavalry. Although victorious, Eumenes' veteran soldiers refused to leave their baggage train unattended and left the field, while Antigonos forced his men to encamp on the field and thus claim the victory.⁷⁶⁷

Combined Arms

At Paraetacene Antigonos relied on the traditional Macedonian oblique formation for victory, as used by Philip and Alexander. Unfortunately for Antigonos, Peithon's insubordination almost cost him the battle, just as Peucestas' cost Eumenes at Gabiene, completely destroying the oblique formation. Because of Peithon's unplanned attack, until his personal last ditch charge, Antigonos was completely outgeneraled and his soldiers were outperformed. Antigonos' personal charge robbed Eumenes of a deserved victory and rescued a draw. He expertly exploited the inflexibility of Eumenes' battle line in order to attack the exposed flanks caused by a gap in the line. This tactic is identical to that used so successfully by Alexander at Gaugamela. The devastating gap in Eumenes' line resulted from the static use of his elephants, which were unable to move rapidly to cut off Antigonos' charge.

Eumenes perfectly employed the principles of combined arms by attacking with his best troops while using the others to hold off the enemy. Antigonos intended to do the same but was foiled by Peithon. Eumenes was ultimately unsuccessful because he did not neutralise Antigonos' superior heavy cavalry, the other main principle of combined arms. Both generals knew how to play to their army's strength and attack the enemy's weakness, and the result was a costly draw.

Gabiene (Diodorus 19.39-43; Plutarch, *Eumenes* 16)⁷⁶⁸

At Gabiene, also, the elephants were not used properly and in fact hamstrung Eumenes' battle plan.⁷⁶⁹ Antigonos put cavalry on the wings and the phalanx in the centre, with the whole line

⁷⁶⁷ The preoccupation of his phalanx with their baggage should have been a warning to Eumenes that he needed to curtail the growing insubordinate independence of Alexander's veterans as a destabilising factor in his army. Unfortunately for him he did nothing and the phalanx sent Eumenes to his death in return for the return of their baggage and camp followers captured by Antigonos at Gabiene.

⁷⁶⁸ The most concise secondary discussion of the battle is Devine 1985d. For the battle in the context of the other battles of the Successors see Pietrykowski 2009.

⁷⁶⁹ Diodorus, 19.39-43; Plutarch, *Eumenes* 16.

fronted by elephants and interspersed light infantry. Eumenes stationed his best cavalry on his left wing opposite Antigonus' better cavalry, just as at Paraetacene. He drew up his elephants *en echelon* to the left of the wing as a flank guard, just as Antigonus did at Paraetacene. Eumenes' phalanx was stationed in the centre again, with the right wing consisting of his weaker cavalry and elephants. Eumenes intended to hold back his weak right wing until the battle was decided by his superior cavalry on the left. Antigonus intended to overwhelm Eumenes' elite left wing.

The battle began when the elephants and cavalry engaged on Eumenes' left. Antigonus took advantage of the cloud of dust raised by the battle to send a detachment of light cavalry to capture the baggage train of Eumenes' army (cf. Polyaeus 4.6.13). At the same time, again hidden by the dust, Antigonus personally led his heavy cavalry to attack the flank of Eumenes' heavy cavalry. Eumenes' cavalry commander, Peucestas, was frightened into retreat and took with him almost a third of Eumenes' elite cavalry. Eumenes stayed with the rest of his loyal cavalry fighting fiercely although isolated. Eumenes' flank guard of elephants was isolated and each elephant was introduced to the action one by one, thus losing all the advantage of their numerical superiority. Despairing, Eumenes withdrew his remaining cavalry round to his right wing to join his troops that had been held back. In the centre Eumenes' veteran phalanx routed the troops opposite it and then rolled up Antigonus' phalanx from its now exposed flank.⁷⁷⁰ Overpowered in cavalry Eumenes tried to rally Peucestas' retreated squadron but they refused to rejoin the battle. Eumenes was forced to retreat with his remaining cavalry severely outnumbered. His victorious phalanx formed a defensive square and gradually withdrew from the field.

Combined Arms

In the battle of Gabiene, Eumenes is the one who adopted the standard Macedonian tactic of the oblique formation, but as a variation he held back his right wing instead of the left. Antigonus' plan to overwhelm the superior units of the enemy is reminiscent of Epaminondas' success against the Spartans at Leuctra, as discussed above. Antigonus' use of the dust cloud to shield his cavalry maneuvers shows the importance of a general adapting to the situation at hand and taking advantage of the terrain and the environment.

⁷⁷⁰ Devine 1985d says that they must have used a wedge, which may be true, but his reconstruction makes the wedge far too big to be able to function with any speed or maneuverability.

Antigonus used everything he could think of to claim the victory. It was the capture of their camp that caused the surrender of Eumenes' unbeaten veteran infantry phalanx and it led to Eumenes' eventual execution, when they handed him over to Antigonus. If Antigonus had not captured the camp, Eumenes would have had enough troops available to him to continue the war, and his phalanx would probably still have carried on routing its opponents. Eumenes was undermined by his subordinates, just as Antigonus was at Paraetacene. Unfortunately Eumenes' valiant attempt to rescue the situation was denied by his lack of control over his troops.

Conclusions

Both Paraetacene and Gabiene were virtual stalemates, showing just how evenly matched Eumenes and Antigonus were as generals. Both battles demonstrate the standard training and tactics of Macedonian style armies and the successful integration of different units into a battle plan. Both generals were the best exponents of the system of combined arms as it had been developed by the Macedonians, and were the best generals of their generation behind Alexander. However neither knew how to use elephants properly and this knowledge did not come until the battle of Ipsus in 301 and it is this unit that delayed the implementation of a comprehensive system of combined arms.

*Ipsus*⁷⁷¹

The battle of Ipsus marks the culmination of the developments of combined arms in Greek warfare and the final application of integrated warfare on the battlefield. Alexander never had to integrate elephants into his army and it was the developing the most effective tactical use of these animals that delayed integrated warfare in the armies of Alexander's Successors. It was not until the battle of Ipsus that elephants were used in a way that got the best out of them in combination with the other units in an army.

Sources

As discussed above the battle of Ipsus is described in few sources. Diodorus' account does not survive except for a few fragments and so we are left with the brief descriptions of Plutarch and Appian.⁷⁷² Neither author is focused on the military details of the battle, both more concerned

⁷⁷¹ Still the best analysis of the battle is Bar Kochva 1976: 105-110. For the battle in the context of the other battles of the Successors see Pietrykowski 2009.

⁷⁷² Plutarch *Demetrius* 28-9; Appian, *Syrian Wars* 55.

with the actions of Demetrius, in not returning to save his father, and Antigonus, in refusing to leave the field until his son returned. As a result only the bare facts of the battle are discernible from Plutarch, but enough to enable an analysis of the innovative use of elephants, the prime concern here.

The Battle

Cassander, Lysimachus and Seleucus opposed Demetrius and Antigonus (Diodorus 21.1.2). The Antigonids had 70,000 infantry, 10,000 cavalry and 75 elephants and the allies had 64,000 infantry,⁷⁷³ 10,500 cavalry,⁷⁷⁴ and 120 chariots⁷⁷⁵ but significantly more elephants to the sum of 400 (Plutarch *Demetrius* 28.3).⁷⁷⁶ Both sides used the standard deployment of elephants along the front of the whole line mixed in with peltasts and missile troops. However, Seleucus remained behind the allied line with a reserve force of elephants.⁷⁷⁷

The usual skirmish of the elephants and light troops began the battle while the cavalry of each side engaged one another on each wing. Demetrius routed the allied left and pursued them too far (Plutarch, *Demetrius* 29.3). Seleucus deployed his elephant reserve to block Demetrius and hold him fast. Seleucus then instead of charging the Antigonid phalanx, which was now unprotected by cavalry, threatened to do so in order to encourage the infantry to change sides. Lysimachus then sent more missile troops to the centre, while he continued the cavalry battle on the right. The missile troops in the centre were so numerous that their volleys forced the Antigonid phalanx to retreat in disorder. Antigonus died fighting in the phalanx, and to the end believed Demetrius would ride in and save the day.

⁷⁷³ Bar Kochva 1976: 82 argues that of this force the 20,000 brought by Seleucus were predominantly light infantry.

⁷⁷⁴ Bar Kochva 1976: 247 n. 11 argues that this is a textual corruption and the allied cavalry total should be 15,000.

⁷⁷⁵ These chariots probably did not feature in the battle. Seleucus unsuccessfully used chariots against Demetrius shortly before the battle of Ipsus (Plutarch, *Demetrius* 48.2).

⁷⁷⁶ Seleucus, after a failed invasion of India, gave up a significant amount of territory to the Indian king Chandragupta in exchange for 500 elephants (Plutarch *Alexander* 62; Strabo 15.2-9, 16.2-10). Seleucus brought most of these with him to Ipsus. Diodorus 20.113.4 states that Seleucus brought through Cappadocia 480 elephants, 12,000 cavalry, 20,000 infantry and over a hundred chariots and these figures fit well into the allied troops totals given by Plutarch. Bar Kochva 1976: 76 suggests that Seleucus lost twenty elephants in crossing through Cappadocia and afterwards another eighty were unfit for battle. Ipsus then is the only battle in Greek warfare where so many elephants were deployed.

⁷⁷⁷ Tarn 1940. Bar Kochva 1976: 108 argues that there was no elephant reserve behind the army.

Combined Arms

At Ipsus both armies fielded varied units that were fully integrated into the battle plan. The allied army's strength lay in its huge force of elephants. As a result the generals had to ensure they got the best use out of these animals in order to make the most of their advantage. As discussed above, the previous use of elephants in battle was as a static flank guard to shield the phalanx. However, the main problem with this deployment was that the slow elephants could not be moved if and when the phalanx advanced beyond the protection they afforded to the flank. At Ipsus the allies had enough elephants to post them opposite Antigonos' animals and still keep hundreds for use elsewhere. It is Seleucus' use of these other elephants as a screen against Demetrius' isolated cavalry that was the catalyst of Antigonos' defeat.

Tarn argued that Seleucus planned this all along.⁷⁷⁸ He may have ordered his son Antiochus, commanding the left wing cavalry of the allies, to fall back at the assault of Demetrius in order to draw him away from the battle so that Seleucus could deploy his elephants to block his return.⁷⁷⁹ There is no evidence for this in the sources but these are in general lacking in detail and Seleucus' speed of action in successfully redeploying so many slow moving elephants is more understandable if it was pre-planned. The tactic of the fake retreat was used by Seleucid armies at the later battle of Elasa suggesting that it was a favourite tactic of Seleucus and his successors.⁷⁸⁰

Conclusion

⁷⁷⁸ 1940: 87 n. 1; 1975: 68-9

⁷⁷⁹ Bar Kochva 1976: 109-110 argues that the terrain behind the allied battle line at Ipsus was such that it took significant effort and time for Seleucus to post enough elephants to prevent Demetrius' return. As a result it must have been a pre-planned tactic induced by a fake retreat of Antiochus' cavalry. Since Antiochus was Seleucus' son the two commanders could easily have organized this together. Bar Kochva 1976: 109 also suggests Demetrius may have been attempting to capture the allied baggage camp after routing Antiochus' cavalry.

⁷⁸⁰ For this battle see Bar Kochva 1976: 184-200. It is only described in I Maccabees 9.1-22 but this account does not mention the fake withdrawal which Bar Kochva believes occurred. Bar Kochva believes that surprise tactics were commonly used in other Seleucid battles, in particular Cyrrestica (Plutarch, *Demetrius* 48-49. See Bar Kochva 1976: 111-6); against Molon (Polybius 5.48.17-54. See Bar Kochva 1976: 117-123); and against the Galatians (Lucian, *Zeuxis* 9). In every case the ancient source for the battle, just as at Ipsus, does not specifically describe such tactics.

Ipsus then marks the culmination of this study into combined arms. The fully integrated army of the later fourth century had to make the best use of elephants, as a counter to heavy cavalry charges without exposing the other units. Once elephants were integrated completely and usefully into the battle plan at Ipsus Macedonian style armies engaged in integrated warfare.

Conclusion: Neo-Assyria, Persia and Macedon: The success of combined arms

The main difference between the Assyrian combined arms system and that of the later Macedonians can be explained by the evolution of the effectiveness of each type of unit. For example the Assyrian spearmen did not maintain a formation when in contact with the enemy: after battle was joined the infantry confrontation became just another melee. By contrast the Macedonian sarissa phalanx was so successful precisely because it was able to stay in formation under any circumstances in battle. It was this unbroken front that terrified opponents, since it was so unusually well executed. Even the phalanx proved ineffective when the formation was disrupted by terrain or the enemy's tactics.⁷⁸¹

The Assyrian heavy cavalry were the same in that when they charged the enemy they did not necessarily do so in a specific tactical organization. The Companion cavalry of Alexander and Philip, as well as their Thessalian cavalry, usually charged in a diamond or wedge formation.⁷⁸² They remained grouped in this fashion until they had broken the opposing battle lines, when they spread out to attack the disordered enemy. The concept of chariot warfare almost precludes any attack formation. Chariots cannot stay too close together or the horses and wheels will affect the other vehicles. The impact of chariots is better achieved when charging into the enemy on their own thereby causing widespread damage all along the line. Sargon II's victory in his eighth campaign aptly demonstrates this, although he used cavalry more than chariots. It is this lack of cohesiveness that allowed Alexander's light infantry to easily overcome Darius' chariots at Gaugamela and Porus' at the Hydaspes.

Neo-Assyria, Persia, Greece and Macedon: The success of 'combined arms'

Two of the principal questions that arise from our discussion of the historical development of combined arms are: 1. why was the Persian Empire not as successful as the other conquest empires of Macedon and Assyria; 2. Why did the warfare of the Greeks make little use of varied units until the late fifth century.

Persian Kings were able to call on many types of soldier to serve in their armies to the extent that there was no type of unit excluded. Yet despite the numerous logistical and

⁷⁸¹ The best examples of this are the Macedonian defeats at the hands of the Roman legions at the battles of Cynoscephalae (Polybius 18.19-26; Livy 33.6-10; Plutarch *Flamininus* 7-8) and Pydna (Plutarch, *Aemilius Paullus* 16-22; Livy 44.40-42).

⁷⁸² Devine 1983.

organizational advantages, the Persian army and battle plan rarely made full use of combined arms. Certainly a reliance on traditional Persian armaments, the bow and arrow, led to the subordination of other units, but this alone cannot fully explain the comparative lack of tactical efficiency. We must seek other explanations.

Neo-Assyria was able to utilize very effectively the disparate units taken from the various states in its Empire. From the little evidence we have of Neo-Assyrian battles, the core of Assyrian troops, namely a heavy cavalry (or chariotry) force supported by heavily armoured bowmen and spearmen, fought alongside other levies of spearmen, bowmen, cavalry and chariots. Neo-Assyria was able to make use of combined arms for a large part because the national troops represented the different types of unit. The auxiliary units were not drastically different from the national troops and so could easily be integrated into the existing military system. The Assyrians did not have to incorporate elephants, or any distinctly 'foreign' unit. From the beginning Neo-Assyria used a system of combined arms, missile and heavy cavalry and missile and heavy infantry fighting together, but still overly reliant on archery as the principal method of fighting battles. As a result the tactics employed by their generals did not have to change significantly in order to make use of the new units.

Tactical innovations significantly influenced the use of combined arms, as the previous chapters have shown. In Neo-Assyria the battle tactics remained constant, relying on massed archery supported by effective heavy infantry followed up by heavy cavalry assaults. Persia inherited this tactical battle plan but abandoned the use of large numbers of heavy infantry and preferred to utilize cavalry as missile troops rather than as shock troops, at least until the late fifth century. In the East the honorific unit was the cavalry, both as horse-archers and as an assault force of heavy armed horses and men. We have no evidence of any battles in the Persian Empire faced with other tactics before the wars with Greece.

Persian armies expected to win by bombarding the enemy with so many arrows that they were too weak to survive the final close quarter assault. As soon as they faced an enemy whose tactical abilities allowed them to overcome numerical inferiority or to withstand a large missile barrage, the Persians were unable to adapt their plans to win. As Lacey (2012: 50) writes,

Persia's generals designed and trained its army to defeat armies that fought like it. It relied on the coordinated action of its combined arms-centered on massed archery-to inflict sufficient losses to shatter an enemy's cohesion.

The infantry, protected by wicker shields stuck in the ground, and cavalry loosed their arrows until the formation of the enemy began to disintegrate. At that point the Persian infantry and cavalry charged into close quarter fighting. Since the Greek hoplites were not very vulnerable to missiles, and attacked the enemy lines hand-to-hand, the Persian military system was ineffective. Moreover the generals could not adapt the battle plan to succeed in this new style of warfare.

Persia attempted to solve the problem of facing hoplites, after their crushing defeat against the Greeks, by incorporating mercenary hoplites into their army instead of creating their own force. This meant that they never managed to create a national cohesiveness to this mixed army. However this was a result of the Persian military system itself. Persian armies always fielded units levied from all the disparate cultures in the Empire. India sent elephants, Scythia horse archers, Egypt spearmen and the Greek poleis hoplites. Persia did not need to reorganize their national units because they made such extensive use of foreign contingents. The idea of a national army of Persian troops was a completely foreign one.

As is usual in any empire, the units from the conquering nation were the most important. Persia fell into the same trap. They continued to view the Persian units as the best and their tactics did not incorporate all the other foreign units to the same level. The problem for Persia, as opposed to Neo-Assyria and Macedon, was that their method of winning battles was to rely on weight of numbers for victory rather than tactical superiority.

By contrast battles in Greece were decided by a direct (primarily) infantry charge all along the line. The battle was decided at close quarters and in a short space of time. This tactical deployment ensured that there was little time for archery to take effect on an opposing army before joining in hand-to-hand combat. Moreover in this style of warfare the goal was not to annihilate the enemy army in one engagement, but to force them to retreat as quickly as possible. One of the most successful ways to achieve this was to kill, capture or rout the enemy king or general. More often than not an army will retreat if its leader does so or is removed from the battle. Alexander's personal charge against Darius at Issus aptly proves this tendency.⁷⁸³ Western

⁷⁸³ The best example in all pre-gunpowder warfare is King Harold II's death at the battle of Hastings in 1066. In fact Hastings serves as a very good example of the importance of the general in battle Bennett et al. 2005. It also shows the use of combined arms in the Norman army of William the Conqueror: Jones 1987: 109-113. The Saxons on the hilltop were relatively secure against the assaults of the Norman cavalry. The Normans began to become discouraged and almost precipitated a headlong retreat when someone shouted that Duke William had been killed. It

armies were designed to fit into this tactical framework. In most cases the heavily armed and armoured infantryman was the preeminent soldier, who did all the hard work in the front lines. In some states the final decisive assault was delivered by a heavy cavalry force instead.

In the heartland of Greece (Central and Southern Greece) battles before the Peloponnesian War were often instigated to decide a dispute over territory or an assumed insult. However, once these traditional Greek poleis began to expand their interests outside of the local area, whether through forced invasion or voluntary involvement in external politics, they encountered other styles of warfare. In the mountainous regions of Greece light infantry were the most common. In the flat areas of Thessaly and Macedon cavalry were preeminent. The hoplite focused armies of the principal Greek poleis had to learn to adapt to the new methods of warfare when fighting in alien environments. Yet it took many years for the Greeks to utilise the benefits of a diverse, integrated army in any battle regardless of terrain. To the Spartans at least warfare in mainland Greece should always remain centred on the hoplite phalanx, as Agesilaus' campaigns in Asia and the Corinthian War demonstrate. It is this reluctance of Athens and Sparta to field combined arms armies everywhere that marks out Greek warfare as tactically static when compared with Neo-Assyria and Macedon in particular.

The two different styles of warfare—massed archery intended to annihilate the enemy over time in Persian battles, and rapid, decisive attacks at close quarters intended to force the enemy into retreat in Greek conflicts—required different applications of combined arms. The latter style allowed more of the general principles of combined arms to be utilized, namely employing each type of unit in the most effective way to mutually support the others, but in Greece the preeminence of the hoplite was never disputed until Chaeronea.

Macedon was fortunate to be situated between these two schools of warfare, east and west. To Macedon, having observed centuries of Greek successes, an army without a strong core of heavy infantry (hoplites) in phalanx formation would be unsuccessful. The advantages of this unit in close combat were evident and the Thebans had begun to perfect specific tactics to

was only when he took off his helmet to reveal himself to his soldiers that they were encouraged to continue the fight. The confidence the Normans then enjoyed after seeing their leader prompted overconfidence in some Saxons who foolishly chased the Norman cavalry down the hill thus breaking their strong formation. On the other side the Saxon army retreated only when they saw that their king, Harold II, had been killed in the fighting. Harold's death prompted the Saxon rout just as the rumoured death of William almost led to a Norman one.

maximize its effectiveness. In the east the Persian Empire relied on cavalry and missile troops for victory. Arrows fired en masse would soften the enemy's resolve to allow the spearmen and heavy cavalry to precipitate the rout. Macedon itself had always used a core of aristocratic heavy cavalry as the main unit in battle accompanied by lightly armed pastoral peasants. Once Philip II had enough money to be able to furnish and train a heavy infantry phalanx to a professional standard, he was able to combine the eastern reliance on cavalry with the western heavy infantry. Philip's army was able to use the phalanx to hold the enemy in position fighting at close quarters, while the heavy cavalry directly attacked the weak points of the opposing formation, or the king or general. Philip could not call on many missile troops to add to this battle plan. Alexander, however, made great use of archers and javelin men to harass the enemy line with missiles while the phalanx and cavalry maneuvered into position, thus combining the eastern and western styles of warfare.

In Macedon, after the creation of the sarissa phalanx using local peasants, the national standing army always comprised the lower-class phalanx and the aristocratic cavalry together. This allowed for mutual respect and a coordination of goals that was lacking in armies utilizing mercenaries on a large scale. Persia never furnished a national body of heavy infantry that was the ideological equal of the cavalry and archers. Even the ten thousand elite Immortals, often used as heavy infantry in close quarter combat, were archers first and spearmen second. Persia was let down because their existing national army was not able to oppose an army using combined arms effectively, in particular one reliant on an elite heavy infantry phalanx working in close conjunction with heavy cavalry.

Macedon was able to integrate other units into the army alongside the Macedonian units, and to adapt the battle tactics accordingly. Alexander relied heavily on the Thessalian cavalry and the Agrarian javelin men as support troops for the phalanx, hypaspists and the Companions. The Persians also used auxiliaries to supplement their national troops, but did not apply the same degree of tactical flexibility as the Macedonians. It is this tactical flexibility that is necessary in order to employ integrated warfare. In fact the use of combined arms can improve tactical flexibility once it is implemented, but cannot be fully realized until that flexibility exists in the first place.

In most cases where combined arms was used successfully based on a national army, the lack of maintenance of the national units led to the fall of the Empire. The Neo-Assyrian Empire

collapsed from internal wars that resulted, to a large degree, from the national army becoming too reliant on its foreign parts. Macedon similarly was defeated by Rome not least because the national Companion cavalry was replaced with less effective allied contingents (Wrightson 2013). The repeated examples of the collapse of a conquest empire that was previously successful at using a form of combined arms, demonstrate the necessity of maintaining national control. As soon as the national units become supplanted by foreign units, the empire cannot be preserved.

The system of combined arms is best practiced when a state can furnish all the types of unit independently, and develop tactics that make appropriate use of each unit. However, in practice few nations have the resources or inclination to be able to produce every type of unit available. As a result mercenaries or foreign auxiliaries must be used. Once the proportion of alien units is significantly greater than that of the national units, state control over the army is eroded and consequently so is the army's effectiveness.

Perhaps the best lesson we can draw from the history of combined arms is that without a concerted effort to maintain a large degree of national influence over the different units in the army, especially without also developing new battle tactics, the army becomes less able to implement the system successfully.

Combined arms is the best way of tactically ensuring victory in battle in the ancient world and today. Using the model of combined arms warfare it is possible to analyse the tactical efficiency of armies and through this lens assess the effects of culture and society on warfare. For the Greeks it is possible to lay a foundation for examining why warfare remained so static for so long and to see how this affected the development of Greek history and culture. For any historical analysis of warfare the level of application of combined arms can serve as a perfect comparative tool for determining the relative strengths, weaknesses, and stage of advanced military training in the warfare of each society or culture.

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