TACTICAL AND STRATEGIC COMMUNICATIONS IN ANCIENT GREECE, FIFTH CENTURY BC
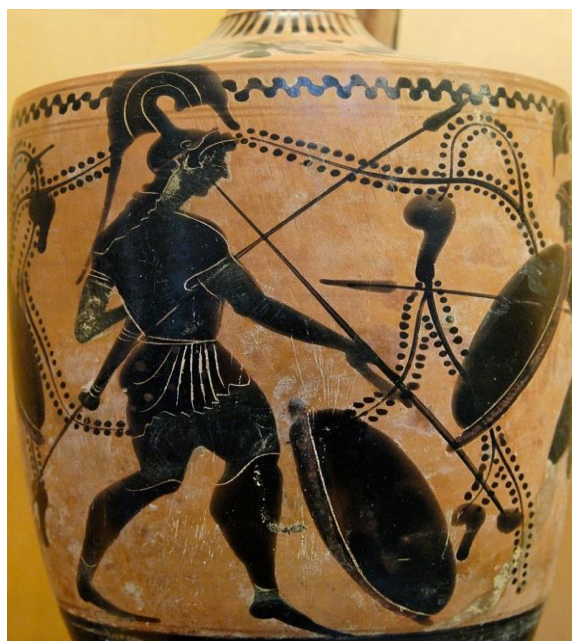
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Warrior playing the salpinx. Attic black-figure lekythos, late 6th–early 5th century BC.

I, Sotirios Christos Peithis, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract:

This dissertation will examine how effective the transmission of orders was in Ancient Greece in the fifth century BC. We will focus both on short-range tactical means of communication, such as vocal orders, and on wider-ranging strategic methods such as fire-signals. This largely neglected topic falls within the wider purview of ancient military intelligence, which has received some attention over the last decades.

Following recent re-examinations of Greek Warfare, we will argue against the prevalent idea that fifth century Greek armies neglected communications. In this we will be following, and furthering, the works of scholars such as Everett Wheeler and Frank Russel, among others. While neither Wheeler nor Russell focus exclusively on the transmission of orders, their respective theories on generalship and intelligence gathering are invaluable to any examination of our own topic.

Our main goals concerning tactical communications will be threefold. We will firstly determine whether vocal orders were audible on an ancient battlefield; secondly, we will examine whether Hellenic generals were in a position to issue commands; and thirdly, we will analyse how far Greek armies could be counted upon to follow instructions.

As for strategic communications, we will aim to prove that the Greeks were capable of delivering more than rudimentary pre-arranged messages via their fire-signals. We will also examine how crucial strategic communications could be in the planning of a military campaign.

This dissertation will thus contribute to the ongoing movement of re-consideration that has gripped ancient Greek military history over the last decades, and hopefully temper seemingly outdated notions concerning Hellenic communications.

Impact Statement:

Military communications are at the centre of most martial practices. As such, any examination of the topic will impact Greek military history as a whole, in one way or another. This dissertation will specifically aim to disprove outdated theories concerning the transmission of orders in Greek warfare. In so doing, we will contribute to the ongoing re-evaluation of Hellenic military history, and contribute material to important issues such as the undecided hoplite debate. More importantly, however, this dissertation will demonstrate that no battle analysis can be considered complete without a solid understanding of how communications functioned. How can one claim to understand the tactics of Delium or Marathon if they cannot confidently describe the methods of communication available to the Greeks?

While we will be focusing on the relatively well-recorded period of the Peloponnesian War, the information uncovered in this dissertation could form the cornerstone of a study into earlier and lesser-known periods such as the *Pentekontaetia.* The main challenge to such an enterprise will be the lack of primary sources, yet whatever meagre information is uncovered could be linked to the evidence included in this dissertation to establish patterns of development, or even potential regional trends.

This dissertation could also, hopefully, contribute to a renewed interest in the otherwise neglected ruins of early warning systems in modern Greece. Many densely populated areas, like Argos or Attica, are dotted with the ruins of dozens of watchtowers that are left untended and ignored. Some of these towers are located within private property, and known only to the local farmers who have lived alongside them for generations. I discovered as much while visiting the Argolid. The members of the Archaeological Museum of Mycenae were incapable of directing me to the towers I needed to examine for the completion of my fourth chapter, but I was fortunate enough to stumble upon the Mitrovgenides while wandering blindly near their lands. They immediately guessed my purpose and guided me to my goal (Figure 40). A renewed academic interest in early-warning systems could, therefore, hopefully contribute to local growth by securing grants for the preservation of these ruins and encouraging

academics to actively work with the locals. Students in particular should be encouraged to seek out such 'irregular' sources of information instead of relying on more official methods: I would have never found the ruins if not for my chance meeting, convinced as I was that if the experts at the Museum could not help me, no one else could.

Contents

<u>Introduction</u>

No army can function without proper communications. Even the best trained men are useless if they cannot be told where to go and what to do. This is one aspect of warfare that has remained constant throughout history, and it stands as the driving motivation behind this dissertation: how effective was the transmission of orders in fifth-century Greece? Could a commander affect the course of an ongoing battle through his tactical orders? How important were strategic communications in the planning and execution of a campaign? And could the Greeks communicate unforeseen events through their fire-signals?

Military communications, as a topic, fall within the larger purview of military intelligence. The latter, however, has received some attention by scholars of late, whereas a more precise examination is still needed for the former. Boris Rankov, whose work focuses on the study of ancient Roman intelligence, separates military intelligence into two major categories: strategic and tactical. According to his definition, strategic intelligence is 'principally concerned with the assessment of an enemy's intention and ability to wage war', whereas tactical intelligence 'is concerned with identifying the location, strength, and intentions of an immediate enemy on the march or on the battlefield.[1] An earlier definition of his follows much the same idea: he defines strategic intelligence as 'the analysis of everything that happens before the arrival at the battlefield' while tactical intelligence 'would take over at the point where two sides are nearly in sight of each other and includes short-term material influencing the choice of a battlefield'.[2]

While these definitions seemingly present a clear and obvious difference between both terms, Rankov stresses that some overlap is inevitable. Alcibiades, for instance, was in the middle of combat when a messenger brought him news from afar.[3] This message thus falls both within the purview of tactical and strategic communications: the messenger set off miles away from the battle and bore news unrelated to

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[1] Rankov 2015.
[2] Austin and Rankov 1995, 6.
[3] Front. *Strat*. 2.7.6.

the ongoing clash, yet he delivered his information to a general in the middle of combat. This is not the result of a faulty definition on Rankov's part. Rather, we must look to the vagaries of warfare to explain this phenomenon, as well as the piecemeal nature of our sources who often do not provide enough clarity to easily distinguish between the two definitions.[4]

Since our topic is restricted to military communications, we will adopt the same terminology as Austin and Rankov but offer a slightly different definition: tactical communications will include any and all methods of communication that occur within the battlefield, whereas strategic communications will revolve around those methods of transmission used in the wider theatre of war. To offer a practical example, Brasidas' order to form hollow square at Lyncestis was a form of tactical communication (Thuc. 4.125.2; see page 113), whereas the fire-signals sent to Alcidas' fleet were a form of strategic communication (Thuc. 3.80.2; see page 203).[5]

This foray into Greek military communications is made possible thanks to the efforts of many historians whose work on ancient military intelligence have shed light on an otherwise nebulous subject. Rankov and Austin's *Exploratio* (1995) was written, in part, to address the fact that no one had previously granted the topic adequate attention, a sentiment unfortunately echoed by ancient authors such as Polybius (see page 185).[6]

The reasons for this neglect are manifold. Firstly, our literary and physical sources are too scarce to allow for extensive research and a thriving scholarship. Ancient authors have an unfortunate habit of

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[4] As noted by Holtzhausen and Zerfass (2015, 3) the terms 'tactical' and 'strategic' communications are no longer restricted to the military domain, and have become rather commonplace in modern communication sciences, public relations, marketing, public diplomacy, campaigning, and financial communications. In fact, it would seem that most modern articles concerning strategic intelligence revolve around non-military uses of the term, though the opposite seems true for tactical intelligence. Yet regardless of the field in which they are used, the main difference between them invariably resides in their scope. The former is minute and localised, the latter wide-ranging and far-reaching.
[5] We should note that here too we may encounter ambivalent cases: during the battle of Potidaea (432 BC), Aristeus deployed his cavalry some seven miles away from the field of battle with orders to engage at the sight of a visual signal (Thuc. 1.63.2.). This scenario may have occurred during an active confrontation, but the distance between the sender and the receiver, as well as the methods involved in transmitting the order to attack, have more in common with strategic communications rather than tactical.
[6] Austin and Rankov 1995, 1. See Plb. 10.43.

oversimplifying, or downright neglecting, their descriptions of military intelligence and communications. It would seem that Roman authors did so to render the description of complex campaigns understandable to their readers.[7] The same, however, may not be true of the Hellenic world in the Classical age. Most of Thucydides and Xenophon's readers would have had some military experience of their own, and it seems reasonable to assume that the disparity in knowledge and experience between these two authors and their public would not have been as great as, for example, between Caesar and his audience. Ergo, one cannot be certain whether Greek authors did not expand upon intelligence and communication in an effort to accommodate their readership, or simply decided to omit material they would have been familiar with, though the latter seems more likely. [8]

In addition, it must be noted that more work has been done on Roman military intelligence than on Greek. Scholars such as Everett Wheeler, Frank Russell, Rankov and Austin have all stressed that the Roman world has more to offer to a prospective researcher than the Hellenic, at least as far as intelligence and communications are concerned.[9] Wheeler, Rankov and Austin point especially to a large disparity of written sources from the hands of experienced men. Roman historians can fall back on the works of Caesar, Tacitus, Dio Cassius and Ammianus Marcellinus among others. All these men either had military experience of their own, or were otherwise closely linked to the intelligence services of their day. To this, the Hellenic historian can only oppose Thucydides and Xenophon, at least for the fifth century BC. Both of these men certainly had military experience, but this does not mean they had access or insight into the methods of communication of every Greek city-state: for instance, an Athenian exile like Thucydides may not have been privy to the workings of the spy network of Syracuse.[10] Furthermore, while Xenophon had a long career and spent much of his days following a renowned king of Sparta, Thucydides' own career

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[7] Austin and Rankov 1995, 2–3.
[8] Russell 1999, 143.
[9] Austin and Rankov 1995, 1–6; Russell 1999, 2; Wheeler 2007b, 243. For a brief overview of Roman tactical communications: Namorato 2000, 104–5.
[10] Thuc. 6.45.1.

was cut short. Their insight remains invaluable, but the disparity in information between the Greek and Roman world cannot be denied. It is true that the fourth century BC offers more possibilities, particularly thanks to the works of Aeneas Tacticus and the later works of Xenophon, but this dissertation will examine the fifth century exclusively, and more specifically its later half.

The reason for separating the fifth and fourth centuries has its roots in the works of previous historians. On those rare occasions where scholars have granted a cursory glance at Hellenic communications, there seems to be a general consensus that the fourth century saw a marked increase in the quality and overall use of order transmission among the Greeks.[11] However, these conclusions seem to be the result of the unfortunate disparity of information between the fifth and fourth centuries.[12] A telling illustration is Rosemary Moore's survey of the role of the general, which has a separate section on the fourth century, but relegates the fifth century to a section on the archaic age.[13] Our research, therefore, will aim to explore the fifth century in more depth in an effort to uncover as much as possible about Hellenic communications at this earlier stage of their history.

Any examination of military communications will invariably touch upon many areas of warfare, such as generalship or tactical flexibility. Fortunately, most of these areas have attracted the attention of modern scholarship far more than military communications.

Generalship

Concerning generalship in Greek warfare, the main theory that seems to be supported even today is that Hellenic leaders were unable to command their troops in battle.[14] This dissertation will suggest otherwise.

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[11] Van de Maele 1992, 93–107; R. Moore 2013, 458; Russell 1999, 3, 2013, 474–75.
[12] Russell 1999, 226.
[13] R. Moore 2013.
[14] Kagan 1981, 125; Lendon 2005, 42; Tritle 2010, 126.

It is thought that a Greek general could only plan ahead, his role effectively over once he set his men in line. A direct consequence of this perceived limitation was that generals would almost always lead from the front, where they would be unable to survey the battlefield or send orders. The high mortality rate among Hellenic leaders is often seen as evidence of their presence on the front-lines. Much like Homeric war-leaders, the classical general would only serve to inspire his men, and his death would not matter from a strategic standpoint.[15]

These theories have all been supported by Hanson,[16] who further claims that agrarian hoplites would have actively rejected battle-managers for fear of serving the interests of an uncaring elite.[17] He believes that a general who failed to lead from the front could damage morale, citing modern examples such as general Joffre's routine during the First World War in support of his argument.[18] Only in the fourth century B.C. would Greek generals start to value their survival, and place leadership above personal valour.[19]

Schwartz has recently reasserted the idea of the 'front-line general', though he does note that at least *some* leaders were demonstrably not stationed at the front.[20] He believes that hoplite armies would prefer front-line fighters over battle-managers due to the supposedly egalitarian nature of the phalanx.[21] He further claims that a general's death could inspire his men to greater deeds, that it did not necessarily bring about defeat, and that the high death rate among *strategoi* proves their presence in the front lines.[22]

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[15] For a brief summary of Homeric generalship: R. Moore 2013, 457–58; Wheeler 2007b, 240, 244–47.

[16] Hanson 2000, 107–16.

[17] Hanson 1995, 260–61. He contrasts this system, where the same men who elected to go to war actually fought in it, with the events of the Vietnam war (1995, 257). This idealized vision of the hoplite-farmer is not necessarily indicative of Archaic or Classical Greek society. Many Greeks, such as the Spartans, Thessalians, or Cretans, relegated the farming to their slaves, while others set the property qualifications for military service so high that only the wealthiest landowners could serve in the phalanx, at least before the 550s (Van Wees 2007, 274–76). Furthermore, officers often received a higher pay and share of the loot than the rank and file, further eroding the notion of a supposedly egalitarian phalanx (Wheeler 2007b, 260–62).

[18] Hanson 2000, 108–9.

[19] Hanson 2000, 111.

[20] Schwartz 2009, 179 n. 753.

[21] See n. 17.

[22] Schwartz 2009, 179–83.

While Hanson and Schwartz are correct in stating that the sight of a leader fighting his own battles would be good for morale, this dissertation will aim to temper the idea of the front-line general. We will first dispel the notion that the death of a leader did not have an adverse effect on the outcome of the battle, or that it necessarily proves his presence at the front (chapter 1). We will then examine several battles where the respective leaders demonstrably led from the rear, and offer proof that a rear-line general could galvanize his troops just as well as a front-ranker (chapter 2).

Paul Cartledge, for his part, largely aligns himself with Hanson and Schwartz.[23] He adds, however, that a shift occurred somewhere during the Peloponnesian war, with men such as Brasidas, Lysander, and to a lesser degree king Agis II, setting an alternative example of generalship for future generations. Chapters two and three will analyse the actions of king Agis II and Brasidas, respectively. We will suggest that the former was a better strategist and tactician than commonly accepted, following Woodhouse's arguments concerning the first battle of Mantinea (see page 100). We will also examine how Brasidas' famous use of the hollow square was mimicked by the Athenians and the Ten Thousand, and what those three instances can tell us about Greek tactical communications (see page 113). Lysander will not be featured in this dissertation, as naval communications fall outside of its purview.

These largely pessimistic views concerning the limits of Greek generalship have been maintained for decades. They are often mentioned in passing in works not wholly concerned with generalship, and are usually held as self-evident.[24] More recently, Roel Konijnendijk has offered a more nuanced approach than the ones outlined above, and proposed that Greek leaders did not choose to fight because they could not otherwise lead, but rather than they could not otherwise lead because they often chose to fight.[25] This

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[23] Cartledge 1987, 206.
[24] Adcock 1957, 6–7; Cartledge 1977, 15–16; Cawkwell 1972, 261; Connor 1988, 13; Lazenby 1991, 104; Pritchett 1974, 206; Snodgrass 1999, 62.
[25] Konijnendijk 2018, 142–43.

important distinction implies that a Greek leader may have been able to command his men, if he but chose to do so.

The most outspoken scholar against the 'front-line general', however, is Everett Wheeler who stresses that our sources do not provide enough information to maintain what he dubs the *opinio communis*.[26] He believes that Greek leaders would often position themselves deeper within the phalanx, or even at the rear lines. Hanson dismisses any examination of the role and position of the general as 'academic quibbling',[27] but Wheeler's work raises important questions that should at the very least temper the idea that the Hellenes saw no point in battle-managers. He claims that a significant number of Classical generals took mid-battle actions that would have been impossible for anyone stationed at the front, citing the cases of Myronides,[28] Daphnaeus,[29] Pagondas,[30] Alcibiades,[31] and Agis.[32] He also adds that many *strategoi* lost their lives during routs or pursuits, when order had broken down. This would suggest that the death toll among generals in no way confirms their presence at the front, since any semblance of order would have been lost when they fell.

This dissertation will adopt Wheeler's view and examine how a general stationed deeper within his phalanx might communicate with his men via vocal orders and messengers (see chapter 1). We will examine Myronides, Pagondas and Agis, but not Alcibiades or Daphnaeus: the latter tells us nothing that Myronides cannot teach us on his own, while the former is not as important as other cases omitted by Wheeler, such as Brasidas, Lamachus, Lykophron, Xenophon, Nicias and Demosthenes (chapters 2 and 3).

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[26] Wheeler 2007b, 242–43.
[27] Hanson 1995, 261.
[28] Front. *Strat*. 2.4.11; Polyaenus 1.35.1; Thuc. 1.108.3.
[29] Polyaenus 5.7.
[30] Thuc. 4.96.5.
[31] Front. *Strat*. 2.7.6.
[32] Thuc. 5.71-3.

Wheeler's theory will also be linked with Hans van Wees' own hypothesis that Hellenic generals of the early fifth century were sometimes accompanied by their attendants.[33]

Tactical flexibility of hoplite armies

Apart from our examination on the limits of Greek generalship, this dissertation will also touch upon the tactical limitations of Greek armies as a whole. The backbone of most city-state armies was the hoplite spearman, a form of heavy infantryman often seen as clumsy, amateurish, and unsuited to the terrain of mainland Greece.[34] While this dissertation will not argue in support of a highly trained and efficient hoplite, we will nevertheless demonstrate how his tactical flexibility, and thus his ability to follow orders, may have been underestimated.

Grundy identifies two alleged paradoxes of Greek warfare. Firstly, he points to the apparent absurdity of favouring heavily armoured infantry over skirmishers in a land where some four fifths of the country is rugged.[35] He cites the destruction of an Athenian army in Aetolia, and a Spartan company in Sphacteria as evidence.[36] Secondly, he stresses that Greek hoplites, especially Spartans, were poor siege experts, despite the fact that *acropoleis* were so prevalent. Both of these paradoxes have more recently been supported by Ober, [37] and re-emerge quite frequently in modern scholarship (see below).

Grundy's views are shared by Gomme and Vidal-Naquet.[38] The latter adds that hoplites were only suited to phalanx-warfare on a pre-arranged plain, and that they were incapable of effectively pursuing a beaten foe. While siege warfare will not feature heavily in this dissertation (see chapter four), we will analyse at least one hoplite army that not only prevailed against native skirmishers in hilly terrain, but did

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[33] Van Wees 2004, 69, 187.

[34] Hunt 2007, 129–30; Sidebottom 2004, 84–85; Snodgrass 1999, 49, 56–57.

[35] Grundy 1911, 244. So too Wheeler 2007a, 202.

[36] Aetolia: Thuc. 3.98.1-2. Sphacteria: Thuc. 4.36.1-3.

[37] Ober 1991, 173–74. Ober believes that Greek roads and highways played little role in trade, and where instead built at considerable expense principally as military highways, to accommodate the march of clumsy an overburdened hoplites: Ober 1991, 176.

[38] Gomme 1945, 10–11; Vidal-Naquet 1986, 86.

so while adopting a complicated formation for the first time in recorded Greek history (see chapter three). We will also examine the evolution of the hoplite equipment, and how it apparently evolved to emphasize flexibility and accommodate tactical communications (chapter one).

Konijnendijk offers a more nuanced view on the tactical limitations of Hellenic armies, and their effect on communications: he claims that while the capabilities of Greek hoplites seem, at first, completely inadequate, certain exceptions can be found. His reasons for generally dismissing Greek tactical communications are the following: for starters, Greek methods of communications were primitive and underused, a view shared by Cartledge.[39] Instruments, for example, served only to sound the charge and the retreat. All else was done through vocal orders, which were only effective when armies were properly sub-divided.[40] Greek militias, however, lacked this kind of organization.[41] The *lochos* was the smallest military unit of the wider Greek world, and usually contained several hundreds of men.[42] The best the Greeks could do was shout at each other, and pass orders from man to man. He further argues that army sizes, battlefield length, ambient noise, and natural obstacles would have further impeded oral communication. In addition, Greek soldiers were generally untrained, and generals, again, often fought in the front ranks. He further states that units in coalition armies would sometimes disobey orders, a fact stressed by Kromayer and Veith (1928, 83–84) and reiterated by Pritchett (1974, 190, 207), Hanson (2000, 143) and Rawlings (2007, 84).[43] Insubordination, enmity, and rivalry seems to have been one of the core reasons why Greek tactical communications could fail, as we will examine briefly in chapter two, and more in-depth in chapter three.

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[39] Konijnendijk 2018, 139–40. See note 23 for Cartledge.
[40] Konijnendijk 2018, 140; Xen. *Hipp*. 2.6; *Lak.Pol.* 11.5-6; Thuc. 5.66.3-4, 5.73.2.
[41] Cf. Hunt 2007, 129: 'In the hoplite phalanx [...] the basic units were large and the chain of command simple'.
[42] Anderson (1970, 98–100) and Matthew (2012, 169–70, 197) have argued in support of officers below the rank of *lochagos* outside of Sparta, but Konijnendijk correctly states that there is no evidence to support this claim, citing the fact that Xenophon was still trying to convince the Athenians to better regiment themselves in the 360s (Xen. *Hipp*. 2.6).
[43] Konijnendijk 2018, 140–44.

Konijnendijk, however, nuances his work and mentions several battles where military commanders successfully issued mid-battle orders (Figure 1).[44] He then examines the reasons why some commanders could apparently lead their men while others could not and argues that most of the cited examples involve Spartans, or mercenary armies trained in the Spartan manner.[45] He also states that the Spartans were the only ones to attempt large scale orders, while other Greeks would simply issue their mid-battle commands to smaller picked units.[46] He concludes by claiming that only small groups of specialist hoplites could hope to match the Spartans' level of tactical flexibility, and that a force had to meet one or more criteria in order to be able to follow mid-battle orders: 1) they needed to be well-trained, 2) well-organized, 3) or under the general's immediate control.[47] Greek levies, on the other hand, were unreliable and impossible to command.[48]

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[44] Konijnendijk 2018, 148.
[45] Konijnendijk 2018, 148–49.
[46] Konijnendijk 2018, 150; Thuc. 6.101.6.
[47] Konijnendijk 2018, 150.
[48] Konijnendijk 2018, 151–52, 154.

'UTTERLY OUTMATCHED IN SKILL': BATTLE TACTICS   149

TABLE 6   *Revised orders given during battle*

Date	Place	Army	Orders	Troops involved	Source
479	Plataia	Greeks	Athenians to come to Spartans' aid	Whole Athenian contingent or its archers	Hdt. 9.60.1
432	Potidaia	Potidaians	Victorious wing to form tight formation for breakthrough to city	'Corinthians and picked troops around [Aristeus]'	Thuc. 1.62.6–63.1
424	Delion	Boiotians	Cavalry to attack Athenian right flank	'Two units of horsemen'	Thuc. 4.96.5
418	Mantineia	Spartans	Left wing to restore line	Skiritai	Thuc. 5.72.1
			Right wing to wheel left	'The whole army'	Thuc. 5.73.2
414	Syracuse	Athenians	Left wing to support crumbling right	'A few archers and the Argives'	Thuc. 6.101.6
401	Kounaxa	Ten Thousand	Countermarch to face threat from rear	'The Greeks'	Xen. *An.* 1.10.6
400	Bithynia	Ten Thousand	Left wing to reform and resume the charge	Peltasts and hoplites of the left wing	Xen. *An.* 6.5.29–30
394	Nemea	Spartans	Whole line to march right in column	'Everyone'	Xen. *Hell.* 4.2.19
			Right wing to wheel inward	'The outflanking wing'	Xen. *Hell.* 4.2.20
394	Koroneia	Boiotians	Victorious wing to form tight formation for breakthrough to camp	'The Thebans'	Xen. *Hell.* 4.3.18
		Spartans	Countermarch to face Thebans (implied)	Agesilaos' contingent	Xen. *Hell.* 4.3.19
381	Olynthos	Spartans	Army to mount cascading charge against Olynthian cavalry	Hoplites, peltasts and horsemen	Xen. *Hell.* 5.3.4–5
375	Tegyra	Spartans	Phalanx to open gaps for Thebans to pass through	'The whole army'	Plut. *Pel.* 17.4
373	Kerkyra	Spartans	Phalanx to double its depth	'Those at the extreme end of the line'	Xen. *Hell.* 6.2.20–21
371	Leuktra	Spartans	Phalanx to extend right and wheel inward	'The right wing'	Plut. *Pel.* 23.2
364	Kynoske-phalai	Thebans	Cavalry to attack Alexander of Pherai's phalanx in rear	'The horsemen'	Plut. *Pel.* 32.3

Figure 1: Mid-battle orders. Table from Konijnendijk (2018, 149, table 6)

This dissertation will agree with most of Konijnendijk's points: hoplites were indeed untrained, poorly regimented, often insubordinate, and smaller armies were more flexible than larger ones (see chapter 3). Other assertions, however, are less certain: vocal orders, for instance, are still used in modern warfare, and remain audible even though the battlefield is now louder than ever before. Even armies with the means to completely transition to more sophisticated methods of communications still favor vocal orders within formations stretching over at least 70 meters (see chapter one).

Furthermore, if we restrict ourselves to the battles of the fifth century in Konijnendijk's list, then his claim that most mid-battle orders involve Spartans, or Spartan-trained troops no longer applies. Out of the seven remaining battles, four involve non-Spartan troops, namely Plataia (Athenians), Potidaia (Corinthians and picked troops), Delion (Boeotians), and Syracuse (Athenians and Argives). In addition, the first battle of Mantinea saw several movements and tactical communications involving allied contingents that were probably neither led nor trained by the Spartan elements of the army (see chapter two). Furthermore, Konijnendijk's list omits at least two other battles with evidence of mid-battle communications within non-Spartan armies: the battle of Solygia (Corinthians), and the battle of Oenophyta (Athenians).[49] The tactical capabilities of non-Spartan armies will be examined in chapters two and three.

Moreover, Konijnendijk's views on Greek levies, while broadly true, omit certain cases where amateur soldiers proved capable of adapting to their leader's unconventional demands: the battle of Lyncestis, for example, saw an army half-composed of hoplite levies successfully form up in hollow square formation for the first time in recorded Greek history (see chapter three). As such, Konijnendijk's statement that a Greek militia 'could not be asked to do what it was never trained or accustomed to do' should perhaps be reconsidered.[50] In addition, several battles of the fifth century saw mid-battle orders directed at, and obeyed by, units of line-infantry that were probably neither well-trained, nor well-organized, nor under the general's control (chapters two and three).

Louis Rawlings, for his part, holds some misgivings concerning Greek communications, particularly within large and hastily assembled heterogenous hoplite-armies.[51] Nevertheless, we can point to the first battle of Mantinea, where Agis commanded his allied troops effectively enough to orchestrate a difficult withdrawal on the eve of the battle, a daring manoeuvre prior to the clash, and a wheeling manoeuvre in

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[49] Both battles will be examined in chapter two.
[50] Konijnendijk 2018, 3.
[51] Rawlings 2007, 83. He cites Nemea as an example: Xen. *Hell*. 4.2.16-17; 4.2.18.

the middle of the fight (see chapter two).[52] We can also point to the battle of Lyncestis, where Brasidas organized three thousand hoplites and an unknown number of skirmishers from various backgrounds into hollow square formation (see chapter three). The same is true of the Athenian coalition army at Syracuse and the Ten Thousand (chapter three).

On the other hand, Rawlings proposes that hoplites were far more flexible than commonly thought. Their manoeuvres may have been simple, but nearly all major battles of the fifth and fourth century still involved some form of manoeuvre.[53] He argues that modern scholarship overfocuses on the role and performance of hoplites in pitched battle, to the detriment of the wealth of experience they gained in more commonplace military activities such as patrol duty, raids, service as marines, rowers, siege engineers, urban fighters, and more.[54] Rawlings argues that all these extra-phalanx practices called for flexibility, and would have helped the hoplite to operate outside the narrow confines of the phalanx.[55] This dissertation will adopt Rawling's views, and examine the possibility that these sources of military experience may have been enough to allow hoplites to adopt hitherto unknown formations, such as the hollow square (chapter three).

Lee largely agrees with Rawlings concerning modern scholarship's fascination with the phalanx.[56] He examines the lesser known areas of ancient Warfare, such as regional developments and military traditions outside of Athens and Sparta. Lee notes that the search for the 'typical phalanx clash' has eclipsed the fact that phalanx warfare could evolve in a number of ways, citing Solygia as a tell-tale

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[52] Ironically, the only case of insubordination on that day came from the Spartans themselves, not the allies: Thuc. 5.72.1. See chapter 3.

[53] Rawlings 2007, 90.

[54] Rawlings 2000, 233–34. Rawlings generally argues that hoplite warfare was far from straightforward, and certainly not agonal (2007, 81). Skirmishes and back-and-forth engagements that called for flexibility were common, not just simple phalanx clashes. He cites Plataea as an example, where the Greeks and Persians jostled for control of water sources (Hdt. 9.20-25; 9.49; 9.52-57). Phalanx clashes could even be avoided altogether if neither side could gain an advantage beforehand (Thuc 4.73.4; Hutchinson 2006, 74; Wylie 2007, 427).

[55] Rawlings 2000, 236.

[56] Lee 2013.

example.[57] He sees this battle as proof that hoplite warfare was not as ritualized and straight-forward as once thought. The battle of Solygia seems, indeed, to indicate that small sections of line infantry could be expected to participate in impromptu missions outside of the phalanx and will thus be examine in detail in chapter 2 (see page 76).

Similarly to Rawlings and Lee, Nick Barley has recently noted the 'lack of detailed attention to what we could call "everyday" warfare'.[58] He believes that fascination with phalanx-warfare and pitched battles has led scholars to understudy the more common aspects of Hellenic Warfare. According to Barley, the first notable engagements of the Peloponnesian war were small skirmishes, urban warfare, and siege-breaking rather than pitched battles.[59] He believes that modern scholarship often downplays the role of small units in Greek warfare,[60] a view he shares with Roel Konijnendijk who has recently gone against this trend, dedicating a large portion of his book to the examination of picked troops.[61] This dissertation will analyze the importance of small units in Greek warfare, and how they affected the flexibility of Hellenic armies, but unlike Barley and Konijnendijk, we will focus mainly on non-elite regiments (see chapters two and three).

Intelligence gathering

Since the transmission of orders is part of what we call military intelligence, this dissertation will inevitably touch upon the wider topic as well. Our focus, however, will specifically be the *transmission* of orders. We will not be focusing on how a city might *gather* information on her rival, or how a general might scout ahead of his troops, though both these issues will play some role in chapter 5 (page 213). In

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[57] Lee 2013, 154-155.
[58] Barley 2015, 44.
[59] Barley 2015, 55.
[60] Barley 2015, 53–62.
[61] Konijnendijk 2018, 153–54: 'picked troops have never been fully integrated into modern characterisations of Greek warfare [...] more recent works still do little more than point out the phenomenon without systematic study of its tactical purpose'.

short, we will not so much look at how the information was gathered, but how it was diffused and how effective the transmission was.[62]

Unlike what we will argue for in this dissertation, many historians today would agree that the Greeks largely neglected military intelligence in the fifth century BC.[63] This view is perhaps best exemplified by Kendrick Pritchett, who claims that marching Greek armies did not employ scouts before the fourth century.[64] His two main arguments in support of this view are the following: firstly, our sources are full of intelligence failures that presumably would have been prevented if scouts were present.[65] He notably cites the case of Agis I at the battle of Mantinea where Thucydides alleges the Spartans were surprised to suddenly encounter the Argive army in front of them (see chapter 3 for opposite view).[66] Secondly, he notes that there is nothing in our sources that could be qualified as a proper scout.[67]

Frank Russell disagrees. Though he concedes that not all Greek generals of the fifth century were mindful of intelligence,[68] he believes that Pritchett's definition of a scout is not in accordance with either ancient or modern practices.[69] Cleon's scouting of Amphipolis,[70] for example, is seen by Pritchett as evidence of the absence of scouts, since a large portion of the army was involved in the operation, but Russell notes that it is simply a reconnaissance in force,[71] much like what the Syracusans would do with

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[62] Liddell (2017, 125) and Bettalli (2017, 173) have both noted that Aineias Tacticus also focused more on methods of transmitting information rather than gathering it.

[63] Adcock 1957, 40–41; Spence 1993, 145; Wheeler 2007a, 202.

[64] Pritchett 1971, 127, 132–33. This would be in contrast with modern armies, who are expected to make use of scouts to ensure the host does not walk blindly into an ambush. Pritchett (1971, 127 n. 1) quotes an unspecified modern military manual: 'The Classic defense of a mobile formation is reconnaissance of nearby terrain, particularly high ground, to learn if the enemy has lodgement there. If this is neglected, the formation may be surprised by frontal assault, or taken in the flank or rear […]'.

[65] Pritchett 1971, 127–28.

[66] Pritchett 1971, 127; Thuc. 5.66.1-2.

[67] Pritchett 1971, 128–31. According to Pritchett, the following criteria had to be met: '(1) The whereabouts of the enemy is not known. (2) The scout merely acts as an advanced eye for the army. (3) It is not the express purpose of the scout to find the enemy. (4) The armies are not static. (5) The scout functions separately from the army.'

[68] Russell 2013, 489.

[69] Russell 1999, 12.

[70] Thuc. 5.7.3-4.

[71] As does Wheeler 2007a, 214.

their cavalry at Catana.[72] Reconnaissance, in one way or another, is attested in the Iliad and the Odyssey.[73] Furthermore, Russell notes that intelligence failure does not equate to an absence of intelligence, nor even to incompetence.

> An intelligence failure does not necessarily indicate a lack of intelligence resources. Should one operate on this assumption, one must conclude that Lee neglected reconnaissance […] prior to and at Gettysburg […] instead, one must ask why Stuart failed to apprise him of Meade's advance. […]. To return to the Greeks, Alexander was obviously ignorant of Darius' movements before Issus yet was not by any means heedless of reconnaissance. Therefore, failure cannot be taken to mean absence or neglect; further, it may not even mean utter incompetence, since counterintelligence and deception measures were prevalent among the Greeks. (Russell 1999, 13–14)

He does agree that the Hellenes appear to have taken a keener interest in reconnaissance in the fourth century compared to the fifth, though he notes that this could be a false impression created by our surviving sources.[74]

Russell also lists the many other methods through which Greek generals, or *poleis*, could gather intelligence for their campaigns.[75] While many of these practices fall short of what we would consider as proper military intelligence gathering, they nevertheless enabled the Greeks to operate with dependable knowledge on their enemies. These tools included tactical, strategic, and covert methods that could help a general see 'beyond the hill', 'beyond the border' and 'beyond the pale' respectively, as Russell puts it.

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[72] Russell 1999, 13; Thuc. 6.65.3. Russell (2013, 475) notes that both the Greeks and the Romans made use of scouting forces ranging from a single man in disguise, to large contingents of thousands of well-equipped soldiers. The size of the formation depended on the level of emphasis placed between fighting power and covertness.
[73] Russell 1999, 12 n. 8; *Iliad* 10.206-10; *Od.* 9.88-90, 9.147.-150, 10.100-102.
[74] Russell 1999, 14.
[75] Russell 1999, 10–139.

In the first category we find: reconnaissance agents, who could take the form of light infantry or cavalry or a mixture of both; surveillance agents, both at night and day, though some commanders could neglect the latter; pickets, whether in camp or in a *polis*; patrols; diviners; captives, ranging from enemy soldiers to local civilians who could act as guides (see chapter 3); deserters, who could sometimes be sent as a ruse to confuse the enemy (see below and chapter 3); and mercenaries previously employed by the enemy.[76]

The second category included: envoys, who could report on the general state of affairs of a *polis*, though the military information they could gather was limited; heralds, who went back and forth between armies and could report on what they had seen; *proxenoi*, who represented the interests of a foreign people in their *polis*, and could provide their clients with information regarding their countrymen; allies, who often shared information with their friends; and other miscellaneous sources of information such as merchants, or other wanderers such as runaway slaves who could report about the lay of the land or the general state of a affairs from where they came.[77]

The third category involves spies in their many forms and is unsurprisingly difficult to surmise upon owing to the sparsity of our sources. Greek *kataskopoi* could range from false deserters, to prostitutes, to infiltrated citizens in a foreign city.[78] This topic has been analyzed in detail by Luis Losada, who argues that treasonous activities by fifth columns were very common during the Peloponnesian War, and possibly even earlier than that.[79] He further adds that the many different spying and counter-spying techniques that have survived in our sources imply that military intelligence was more important in Greek warfare than what was accepted in Losada's day.[80]

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[76] Each of these categories is examined in Russell 1999, 15–62.
[77] Russell 1999, 63–93, 98–102.
[78] Xen. *Hipp.* 4.7-8; Russell 1999, 104 (false deserters), 109 (prostitutes), 130 (inflitrators).
[79] Losada 1972, 133-135
[80] Losada 1972, 114 n. 3.

This dissertation will not aim to add more to the subject of intelligence gathering. We will instead largely adopt Russel's views and examine how strategic intelligence supplied by allied states and rebellious slaves could influence the course of a campaign (see chapter 5). Furthermore, Russel's belief that failure does not equate to incompetence will also influence how we rate the effectiveness, or lack thereof, of Greek communications (see below).

Fire-signals

Fire-signals were used mostly, perhaps exclusively, during war possibly as far back as the mythical times of Homer.[81] The Hellenistic historian Polybius claimed that Greek fire-signalling methods prior to the introduction of his own improved system were primitive and incapable of delivering anything other than pre-arranged messages.[82] This view sometimes re-emerges in modern scholarship,[83] but several historians note that Polybius' harsh views may have been exaggerated (see below). This dissertation will go against Polybius, and demonstrate that complex messages could be conveyed via fire-signals as early as the fifth century BC.

One scholar who supports the idea that early Greek fire-signals were ineffective prior to Aeneas and Polybius' inventions is Jackson Hershbell.[84] In this, he is possibly influenced by Polybius' claims, and the unfortunate lack of evidence concerning fire-signals prior to the fourth century. Hershbell's conclusions are also likely driven by the fact that Aeneas Tacticus' hydraulic telegraph, invented in the fourth century, was incapable of communicating messages that had not been pre-arranged. Chapter 4 will disprove this notion, and suggest that the hydraulic telegraph's limitations in the fourth century are not indicative of earlier practices (page 208).

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[81] Fire signals used exclusively in war: Hershbell 1978, 82; Russell 1999, 146 n.22. Fire-signals in Homer: Russell 1999, 145; *Iliad*. 18.207-13. First historical example of fire signals: Hdt. 7.183.1-3.
[82] Plb. 10.43.
[83] Leighton 1969, 147–48.
[84] Hershbell 1978, 84.

Russell, once again, argues in support of a greater amount of skill among the Greeks,[85] though he does not think that they would have been able to communicate unforeseen events or precise details. He argues that Polybius' harsh views on earlier methods of communication, while largely reasonable, may have been exaggerated in order to highlight his own improved method. He notably points to the siege of Plataea, where the defenders employed tactics that seemingly prove that fire-signalling methods could be far more complex than Polybius suggested.[86]

The siege of Plataea is among the most detailed and memorable passages in Thucydides and, as a result, has received a great deal of attention from experts throughout the years. Most of these scholars, however, focus exclusively on the tactics adopted by either side during the initial assault on the city. Almost none has taken the time to analyse the implications of the Plataean fire-signals, despite the fact that they played a crucial part in the successful escape of the Plataean garrison.[87] Some exceptions, other than Russel, include Gomme and Grote, who point out that Plataea might disprove Polybius' claims.[88] More recently, Moore examined how ancient authors depict fire-signalling methods in their works, and stressed that Plataea could have important implications concerning their capabilities.[89] Unfortunately, he does not go into any more detail than that. This remarkable lack of interest in strategic communications among contemporary scholars must be pointed out, as it follows a pattern known since Antiquity: Polybius' own account on the subject of fire-signals was written specifically because he lamented the fact that none of his predecessors took an interest in such a vital aspect of warfare.[90] Chapter 4 will accordingly revive Gomme, Grote, Moore and Russel's theories, in an effort to bring an important question back into

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[85] 'Although [Polybius] added that signals were less developed in earlier times (i.e., before the second century), extant examples show that even then signals served often and well.' Russell 1999, 146.

[86] Russell 1999, 147.

[87] Examinations of the siege of Plataea that do not take the fire-signals into any real consideration include: Barley 2015, 55–56; Chaniotis 2013, 444–48; Ducrey 2019, 337–38; Garlan 1974, 118; Harrison 1959; Henderson 1927, 68–81; Hornblower 1991, 406–8; Kagan 1974, 105; Rees 2016, 142; Seaman 2013, 647–51; Strauss 2007; Tritle 2010, 57–59.

[88] Gomme 1956a, 284; Grote 1851, 320 n. 1.

[89] D. W. Moore 2017, 115.

[90] Plb. 10.43.

the academic spotlight (page 185). We will also attempt to build upon their ideas, and draw a clearer picture of what the signalling methods might have been like at Plataea.

Modern Greece is still dotted with the ruins of early warning systems meant to guard and supervise the territory of the ancient *poleis.* These systems used a combination of forts and watchtowers, all in visual range of one another, to communicate via fire-signals. Networks such as these have been examined by several scholars, yet dating them with any real precision remains impossible. Experts like Pikoulas, Fossey, and Ober tenuously date most of the material remains they have inspected to the fourth century BC, however they all agree that their origins should be looked for in earlier times.[91] Pikoulas focuses on the Argive network, while Fossey and Ober examine Boeotia and Attica respectively. Fossey in particular is extremely sceptical of the fact that Thebes would not have had some form of early warning system before the fourth century BC. This dissertation will adopt these views, and argue in support of the presence of earlier networks of communication in the fifth century BC, possibly made out of perishable wood. Chapter four will examine the Boeotian network, as well as Alcidas' makeshift system created during his expedition to Corcyra (page 185). Chapter five will analyse the Argive system in detail, and how its presence may have affected Agis' first invasion of Argos (page 213).

Methodology

Our approach will be based on detailed case-studies rather than a comprehensive coverage of the topic of communications. As previously mentioned, evidence is scarce within fifth century Greek sources, meaning that each piece of the puzzle must be analysed individually and in detail to determine the effectiveness, or lack thereof, of order transmissions. A critical approach to our sources is indispensable, since what little information remains may have been obscured by Greek prejudice or indifference.[92] Both

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[91] Fossey 1992, 128; Ober 1985, 205–7; Pikoulas 1995, 332.
[92] Not unlike other topics of military history such as the peltast.

Thucydides and Xenophon, our primary sources, seem to have altered events involving military communications to suit their own agenda at least once: the former to condemn a figure he seemingly disliked (page 100) the latter to safeguard his own reputation (page 168).

This dissertation will also partly rely on a practical reconstruction to establish the advantages of the hydraulic telegraph (Appendix). We will enlist the help of two amateur teams, train them to a limited extent, and see how effectively and reliably they can communicate through Aeneas' invention.

Finally, I will also be drawing on my personal experience in the Hellenic army on a few occasions. While it is dangerous to assume that modern military practices and experiences can be transposed to the ancient world, there are certain aspects of warfare that simply do not change. Human visual and acoustic perception, for instance, has not varied. It is, therefore, safe to state that if modern vocal orders are still audible today across a set distance, they would have been so in the ancient battlefield as well (page 46).

Which methods of communication qualify as 'effective' will largely depend upon each case. Nevertheless, we can point to some common threads. First and foremost, failure will not be equated with ineffectiveness. As Frank Russell noted, failure does not suggest incompetence or poor methods.[93] Human error will especially not be taken into consideration, since this dissertation is interested in the method itself rather than its users. For instance, many historians will agree that Agis' orders at the battle of Mantinea were ill-advised (see page 105 for opposite view). What matters for this paper, however, is the fact that his commands were successfully transmitted down the line. Furthermore, it could be argued that the disastrous end of the Sicilian expedition was partly due to the fact that Nicias failed to share vital information concerning the state of the besieged with his colleagues (see page 168). This, however, was not the fault of the intelligence system itself, but rather the selfish actions of a man afraid of censure.[94] The only way that human error will be equated with ineffectiveness will be if the mistake was due to an

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[93] See page 22.
[94] As Russell has correctly noted (1999, 231-232).

overly complex or insufficiently clear method of communication: if a system is too complicated to be easily grasped by its intended users, or inversely if it is so basic as to be essentially useless, then the fault lies with the system, not the person.

Structure

This dissertation will be separated into two major parts: the first dealing with tactical communications and the second with strategic. The first part will consist of 3 chapters, and will attempt to establish whether a general could effectively lead his men, and most importantly whether or not he could alter the course of an ongoing battle through tactical communications. Chapter one will begin by analysing the role and position of the general on the battlefield, in an effort to confirm and add to Wheeler's theory that some Greek leaders opted to lead rather than fight. Chapter two will then continue with an examination of the battles of Delium, Oenophyta, Second Syracuse, Solygia, and First Mantinea, all of which feature mid-battle orders. We will analyse each clash in turn and establish what they can teach us concerning a general's level of control, methods of communication, and overall tactical capabilities. Chapter three will examine three out of the four recorded uses of the hollow square in the fifth century, namely the battle of Lyncestis, the retreat from Syracuse, and the initial stages of the flight of the Ten Thousand. This unusual military formation demanded a greater degree of flexibility, cooperation, and communication than the phalanx and as such arguably represents the epitome of tactical communications among Hellenic armies.

The second part will consist of two more chapters. The first will establish whether or not the Greeks could communicate unforeseen events through fire-signals. We will examine the siege of Plataea, as well as Alcidas' naval expedition against Corcyra, two episodes that strongly suggest fifth century Greek fire-signalling methods were far more effective than what later authors such as Polybius have claimed. Apart from our literary evidence, this chapter will also include a practical experiment aimed at establishing the

benefits and detriments of the earliest known Greek fire-signalling method: Aeneas Tacticus' hydraulic telegraph. This fourth century invention was an ingenious way to easily communicate a number of predetermined messages, though it could not transmit anything that had not been agreed upon before. Polybius claims this system was the most advanced of its age, which in turn implies that previous systems could not communicate unforeseen events either.[95] Our experiment will show that the advantage of Aeneas' system was not its sophistication or effectiveness, but rather its ease of use. The second and last chapter will follow the expedition of king Agis II of Sparta against Argos, and will prove how crucial strategic communications could be during a military campaign.

Whatever information we uncover over the course of this dissertation will contribute to furthering our understanding of Greek warfare overall. Proper order transmissions are the bedrock of any successful army, and an examination of how they functioned in ancient Greece is overdue.

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[95] Plb. 10.44-5.

Part I: Tactical Communications

Chapter 1: The role of the general

The Greek general: brawler or leader?

Tactical communications are essential for any army that hopes to adapt on the field of battle. A general may, of course, plan ahead and establish a signal to launch a surprise attack, or call upon hidden reserves, but could he also react to something he had not foreseen?

Classical generals are widely believed to have played little role as battle-managers, instead preferring to take their place in the ranks of the phalanx and fight in the front-lines, unable to perceive what was going on around them, and often laying down their lives in the process. This view has recently been challenged by historians such as Everett Wheeler (2007b), Louis Rawlings (2007), and Roel Konijnendijk (2018), but they remain prevalent. According to modern scholarship, this fascination with personal valour and hand to hand combat would necessarily prevent them from reading the battlefield and communicating orders to their men, since they would be too busy fighting for their very lives.[96]

> There was a genuine desire on the part of the general to fight and risk death alongside his men, like the Spartan king Leonidas at Thermopylai, rather than watch the killing safely from afar. At least in the sixth and fifth centuries, this was an important function of generalship (Hanson 2000, 108)

> In the fourth century […] the commander-in-chief, be he king or general, was still expected to join the hoplite phalanx in person, and so was denied a general view of the

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[96] See: Debidour 2002, 44; Hanson 2000, 107–14; Schwartz 2009, 179–83.

> development of the battle and the opportunity to make new plans if his first mis-carried
>
> (Anderson 1970, 71)

> The hoplite general […] led his troops from the front of the melee and had no mechanical
>
> means of communicating detailed instructions beyond his immediate entourage, his
>
> primary function had been to maintain the morale of his troops (Cartledge 1987, 206)

> During the entire hoplite era, the Greeks preferred a commanding officer who not only
>
> participated in the fighting but who was also placed right where the fighting was thickest
>
> (Schwartz 2009, 180)

It is argued that this mentality would gradually evolve, until a new type of general, closer to our modern understanding, started to appear during the Hellenistic period, where individual prowess gradually became secondary to battlefield-management.[97] This shift is thought to be exemplified by Pyrrhus, who was lauded for his ability to command, even as he fought.[98]

This new general served as a model to future military leaders, and has shaped our own mentality of what proper military leadership entails – the soldier fights while the general leads from a distance. This idea is so ingrained in our society that few now question the fact that a commander should always lead from the rear.[99] During the Falklands War, Lieutenant Colonel Herbert Jones was killed at the battle of Goose Green, in 1982, after personally leading a charge against enemy positions. Even though Jones was posthumously awarded the Victoria Cross for his sacrifice, his actions have since been criticized by the

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[97] Schwartz 2009, 180; Wheeler 2007b, 242.

[98] Plut. *Pyrrh*. 16.8.

[99] Though it should be noted that some experts and scholars, such as Hanson and Schwartz, still argue in support of placing modern senior officers in danger in order to inspire the troops: Hanson 2000, 107–10, 115–16; Schwartz 2009, 182–83. Hanson begins his chapter on the role of the Greek general by quoting Richard Gabriel and Paul Savage (1978): 'In Vietnam the record is absolutely clear […] : the officer corps simply did not die in sufficient numbers or in the presence of their men often enough to provide the kind of 'martyrs' that all primary sociological units, especially those under stress, require if cohesion is to be maintained'. For proof that rear-line generals could still inspire their troops, see page 69.

public as well as some of his men as unnecessary, foolish, and detrimental. Modern armies, therefore, place a clear and absolute value on the survival of senior officers and generals, believing that without a distinct command-and-control structure an army's combat effectiveness will always suffer.[100] In other words: should the general be killed, communications will break down.

This seemingly evident separation of 'soldier' and 'general', however, was not as pronounced in ancient Greek society, and debate rages over when the two roles split. The development of Greek military leaders from undisciplined glory-seekers to Hellenistic paragons of generalship is firmly linked to any study of Greek tactical transmission of orders, since the passage from one to the other entails placing battle-management and communications over personal valour and combat.

There are, admittedly, many examples of Greek generals losing their lives or suffering grievous injuries in battle throughout the fifth century, and even well into the fourth, a fact that could indeed be explained by an overall tendency of Greek leaders to put themselves in harm's way.[101] Nevertheless, we should not jump to the conclusion that a commander must have invariably been fighting in the front lines simply because he was killed or wounded in action.

Wheeler, for instance, believes it was not unheard of for a Greek general of the Classical Period to place himself deeper inside the phalanx, instead of the front ranks.[102] From this relatively secure location, a Greek general could reasonably be expected to read the battlefield and react to it. He has theorised that the high attrition rate among generals occurred during the second phase of a hoplite battle, when one of the phalanxes had collapsed and the other followed in pursuit.[103] It was during these moments of chaos

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[100] The *Department of Defense Dictionary of Military and Associated Terms* defines 'Command-and-Control System' as 'The facilities, equipment, communications, procedures, and personnel essential for a commander to plan, direct, and control operations of assigned and attached forces pursuant to the missions assigned' (U.S. DOD 2010, 40),

[101] For a detailed list of casualties throughout the Classical period: Schwartz 2009, 182 n. 763.

[102] Wheeler 2007b.

[103] Dayton 2005, 81–102; Konijnendijk 2018, 133; Wheeler 2007b, 253, 2007a, 212.

and confusion, when the ranks had broken on both sides, that a military commander was most at risk.[104]

Under those conditions, any general could meet his end, regardless of where he actually started the battle.

A defeated general would, more often than not, stand his ground during a rout and welcome death as an

honourable alternative to shame, exile, or execution.[105] A victorious general, on the other hand, might

pursue the enemy too eagerly and be cut down far from the safety of his own soldiers.[106]

This happened notably to Callimachus and Stesilaus at the battle of Marathon, and to Lamachus,

during the siege of Syracuse.[107] Lamachus' case is particularly detailed and perfectly illustrates Wheeler's

point. After losing a battle to the Athenians, the right wing of the Syracusan army withdrew to the safety

of their city. Their left flank and cavalry, however, were left stranded outside. The Athenians sent 300

picked men to cut them off but the Syracusans routed them and pressed their advantage. They charged

into the Athenian right wing, throwing them into confusion. Upon seeing this, Lamachus took some of his

men from the left wing to reinforce the right. However, he and a handful of his soldiers overextended

themselves and were trapped behind a Syracusan ditch where they were slain.[108]

The following table lists 49 Hellenic leaders killed, or heavily wounded, in action in various ways

throughout the Classical Period.[109] It also indicates whether or not they were cut down during the later

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[104] Though it should be noted that Brasidas, in his speech deriding the qualities of the Illyrians, declared that pursuit posed no threat to the victor (Thuc. 4.126). Brasidas, however, was more interested in encouraging his troops than portraying the realities of war. It was Spartan practice, after all, not to pursue a beaten foe for too long (Thuc. 5.73.4; Paus. 4.8.11). Konijnendijk believes this was done to prevent unnecessary losses during the chase (2018, 189), yet Polyaenus and Plutarch both give different reasons. The former claimed it was done to encourage the enemy to flee (*Strat*. 1.16.3), while the latter believed the Spartans restrained themselves out of virtue (*Lyk*. 22.5). We need not accept only one of these theories to the exclusion of the rest.

[105] Wheeler 2007b, 268–69.

[106] Thuc. 4.44.2. This last scenario was certainly not limited to the officers of the phalanx, as cavalry officers were just as likely to overextend themselves in pursuit and lose their lives: Thuc. 4.72.4. For contemporary visual examples of the danger of overextension see video titled '*Ukrainian Special Police Charges Rioters'* mark 3:10 (sotospithis.wixsite.com/website). This video contains depictions of violent riots that may not be suitable for all, viewer discretion is advised.

[107] Wheeler 2007b, 253; Hdt. 6.113-114; Thuc. 6.101.6.

[108] Lazenby 2004, 148; Thuc. 6.101.6. The Syracusans had previously dug this ditch to protect the outworks they were building as a response to the Athenian blockading wall: Thuc. 6.101.2.

[109] This list also includes casualties from the fourth century for the sake of thoroughness.

stages of a hoplite battle, when they would be either pursuing a beaten foe, being pursued themselves, or trying to keep their own men from routing. Cases with insufficient information to determine the course of events will be classified as 'unknown', while cases that depict circumstances that cannot be considered in a debate about a Greek general's position in the phalanx will be marked as 'invalid' (see below).

	General	Reference	Killed in Rout/pursuit	Details
1	**Anchimolius**	Hdt. 5.63.4	No	The horsemen charged and slew Anchimolius and many more of the Lacedaemonians, and drove those that survived to their ships. (Godley 1922)
2	**Callimachus**	Hdt. 6.113.2 - 114.1	Yes	The Athenians […] followed the fleeing Persians and struck them down […] In this labor Callimachus the polemarch was slain, a brave man, and of the generals Stesilaus […] died. (Godley 1922)
3	**Stesilaus**	Hdt. 6.113.2 - 114.1	Yes	*Ibid.*
4	**Leonidas**	Hdt. 7.224.1	No	Leonidas, proving himself extremely valiant, fell in that struggle. (Godley 1922)
5	**Sophanes**	Hdt. 9.75.1	Unknown	He was killed at Datus by the Edonians in a battle for the gold-mines. (Godley 1930)
6	**Anaxikrates**	Diod. Sic. 12.3.4	Unknown	Anaxicrates […] who had fought brilliantly, ended his life heroically. (Oldfather 1946)
7	**Tolmides**	Diod. Sic. 12.6.2	Unknown/ Invalid	Tolmides fell fighting. (Oldfather 1946)
8	**Kallias**	Thuc. 1.63.3	Unknown	The Potidaeans and their allies had close upon three hundred killed; the Athenians a hundred and fifty of their own citizens, and Callias their general. (Crawley 1910)
9	**Melesander**	Thuc. 2.69.2	Unknown	Melesander, going up the country into Lycia with a force of Athenians from the ships and the allies, was defeated and killed in battle, with the loss of a number of his troops. (Crawley 1910)
10	**Xenophon**	Thuc. 2.79.7	Unknown	The Athenians […] returned to Athens with the remnant of their army; four hundred and thirty men and all the generals having fallen. (Crawley 1910)

11	**Unknown general**	Thuc. 2.79.7	unknown	*Ibid.*
12	**Unknown general**	Thuc. 2.79.7	unknown	*Ibid.*
13	**Asopios**	Thuc. 3.7.4	Yes	[Asopios] was cut off during his retreat, and most of his troops with him, by the people in those parts aided by some coast-guards. (Crawley 1910)
14	**Lysicles**	Thuc. 3.19.2	Unknown/ Invalid	Lysicles […] being attacked by the Carians and the people of Anaia, was slain with many of his soldiers. (Crawley 1910)
15	**Charoeades**	Thuc. 3.90.2 / FGrH 577 F 2	Unknown	[…] the Athenian general Charoeades, killed by the Syracusans in battle […](Crawley 1910) / The Syracusans recovered the ships and the crews. Chariades, who had been wounded, died from the wounds (translation by N. Luraghi).
16	**Prokles**	Thuc. 3.98.4	Unknown	Among the slain was also Procles, the colleague of Demosthenes. (Crawley 1910)
17	**Eurylochos**	Thuc. 3.108.1, 109.1	Unknown	The Peloponnesians were now well engaged and with their outflanking wing were upon the point of turning their enemy's right; when the Acarnanians from the ambuscade set upon them from behind, and broke them at the first attack, without their staying to resist; while the panic into which they fell caused the flight of most of their army, terrified beyond measure at seeing the division of Eurylochus and their best troops cut to pieces. (Crawley 1910)
18	**Macarios**	Thuc. 3.108.1	Unknown	*Ibid.*
19	**Epitadas**	Thuc. 4.38.1	Unknown	Epitadas, the first of the previous commanders, had been killed. (Crawley 1910)
20	**Hippagretas**	Thuc. 4.38.1	Yes	Was left for dead on the field, suggesting he fell during the Spartan retreat in the earlier hours of the battle.
21	**Lykophron**	Thuc. 4.44.2	Yes	It was in this rout of the right wing that they had the most killed, Lykophron their general being among the number. (Crawley 1910)
22	**Hippokrates**	Thuc. 4.101.2	Unknown	Not quite five hundred Boeotians fell in the battle, and nearly one thousand Athenians, including Hippocrates the general. (Crawley 1910)

23	**Brasidas**	Thuc. 5.10.8	No	Brasidas was passing on to attack the right, he received a wound; but his fall was not perceived by the Athenians, as he was taken up by those near him and carried off the field. (Crawley 1910)
24	**Cleon**	Thuc. 5.10.9	Invalid	Cleon, who from the first had no thought of fighting, at once fled and was overtaken and slain by a Myrcinian targeteers. (Crawley 1910)
25	**Xenares**	Thuc. 5.51.2	Unknown	They now in this battle defeated the Heracleots, Xenares, son of Cnidis, their Lacedaemonian commander, being among the slain. (Crawley 1910)
26	**Laches**	Thuc. 5.74.3	Unknown	The Argives, Orneans, and Cleonaeans had seven hundred killed; the Mantineans two hundred, and the Athenians and Aeginetans also two hundred, with both their generals. (Crawley 1910)
27	**Nikostratos**	Thuc. 5.74.3	Unknown	Ibid.
28	**Diomilos**	Thuc. 6.97.4	Yes	Attacking in this way in considerable disorder, the Syracusans were defeated in battle at Epipolae and retired to the town, with a loss of about three hundred killed, and Diomilus among the number. (Crawley 1910)
29	**Lamachus**	Thuc. 6.101.6	Yes	Lamachus came to their aid from the Athenian left with a few archers and with the Argives, and crossing a ditch, was left alone with a few that had crossed with him, and was killed. (Crawley 1910)
30	**Chalkideus**	Thuc. 8.24.1	Unknown	The Athenians […] made a descent at Panormus […] and killed Chalcideus the Lacedaemonian commander, who had come with a few men against them. (Crawley 1910)
31	**Mindarus**	Xen. *Hell*. 1.1.18	No	When Mindarus saw this, he also landed, and fell fighting on the shore; and those who were with him fled. (Brownson 1968b)
32	**Labotas**	Xen. *Hell*. 1.2.18	Unknown	About seven hundred of the Heracleots perished, together with the Lacedaemonian governor, Labotas. (Brownson 1968b)
33	**Hippocrates**	Xen. *Hell*. 1.3.6	No	For a long time Hippocrates and Thrasyllus fought […] Then Hippocrates was killed, and those who were with him fled back into the city. (Brownson 1968b)
34	**Chaeron**	Xen. *Hell*. 2.4.33	Yes	Then the Lacedaemonians […] gave ground, though still facing the enemy; and at this the latter attacked much more vigorously. In this attack Chaeron and Thibrachus, both of them polemarchs, were slain. (Brownson 1968b)

35	Thibrachus	Xen. *Hell*. 2.4.33	Yes	Ibid
36	Lysander	Xen. *Hell*. 3.5.19	No	Now when Lysander had been killed and his troops were fleeing to the mountain, the Thebans pursued stoutly. (Brownson 1968b)
37	Gorgopas	Xen. *Hell*. 5.1.12	Unknown/ Invalid	Now when those in the van had passed by the ambush, Chabrias and his followers rose up and immediately threw javelins and stones upon the enemy. And the hoplites who had disembarked from the ships also advanced upon them. Then those in the van […] were quickly killed, among whom were Gorgopas. (Brownson 1968b)
38	Teleutias	Xen. *Hell*. 5.3.5-6	Yes	Teleutias, filled with anger when he saw what was going on, […] led the hoplites swiftly forward, while he ordered the peltasts and the horsemen to pursue and not stop pursuing. […] when the men were showered with missiles from the towers, they were forced to retire in disorder and to guard themselves against the missiles. At this moment the Olynthians sent out their horsemen to the attack, and the peltasts also came to their support; finally, their hoplites likewise rushed out, and fell upon the Lacedaemonian phalanx when it was already in confusion. There Teleutias fell fighting. (Brownson 1968b)
39	Phoibidas	Xen. *Hell*. 5.4.44-45	Yes	But when the horsemen of the Thebans as they retired came to an impassable ravine, they first gathered together and then turned to face him, not knowing where they could cross. Now the peltasts were few in number; the foremost of them were therefore seized with fear of the horsemen and took to flight; but when the horsemen, in their turn, saw this, they applied the lesson they had learned from the fugitives and attacked them. So then Phoebidas and two or three with him fell fighting, and when this happened the mercenaries all took to flight. (Brownson 1968b)
40	Alypetos	Xen. *Hell*. 5.4.52	Invalid	The Thebans, however, hurled their spears from the hill-tops, so that Alypetus, one of the polemarchs, was struck and killed. (Brownson 1968b)
41	Gorgoleon	Plut. *Pel*. 17.3	No	The polemarchs of the Spartans, Gorgoleon and Theopompus, advanced against the Thebans. The onset being made on both sides particularly where the commanders themselves stood, in the

				first place, the Lacedaemonian polemarchs clashed with Pelopidas and fell. (Perrin 1955)
42	**Theopompos**	Plut. *Pel*. 17.3	No	Ibid
43	**Kleombrotos**	Xen. *Hell*. 6.4.13-14	No	Killed during the battle, but described as being located behind the front lines (See below)
44	**Stratolas**	Xen. *Hell*. 7.4.31	Yes	When, however, they had pursued the enemy […] although they fought no less stoutly and kept pushing the enemy towards the altar […] they were pelted from the roofs of the porticoes, the senate house, and the great temple, and were themselves fighting on the ground-level, some of the Eleans were killed, among them Stratolas himself, the leader of the Three Hundred. (Brownson 1968b)
45	**Pelopidas**	Diod. Sic. 15.80.5; Plut. *Pel*. 32.5-6	Yes	Pelopidas, eager to settle the battle by his own courage, charged Alexander himself. […] a stubborn battle ensued […], and though [Pelopidas] brought the contest to a close […], he yet lost his own life. (Sherman 1952) / [Pelopidas] could not subject his anger to his judgement, but, inflamed at the sight, and surrendering himself and his conduct of the enterprise to his passion, he sprang out far in front of the rest […] (Perrin 1955)
46	**Epaminondas**	Diod. Sic. 15.87.1	Yes	As for the Lacedaemonians, when they saw that Epaminondas in the fury of battle was pressing forward too eagerly, they charged him in a body. (Sherman 1952)
47	**Mnaseas**	Diod. Sic. 16.38.7	Unknown/ Invalid	After this in a night attack upon the Phocians the Boeotians slew their general Mnaseas and about two hundred of his men. (Sherman 1952)
48	**Kleinios**	Diod. Sic. 16.48.5	Unknown	[…] the Greeks serving with the Persians, fighting brilliantly, slew the general Cleinius and cut down more than five thousand of the rest of the soldiers. (Sherman 1952)
49	**Leosthenes**	Diod. Sic.18.13.5	Invalid	For when Antipater made an attack on the men who were digging the moat and a struggle ensued, Leosthenes, coming to aid his men, was struck on the head by a stone and at once fell and was carried to camp in a swoon. (Geer 1984)

Unsurprisingly, most of these cases do not present enough evidence to declare with certainty whether or not the general in question was killed before or after the battle. Out of 49 cases, 19 are classified as unknown due to lack of information, 3 are classified as invalid and 4 are classified as both unknown and invalid.

Concerning the reasons for the dismissal of the seven invalid cases: Tolmides, Lysicles and Gorgopas (7, 14, and 37) were all killed in various ambushes, when they and their men would have been caught out of formation.[110] Mnaseas (47) lost his life during a night attack, of which we know very little. However, considering the nature of such battles, confusion is more likely to have gotten him killed rather than front-line combat. Leosthenes (49) and Alypetos (40) were killed by missiles, which in no way helps us identify the exact position of the general, since such weapons could kill anyone anywhere within the formation. As for Cleon (24), Thucydides' clear bias towards him ought to make his description of the events dubious, at best. According to the narrative, the Athenian general fled while his men stood firm, a very unusual occurrence that could reasonably be explained through Thucydides' partiality. These unusable occurrences add up to a total of 26 cases, or 53% of our list.

Of those remaining instances, no less than 14 of the listed generals fell either while being pursued during a rout, standing their ground during a rout, or while overextending themselves. This makes up 60.8% of our valid cases. All these men may have been positioned anywhere within the phalanx despite losing their lives in battle. Against this number, we may only oppose 9 cases where a general was killed during the actual hoplite clash, mounting up to 39.1% of valid cases. Judging by these numbers, the supposition that the high mortality rate among generals and officers is proof that they always fought as front-rankers cannot stand. While the above calculations cannot definitively prove the opposite view either, they certainly allow us to posit that not all fallen leaders were necessarily positioned on the front lines.

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[110] Greek armies often marched in disorder: Konijnendijk 2018, 57; Xen. *Oikonomikos*. 8.4, 20.7; *Hipparch.* 2.7.

Here we may also link Wheeler's hypothesis with Hans van Wees' suggestion that Greek generals, or other high-ranking officers, would sometimes bring their attendants with them, while the rest of the citizen-soldiers would be expected to relegate their own servants to the back of the line.[111] If we accept Wheeler's theory that generals were often found deeper inside the phalanx, then the presence of these attendants beside the general could be explained otherwise: perhaps the fact that a general would keep his servants around him is no indication that these, presumably light-armed, men were exceptionally allowed in the front lines of the heavy spearmen, but rather that the general himself was positioned deeper within the ranks, closer to the attendants themselves, in a position where he could have his servants around him without disrupting or weakening the lines.

Unfortunately, the information remains too scarce to declare with absolute certainty where exactly a general might position himself inside the phalanx. While our sources are often clear on whether he was to be found at the right, left, or centre of the army, they almost always fail to specify in which rank he fought.[112] Only three of the forty-nine cases listed above provide us with enough details to deduce where the general was stationed (33, 43, and 45). The case of Pelopidas (45), is a perfect example.

> Through the rear ranks he forced his way to the front, and filled all his men with such
>
> vigour and ardour that the enemy also thought them changed men, advancing to the
>
> attack with other bodies and spirits. (Plut. Pel. 32.4. Perrin 1955)

This lack of information has led Wheeler to suggest that the choice of whether or not to fight as a front-ranker was left to the commander's discretion. In other words, there was no such thing as a designated place for a Greek general – should the prospect of personal combat strike his fancy, nothing would keep him from fulfilling his wish. Roel Konijnendijk offers a similar view: he claims that Greek

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[111] Van Wees 2004, 69, 187. Van Wees cites Epaminondas' question about whether his shield had been saved by his attendant as an example: Diod. 15.87.6.
[112] Wheeler 2007b, 264–65.

generals did not fight on the front lines because they could not lead otherwise, but rather that they could not lead otherwise because they chose to fight.[113] This distinction seems to imply the only thing that kept a general from leading from the rear was personal choice. Plutarch (*Pel.* 2.4-5) was still arguing in favour of generals not throwing their lives needlessly away in the first century A.D., but this notion was evidently not unknown in the fifth century BC either: Xenophon, for instance, was twice chastised by his fellow-generals for needlessly endangering himself.[114]

Finally, we must look into one last issue concerning the role of the Greek general. According to Victor Davis Hanson the high mortality rate among *victorious* generals should also be taken as evidence that Greek military leaders were not indispensable to ensure victory. In other words, the tactical role of the Greek general was, to his mind, so insignificant on the field of battle that the outcome of the clash would be the same whether he lived or died. [115]

> Secondly, in a surprising number of major battles, the victorious general is killed despite the success of his troops - again, perhaps a suggestion that his presence in the front ranks, rather than his safety from injury, was important if his men were to fight well: so much for the idea that the battlefield general's survival was always vital for military success (Hanson 2000, 114)

This would be in stark contrast with most other armies, closer to our own models, who would often break upon hearing news of their leader's demise. In a modern fighting force, a commander's death would entail a possible collapse of the command-and-control structure, and would, as a result, significantly

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[113] Konijnendijk 2018, 142–43.
[114] Xen. *Anab.* 3.3.11; 4.6.19.
[115] This theory is also supported by Snodgrass (1999, 62) and Adam Schwartz (2009, 181): 'From this point (after the battle had begun) the survival or death of the general mattered little as far as command was concerned'.

impact the army's ability to function. Hanson, however, suggests that Greek armies were immune to this phenomenon since their leaders did not communicate with their men during battle in the first place.

This argument is worth considering: if a Hellenic army was perfectly capable of functioning despite the death of its leader, then it could indeed mean that he had no tactical role to serve once the battle had begun. Yet the two battles brought up by Hanson in support of his theory are problematic. He first speaks of the death of the *polemarch* Callimachos at Marathon (our no. 2), and then of Brasidas at Amphipolis (23).[116]

In the case of the former, one could first argue that even though he was in command of the right wing,[117] it was Miltiades who was the *de facto* leader of the army, as well as the mastermind behind the Athenian assault.[118] The death of Callimachos, therefore, would not have been as detrimental to the Athenian war-effort as the death of Miltiades. Yet even if we assume that Callimachos had complete and absolute control over the Athenian host, we must not forget that his death came *after* the Persians broke ranks and fled.[119] In other words, the battle had clearly been won and order had broken down on both sides when the *polemarch* lost his life.[120] Callimachos' death, therefore, cannot be used to argue that the general's survival was not required to achieve victory.[121]

As for Brasidas, his death should not be considered as a valid example for Hanson's theory either. While we may not be certain of the precise moment when Brasidas was mortally wounded, we do know that the battle continued to rage after he was evacuated by his men.[122] As such, the battle of Amphipolis, unlike the battle of Marathon, is indeed an example of a Greek army fighting on and claiming victory

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[116] Hanson 2000, 114; Thuc 5.10; Hdt. 6.114.1.
[117] Hdt. 6.111.1.
[118] Hdt. 6.110.1.
[119] Wheeler 2007b, 253.
[120] Hdt. 6.113.2 - 114.1.
[121] See page 44 for generals whose death affected the outcome of a battle. See also page 45 for an example of a general whose death turned a victory into a stalemate.
[122] Thuc. 5.10.8-12; Barley (2015, 59) believes Brasidas fell in the early stages of the fight.

despite the loss of its leader. Brasidas, however, was only in charge of a small contingent of 150 picked men on that day, not of the entire host.[123] The bulk of the army was commanded by Clearidas, who survived the encounter.[124] Furthermore, Brasidas' contingent was clearly separated from the main body of the army, and as such news of his death would not have necessarily reached the main force.[125] Thucydides claims that even 'the Athenians did not realize that he had fallen'.[126]

Brasidas' survival, therefore, was not as important as that of Clearidas. His only objective was to take the Athenians by surprise and cause enough chaos for the rest of his troops to finish the job. It was Clearidas, not Brasidas, who would have been responsible for tactical communications among the bulk of the army. The death of Brasidas at Amphipolis, therefore, did not leave the Lacedaemonians leaderless, and did not break down communications.[127]

A re-examination of our list of fallen leaders also seems to disprove Hanson's theory. Once we remove the cases already covered by Hanson, we are left with 46 instances (Stesilaus must be removed alongside Callimachus since they fell in the same battle). We must also remove seven other cases, since their respective generals fell alongside others: two unnamed generals with Xenophon (10, 11, 12); Makarios with Eurylochos (17, 18); Epitadas with Hippagretas (19, 20); Laches with Nikostratos (26, 27); Chaeron with Thibrachus (34, 35); and finally Gorgoleon with Theopompos (41, 42). We are thus left with 39 battles, though Cleon's death (24) should once again be dismissed. Of the remaining 38 cases, only 5 involve battles where armies won despite the loss of their leader (6, 8, 29, 40, 45). In the remaining 33 instances the death of the general was accompanied by defeat.

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[123] Hooker 1980, 197–98; Kagan 2003, 185.
[124] Thuc 5.10.1; 10.7; 10.12.
[125] Lendon 2010, 360.
[126] Thuc. 5.10.8. Translation by Hans van Wees.
[127] Cf. Barley (2015, 58–59) who also refutes Hanson's theory. Barley, however, views Brasidas as the main leader of the army on that day, not Clearidas.

Unfortunately, it is much harder to determine whether the death of the general actively *caused* those defeats: out of our 33 cases, 25 do not offer enough information to determine the chain of events, or to categorically state whether the army routed because of the loss of its leader instead of general casualties.[128] In 3 of our remaining cases it would appear that the army kept fighting, at least for a while, despite the death of their general (4, 43, 46). This would leave 5 other instances where the death of the leader actively caused the rout of the phalanx, or large parts of it (31, 33, 36, 38, 39).

At least three of the five cases where victory was achieved despite the death of the leader can be explained by the fact that their command structure was not wholly shattered. Anaxikrates (6), Kallias (8), and Alypetos (40) were all accompanied by colleagues of equal rank who could have led the army. Anaxikrates shared his command with Kimon,[129] while Kallias was one of at least five generals.[130] Alypetos was a *polemarch* in Agesilaus' army, but the latter apparently did not participate in the skirmish in which the former died. The Spartan king led his army towards Thebes, thus forcing the Theban army to race him to the city. Several Spartan *polemarchs* then took their respective units and attacked the enemy. The *polemarchs* were the highest-ranking officers in this skirmish, and the death of one of their number would not have left the whole force leaderless. Lamachus' case (29) is less clear. He had joint command of the army with Nicias, but the latter was confined to the Athenian Circle due to poor health.[131] He was obviously well enough to defend his position from a Syracusan counter-attack, but it is unknown if he would have been able to instruct the rest of his forces after the death of his colleague. Pelopidas (45), on the other hand, seems to be the only example that could support Hanson's theory.

The three instances where the army kept fighting for a while after the death of the general can also be explained. Leonidas' force was small (4), and so we can reasonably surmise that the death of their

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[128] Cases 1, 5, 7, 9, 10, 13, 14, 15, 16, 17, 19, 21, 22, 25, 26, 28, 30, 32, 34, 37, 41, 44, 47, 48, 49.
[129] Diod. 12.3.1.
[130] Thuc. 1.61.1. His army had also linked with another Athenian contingent led by its own commanders: Thuc. 1.57.6; 1.61.2.
[131] Thuc. 6.102.2-4.

leader would not have thrown them in confusion as it would a larger army. The Thespians fighting alongside them were led by their own officer, though Herodotus makes no mention of his fate.[132] As for Kleombrotos (43), Xenophon claims the Spartans broke after the death of a *polemarch* and several other notable men. The remnants of the Spartan army were then commanded by the surviving *polemarchs*.[133] Perhaps these officers took charge of the army after their king's death, thus explaining the delayed rout. The unusual Spartan subdivision (see page 100) must have played some part here. Thucydides claimed the Lacedaemonians made use of their officers to transmit their tactical orders more effectively down the line (Thuc. 5.66.3-4), but perhaps they could also keep the phalanx from breaking by maintaining some semblance of command-and-control in case their leader perished.[134] Epaminondas (46), on the other hand, fell while pursuing the fleeing Lacedaemonian phalanx, in a manner not too dissimilar to Callimachus. Unlike Callimachus, however, Epaminondas' death turned a victory into a stalemate. This turn of events could either be explained by a breakdown in communications that put a stop to the Theban momentum, or a sudden loss of moral (see below).

The death of the general could lead to an instantaneous rout, as may have happened to Lysander's army (36): '[...] the Thebans came on the run to the rescue, [...] Now when Lysander had been killed and his troops were fleeing to the mountain, the Thebans pursued stoutly'.[135] This, however, seems to have been the exception, and our sources usually describe more localised routs around the fallen general that then lead to mass panic and desertion: 'When Mindarus saw this, he also landed, and fell fighting on the shore; and those who were with him fled';[136] 'For a long time Hippocrates and Thrasyllus fought [...] Then

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[132] Hdt. 7.222.1.
[133] Xen. Hell. 6.4.14-15.
[134] Barley 2015, 47: 'The Spartan system was rather more complicated than the Athenian, and allowed Spartan phalanxes to exercise an impressive degree of battlefield adaptability and survivability in the face of concerted attack, or in the event of their general being targeted and killed.'
[135] Xen. *Hell*. 3.5.19, Brownson 1968b.
[136] Our n. 31. Xen. *Hell*. 1.1.18, Brownson 1968b.

Hippocrates was killed, and those who were with him fled back into the city';[137] 'The Olynthians […] fell upon the Lacedaemonian phalanx when it was already in confusion. There Teleutias fell fighting. And when this happened, the troops about him at once gave way, and in fact no one stood his ground any longer, but all fled'.[138] This can be reasonably explained by the fact that most soldiers would not immediately witness the fall of their leader, particularly in larger armies. If, however, they could see the general's own section of the phalanx breaking, then they could reasonably assume their leader was slain, or would be in short order.

We should, therefore, not assume that the high casualty rates, even among victorious generals, imply unimportance. At least some defeats were directly caused by the loss of the general, possibly because the army's command structure was compromised. It seems that most armies that survived the loss of their general contained more than one leader, though exceptions such as Pelopidas can be found. Our sources are not detailed enough to provide a definite answer to this question, but Hanson's categorical statement should, at least, be tempered.

Tactical communications: limits and capabilities

At any rate, we can reasonably state that a general who opted to stand deeper within the phalanx was in a better position to direct his forces during battle.[139] We must not, however, overestimate his personal abilities. A general could almost certainly not rely solely on himself to lead his army, and would thus have to make use of several tools to understand the battlefield and react to it. It seems unlikely, for instance that a leader would have been able to supervise the entire battlefield, even if he was standing in the rear ranks. His field of vision must have been limited by at least three factors.

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[137] Our n. 33. Xen. *Hell*. 1.3.6, Brownson 1968b.
[138] Our n. 38. Xen. *Hell*. 5.3.6, Brownson 1968b.
[139] Konijnendijk 2018, 143.

Firstly, fifth century generals possibly fought on foot, which would have robbed them of the plunging view and mobility that a horse would offer.[140] It should be noted, however, that there is no definitive argument to unequivocally support the view that all Greek generals were dismounted. The idea, rather, seems to stem from the misconception that generals always fought as front-rankers, and from a lack of information in our sources. Since, however, some generals could evidently stand in the rear lines, the possibility remains open that some could have done so from horseback. Hans van Wees has recently supported this idea, citing Xenophon's description of an attack where he chose to ride rather than walk.[141] Adam Schwartz has rejected this hypothesis, pointing out that Xenophon was immediately admonished by one of his 300 hoplites and forced to dismount.[142] If, however, this man's reaction is to be considered indicative of Greek sentiment towards mounted officers, then we should also consider how the other soldiers reacted.[143] According to Xenophon, the rest of the hoplites physically and verbally abused their comrade for his behaviour. Furthermore, Xenophon mounted once again shortly after the incident and led his men without further objections.[144] This suggests that 299 out of 300 hoplites, plus an unknown number of peltasts, apparently had no issue with following a mounted officer.[145] In addition, Xenophon eventually went one step further and gave a horse to every single one of his fellow generals, as well as every subordinate officer of the army, with no indication that such a move caused any kind of stir.[146] We should, therefore, not dismiss the possibility that at least some Greek generals, positioned in the rear ranks, might have been mounted. If so, then the task of surveying the battle and reacting to it would have been considerably easier for them. Regardless, we certainly cannot argue that *all* Greek generals were mounted either. As such, we are forced to wonder how a dismounted officer could lead his army from the

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[140] Wheeler 2007b, 259–60.
[141] Van Wees 2004, 69, 187; Xen. *Anab.* 3.4.46 – 49.
[142] Schwartz 2009, 180 n. 758; Xen. *Anab.* 3.4.47-48.
[143] As noted by Wheeler 2007b, 262.
[144] Xen. *Anab.* 3.4.49.
[145] Xen. *Anab.* 3.4.43.
[146] Xen. *Anab.* 4.5.35.

rear. A single infantryman would find it near impossible to look beyond a formation brimming with spears and more than a few helmet crests. During my own military service in the Greek army, I took part in several parades with shouldered arms where I could not see what was happening around me. Looking directly ahead, left, or right in a formation where ranks and files are kept at parade level is feasible: the spacing between each file allows for a soldier to see at 0°, 90°, and 270° if he were to lean slightly to the side (Figure 2). Anything else, however, is obstructed by bodies and equipment. In addition, ranks and files would never survive intact in combat, meaning that even this limited visibility would be impossible.
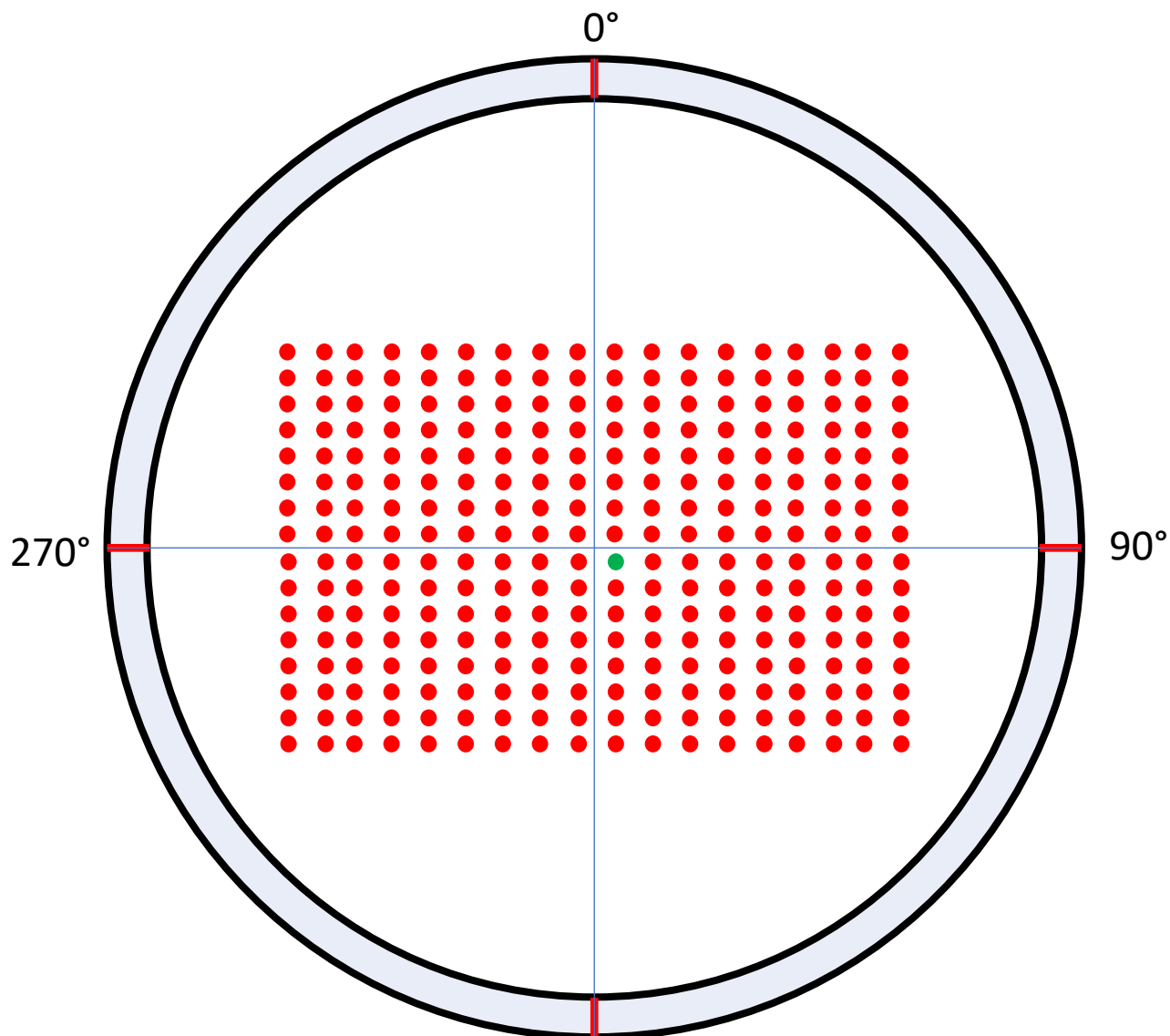
Figure 2: Lines of sight in parade formation.

A man of average height will find it near impossible to look beyond an infantry formation with shouldered rifles. The weapon used in the modern Hellenic army is the G3A3, which measures 1 020 mm.[147] Approximately three quarters of the weapon are tucked near the body during parade, with the remaining third (340 mm) protruding above the shoulder at a slight angle. Hoplites, in contrast, used

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[147] As stated in the official page of the Hellenic Army: http://www.army.gr/el/organosi/oplika-systimata/tyfekio-g3a3-g3a4

spears that ranged between two to three meters in length, and we can reasonably assume that some in the rear ranks would have held their weapons vertically, since they had no hope of taking part in the actual battle. This practice, coupled with the presence of at least some crested helmets, must have created a considerable visual barrier.

Secondly, a Greek phalanx could stretch over several kilometres depending on the size of the army (see n. 213). Any man would find it hard to discern what was going on that far away, especially if he were leading one of the flanks.

Lastly, most battlefields would have presented some natural obstacles.[148] Even seemingly insignificant obstructions can have a large effect on vision. Let us imagine, for example, a marching phalanx led by a general stationed on the right flank. If the centre of the formation were to march over a small hill, no higher than a meter, then the general would lose visual contact with his left flank – the men marching over the hill would now be too elevated for their leader to look past them and their weaponry (Figure 3).[149]
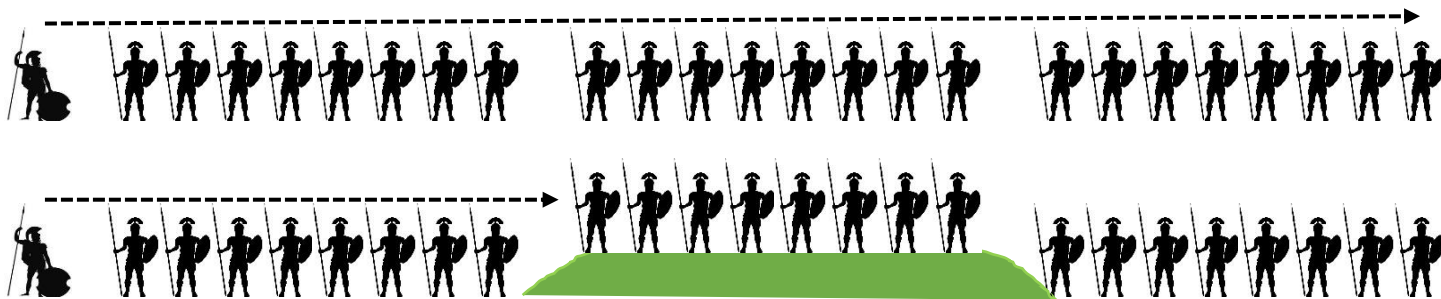

Figure 3: Visual obstruction on the battlefield

Placing a dismounted general in the rear ranks, therefore, did not translate to control over the army. He was just as limited in his field of vision as any front-ranker would have been, perhaps even more so. It

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[148] Thuc. 4.34.2.
[149] Roel Konijnendijk rightly stresses how obstructive even small objects could be on the field of battle: 'Even on the most level plain, obstacles such as houses, trees and field walls meant that there was probably no single place from which the entire army could be seen' (2018, 140).

did, however, mean that the general was now more accessible to messengers, or any other person that had business with the leader of the army. This appears to have been the only way for a foot-bound general to maintain control of the battlefield. Pausanias was easily recognized and accosted by a civilian while directing the pursuit at Plataea (Hdt. 9.76.1); Alcibiades received a messenger during the middle of battle (Front., *Strat*. 2.7.6); Cleon and Demosthenes were approached by a subordinate officer during the battle of Sphacteria (Thuc. 4.36.1); on the eve of the battle of Mantinea one of the elder Lacedaemonians shouted warnings at Agis II, his voice reaching the king even as he must have been surrounded by his 300 bodyguards (Thuc. 5.65.2);[150] and finally, Xenophon and Cheirisophus sent messengers back and forth between themselves during the retreat of the Ten Thousand (Xen. *Anab.* 3.4.38-39; 4.1.17).

Messengers were used in war as far back as the Persian Wars to communicate down the line, or even across vast distances, though little information survives on them.[151] Herodotus, however, hints at the existence of professional runners, called *hemerodromoi*, such as Pheidippides.[152] These men could be relied upon to run for miles, though there is nothing to indicate they were a purely military organization, or that states maintained a number of professional runners for that purpose. It seems, instead, that the *poleis* relied upon the best runners they could find at any given time, and it stands to reason that armies would operate along the same lines (see below).[153]

Of course, the general himself was also in a position to send messages of his own to carry out his orders. How these messengers operated is a matter of speculation, and likely varied from battle to battle – Agis II, for instance, brought a number of horsemen who apparently played no active part in the battle

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[150] Thucydides does not directly state that the king was near his bodyguard during this episode, though it seems undeniable considering the events of the following day (Thuc. 5.72.4).

[151] Hdt. 9.60.1; Xen. *Hell*. 4.5.7; Anderson 1970, 72; Russell 1999, 143. Russell believes this lack of information stemmed from the fact that Greek authors were more interested in stating the result of communication rather than the action. This in turn allegedly led the ancients to simplify their texts to simple phrases such as 'when it was announced'.

[152] Hdt. 6.105.1.

[153] Hdt. 9.12.1.

of Mantinea.[154] These men were stationed on either flank of the army, but some may have remained close to the king to carry his messages.[155] The same could be true of Pagondas at Delium: his horsemen were also stationed on either side of the army and could, perhaps, have brought him news of the defeat on the left flank.[156] Brasidas, on the other hand, had no cavalry at Lyncestis, and must have relied on infantrymen to carry his order.[157] Ergo, there was apparently no fixed way to carry out the task, and we must look at each battle individually to assess how orders may have been transferred.

Unfortunately, we have no way of knowing whether messengers would carry written or verbal orders. While there is no recorded evidence for written tactical orders in the 5th century, both methods have been successfully used in warfare, even in recent years – the Wehrmacht favoured oral transmissions to emphasize speed, whereas the Red Army made heavy use of written tactical orders complete with graphs, sketches and diagrams.[158] Perhaps we must, once again, tread with caution and assume that methods varied depending on the circumstances – Pagondas, for instance, had to act quickly to redress the situation at Delium, and would likely not have wasted time in writing down his order.[159] Cheirisophus, on the other hand, could have possibly taken the time to write his instructions down during the crossing of the Carduchian mountains: the Ten Thousand were stretched over several miles and a few extra seconds of delay for the sake of clarity would have, perhaps, been deemed a worthy exchange.

As for short range tactical communications, such as subordinate officers trying to communicate with their men, it seems that vocal orders were favoured above all.[160] The Greeks made some use of trumpet signals, but these were mostly limited to sounding the attack and the retreat.[161] Flags or other such visual

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[154] Thuc. 5.67.1.
[155] See page 100.
[156] Thuc. 4.93.4.
[157] See page 114.
[158] Antal 1990, 120–21. For written words in military communication see Liddell 2017.
[159] Thuc. 4.96.5.
[160] Anderson 1965, 1–2; Cartledge 1987, 206.
[161] Krentz 1991, 110, 114–16, 118: 'the Greeks blew the *salpinx* before and after battles but rarely during a battle itself'. Other military uses of the *salpinx* included: summoning men to arms (Bacchylides 18.1-10), waking up the

indicators were, likewise, rare.[162] Vocal orders are, by far, the most primitive method of transmission one

can use, but we should not equate 'primitive' with 'ineffective'. The fact remains that even modern armies

and riot police still rely on vocal orders for their short-range communications. That much is true within

the modern 'squad', the second smallest unit in western-style armies, usually numbering eight men.[163]

Each squad is led by a squad leader with access to a platoon radio, allowing him to communicate with his

superior officer. Intra-squad communication, however, is usually verbal.[164] Some countries, such as the

U.S., are currently experimenting with squad radios within elite regiments, but the results do not always

favour their use over verbal communication.[165] In other words, the simplest solution is often the best, a

fact that seems to agree with Peter Krentz's view that the Greeks did not make more extensive use of

trumpet signals due to the simple fact that verbal orders were effective enough on their own.[166]

During my own military training, we made use of vocal orders during live/blank-fire exercises and

mock assaults. Our squad consisted of eight men, spread ten meters apart from one another for a total

frontage of 70 meters. We were all equipped with mandatory earplugs, and deployed next to other squads

conducting similar exercises. The fact that vocal orders were audible to all involved across 70 meters,

through the sound of gunfire, and despite our earplugs is a testament to their effectiveness. There was

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men (Plb. 12.26.2), forming a line, calling for silence, sounding the charge (Xen. *Anab*. 6.5.27), sounding the retreat (Xen. *Anab*. 4.4.22). For uses of trumpet signals see n. 520.

[162] Namorato 2000, 104.

[163] Each squad will normally consist of two fireteams of four men. These fireteams, however, are usually not expected to act independently, which is why we will focus on the communications of the squad.

[164] Some elite fighting forces make use of non-verbal methods (such as hand signals) but for the most part the modern soldier will still rely on his voice to communicate with the members of his squad (Christ and Evans 2002, 1).

[165] A 2002 study conducted by the U.S. Army Research Institute attempted to establish how squad radios affected combat effectiveness. They organized fourteen U.S. Army Ranger squads and put them through a series of tests. Overall, the study does not argue against the use of squad radios – they proved very effective under specific situations, such as low-light conditions. However, it was also revealed that they came with a clear danger of information overload: Christ and Evans 2002, 33. The study was also concerned about how well regular infantry could handle the added pressure of a squad radio, and recommended that the tests be conducted on less experienced troops than the Rangers: Christ and Evans 2002, 35. The fact that some of the most elite forces in the world encountered difficulties in using squad radios seems to indicate that the vast majority of armies will continue to use vocal orders for the foreseeable future.

[166] Krentz 1991, 118.

nothing in the ancient battlefield that could produce quite the same noise as gunfire, artillery, or the passage of armoured and airborne divisions.[167]

Of course, the smallest non-Spartan military unit of ancient Greece, the *lochos*, was larger than the modern eight-man squad. Roel Konijnendijk has recently noted that verbal transmission of orders would have been difficult since the Greeks usually fielded large units containing several hundred soldiers.[168] Troop *numbers*, however, are not as important as troop *distancing* when it comes to gauging the effectiveness of vocal orders: the *lochos* may have contained far more men than the average modern squad, but hoplites were also less stretched than contemporary soldiers are. If we consider a *lochos* of 300 men, such as the Spartan *hippeis* (Thuc. 5.72.3), or the Athenian and Boeotian picked troops (Boeotian: Thuc. 3.22.7; Athenian: Thuc. 6.100.1) deployed eight shields deep,[169] then the formation would be either thirty-five meters long and seven meters deep if we accept that hoplites stood at a three-feet interval, or seventy meters long and fourteen meters deep if we accept Krentz' view that they stood at six-feet intervals.[170] Either way, neither exceeds the effective range of 70 meters noted above. Here we must note that this effective range is by no means the maximum range at which verbal orders are still audible: it only translates to how far my own squad was deployed. In fact, verbal orders were seemingly audible enough for cross-unit communication – on the eve of the battle of Mantinea, an old soldier was

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[167] Sound level of rotating helicopter blades and exploding shells can reach up to 140 dB. Unsuppressed firearms can exceed that: Becker and Güdesen 2000, 153–54. For dangers of hearing loss in modern warfare, see video titled '*Veterans suing 3M*' at (sotospithis.wixsite.com/website). While there is evidence that hoplites could suffer from sight defects (see page 162), there is no indication that the ancient battlefield could permanently damage one's hearing.

[168] Konijnendijk 2018, 140.

[169] Note that a *lochos* of three hundred men could not be divided evenly into files of eight: Konijnendijk 2018, 130. I nevertheless adopt this depth because the eight-shield model seems to be the most recurrent one in our sources. This recurrence, however, does not in any way indicate that such a depth was standard, or even usual (see n. 537).

[170] Six feet: Krentz 1985, 54; Van Wees 2000b, 128–30, 2004, 185–86. Three feet: Hanson 2000, 119–21; Lazenby 1991, 93; Pritchett 1971, 144. The three feet theory stems mainly from Thucydides' description of the first battle of Mantinea (Krentz 1985, 52; Thuc. 5.71.1), where he claims each hoplite tried to get close to his neighbour's shield to benefit from its protection, thus shifting the entire formation to the right.

able to communicate with Agis, despite the fact that the monarch was probably located somewhere

within his personal bodyguard of 300 men.[171]

Nevertheless, we may of course point to some instances where vocal orders were drowned out by the

noise of battle: during the battle of Sphacteria, Thucydides reports that the Spartans could not hear their

commander's orders due to the noise (μείζονος βοῆς) raised by the Athenian skirmishers.[172] This incident,

however, seems to imply this was an unusual occurrence, at least among Spartan troops: if orders were

usually drowned out by the sound of battle, then surely the Lacedaemonians would not have been so

affected by it at Sphacteria. Furthermore, we can oppose to this the fact that vocal orders could

sometimes be audible even to the opposing side,[173] something Greek generals were evidently aware of:

Alcibiades withheld information that would have encouraged his enemies and disheartened his men,

while Myronides shouted about an imagined victory on his left flank to produce the opposite effect.[174]

The Roman author Aristides Quintilianus, writing somewhere between the third and fourth century AD,

noted this was still an issue in his day.[175]

> Often reject verbal orders as damaging if they should be discerned by those of the
>
> enemy speaking the same language. (62.6-19. Mathiesen 1983)

It would seem, therefore, that Thucydides either tried to make excuses for the Lacedaemonians, or

that the ambient noise at Sphacteria was extraordinary for the standards of Greek warfare: the Spartans

were outnumbered and pelted from all sides by thousands of shouting Athenian skirmishers. The noise

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[171] Thuc. 5.65.2.

[172] Thuc. 4.34.3.

[173] This problem is also encountered by modern elite forces, who are encouraged to use hand gestures when they 'need to communicate with one another when normal vocalizations are not appropriate (e.g. they could be heard by the threat force)' (Christ and Evans 2002, 1). This practice, however, is not common among regular troops (Christ and Evans 2002, 35). For the limited use of hand gestures in the Ancient Greek world: Liddell 2017, 126; Aeneas Tacticus 25.2-4.

[174]Alcibiades: Front., *Strat*. 2.7.6; Myronides : Front. *Strat*. 2.4.11; Polyaenus 1.35.1.

[175] Krentz 1991, 117.

created by so many missiles striking the small area occupied by the Spartans must have been hellish indeed, even without the shouting.[176] Another factor may have been smoke inhalation: the island had recently been ravaged by a forest fire large enough to cause a great amount of smoke to rise from the burnt wood during the battle.[177] Thucydides only ever stresses how the smoke affected the Lacedaemonians' field of vision, but some of the symptoms of carbon monoxide poisoning include confusion and impaired mental state,[178] all plausible factors for why one might fail to hear an order during combat.

Xenophon claimed that the commander of a Spartan *enomotia* of only thirty-six men could not reach all of his men with his voice,[179] but this seems odd in light of the actions of Myronides and Alcibiades whose vocal orders could be heard by the enemy, or the writings of Quintilianus who seems to confirm this was still the case in his day. Xenophon claimed the soldiers of the *enomotia* 'παρακελεύονται δὲ τῷ ἐνωμοτάρχῳ: οὐδ ἀκούεται γὰρ εἰς ἑκάστην πᾶσαν τὴν ἐνωμοτίαν ἀφ ἑκάστου ἐνωμοτάρχου ἔξω'. The word 'παρακελεύονται' can be translated as 'the men shout words of encouragement to the [*enomotarch*]'.[180] Perhaps an encouraging speech from a unit's *enomotarch* could be more difficult for the men to understand than a short tactical order, i.e. 'form eight ranks'; 'turn left'; or 'charge'. However, perhaps a more accurate translation of Xenophon would be 'they give orders to one another on behalf of the *enomotarch*; for the *enomotia* does not hear every single thing outside the range of its *enomotarch'*.[181] This could mean that some information could be lost, thus leading soldiers to repeat orders to one

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[176] For the effect of missiles hitting shields: Xen. *Anab*. 4.3.29.
[177] Forest fire: Thuc. 4.30.2. Smoke rising: Thuc. 4.34.2.
[178] Carbon monoxide poisoning in wildfires affects firefighters, who stay close to the smouldering areas: Oregon Health Authority 2010. Judging by the size of the island and the fire, it seems likely the Spartans would have experienced at least some level of poisoning. The effects of carbon monoxide poisoning are listed in the NHS website (https://www.nhs.uk/conditions/carbon-monoxide-poisoning/).
[179] Konijnendijk 2018, 141 n. 8; Xen. *Lak*. *Pol*. 13.9.
[180] Translation by E. C. Marchant and G. W. Bowersock. For Spartans encouraging each other in combat: Thuc. 5.69.2.
[181] Translation by Hans van Wees.

another. This practice is still used effectively today, and it does not follow that vocal orders are ineffective because of it.

In short, while tactical communications might be impeded in some circumstances, there is good reason to believe that verbal orders would normally be audible across units of several hundreds of men.

Evolution of Greek helmets: a shift towards transmission of orders

The evolution of Greek headgear during the fifth century BC seems to indicate a shift towards equipment well suited to battlefield communication. During the Archaic Period and the early Classical Period, the most popular form of headgear seems to have been the so-called Corinthian helmet (Figure 4).[182]

Figure 4: Corinthian helmet, circa 460 BC. British Museum, number 1824.0407.32

Scholars have long argued about the qualities of this headpiece, with opinions differing notably on the range of vision offered by the eye-slits. Nevertheless, most experts seem to agree that the closed helmet restricted the wearer's voice projection and hearing,[183] which would naturally prevent anyone

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[182] Ducrey 1985, 47; Jarva 2013, 401.

[183] Debidour 2002, 35–36; Hanson 2000, 71–73; Hunt 2007, 113; Kagan and Viggiano 2013, 25; Raaflaub 2013, 11; Schwartz 2009, 62–63; Sidebottom 2004, 84; Viggiano and Van Wees 2013, 60; Van Wees 2004, 50. *Contra* Matthew 2012, 96–97. I have never worn a Corinthian helmet, but I have worn, and conducted tests with, the so called 'Italo-

from either issuing or receiving orders effectively.[184] Yet, the Corinthian helmet saw a marked drop in popularity throughout the fifth century in favour of unrestrictive open-faced helmets (Figure 5 and Figure 6), to the point where only a minority of hoplites still used it by the time of the Peloponnesian War.[185]

Figure 5: Bronze pilos helmet. Metropolitan Museum of Art. Accession number 08.2.4

Figure 6: Pilos helmet worn by hoplites. Attic tombstone, late fifth century BC. Staatliche Museen zu Berlin. Photo: Anderson 1970, pl. 12.

There are, admittedly, many reasons that could explain such a shift.[186] Lower prices, ease of production, comfort, a greater emphasis on rapid reaction during raiding or when countering light-infantry or riding a horse are all valid reasons to opt for an open-faced helmet over a closed one. A *pilos*

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norman' medieval helmet. Though the helm itself does not cover the ears, the padded coif I wore underneath completely covered both my neck and head. The pressure of the helmet and the padded cloth severely restricted my hearing. I cannot attest to the effects of long hair and thick beads, as noted by Schwartz (2009, 64). If the Greeks made use of padding underneath their helmets, as was likely the case (Jarva 2013, 401; Schwartz 2009, 60), then it is highly probable the wearer's hair would have been firmly secured by the pressure of the cloth against his scalp. I have also had the opportunity to wear the open-faced M1 helmet during my military service. Even with the mandatory use of earplugs during live-fire exercises, my hearing was significantly better from what I had experienced with the Italo-norman helmet.

[184] Debidour (2002, 35–36) claims this was largely the reason why the Greeks did not develop any tactics worthy of the name. He only briefly mentions the presence of open-faced helms, and does not delve into how these new models would have facilitated the development of tactics.

[185] Anderson 1970, 28–29; Hanson 2000, 75; Hunt 2007, 117; Jarva 2013, 402; Snodgrass 1999, 93–94; Viggiano and Van Wees 2013, 63; Van Wees 2004, 50.

[186] Matthew 2012, 37.

type helmet, for instance, only used a fraction of the metal required for a Corinthian helmet, while its rudimentary design drastically shortened its construction time.[187] As for comfort, scholars believe the Corinthian helmet would quickly become unbearable to a wearer sporting long hair and a thick beard: poor ventilation, as well as the inevitable heating of the metal under the Greek sun would have seen to that. An open-faced helmet could remedy these shortcomings, albeit at the expense of protection.[188]

Yet all these reasons were not always enough for a people to switch to open-faced helmets: roman cavalrymen eventually adopted a closed helm, as did most European civilisations during the middle ages. One would imagine that mounted troops would be particularly attracted to comfortable and unencumbering headgear. Consequently, we should not dismiss military communications as valid reason for transitioning to a new type of helmet.

Indeed, the Corinthian helmet itself saw some tell-tale changes in its design that confirm the main reason behind its decline must have been concern over its restrictions over voice and hearing. Firstly, the opening between both cheekpieces, near the mouth, became wider, which facilitated breathing as well as talking.[189] Secondly, later types of Corinthian helmets sported earholes (Figure 7).[190] These two changes were clearly designed to facilitate communication. If cost, ease of production, and comfort were the only reasons to switch from a full-faced helm to an open-faced one then the Corinthian helmet would not have evolved as it did. When compared to other forms of headgear, the Corinthian helmet is inferior in every way save for the protection it granted. Creating earholes and widening the mouth gap, however, lessened

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[187] For manufacture process of Corinthian helmets: Jarva 2013, 402; Snodgrass 1999, 51; de Souza 2008, 674.

[188] Some types of *pilos* helmets were possibly made out of felt, reducing cost even further. Thucydides tells us that at Sphacteria, the Lacedaemonian *piloi* could not keep out the Athenian arrows (Thuc. 4.34.3). This has led scholars to suggest their helmets were made out of felt: Hanson 2000, 83; Lazenby 2012, 148. *Contra* Anderson 1970, 30; Konijnendijk 2018, 97 n. 9. Yet it is equally possible that Thucydides was describing arrows striking Spartan hoplites in the unprotected areas of their face, rather than arrows going through their soft caps. Even if it were virtually impenetrable, the open faced *pilos* would still have been ineffective against a hail of missiles. Peter Hunt hints at this, though he does not name the Sphacteria incident specifically. He claims that by the end of the fifth century, hoplite armour was lighter and particularly vulnerable to missiles, referring the reader to the grave monument of Lisas of Tegea depicting a hoplite wearing a *pilos* helmet (Hunt 2007, 115–16).

[189] Schwartz 2009, 56.

[190] Naiden 2017, 68; Schwartz 2009, 63; Snodgrass 1999, 93–94.

this sole advantage. This decision would not have been made if the Greeks did not feel that the benefits outweighed the detriments. It would seem, therefore, that the Hellenes recognized the importance of tactical communications well before the fourth century BC, to the point where they were willing to sacrifice protection to ensure they could both issue and receive orders in battle.

Figure 7: Late Corinthian helmet with earholes. Early 5th century BC From the Metropolitan Museum of Art, n. 2016.235a–c.

Conclusions

The fifth century provides us with enough evidence to suggest that a Greek general could command his men during battle if he so wished. Some generals would still fight in the front ranks, as that tendency had certainly not died out, but others could choose to place themselves deeper within the phalanx. This would allow a military leader to send and receive messengers across the field of battle. In addition, the methods of tactical communications used by the Greeks, though primitive, were not necessarily ineffective. Vocal orders, the principal method of communication in the fifth century BC, are still used effectively in modern warfare, a time when the battlefield is far louder than it would have been in Antiquity. Finally, Greek helmets saw a marked change in their design, and a clear shift from closed helmets to open-faced ones can be traced well before the fourth century BC. These modifications facilitated communications and battlefield awareness, but came at the expense of protection. This, in turn, would seem to indicate that the Greeks valued their communications enough to deem this exchange an acceptable risk.

Chapter 2: Changing the course of the battle.

A fifth century general was, therefore, in a position to communicate with his men if he so wished. Of course, being in a position to do something and actually doing it are two very different things, and it falls to us to see whether or not there is any evidence of Greek leaders who effectively changed the course of a battle through tactical communications. As it happens, there are at least eight generals that fit the description: namely Pagondas, Myronides, Lamachus, Lykophron, Agis II, Brasidas, Nicias, and Xenophon. We will accordingly examine the battles in which they fought in an effort to assess the commanding capabilities and limits of a Greek general. This chapter will analyse the first five cases, which all deal with tactical communications within the phalanx. The last three cases concern tactical communications within the hollow square formation, and will be examined in chapter 3 (page 113). We will begin by examining Pagondas at the battle of Delium, the least controversial battle in this list insofar as it widely recognised as a successful case of transmission of orders. We will then examine Myronides at the battle of Oenophyta before moving on to Lamachus at the battle of Syracuse: both narratives depict generals traveling across their phalanx to deliver their orders, and thus complement each other. Next on our list will be Lykophron at the battle of Solygia: his actions on that day can be used to nuance the information we will uncover from the battle of Syracuse. Finally, we will end our chapter with Agis at the first battle of Mantinea: unlike our other cases, the lessons from this battle are unique and concern more than verbal orders.

Pagondas at the Battle of Delium

The battle of Delium in 424 BC stands as arguably the greatest and most unequivocally successful case of mid-battle tactical communications in the fifth century BC. The Theban general Pagondas famously

saved his army from destruction by ordering some of his horsemen to flank the Athenian army at the height of the battle.[191]

The Athenian general Hippocrates had recently invaded Boeotian territory and spent five days fortifying the temple of Apollo at Delium. In answer to this, the Boeotians marshalled their forces at Tanagra, and marched under the command of Pagondas of Thebes to intercept the Athenian army.[192] The Theban general positioned his men behind a hill in order to conceal the deployment of his heavy infantry.[193] He let his allies deploy their contingents as they saw fit, but ordered his own right wing to form in a deep phalanx of twenty-five ranks.[194] Scholars have long argued about the benefits of such a formation, and a summary of their views can be found in Konijnendijk's recent book.[195] No one, however, seems to have considered the possibility that a deeper phalanx could potentially help the general command his forces.

One theory states that each additional rank would add to the strength and momentum of the formation, allowing it to shove any opposition off the field. This view, however, assumes that phalanx warfare was limited to a shoving match where more men would translate to added strength, and as Konijnendijk points out, there are many examples of deep phalanxes failing to break through thinner formations.[196] Another theory is that the extra men at the rear of the formation could act as reserve forces.[197] This idea, however, has been largely rejected, and Konijnendijk correctly states that there seem to be no recorded instances of rear-line hoplites splitting up from their formation while the front-rankers fought on.[198] There is, however, evidence of reinforcements coming from one end of the phalanx to the

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[191] Thuc. 4.93.1-96.8; Bagnall 2006, 57. For concise details and developments of the battle: Schwartz 2009, 242 battle inventory n. 5.
[192] Thuc. 4.93.1.
[193] Bagnall 2006, 165; Hanson 2005, 127.
[194] Thuc. 4.93.4.
[195] Konijnendijk 2018, 133–38.
[196] Konijnendijk 2018, 134–35. Delium is one such example. Wheeler (2004, 347–48, 2007a, 206–7, 218) is also unconvinced by this theory. For correlation between troop numbers and unit mass see n. 210.
[197] Cawkwell 1972, 261.
[198] Konijnendijk 2018, 135.

other during combat, such as the battles of Syracuse and Solygia (see below). Even though neither battle describes reinforcements plucked from the rear lines, they do indicate that it was not unheard of for Greeks to detach part of their forces mid-battle, which could in turn suggest this second hypothesis is not entirely unlikely. The third and final theory, supported by Konijnendijk himself, states that the advantage was psychological rather than physical: a deeper phalanx would simultaneously increase the confidence of the men and demoralize the enemy.[199] This final theory seems the most likely: morale was the reason phalanxes broke, not weight, and so it would be sensible to suggest that Pagondas' tactic aimed to maximize this effect.[200] Nevertheless, we need not assume that morale was the *only* advantage conferred by a deeper formation.

As we saw, Greek generals would sometimes position themselves at the rear of the phalanx. Consequently, perhaps a deeper formation also provided the general with additional security and, under certain conditions, visibility: the Boeotians were advancing down a hill, giving them a height advantage over the Athenians.[201] Consequently, Pagondas' field of view would have been clearer the further back, and thus higher, he stood. Furthermore, the bulk of the deep phalanx would have made it easier for any messenger to immediately spot the location of the general among his troops. As Alcibiades' case proves, messengers could arrive from outside the army, and thus have no idea where the general was standing.[202] Furthermore, battle lines could easily get blurred once the battle had begun, meaning that even a messenger sent from within the army might have trouble locating his leader in the thick of the fighting.

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[199] Konijnendijk 2018, 136; Krentz 1985, 60; Van Wees 2004, 191. Konijnendijk cites Xenophon in support of his argument: Xen. *Kyr*. 7.5.4–5.

[200] Pagondas clearly understood that weight alone counted for nothing. The cavalry detachment that won him the battle could not have been great, yet it managed to sow terror among the Athenians (Thuc. 4.96.5). Brasidas' detachment at Amphipolis was similarly small (only a hundred-fifty men), yet it threw the enemy into confusion (Thuc. 5.10.6). Lamachus was also clearly aware of the importance of morale over weight: the fact that he only sent three hundred picked men to finish off an entire wing of the beaten Syracusan army proves as much (Thuc. 6.101.4). Though these men were beaten, the fact remains that a capable general thought they stood a fighting chance against greater numbers simply owing to morale.

[201] Thuc. 4.96.1.

[202] See n. 3. See also the messengers at Plataea: Hdt. 9.54.2; 9.60.1. Pagondas could expect to receive news from the reserves he had detached to watch the Athenian cavalry: Thuc. 4.93.3.

All this could, in turn, explain how Pagondas was able to react so well to the collapse of his left flank. It is certainly striking that one of the rare recorded instances of a deep phalanx also features one of the most successful cases of mid-battle tactical communications.

There would, however, be some detriments: issuing orders to the front line of the deeper part of the phalanx must have been harder than in the more usual depth of eight shields.[203] If we assume that hoplites stood three feet apart, Pagondas' front and rear ranks would have been separated by approximately twenty-five meters as opposed to only eight. If, however, we adopt Krentz's theory and assume that hoplites stood six feet apart, then that number is raised to fifty meters as opposed to sixteen.[204] Neither scenario exceeds the effective range of 70 meters previously noted,[205] but it seems undeniable that a deeper formation would have been harder to communicate with. Yet the extra security and accessibility to messengers could, perhaps, have provided the general with enough battlefield intelligence to make up for this shortcoming. If so, it is unclear whether the lesson was heeded by other users of the deep phalanx. Roel Konijnendijk offers a list of nine armies (eight if we remove Delium) who made use of it.[206] Six of the eight cases do not state whether the generals in question were at the front or rear of the formation (Thuc. 6.67.2–70.1; 7.79.1–2; Xen. *Hell*. 2.4.11–19; 2.4.34; 4.2.18–23; 6.4.12–14), though two involve generals who probably fought in the front ranks (Xen. Hell. 7.5.22–25; Diod. 17.26.3–27.3).

The Boeotians eventually set off from behind the hill and closed the gap with the Athenians, presumably in good order and at a steady pace.[207] The Boeotian plan was simple: a swift victory on the right followed by an envelopment of the rest of the Athenian army. Yet Pagondas' fortified right wing

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[203] For shield depths in the phalanx see n. 537.
[204] See n. 170.
[205] See page 30.
[206] Konijnendijk 2018, 137 table 5.
[207] We can infer as much by the fact that Thucydides seems to contrast their behaviour with that of the Athenians who attacked the Boeotians at a run: Thuc. 4.96.1.

came at the expense of his left and centre: both armies contained more or less equal numbers of hoplites, but the Athenians had all deployed in a uniform depth of eight shields. This meant the Boeotians would naturally present a narrower front.[208] The rest of the army would have to stretch itself thin in order to match the length of the Athenian battle-line (Figure 8). Pagondas' plan, therefore, relied entirely on speed: he had to win on the right before his weakened left and centre collapsed.[209]
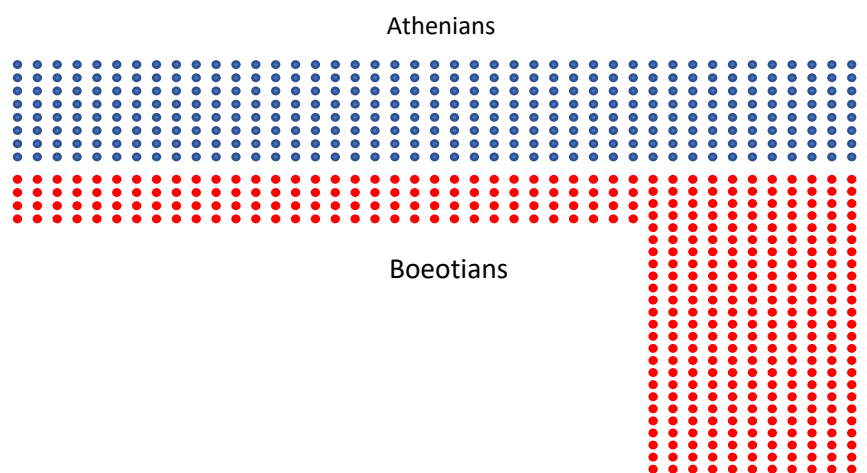

Figure 8: Delium battle-line.

At first, the battle went poorly for the Boeotians: Pagondas' right flank was slowly pushing back the Athenian left, but the enemy was making short work of the Boeotian left and centre.[210] The Boeotian left wing finally gave in, and all pointed to an Athenian victory until Pagondas ordered some of his

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[208] Kagan 1974, 283; Tritle 2010, 100. We do not know how many Thebans took part in the battle. As such, their right flank of twenty-five shields in depth could have had a front ranging anywhere between hundreds of men, to a mere handful. The greater their numbers, the thinner the rest of Boeotian line would be. Gaebel estimates the Theban numbers between two and four thousand, which in turn leads him to surmise the rest of the allies were drawn somewhere between five and three shields deep (2002, 99).

[209] Kagan 1974, 283.

[210] J. T. Roberts 2017, 145; Tritle 2010, 102. Concerning the unimpressive charge of the deep phalanx, Hanson suggests there is a critical mass above which there is no point in adding more men to a formation. He sets the ideal number of ranks between 16 to 24 (2007, 506).

horsemen to ride around a hill and outflank the enemy.[211] The Athenians mistakenly believed a second army was attacking them and fled.

Unfortunately, Thucydides does not explain how Pagondas noticed the issue on his left flank, nor how he communicated with his cavalry, a common omission among our sources as we shall see. There were only two ways for Pagondas to realize what was happening: either he saw it for himself, or he was told about it in some way, presumably a messenger. Pagondas was certainly not fighting in the front ranks, otherwise he never would have had the chance to deliver his orders to the cavalry.[212] As such, he must have been safely located within the deep phalanx. Its unusual depth, coupled with the plunging view the hill would have afforded, may have allowed Pagondas to keep an eye on his battle-line, especially if he were mounted himself. Nevertheless, we must not forget that the Boeotian phalanx stretched over at least 800 meters, and possibly as much as 1.6 kilometres.[213] Such a distance, coupled with the inevitable visual obstruction of the terrain, could have prevented the general from having a clear visual contact with his left wing. A report from a messenger thus seems more likely. The Thebans had positioned their cavalry on both ends of their phalanx, and the terrain had largely kept them safely out of the fight.[214] It would, therefore, have been simple for a Theban rider, positioned near the left flank, to deliver news to Pagondas.[215]

As to how the general communicated with his cavalry detachment, we may suggest the following: Pagondas had evidently not set a pre-arranged signal to order his horsemen to flank the Athenians,[216] since Thucydides clearly states that the Theban general acted only because the left wing was in trouble,

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[211] Henderson 1927, 236–37; Kagan 1974, 285; Tritle 2010, 102–3.
[212] Gaebel 2002, 100.
[213] The Theban line matched the Athenian phalanx in length, and both armies had about 7 000 hoplites: Thuc. 4.93.3. The Athenians deployed their men eight ranks deep, meaning their front rank sported 875 soldiers. With three feet intervals between hoplites, the line would measure 800 meters. With six, it would measure 1 600. See n. 170.
[214] Thuc. 4.93.4; 4.96.2.
[215] See n. 151.
[216] See battle of Potidaea for such a practice: Thuc. 1.62.3; 1.63.2.

not because he had planned on doing so beforehand.[217] Consequently, the order must have been communicated verbally and on the spot, either by Pagondas himself or yet another messenger, presumably the same one that brought him the news. At first, it would seem odd to consider the possibility that a general would personally deliver his orders rather than send a subordinate, but this practice was not unknown in the Greek world, as our next two cases will demonstrate (see pages 69 and 73). A messenger would have been the only viable solution in the unlikely event that Pagondas meant to use the cavalry of the left wing. This Detachment, however, was likely within visual range of the victorious Athenian right, and so their flanking manoeuvre would not have tricked them into believing a second army was falling upon them.[218] In addition, there was no reason for Pagondas to waste time communicating with a faraway squadron when another one was stationed close by. The order, therefore, must have been directed at the cavalry of the right wing, whose closer proximity to Pagondas could have allowed him to communicate with them personally, if he so chose.[219]

The battle of Delium thus offers an undeniable example of effective mid-battle communications. The actions of Pagondas suggest the following: firstly, a Greek general could be made aware of a development on one side of his phalanx even if he were positioned at the other end. Secondly, a Greek general could order some of his subordinates, in this case the unnamed officer in charge of the cavalry division, to take action and remedy the situation, thus influencing the course of a battle far away from where he personally stood. Thirdly, a Greek general was capable of small-unit tactics, though in this case only with non-hoplite units who were not engaged in battle (see pages 69 and 76 for similar actions involving hoplites). Finally,

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[217] Thuc. 4.96.5.

[218] The Athenians seemed entirely unconcerned about the Boeotian riders on the left. This could be explained either by the fact that the terrain that had so far kept them out of the fight was still somehow obstructing them (see note 214), or that collapse of the Boeotian left wing had broken them in turn.

[219]Cf. Theodoratos 2007, 176; Worley 1994, 95.

we should consider the possibility that a deep phalanx could grant the general additional security and accessibility, which would in turn allow him to better survey and communicate with his forces.

Myronides at the Battle of Oenophyta

According to both Frontinus and Polyaenus, the Athenian general Myronides distinguished himself shortly after the battle of Tanagra in 457 BC, when he defeated the Thebans at Oenophyta.[220] Thucydides briefly mentions the battle, but he does not provide any details.[221] We must thus rely on Polyaenus and Frontinus for insights into Myronides' actions.

> Myronides ordered the Athenians to run towards the enemy when he gave the signal, starting from the left wing. He gave the signal; they ran. When they had advanced a short distance, Myronides, running towards the right wing, shouted loudly 'We have won on the left'. The Athenians, encouraged by the report of victory, attacked more enthusiastically, but the Thebans, terrified by the announcement of defeat, turned to flight. (Polyaenus 1.35.1. Translation by Hans van Wees)

> Myronides, the Athenian, in an indecisive battle which he was waging against the Thebans, suddenly darted forward to the right flank of his own troops and shouted that he had already won victory on the left. Thus, by inspiring courage in his own men and fear in the enemy, he gained the day. (Frontinus. *Strat*. 2.4.11. Bennett 1925)

Both narratives differ slightly. Polyaenus' more detailed account claims that Myronides acted during the advance, whereas Frontinus claims it was during an ongoing, and reportedly undecided, battle.

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[220] Diodorus claimed this victory was the equal of Marathon and Plataea: Diod. 11.82.1.
[221] Thuc. 1.108.3

It was not uncommon for Greek leaders to lie to their subordinates or their foe. Usually however, such deceptions played out on the strategic level rather than the tactical, and allowed generals to manipulate campaigns rather than battles, with the possible exception of Agis II (see page 95).[222] Myronides thus appears as an oddity. As such, one may reasonably question the accuracy of writers like Polyaenus and Frontinus, and argue that rather than describing the actual events of a fifth century battle, they were instead projecting the tactics of their era: this type of stratagem, later known as the *salubre mendacium*, was something of a standard in their days. Anderson, for instance, rejects the accounts due to their later date.[223] Wheeler, however, accepts that Myronides, as well as Daphnaeus (Polyaenus 5.7), both made an early use of what would eventually be known as the *salubre mendacium*.[224] He claims that Frontinus based his accounts on earlier Greek sources,[225] while Polyaenus used Ephorus as his chief source.[226] Though he does not claim this as a guarantee of accuracy, he does believe it enough to reject Anderson's scepticism.

Wheeler's claim concerning Polyaenus' main source is uncertain. Ephorus possibly also served as a source for Diodorus, who provides next to no detail about Oenophyta.[227] If Diodorus' account is indicative of Ephorus' own, then the latter's description of events would not be anymore compatible with Polyaenus' version of events than with Frontinus', meaning it could have served as a basis for either account. Alternatively, Diodorus may have simply refrained from providing a more detailed account out of personal preference rather than poor sources.

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[222] Lying to own troops and allies: Xen. *Hell*. 4.3.13-14; Poly. *Strat.* 1.20.1; 1.42.1; 1.48.1; 2.1.3; 2.2.4. Lying to the enemy: Hdt. 8.22.1-3; 8.75.1; Poly. *Strat*. 1.20.2; 1.33; 1.40.5; 1.43.1-2.

[223] Anderson 1970, 160.

[224] Wheeler 2007b, 267.

[225] It is unfortunately unclear what Frontinus' own Greek sources were: K. D. Murray 1997, 176–80. He starts his work by claiming he examined sources from both languages (quae utraque lingua), namely Latin and Greek, though he admits to skipping over many details (Frontiuns. *Strat*. 1.). This may explain why his description of the battle is slightly briefer than Polyaenus'. The earliest Hellenic sources hinted by Frontinus himself seem to have been the lost military writings of Pyrrhus of Epirus (Frontinus. *Strat*. 2.6.10.).

[226] Wheeler 2007b, 267 n. 143.

[227] Diod. 11.83.1.

Diodorus also famously provided an account of the battle of Thermopylae completely at odds with Herodotus' more well-known and sober description.[228] This so-called 'Legend' of Thermopylae is thus assigned to Ephorus, and many historians believe he simply invented it.[229] Michael Flower (1998), however, defended Ephorus' reliability, arguing that he based his account on oral narratives that arose shortly after the battle.[230] Hans van Wees largely agrees with this view, adding that these stories were the product of pro-Spartan propaganda attempting to reinterpret an otherwise failed military expedition.[231] Ephorus' description of the battle was, thus, inaccurate, but considering he based it on contemporary accounts instead of his own imagination it does not follow that Ephorus himself was unreliable. Consequently, we may reasonably assume that Ephorus' description of Oenophyta would have relied on similar sources. Though this is no guarantee of accuracy, it suggests at the very least that if either Frontinus or Polyaenus based their respective accounts on Ephorus, they would not have transposed the tactics of their era into the past. Furthermore, as we shall see later on in this chapter, Myronides' actions are not very dissimilar to those of other contemporary generals, such as Lamachus (see below).

As mentioned previously, Polyaenus claims that Myronides acted during the advance, whereas Frontinus claims he did so during an ongoing battle. The former thus implies the general's actions were planned, while the latter seems to suggest they were spontaneous. Polyaenus' story seems the likeliest one: the fact that Myronides' actions are characterized as a 'stratagem' by both our sources suggests premeditation.[232] Furthermore, the only other general in our dissertation to run to one part of his phalanx did so during a lull in the fighting, not in the middle of battle (see page 73). We will accordingly prefer Polyaenus' version of events of Frontinus'.

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[228] Diod. 11.5-11.
[229] See Van Wees 2019, 20 n. 5 for a list.
[230] Flower 1998, 366–68.
[231] Van Wees 2019, 20, 43–51.
[232] See Wheeler 1988, 1–2, 25–26.

Polyaenus states that the general ordered his left flank to march ahead of the rest of the army. Perhaps this was done so that he could then bring plausible news of their 'success' to the right. If true, then Myronides would have built his entire battle plan on the accurate assumption that he could communicate both with his troops and the enemy.

One thing both sources agree on is that the Athenian general personally delivered the news to his right flank. A *strategos* could thus evidently take it upon himself to run behind his phalanx instead of relying on other means of communication, but why would he do so? Many other battles present evidence that Greek generals could, and often did, rely on subordinates to transfer their orders, including the battles of Solygia, first Mantinea, and all three instances of the hollow square formation (see below). In light of this, the actions of Myronides cannot be explained through supposedly poor tactical communications, but rather through a tactical choice: the sudden arrival of a general willing to take charge of matters would undeniably be better for morale than a messenger, as Oenophyta seems to indicate. Frontinus suggests the general attempted to achieve a breakthrough in an otherwise undecided battle, while Polyaenus claims he wanted to offer his men an advantage of morale over their enemy. By moving to the right, Myronides would thus give the impression that the 'victory' on the left flank was so complete that his presence was no longer needed.

Furthermore, Myronides could not have been positioned in the front lines. The fact that he was able to run to the right suggests he must have been close to the rear ranks of the phalanx, or even entirely outside the formation. Leaving the phalanx would have been increasingly dangerous for the formation the closer he was to the front line, and there would be no reason to stand deep within the phalanx if his actions were premeditated. It seems, therefore, far more likely that Myronides kept himself at a safe distance and encouraged his men without compromising the integrity of their formation or hampering his own freedom of movement.

Lamachus in the Second Battle of Syracuse

Lamachus was leading the left flank of his army against the Syracusans. After a fairly obscure battle the Syracusans retreated, with half of their men making for the safety of their city, while the left flank was left stranded outside the walls, behind a river. Three-hundred Athenian *logades* then attempted to isolate these troops.[233]

Thucydides does not clarify whether the *logades* acted under orders from Lamachus, but this seems likely. Dedicated reserves could be left to join the fight at their own discretion,[234] but it does not seem that the *logades* were a standing and independent regiment.[235] They had been created a few days earlier to attack the enemy stockades, but we do not know if they were kept separate from the rank and file.[236] Furthermore, this earlier action seems to have been carefully orchestrated by the Athenian generals, both of whom led sections of the army to support and exploit the breakthrough created by their picked regiment. Athens had made use of picked units during the Persian Wars, however this unit was not maintained all the way through the Peloponnesian War.[237] Lee believes that Athens only created a permanent elite unit in the fourth century.[238]

The *logades* were eventually routed, and the Syracusans pressed their counter-attack until they fell upon the Athenian right. It was at this moment that Lamachus decided to intervene, and move to the right flank in order to assist them.

> The alarmed Syracusans, who had with them most of their cavalry, closed and routed [the
>
> *logades*], hurling them back upon the Athenian right wing, the first tribe of which was

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[233] Thuc. 6.101.4.

[234] Thuc. 3.107.3; 5.9.7; Wheeler 2007a, 219.

[235] According to Tritle, the Athenian would only establish standing elite regiments in the fourth century BC, whereupon they would be known as *epilektoi*: Tritle 1989, 55–56.

[236] Thuc. 6.100.1-2.

[237] Konijnendijk 2018, 154; Van Wees 2004, 59; Hdt. 9.21-22. Other states, like Argos, maintained their elite regiments at public expense: Thuc. 5.67.2.

[238] Lee 2013, 146.

thrown into a panic by the shock. Seeing this, Lamachus came to their aid from the

Athenian left with a few archers and with the Argives, and crossing a ditch, was left alone

with a few that had crossed with him, and was killed with five or six of his men. (Thuc.

6.101.5-6. Crawley 1910).

Lamachus' actions firstly prove that it was not unheard of for a Greek general to dart from one flank

of his army to the other in order to deal with an unexpected tactical situation. Lamachus, however, was

not engaged by the time he moved. This lull in the fighting is probably what drove him to reposition rather

than send a subordinate: there was simply no reason for him to stay on the left.[239] We are even left to

wonder if the Athenian general travelled behind or in front of his phalanx. Thucydides does not say, but

the latter scenario would have allowed Lamachus to strike at the unshielded side of the Syracusan left

wing. Such a movement would have also left him exposed, which could explain his eventual isolation and

death.[240]

Secondly, Thucydides claims that Lamachus personally saw (ἰδὼν) the plight of his left flank. This

could only be possible if the Athenian general had a height advantage over his forces, perhaps suggesting

he was initially stationed somewhere near the Athenian Circle which stood on top of a hill above the

battlefield.[241] The battle itself was fought in a marsh, where planks had previously been used to avoid

sinking into the ground.[242] This would suggest that at least some sections of the army would be fighting

on firmer and higher ground than others, thus robbing them from the field of view of someone within the

phalanx (Figure 3). Unlike Delium it seems unlikely that natural obstacles, such as trees or cliffs, would

have been present in the marsh, and so a plunging view from the nearby hill may have been enough to

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[239] Though the battle would soon resume once the Syracusan right and centre returned to the field: Thuc. 6.102.1-2.
[240] Thuc. 6.101.6.
[241] Thuc. 6.101.1.
[242] Thuc. 6.101.3.

witness the ebb and flow of combat. Nicias, who stayed at the Circle due to his health, evidently saw the Syracusan counter-attack and ordered his men to light a large enough fire to drive the attackers off.[243] This, presumably, would have taken some time, and could indicate that the field of view from the hill was more than enough to supervise the battle.

Thirdly, Lamachus' actions highlight the control he held over his army, and indicate a high level of organisation and communication within the Sicilian expedition as a whole, not just its Athenian elements. Lamachus was seemingly capable of commanding small units of hoplites: his possible dispatch of the 300 Athenian *logades* could indicate as much. His second set of orders, however, was directed at the Argive hoplites of the expedition, plus an unknown number of archers. We unfortunately do not know the Athenian order of battle for the second battle of Syracuse, but we do know that the Argives had been positioned on the right flank during the first battle of Syracuse.[244] Perhaps Lamachus chose them over Athenian troops because they were, once again, positioned at the extremity of the phalanx, in this case the left flank, and could thus be moved without creating a gap in the line.

Roel Konijnendijk has recently argued that small picked regiments, like the *logades*, were formed specifically to carry out tactical operations that the larger and clumsier hoplite levy could not.[245] The Argives were certainly highly experienced men, well above the average city-state militia (see note 249), but they had not been expected to fight outside the phalanx on that day.[246] While it seems undeniable that smaller divisions of elite troops selected for their skills and grouped together in separate units would be more flexible than the clumsy parts of the phalanx, the second battle of Syracuse seems to indicate that a general could also select larger formations of experienced men straight from the line, provided they

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[243] Thuc. 6.102.2.
[244] Thuc. 6.67.1.
[245] Konijnendijk 2018, 153–56. Konijnendijk (2018, 155) plausibly claims that factors in the selection of picked troops would have involved strength, skill, and quality of equipment.
[246] The fact that the Athenians still felt the need to create elite corps of 300 men seems to indicate that the soldiers of the expedition were not all on the same level, despite their overall experience and quality.

were not engaged. Lamachus took the full unit of five hundred Argive hoplites.[247] Had he intended to use them in extra-phalanx activities beforehand, perhaps he would have trimmed their numbers down to match those of the Athenian logades to ensure their flexibility.

This means that Lamachus trusted this line formation of experienced hoplites to be versatile enough to command outside of the phalanx, and take part in an impromptu action without altering their unit in any way. This would also raise the effective range of vocal orders within regiments to possibly as much as 92 meters, if we assume the five hundred Argives deployed ten shields deep and maintained six feet between each hoplite.[248]

However, we should not be blind to the fact that, at least according to Thucydides, the Athenian coalition army at Syracuse, including the Argives, was exceptionally effective and experienced.[249] As such, perhaps the reason why Lamachus was able to lead his Argives was because of their unusual experience. If so, the second battle of Syracuse might have been the exception, rather than the norm. Yet the next battle on our list would seem to indicate otherwise.

Lykophron at the Battle of Solygia

The actions of Lykophron of Corinth at the battle of Solygia are a good indication of how a general could rely on his subordinates to carry out his orders rather than personally deal with an emergency. [250] Furthermore, it also stands as proof that the tactical communications of the second battle of Syracuse were not only possible within an army as reportedly experienced as the Athenian expedition.

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[247] Argive numbers: Thuc. 6.43.1. Some of the Argives had been killed in the previous days, but Thucydides claims their losses were few: Thuc. 6.100.2.
[248] I adopt a 10-shield depth here merely for convenience of calculation. For the variability of depths see nn. 169 and 537.
[249] Thuc. 6.31.3; 6.68.2; see n. 420, 421, 422, 423, and 424.
[250] Thuc. 4.43.1-44.6.

In the summer of 425, immediately after the unexpected Spartan surrender at Pylos, the Athenians attacked Corinth with a sizeable naval expedition of some eighty ships under the command of Nicias and two other generals.[251] The Corinthians, however, had gotten word of their arrival, and under the command of Lykophron and Battus aimed to repel the Athenian landing. Battus was sent with a *lochos* to garrison the nearby village of Solygia, while Lykophron was left in charge of the rest of the army.[252] They first engaged the Athenian right flank, before eventually coming in contact with the rest of their army.

> The Corinthians first attacked the right wing of the Athenians, which had just landed in front of Chersonese, and afterwards the rest of the army. The battle was an obstinate one, and fought throughout hand to hand. (Thuc. 4.43.2. Crawley 1910)

This can be explained by the fact that the Corinthian army was marching south from the Isthmus, while the Athenian army was deploying north to south along the coast, thus presenting their right flank to the enemy. The leading elements of the Corinthian army must have made contact with the first Athenian units to disembark, thus effectively forming the left and right flank of both armies. The remaining Corinthian forces must have then carried on, moving past the engaged units and following along the shore until they could engage the rest of the Athenians exiting their ships.

The Corinthian left wing was eventually routed and chased off the field, but they soon recovered and turned on their pursuers after reaching the relative safety of a civilian wall.[253] At this moment, an unknown Corinthian *lochos* came to the rescue of the beleaguered left, and helped them repulse the Athenians back towards the sea.[254]

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[251] Thuc. 4.42; Hornblower 1996, 197; Lee 2013, 154; Lendon 2010, 284; Salmon 1984, 319. Polyaenus offers a radically different interpretation of the battle: Poly. *Strat*. 1.39.1.

[252] Thuc. 4.43.1.

[253] Thuc. 4.43.3; Gomme 1956b, 491; Hornblower 1996, 198–201; Pritchett 1991, 7. Thucydides claims the Corinthians pelted the Athenians before counter-attacking. Two sling bullets marked with the name of Lykophron are currently held at the Ashmolean Museum, possibly suggesting the presence of slingers at Solygia: Salmon 1984, 319 n. 33.

[254] Thuc. 4.43.4.

There seems to be only two plausible scenarios as to where that *lochos* came from, and who ordered it to move to the left: either they were sent there by Lykophron, who was stationed on the right wing of the army,[255] or this was the same *lochos* that Battus had taken to garrison Solygia.[256] The latter scenario, however, seems unlikely for three reasons: firstly, Thucydides had just mentioned Battus and his regiment by name in his narrative, and so the fact he obscurely referred to the reinforcing *lochos* as 'some Corinthian *lochos*' (*λόχος δέ τις τῶν Κορινθίων*) suggests both groups were separate.[257] Secondly, the village was located approximately a mile and a half from the battle: probably too far for a dismounted force of heavy infantry to reinforce a phalanx in time.[258] Thirdly, the Corinthians seem to have been convinced the target of the Athenian expedition was the village of Solygia, to the point where removing its garrison would have made little sense. The village stood on a strategic hill, a few miles away from Corinth, and had been used by the Dorians in the past to attack the city.[259] Though Thucydides does not reveal the exact purpose of the expedition,[260] the fact that the Athenians landed no more than a mile and a half from the town cannot be a coincidence, and they may well have meant to garrison the village and use it as a base of operations.[261] This somewhat aged theory is rejected by Salmon, Gomme and Hornblower, who all believe Solygia to have been located too far inland to act as a suitable Athenian outpost.[262] Yet while the village is indeed relatively far from Corinth,[263] and is further separated from it by

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[255] Thuc. 4.43.5.

[256] Konijnendijk 2018, 120, 164.

[257] Thuc. 4.43.1-4.

[258] Thuc. 4.42.2. It would take half an hour to cross this distance at a walk, and fifteen minutes at a run, though the men would have been exhausted.

[259] Thuc. 4.42.2.

[260] Gomme, Andrewes, and Dover 1981, 363; Hornblower 1996, 198.

[261] The expedition was certainly equipped for such a task, as a few days after the battle they would go on to raid the territories of Epidaurus and Methana where they left a garrison that successfully carried out raids against the nearby territories of Troezen, Haliae, and Epidaurus (Thuc.4.45.1-2; Lendon 2010, 287–88).

[262] Solygia as target of the Athenian expedition: Garlan 1974, 33. *Contra* Hornblower 1996, 197; Salmon 1984, 320 n. 34. Gomme further adds that the Athenians could never hope to keep Solygia since it was unfortified: 1956b, 494. Other scholars believe Nicias' primary purpose was to actively seek a hoplite battle, a truly radical shift from previous Athenian policy, that could have been born from the athrill of their latest successes: Lendon 2010, 284. This theory, however, does not take into consideration how circumspect Nicias was: see n. 638.

[263] Sixty *stades* according to the narrative: Thuc. 4.42.2.

Mount Oneion, the Athenians had embarked two hundred cavalrymen along with their infantry.[264] These men could have acted as an effective raiding force, even from a remote location, especially considering the Corinthians had no cavalry of their own with which to oppose them.[265] Of course, they would depend on support from the sea, but as Salmon noted, the Corinthians had recently lost several ships and could not count on any naval assistance from Sparta.[266] There was, therefore, an important strategic need for the garrison of Solygia to stay put. Thucydides goes as far as to claim that Lykophron and his men fought with notable ferocity specifically out of fear that the Athenians might break through them and make for the village.[267] Considering, therefore, that both generals had the safety of Solygia in mind, they would likely not have sanctioned the removal of its garrison. As such, we must assume Battus and his men never took part in the fight,[268] and that the reinforcements came at the behest of Lykophron and were either drawn from an unspecified reserve force or from within the phalanx itself, presumably the right flank.

Thucydides, however, usually mentioned when an army had established a reserve force, which begs the question of why he would have failed to do so at Solygia.[269] It also seems highly unlikely that the *lochos* came as part of the additional reinforcements from Corinth, since Thucydides states these men arrived

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[264] These men effectively turned the tide of the battle in favour of the Athenians. Their prowess (or more specifically their horses') was praised by Aristophanes (Ar. *Knights*. 595-610; Gomme 1956b, 489). Hornblower suggests that the playwright may have also given us the name and rank of the officers in charge of the Athenian cavalry: two *hipparchs* going by the name of Simon and Panaitios (Hornblower 1996, 202). He further adds that this Simon might have been the same man who wrote a treatise on horsemanship under the name of Simon Hippikos. Xenophon would later dedicate his own treatise on horsemanship to him.

[265] Thuc. 4.44.1; Hornblower 1996, 202. This was apparently still the case in 418 BC, during the Argive expedition of Agis II: unlike their Boeotian allies, the Corinthians brought no cavalry, and were thus free to invade Argos from a steep road unsuitable to horses: Thuc. 5.58.4. For further proof of the effectiveness of Athenian cavalry during raids: Thuc. 2.31.3; 56.2. For the effectiveness of cavalry raids launched from nearby villages: Thuc. 7.4.6.

[266] Salmon 1984, 318–20. The Spartans lost every single military vessel they had, while the Corinthians and other naval allies lost somewhere around 25 to 30 vessels between them. Garlan notes that a fort had to fulfil two criteria to be a nuisance to the enemy: 1) it had to be easily accessible by the invaders 2) and close enough to the enemy to strike freely (1974, 35). It should also be noted that the fort of Decelia was 120 stades away from Athens and still remained effective.

[267] Thuc. 4.43.5.

[268] Gomme 1956b, 491. The perceived value of Solygia could have been the reason why the Corinthians sent one of their two generals to garrison it instead of a *lochagos*.

[269] Corinthian cavalry reserve at Potidaea: Thuc. 1.62.3. Athenian reserves at Acarnania: Thuc. 3.107.3-108.1. Athenian cavalry reserves at Delium: Thuc. 4.93.2. Boeotian cavalry reserves at Delium: Thuc. 4.96.5. Brasidas' reserves at Amphipolis: Thuc. 5.9.7-10. Athenian hollow square reserve at Syracuse: Thuc. 6.67.1.

only after the battle (Thuc. 4.44.4-5). Removing men from the phalanx to reinforce another part of the line was certainly unusual, but it was attempted by king Agis II during the first battle of Mantinea (Thuc. 5.71.1-3) as well as Lamachus (Thuc. 6.101.5-6). King Agis' plan failed due to insubordination (see page 100), while Lamachus was more successful despite his death. Consequently, since Battus' unit likely never joined the battle, and since Thucydides does not mention the presence of any other reserve forces, we must assume the reinforcing *lochos* was indeed drawn from within the phalanx itself.

The only way this could have happened was if Lykophron himself had ordered it. The Corinthian general must have noticed the plight of his left flank and sent aid accordingly. As we saw previously with Pagondas and Lamachus, and as we will shortly see with Agis, Xenophon, and Cheirisophus, any form of reinforcements travelling from one part of the army to the other were always sent at the behest of the general, not a subordinate officer.[270]

How Lykophron noticed the defeat of his left wing is unknown. Perhaps the Corinthian left had already started to crumble as the rest of the army was deploying to attack the Athenian left and centre. If so, then Lykophron might have been informed of their imminent defeat, or witnessed it for himself, as he and the rest of his forces travelled past their left flank to take up their positions. It would also have been easier for him to detach hoplites from the phalanx during this phase since they would not be in contact with the enemy. Alternatively, he might have been notified by a messenger mid-battle. If his orders were issued during combat, then one has to imagine the troops he meant to detach from the line were not currently engaged, just like Pagondas' cavalry and Lamachus' Argives. Perhaps the Corinthian right outflanked the Athenian army, in the same way Agis' army did at Mantinea, thus allowing Lykophron to peel some troops away. Thucydides does not provide us with enough information on the battle to move

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[270] Pagondas: Thuc. 4.96.5. Lamachus: Thuc. 6.101.6. Agis: Thuc. 5.71.1-3, see page 82. Cheirisophus and Xenophon: Xen. *Anab*. 3.4.38, see page 113.

beyond speculation, but Solygia was evidently a highly mobile and fluid confrontation. As such, perhaps we should accept that Lykophron sent his reinforcements during the march.

We are also unable to determine how Lykophron communicated with the *lochos* he sent to the left. Either he personally ordered them to shift flanks, or he sent a messenger of his own, as Agis II did at first Mantinea.[271] Agis, however, was stationed at the centre of his forces and was attempting to communicate with men positioned on the far right and left. Lykophron, on the other hand, was stationed on the right, and presumably close to the men he drew from the line. As such, he might have had the luxury of both options, just like Pagondas presumably had at Delium.

We should also add that, much like the second battle of Syracuse, this episode seems to suggest that line troops could be relied upon to carry out impromptu operations outside of the phalanx, instead of just picked regiments specifically raised for such a purpose: there is nothing to suggest that the reinforcing *lochos* was made out of elite men. Konijnendijk, at any rate, believes the Corinthians would have stationed their best units on the left flank, not the right.[272] This seems plausible considering they managed to regroup and counter-attack after their initial rout: perhaps regular levies would not have been so motivated. Furthermore, the battle seems to have begun very quickly and haphazardly, judging by Thucydides' description of the first moments of the engagement. It seems, therefore, unlikely that Lykophron would have had the time to select and prepare a picked regiment to act as a quick-reaction force. Battus' own men are not described as *logades* by Thucydides, but rather as an ordinary *lochos* which the general quickly took to Solygia, regardless of skill, equipment, morale, or size.[273] Unfortunately, we do not know the size of the reinforcing Corinthian *lochos* and, as such, we cannot expand upon their troop distancing, and what it might tell us about the effective range of vocal orders.

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[271] Thuc. 5.71.3.
[272] Konijnendijk 2018, 32 n. 121.
[273] See n. 252.

In conclusion, Solygia seems to suggest that a general could communicate with his subordinates in the middle of a battle, [274] direct them to where they needed to be, and so influence events far away from where he stood. Lykophron noticed the rout of his left flank, either personally or through a messenger, and successfully sent a subordinate officer to remedy the situation. Furthermore, the battle of Solygia, much like the second battle of Syracuse, seems to indicate that a Greek general could command line infantry in the middle of battle, provided they were not engaged in combat.

Agis II at the First battle of Mantinea [275]

The first battle of Mantinea took place in 418 BC and was fought between the cities of Sparta and Argos, each leading her allies into battle. Thucydides' description of the battle is one of the most precious accounts of Greek warfare. It provides the reader with the first detailed description of Spartan hierarchy and military organization, as well as some of the most exceptional developments in Greek warfare regarding battlefield communications. Most historians today would agree that the Spartan king, Agis II, made a series of mistakes that emphasize the limits of ancient Greek armies.[276] One notable exception is W. J. Woodhouse, who asserted that Agis' leadership was inspired.[277] We will examine his views in detail later on (see page 105), and offer a slightly different interpretation of Agis' qualities. Furthermore, the battle of Mantinea and the assault on the Alesion that took place the day before offer us important lessons concerning vocal orders and trumpet signals respectively.

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[274] This practice is most clearly described by Xenophon: Xen. *Anab.* 5.2.12, see page 153.

[275] Thuc. 5.65.1-74.3.

[276] Hutchinson 2006, 112–15; Kagan 1981, 114, 125; Lazenby 1991, 104, 2004, 120, 125; Rusch 2011, 114; Theodoratos 2007, 191; Tritle 2010, 126.

[277] His views have not found worldwide acceptance. Cf: Rusch 2011, 114 n. 38; Tritle 2010, 125 n.37. Donald Kagan accepts that he raises several good points, but dismisses him in the end (1981, 121–25).

1) *The Alesion hill: the effectiveness of trumpet signals.*

On the eve of the battle of Mantinea Agis led his men, approximately 9 000 hoplites,[278] in an abortive up-hill assault on the Alesion hill where the Argive army was positioned.[279] The king eventually called for a retreat through unknown means before both armies could clash. According to Thucydides, the Peloponnesians were a javelin or stone's throw away from the Argives when the king ordered the withdrawal (μέχρι μὲν λίθου καὶ ἀκοντίου βολῆς).[280] There is, however, always a moment of delay between the time an order is issued and when it is obeyed. The larger the formation is, the larger the delay will be (Figure 24). This, in turn, means that the order to retreat had to be delivered to, and obeyed by, the entire host before they had time to close the gap with the Argives. Ergo, if one were to establish the method of communication used on that day, as well as the approximate distance Thucydides was trying to illustrate, we could have a better idea of how quickly an army could come to a halt through that method.

A) *Method of transmission: vocal orders or trumpet signals?*

Thucydides states that Agis withdrew his men at speed (κατὰ τάχος).[281] This could either mean that the Peloponnesians quit the field at a fast pace, or that the order itself was issued and obeyed swiftly, thus speeding up the whole process. The first scenario, however, seems impossible. The only way to achieve a fast pace would be to order the phalanx to turn about, similarly to what Xenophon would do years later.

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[278] Thucydides' description of the battle of Mantinea is notoriously problematic when it comes to the numbers of the Spartan army (Thuc. 5.68.2; Rusch 2011, 111; Van Wees 2004, 245–47). Historians suggest numbers ranging from 8 000 men (Rusch 2011, 111; Theodoratos 2007, 190–91), to 9 000 men (Hutchinson 2006, 109; Kagan 2003, 230), or even as high as 11 000 men (Butera and Sears 2019, 324; Fields 2013, 199). This dissertation shall adopt 9 000 to err on the side of caution. For the difficulties of establishing Spartan numbers at Mantinea: Hutchinson 2006, 108–12; Lazenby 2012, 5–10.

[279] Thuc. 5.65.1-5. Thucydides never refers to the Alesion by name, but the site of the battle is widely accepted.

[280] Thuc. 5.65.2.

[281] Thuc. 5.65.3.

> The orders he gave to his own men were, that when sling-stones reached them and shields
>
> rang, they were to strike up the paean and charge upon the enemy, and when the enemy
>
> turned to flight and the trumpeter on the river-bank sounded the charge, they were to
>
> face about to the right, the file closers were to take the lead, and all of them were to run
>
> and cross as fast as they could (Xen. *Anab*. 4.3.29. Brownson 1968a)

Firstly, the terrain was not as much of a disadvantage for Xenophon as it was for Agis, where the hill would possibly interfere with the integrity of the phalanx. Secondly, Xenophon only committed a few of his troops to his mock assault, not 9 000 men. Finally, Xenophon was facing skirmishers who would inevitably fall back when rushed by heavy infantry, whereas Agis was facing hoplites who could be expected to counter-charge at any time. [282]

The Peloponnesians, therefore, could not turn their backs on their foe without dangerously exposing themselves.[283] Consequently, we are forced to conclude that the only way the Spartans and their allies could have withdrawn was in good order while facing the enemy, as they would do again years later.

> The Lacedaemonians, since many of them were being wounded and they were hard
>
> pressed, gave ground, though still facing the enemy; and at this the latter attacked much
>
> more vigorously. (Xen. *Hell*. 2.4.33. Brownson 1968b)

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[282] Hutchinson (2006, 107) is perplexed at the fact that the Argives failed to attack the Spartans. Even a defensive army would usually counter-charge. Agesilaus' reaction to Chabrias shows how even an army in a perfect defensive position was expected to take advantage of at least a few meters to charge into the enemy: Diod. 15.32.5 - 6. Rawlings has also noted how easily a down-hill charge could shatter an enemy phalanx (Rawlings 2007, 89; Xen. *Hell*. 2.4.14-16; 2.4.19) though he also stressed that victory was not guaranteed (Thuc. 4.131.1-2; Xen. *Hell*. 4.6.11.). The battle of Amphipolis is a perfect example of what happened when a retreating army was struck by the enemy: Thuc. 5.10.5-6.

[283] *Contra* Woodhouse (1933, 42) who states that the Lacedaemonians 'halted, faced about, and then drew off down the hill'.

This form of retreat may have been possible through the help of the very same pipes the Spartans used to keep their advances orderly.[284] 'Κατὰ τάχος', therefore, should not be applied to the manner in which the Peloponnesians left the hill, but rather to the speed with which the order was issued, understood, and obeyed.

It seems unlikely that a speedy transmission could be achieved through the unusual subdivision of the Spartan army. The Lacedaemonians fielded far more officers than any other Greek city-state, which allowed their generals to easily issue orders through the ranks.[285] This system, however, seems to prioritise clarity over speed. It essentially ensured that there was one officer for every thirty-two soldiers,[286] and while this certainly ensured a clear 85 orders it probably did not guarantee a *quick* transmission of orders, judging by how many times they would be repeated across the ranks. It seems, instead, far more likely that the Spartan subdivision only played a role in executing the retreat *after* the order had been delivered to the entire line through some other, swifter, method.

Furthermore, such a method of transmission would have left the allies to their own devices. The Spartans would have to either train their allies in the Spartan manner prior to the campaign, or lend them some of their officers.[287] Thucydides, however, does not mention any form of training among the allies nor any exchange of officers, though this fact alone is admittedly not enough to dismiss this possibility. It seems unlikely, however, that Agis would have followed either practice. The king clearly thought little of his allies, as evidenced by his actions at Argos, and was known to withhold vital information while on

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[284] Thuc. 5.70.1.

[285] Thuc. 5.66.3-4; Xenophon would later commend this system, and stand as a major proponent of its use, arguing the obvious point that officers were better suited than soldiers to receive and transmit tactical orders: Konijnendijk 2018, 46; Xen. *Hipparch*. 2.6; Xen. *Lak*. *Pol*. 11.5–6.

[286] Thuc. 5.68.3: the smallest unit in the army was the *enomotia*. During his description of the battle of Mantinea, Thucydides claimed that while the *enomotiai* were not all drawn in the same manner, most sported a frontage of four soldiers and a depth of eight.

[287] There was a type of Spartan officer, the *xenagos*, whose purpose was to command allied contingents: Naiden 2017, 71; Thuc. 2.75.3; Xen. *Hell*. 4.2.19; 5.1.33.

campaign.[288] Furthermore, many members of the Peloponnesian League were on the verge of open sedition.[289] Agis would probably not have given untrustworthy outsiders any insight into how the Lacedaemonians operated.

In short, the order had to be delivered swiftly, before the Lacedaemonians closed the distance, and in a manner the allies could understand. The only plausible way this could have been done was probably through a trumpet signal, the only method of communication that could have reached the entire army almost instantaneously.[290] Under different circumstances Agis might have also used a visual signal, however the curvature of the hill may have robbed parts of the phalanx from view, leaving acoustics as the only viable solution. This episode, therefore, suggests that trumpet signals could allow an army to halt within the span of time it would take for them to march the equivalent distance of a 'λίθου καὶ ἀκοντίου βολῆς'.

B) Establishing the distance

The fact that Thucydides claimed both armies were standing at a stone's throw or a javelin's toss away probably indicates he was referring to hand-thrown rocks rather than sling shots: slings generally outranged bows, which in turn generally outranged javelins.[291] Ergo, the only way the distance could have

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[288] Agis organizes and subsequently cancels a military expedition without revealing its objective: Thuc. 5.54.1. Agis unilaterally concludes a truce with Argos without consulting his allies: Thuc. 5.60.1-2. Hutchinson (2006, 105) surmises that he failed to consult them at Argos because of poor communications between the three sections of the Lacedaemonian army, but this cannot be the reason: Agis failed to inform his own Spartans (with one exception), and the king's section was made up of Spartan, Epidaurian, and Arcadian troops (Thuc. 5.58.4). He could have easily taken them into his confidence if he wanted to. For more information on Agis' tendency to withhold information see page 105.
[289] Allied sentiment towards Sparta: Thuc. 5.57.1; 5.64.1.
[290] Sound travels at approximately 343m/s, though this may vary depending on the temperature. For use of the *salpinx* during retreats see n. 161.
[291] Xen. *Anab.* 3.3.7; Ducrey 2019, 199.

been equal to a javelin's throw *and* a stone's throw is if the latter was hurled by hand, a well-attested

practice in Greek warfare (Figure 9).

Figure 9: Stone-thrower, mid-fifth century BC Attic Skyphos (Vienna Kunsthistorisches Museum, Inv. IV 1922). Found in Trundle (2004, 14 fig. 2).

And you for your part, light-armed, crouch under your shields on each side, and hurl your

great stones or cast your smooth javelins (Tyrtaeus, line 35. Translation by Anthony

Snodgrass).

According to Harris, a javelin throw could range between three or four hundred fifty feet (91 – 137

meters).[292] This estimate, however, probably reflects the realities of the stadium rather than the

battlefield.[293] Harris came by it through Statius' description of a chariot course at Nemea, which was

apparently as long as three bow shots or four javelin throws.[294] He then divided the length of well-known

hippodromes, with spans ranging from four hundred yards to six hundred yards, by four. We should,

however, probably not expect the average Greek skirmisher to have matched the feats of professional

athletes who dedicated their lives to their sport and could line up their shot without fear of injury or death.

To put Harris' numbers into perspective, the current world record for male javelin throwers stands at

98.48 meters.[295] Unlike modern athletes, Greek javelin-men made use of a leather thong, the *ankyle*,

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[292] Harris 1963, 35.
[293] Javelins meant for warfare were heavier than those used in athletic contests: Harris 1963, 27.
[294] Stat. *Thebaid*. 6. 340-355.
[295] S. R. Murray, Sands, and O'Roark 2012, 2 n. 4. World record set by Jan Železný in 2017.

which possibly doubled their range,[296] but recent experiments have shown that modern metal or carbon-fibre javelins travel further without the ankyle than ancient wooden javelins do with it.[297] Furthermore, Thucydides' insistence on the stone throw should temper our expectations on the range involved on the Alesion. Even if we accept that Greek *psiloi* could somehow match Olympic athletes, it seems unlikely that anyone could throw a stone heavy enough to be of use in warfare as far away as a professional could throw a javelin specifically designed to be light, balanced, and aerodynamic.

Furthermore, professional javelin throwing competitions, whether ancient or modern, aim to achieve the greatest possible range with every throw, but a long shot is not necessarily useful in warfare: projectiles travel further when thrown in an arcing shot but they also lose much of their velocity upon reaching the climax of their arc, striking the ground with little more than the power of their own weight. Greek skirmishers must have shot their missiles straight, or near-straight, at their target in order to do any real damage, a tactic maintained well beyond antiquity (Figure 17). The fact that Thrasybulus could confidently state that an army marching up-hill could not throw missiles over their adversaries seems to confirm that such weapons had to be thrown straight, otherwise the hill would not have been an issue.[298] Artistic representations seem to depict skirmishers aiming their weapons straight at the enemy, rather than arcing their shots (Figure 9 through Figure 17).

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[296] Harris 1963, 28.
[297] S. R. Murray, Sands, and O'Roark 2012, 12.
[298] Xen. *Hell*. 2.4.15.

Figure 11: Slinger. Aspendos stater, fourth century BC. Found in Ducrey (2019, fig. 29).

Figure 10: Javelin-thrower (Vienna, Kunsthistorisches Museum). Found in Shepherd (2013, 42).

Fig. 30. Frondeur au combat.
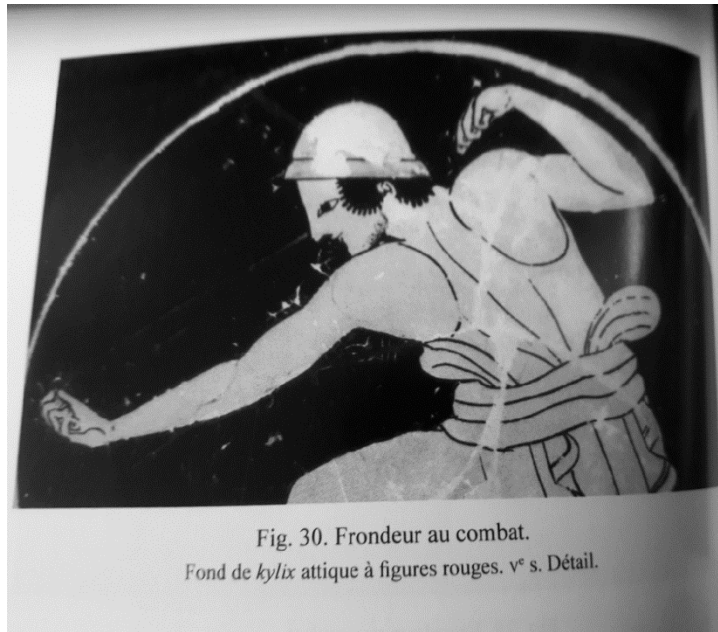Fond de *kylix* attique à figures rouges. vᵉ s. Détail.

Figure 12: Slinger. Red figure Attic kilyx, fifth century BC. Found in Ducrey (2019, fig. 30).
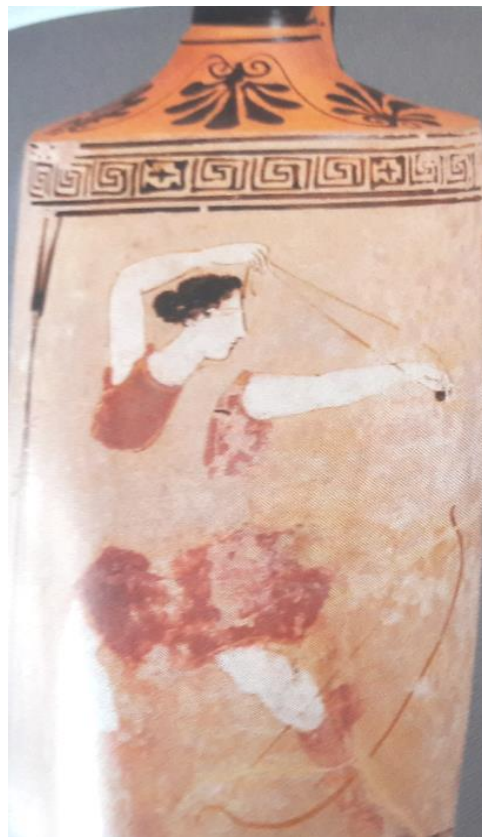
Figure 13: Amazon slinger. Attic Lekythos, circa 440. Found in Ducrey (2019, fig. 32).

Figure 14: Archer, javelin-men and javelin-woman hunting Calydonian boar. Francois vase, Attic Black-Figure Volute-Krater, sixth century BC. Found in Stambolidis (2017, 32 fig. 20).
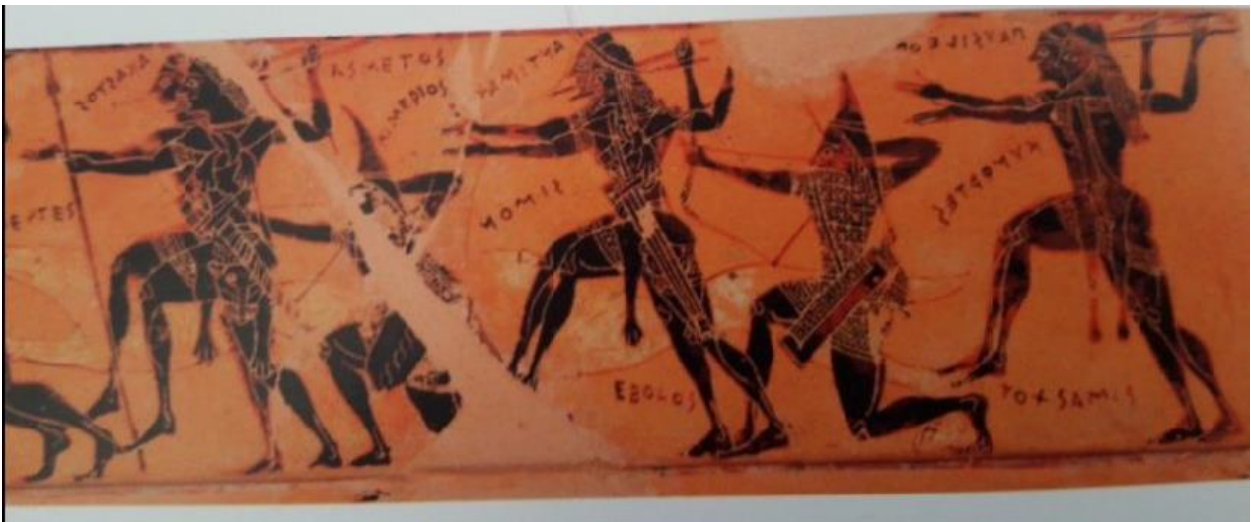

Figure 15: Archers and javelin-men hunting Calydonian boar. Francois vase, Attic Black-Figure Volute-Krater, sixth century BC. Found in Stambolidis (2017, 32 fig. 20).

Figure 17: Archers at the battle of Agincourt. Early 15th century,
Chroniques d'Enguerrand de Monstrelet.

Harris' estimates are, therefore, probably too optimistic to be considered in this scenario. There is

unfortunately no way to accurately translate Thucydides' vague estimates into a concrete distance, but

modern-day riots, where rocks are commonly thrown by hand, probably better reflect the distance he

had in mind (Figure 16).[299]

Figure 16: Rock-throwing range in riots.

Harris conducted several javelin-throws of his own, though he never exceeded 20.5 meters even with

the help of the *ankyle*.[300] These results, however, are equally unhelpful, since they were conducted by an

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[299] For the difficulties of estimating javelin ranges in the Ancient world: Harris 1963, 26.
[300] Harris 1963, 34.

inexperienced javelin-man who remained stationary with every throw.[301] A more recent experiment conducted by students from Colorado Mesa University may offer us a better image of the average skirmisher's range in Greece: the organizers enlisted the help of sixteen men in their twenties and offered them some basic training. The experiment lasted for nine days, with participants warming up each day before throwing their javelins both with and without the ankyle. Participants were also allowed to take a single step to add power to their throw.[302] The mean throwing distance with the ankyle was 30.99 meters. Once again, these estimates are not exhaustive, since the participants were not allowed to run before throwing their weapons.[303] Nevertheless, they probably offer a better indication of the average effective range of Greek skirmishers than Harris' throws considering the regular training the subjects underwent over the course of those nine days. This distance is also far more realistic when it comes to an effective stone throw.

The same experiment was repeated a year later using highly trained collegiate javelin men. The organizers concluded that ancient athletes could probably throw their javelins somewhere between 55 to 70 metres, far less than Harris' estimates but considerably more than their own earlier finds.[304] Once again, these results can be disputed,[305] and the question surrounding the range of ancient javelins remains largely unanswered.[306] As such, this dissertation will adopt Harris' numbers as our maximum range, and the first experiments' results as our minimum range to ensure we remain within the margin of error.

Consequently, the distance between both armies probably ranged somewhere between 30.99 meters and 114 meters, with the minimum reflecting the average throwing abilities of a young male amateur and

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[301] Harris 1963, 31. The purpose of the experiment was not the establish the maximum or average range of the javelin, but rather the effect a leather thong had on a throw. Harris threw his javelins stationary to ensure some similarity between each throw.
[302] S. R. Murray et al. 2011, 8.
[303] S. R. Murray et al. 2011, 12–13.
[304] S. R. Murray, Sands, and O'Roark 2012, 13.
[305] S. R. Murray, Sands, and O'Roark 2012, 8.
[306] See S. R. Murray, Sands, and O'Roark 2012, 8–11.

the maximum reflecting the average of what Harris estimated was the throwing distance of Hellenic athletes. If we then assume that the Spartans advanced at a steady four kph,[307] they would need 102.6 seconds to close the maximum distance, and 27.9 seconds to close the minimum distance. This would, in turn, mean that a trumpet signal could probably be obeyed by an army anywhere between 27.9 and 102.6 seconds. The complete withdrawal of the army from the field would take longer, but the host could evidently come to a halt and begin the process of retreating within that span of time. To put this number into perspective, a messenger starting off from the centre of the army, where Agis may have been standing,[308] and running at ten kph would need approximately 185 seconds to reach either end of the phalanx.[309]

These calculations are, of course, only estimates. For instance, the assumption that the Spartans would be advancing at 4 kph is in no way certain. We are also forced to assume that the Lacedaemonian army would be able to retreat up to the last meter that separated them from the Argives, which is highly improbable: surely there must have been a point of no return, after which it would have been impossible to recall the troops without them clashing with the enemy. Consequently, the formula we should be using to determine the time of transmission and execution *(t)* should not be $t = \frac{d}{s}$ where *(d)* stands for distance and *(s)* for speed, but rather $t = \frac{d-y}{s}$, with *(y)* reflecting the point of no return. To my knowledge, however, there is no way of estimating *(y)*, and so we must make do with the first formula.

I would however, once again, suggest that modern riots could provide us with a more accurate estimate of the time frame. Provided the protesters hurl their missiles by hand and the officers approach at a steady pace, one could reasonably suggest they would close the distance at about the same time the

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[307] According to Thucydides, the Spartans marched in good order instead of a maddened charge: see n. 284. the average walking speed of a normal man is about 5 kph, but we must adjust this number to reflect the fact the Spartans were marching uphill.

[308] Thucydides does not tell us where Agis was stationed during the events of the Alesion hill. The Spartan king would place himself at the centre of his phalanx on the following day: Thuc. 5.72.4.

[309] This assumes a uniform depth of eight shields and a spacing of three feet between hoplites.

Spartans would have done on the Alesion. Of course, no two protests are quite the same: rioters usually retreat upon contact, thus increasing the distance, while officers usually charge at a run, thus shortening the time of arrival. Furthermore, coverage of such events is rarely clear or complete enough to calculate *(s)*, *(d)*, and *(t)*. Nevertheless, riots can still provide us with a vague idea of how long it would have taken the Lacedaemonians to close in with the Argives, and in turn, how quickly a trumpet signal could be heard and obeyed by an army. For instance, it took approximately one minute for riot police officers in Baltimore marching at a rhythmic pace to close in on their target, though the protesters were falling back as the officers advanced.[310] This number sits comfortably between the 27.9 and 102.6 second margin calculated above.

C) Planned or spontaneous retreat?

Finally, there is reason to suggest the assault upon the Alesion was not a desperate and foolhardy endeavour, as Thucydides and most modern scholarship depict it (see below), but rather a carefully calculated and ultimately successful ploy that relied entirely on the fact that the king would be able to communicate with his men in time.[311]

Up until that point, Agis had been anything but reckless.[312] Thucydides himself hinted that he was not certain why the king ordered the retreat, giving credit either to the objections of a Spartan veteran, or to 'some sudden new idea' of Agis.[313]

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[310] See video titled '*Move Back*' at (sotospithis.wixsite.com/website). Viewer discretion is advised.

[311] Rusch 2011, 108; Woodhouse 1933, 54–55. *Contra* Fields 2013, 199–200; Lazenby 2004, 120: '[Thucydides] does not appear to have believed that the withdrawal was planned, and nor should we. Everything he tells us about the king suggests that he was a man given to sudden changes of mood.'

[312] Thuc 3.89.1; 5.54.2; 5.58.2.

[313] Thuc. 5.65.2-3, Crawley 1910.

Woodhouse has surmised that Agis' original plan was to avoid battle until his northern allies had joined him,[314] but that the desertion of three thousand enemy Elean hoplites led him to reconsider.[315] He could now risk an early engagement, and spare himself the costly drawn-out process of a siege. Yet his own incoming reinforcements had become a double-edged sword: the enemy was fighting in friendly territory and could deny him a quick battle if they felt the odds were not in their favour.[316] The king also had to contend with the looming threat of the Eleans re-joining his enemies.[317]

Agis needed to draw the enemy off the Alesion hill, and he did so by exploiting the enemy's overconfidence and inner divisions.[318] The king was intimately familiar with the enemy arrayed against him, as he had surrounded most of them at Argos a few days earlier.[319] Even though the Argives had clearly been at Agis' mercy on that day, Thucydides emphasizes how little they thought of the Spartan invaders, and how sure they were of victory.[320]

> Now the bulk of the Argives and their allies did not see the danger of their position, but
>
> thought that they could not have a fairer field, having intercepted the Lacedaemonians in
>
> their own country and close to the city (Thuc. 5.59.4. Crawley 1910)

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[314] Northern allies: Thuc. 5.64.4.

[315] Woodhouse 1933, 107–9. Elean desertion: Thuc. 5.62.2. Woodhouse surmises Agis would have only learned of this after his arrival at Tegea, a sentiment shared by Kagan (2003, 229).

[316] The difficulties of engaging an out-matched foe are illustrated in Xenophon's *Cyropaedia* (1.4.19.) where a young Cyrus tells his grandfather that if they wait for the arrival of their reinforcements the enemy would melt away without a fight. Alternatively, two armies could sit and wait for days without engaging one another, a delay Agis could not afford: Hdt. 9.39.1; Thuc. 3.107.3. Barley notes that the impact reinforcements could have on the enemy was well-known in Antiquity: Thuc. 5.9.8; 4.96.5; Aen.*Tact*. 38.2; Barley 2015, 53.

[317] Kagan 2003, 230.

[318] Woodhouse claims that Agis' attack on the Alesion also served to cover his baggage train (Woodhouse 1933, 45; Thuc 5.72). Gomme (1970, 97) is unconvinced and instead suggests that the assault only served to draw the enemy into the plain.

[319] Thuc. 5.58.1-60.6. See chapter 5 for the Argive expedition.

[320] This overconfidence is twice reflected in their eagerness to get to grips with the Spartans: Thuc. 5.59.4; 5.60.5.

The Argives were outraged at the fact that their leaders concluded a truce with the enemy instead of fighting, and went so far as to stone them for what they saw as a betrayal.[321] The withdrawal of the Elean hoplites was further proof that all was not well within the enemy ranks.

By withdrawing once again in the face of an Argive army eager for battle, Agis was essentially repeating his actions from the Argive expedition, only this time he could hope to use the consequences in his favour. Anyone could reasonably expect the same action to have the same result: in this case overconfidence on the part of the enemy soldiers, and outrage towards their leaders. This would then hopefully translate to an ill-advised attack. While the retreat did not immediately cause the Argive's to abandon the high ground, the resentment it created eventually forced their generals to meet the Spartans on the field.[322]

> The Argives and their allies were at first amazed at the sudden retreat of the enemy after advancing so near, and did not know what to make of it; but when [Agis] had gone away and disappeared, without their having stirred to pursue him, they began anew to find fault with their generals, who had not only let the Lacedaemonians get off before, when they were so happily intercepted before Argos, but who now again allowed them to run away, without any one pursuing them, and to escape at their leisure while the Argive army was leisurely betrayed. The generals, half-stunned for the moment, afterwards led them down from the hill, and went forward and encamped in the plain, with the intention of attacking the enemy. (Thuc. 5.65.5-6. Crawley 1910)

Agis also spent the night between the events of the Alesion and the battle attempting to divert a nearby stream towards Mantinea in order to further antagonize the enemy, presumably because the

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[321] Thuc. 5.60.5-6; Butera and Sears 2019, 323; Rees 2016, 44; Theodoratos 2007, 188.
[322] Butera and Sears 2019, 324.

Argives had not immediately abandoned their positions after the retreat. Woodhouse unjustly dismisses the whole event: he claims that the waters could only be diverted deep into Tegean territory, where the Argives would never go; that the water levels would not be significant in summertime; that nearby sink-holes would have further prevented any flooding; [323] and that the entire enterprise would require more than a single day's work. He also claims that success, however unlikely, would have created a barrier between both armies, something completely at odds with Agis' plans.[324]

Pritchett, however, notes that Agis simply approached Tegean territory (ἀφικόμενος πρὸς τὴν Τεγεᾶτιν), and did not necessarily go much further than the borders.[325] He also stresses that Thucydides claimed the stream was actively fought over by both the Tegeans and the Mantineans (5.65.4), thus suggesting it lay somewhere between both cities, and certainly within reach of the enemy. He believes Thucydides was referring to a series of sink-holes lying in a straight line just south of the 'waist' of the Mantinean plain, far away from Tegea.[326] He agrees with Woodhouses' view that the water levels must have been low in summertime. This fact, however, should not be enough to dismiss the event: perhaps the water levels were low enough to cause damage, but not high enough to make the passage from Tegea to Mantinea impossible, as Woodhouse feared it would. As for the timeframe: Agis would not need to maintain his efforts if he could see that the Argives had abandoned the Alesion hill (see below). It should be noted, however, that while Agis was successful in drawing the enemy away from the hill, he did not manage to lure them towards the sink-holes. It seems, therefore, that the campaign was not progressing as either side hoped: with Agis goading the Argive soldiery anyway he could, and the Argive leadership trying to rein them in.

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[323] Pritchett (1969, 42 n. 6) has identified nineteen such sink-holes in the plain of Mantinea.
[324] Woodhouse 1933, 46–49.
[325] Pritchett 1969, 41; Thuc. 5.65.4.
[326] Pritchett 1969, 43.

Drawing the enemy into favourable ground was not unheard of in the Greek world. Themistocles is a prime example of a man who exploited both the enemy's overconfidence and his inner divisions to do so: he not only succeeded in drawing the Persians into Salamis, he also stirred distrust between them and their Ionian allies by placing signs along the Persian fleet's path calling for the Greeks to revolt.[327] The Spartans themselves used feigned retreats at Thermopylae, drawing the enemy in, and fighting on ground of their own choosing.[328] The battle of Plataea was also preceded by days of skirmishes between the Persians and the Greeks, both of which were jostling for position: the Persians trying to lure the Greeks on level ground where their cavalry could best be used, and the Hellenes clinging to the hills.[329]

Agis, therefore, must have felt certain that his tactical orders could be transmitted in time, and that his coalition army could be relied upon to execute them. The Spartan king could have shared this supposed plan with his army, or he could have kept it to himself. Unlike Myronides' *salubre mendacium*, however, there was no point in keeping his men in the dark. According to Thucydides, Agis was known for withholding information,[330] but his treatment of the king seems to have been hostile and unreliable (see page 105). The Alesion hill should thus probably be seen as an example of sophisticated pre-arranged tactics, rather than mid-battle communications. However, the insights it provides on the effectiveness of trumpet signals are important enough to include in this dissertation.

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[327] See n. 222.

[328] Hdt. 7.211.3.

[329] The Greeks take up position on the hills near Erythrae and the Persians try to harass them, presumably to draw them into the plain: Hdt. 9.19.3-20.1. The Greeks move their camp closer to the Persians to have easier access to water. Most of their army is still on elevated terrain: Hdt. 9.25.2-3. The Greeks eventually retreat due a lack of provisions brought about by cavalry attacks. Their fallback position is chosen because it proves both water and protection from Persian horsemen: Hdt. 9.50.1. For Persian cavalry at Plataea: Konijnendijk 2012, 9.

[330] Woodhouse 1933, 47 n.9. See n. 288.

2) *The battle of Mantinea.*

A) *Methods of Communication*

Both armies eventually engaged in battle the day after the events on the Alesion. According to the narrative, Agis realized both phalanxes had drifted to the right while marching to engage each other, as Thucydides claimed was typical of hoplite armies.[331] This meant that the right wing of each host threatened to envelop the other's left (Figure 18).
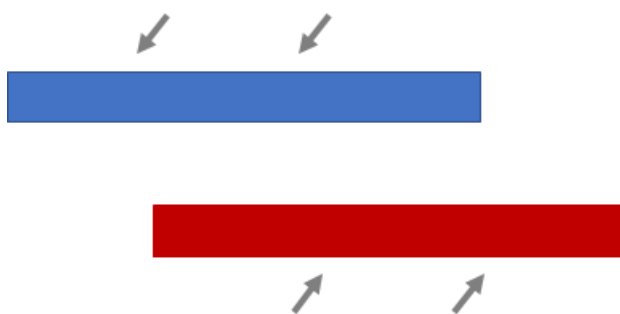

Figure 18: Battle of Mantinea, initial troop movements.

Agis thus ordered his left wing, made up of helots, Brasideans, and Skiritai, to split from the rest of the phalanx and shift further to the left in order to match the enemy front (Figure 19). He then ordered two *polemarchs* to take their *lochoi* from the right and plug the gap created by the left wing, only for both men to refuse their king's commands. In response, Agis ordered the helots to close the gap they had just created but it was too late: the one thousand picked Argive troops burst through, routed the left wing, and surrounded parts of the Lacedaemonian elements driving them back towards the baggage train. Agis, however, successfully beat back the rest of the Argive army and eventually ordered his men to turn left in order to face the victorious elements of the enemy, thus winning the battle. [332]

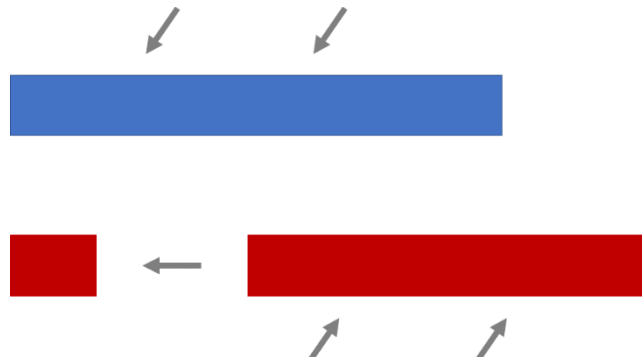[331] Thuc. 5.71.1.
[332] Thuc. 5.71.3-73.4.

Figure 19: Battle of Mantinea, shift of the left flank.

Agis' orders and overall competence on that day have been heavily criticized. The general consensus among modern scholarship seems to be that his orders were unrealistic (see page 105 for opposite view), a view clearly supported by Thucydides himself as well as the two *polemarchs* who disobeyed their king.[333] Setting aside, for the moment, the *feasibility* of Agis' commands it seems undeniable that his *method* of transmission was effective, in the sense that he both sent and received complex and impromptu messages without any sort of misunderstanding or miscommunication that Thucydides cared to mention. The narrative clearly indicates that he was rightly confident of the fact that he could communicate with both ends of his phalanx moments before contact with the enemy.

> If one thing emerges from the account [...] it is the implication that Agis entertained not
>
> the shadow of a doubt on the score of his own power to direct, up to the very last moment
>
> before contact, the advance of any portion of his line upon any desired objective
>
> (Woodhouse 1933, 80)

There were essentially five exchanges of information on that day: 1) Agis' orders to the left wing, 2) Agis' orders to the *polemarchs* of the right wing, 3) the latter's refusal to comply, 4) Agis' final order to

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[333] Fields 2013, 202; Konijnendijk 2018, 150–51; Lazenby 2004, 124–25; Rusch 2011, 114. Hutchinson 2006, 113–15: 'It can be seen that Agis was a commander of suspect judgment and prone to impetuous and wrong-headed decisions that sometimes endangered those he led. He was tactically inept and saved only by the outstanding qualities of his fighting force'. *Contra* Woodhouse (1933).

the left wing, 5) and Agis' order for the rest of the army to head to the left. Every single one of these orders was directed at a unit that was not engaged at the time. It seems that even the Spartans did not presume to move units that were in contact with the enemy.

It is unknown whether or not the Spartan subdivision played a major role in all of these transmissions: as Anderson has noted, the left wing would have been unreachable after its separation from the rest of the phalanx.[334] We do not know how large the gap was, but it was big enough for a thousand men to exploit. This would put the gap at a minimum of 114 to 228 meters wide, depending on the spacing between hoplites and assuming a depth of eight shields.[335] The actual distance could have been far greater, as the helots and Skiritai were ordered to shift further left while the rest of the army presumably kept drifting towards the right, thus widening the gap.[336] At best, we could perhaps suggest that the order was passed from one officer to the next until it reached the gap, whereupon the leftmost file-leader could have sent a messenger to the isolated helots. Nevertheless, since the order only affected the helots, there was no need to pass it down the line only to then send a messenger. A runner, or rider, starting directly from Agis' position thus seems more likely.

Consequently, we should assume that at least one order was delivered through messengers, possibly mounted.[337] The Spartans had a large cavalry contingent stationed on the wings (Thuc. 5.67.1). Thucydides never mentions their deeds during the battle, but it seems plausible that some of their numbers may have been detached from the flanks to act as messengers, presumably taking up position near where the king was standing. What seems clear, however, is the fact that Agis was capable of sending

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[334] Anderson 1970, 72.
[335] Thuc. 5.72.3.
[336] Hutchinson 2006, 114.
[337] Anderson 1970, 72. Cf. Hdt. 9.60.1.

and receiving several messages to and from either side of his phalanx in a very short, if undetermined, period of time.[338]

This could reasonably be explained by the fact that Agis led his army from the centre of the phalanx, rather than the wings, thus halving the distance a message would have to travel.[339] Agis certainly sent and received more messages than any other leader we have examined. Leading from the wings, however, could have its own tactical advantage, since Agis is also the only general who failed to complete the manoeuvre he intended. As such, perhaps Greek leaders would place themselves on the wings to guarantee obedience on at least one flank, albeit at the expense of longer lines of communication. The centre of the phalanx was evidently the most unwieldy section, and the vast majority of tactics and manoeuvres originated from, or targeted, the wings: Pagondas with his cavalry, Myronides with his right and left flank, Lamachus with his Argives, Lykophron with his *lochos* presumably drawn from the right.

On the other hand, a general placed at the centre may have been able to survey the battlefield more easily. It is unclear whether or not Agis personally noticed the unfavourable disposition of both armies (Figure 18).[340] Thucydides merely states that he was afraid (δείσας) that the enemy would encircle his left.[341] The phalanxes had not yet engaged in battle and anyone would have been more or less free to analyse the battlefield, assuming they could look beyond the man in front of them. King Agis, however, was surrounded by his bodyguard,[342] and so we can confidently state that he was not stationed on the front lines during combat.[343] Yet the possibility remains that he was at the front during the advance.[344]

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[338] According to Thucydides (Thuc. 5.72.1), the *polemarchs* received their orders at short notice during the march. Hutchinson 2006, 113: 'the time available from the point of decision to the receipt of a command that could be followed was minimal'.

[339] Thuc. 5.72.4.

[340] Hutchinson (2006, 113) is equally undecided: 'Agis came to the conclusion (or perhaps it was drawn to his attention) that while he could encircle the enemy's left, his own left was in danger of the same'.

[341] Thuc. 5.71.3.

[342] 'Περὶ αὐτὸν οἱ τριακόσιοι ἱππῆς καλούμενοι, προσπεσόντες τῶν Ἀργείων.'

[343] Wheeler 2007b, 266.

[344] Pelopidas and Alexander of Pherae both proved that generals could switch ranks even during battle (Plut. *Pel.* 32.4; 32.6).

Alternatively, he may have simply been informed of the development by the front-rankers among his guard.

Thucydides, however, states that the king perceived (ἤσθετο) the defeat of his left flank, mid-battle.[345] This word is often used to describe someone witnessing or understanding something through their own senses.[346] How this was possible at Mantinea is a mystery. If Agis was mounted, then perhaps he could have looked past his men. If not, then he must have been stationed at the back of the phalanx, otherwise he would have likely been unaware of his surroundings (Figure 2). Furthermore, any messengers coming to and from the general would first need to make their way through the rear lines. Yet the apparent ease with which the five messages reached and left the king's position suggests that Agis must have been stationed at the rearmost ranks rather than the middle or front ones. Perhaps we should consider a scenario similar to Pagondas and Alexander of Pherae, with the king switching ranks as the battle progressed to facilitate communications.[347] Whether this would have cleared his field of view enough to supervise his wings is uncertain. [348]

Finally, it should be noted that the final order of the battle of Mantinea seems to be the only case, other than possibly the Alesion, where the entire army was issued a mid-battle command.[349] As Konijnendijk rightly states, only the Lacedaemonians attempted anything in such a scale.[350] The closest non-Spartan equivalent would be Cleon's disastrous attempt to withdraw his forces at Amphipolis.[351]

Mantinea, therefore, seems to indicate how far a general could rely on his messengers to transfer his orders through the line, moments before impact. Not a single case of misunderstanding can be found

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[345] Thuc. 5.73.2.
[346] Thuc. 1.47.1; 3.36.5; 3.81.2.
[347] See n. 344.
[348] Depending on the spacing between the hoplites, the left wing would have approximately stood at either 514 or 1028 meters, assuming a uniform depth of eight shields throughout the host.
[349] Thuc. 5.73.2: 'παραγγεῖλαι παντὶ τῷ στρατεύματι'.
[350] Konijnendijk 2018, 148–50.
[351] Thuc. 5.10.3-10. We will examine the tactical capabilities of Greek levies in more detail in our next chapter (see page 113).

in a battle that saw the use of unusual tactics, and where no less than five sets of orders and information were exchanged. The mistakes of Mantinea were not due to poor tactical communications, but rather, if Thucydides is to be believed, to unrealistic expectations and insubordination (see below). In addition, First Mantinea suggests that a Greek general stationed in the middle of his phalanx may have been able to better communicate with all his army, but a general stationed on the wings (the target and origin of most manoeuvres) could ensure his orders were followed to the letter. Furthermore, Mantinea stands as the only case where the entire army was issued an order mid-battle, rather than small sections.

B) *The tactics of Mantinea*

The tactical failures of the Lacedaemonian army at Mantinea are often used as proof of the limits of Hellenic armies.[352] Thucydides' description of the events seems to imply that Agis was attempting manoeuvres that were simply beyond the Spartans. Woodhouse, however, has rightly pointed out the many gaps in Thucydides' account; flaws that the historian himself hinted at on three occasions.[353] This led Woodhouse to reconsider the entire narrative, and propose that Agis' plan was misunderstood by Thucydides.[354] He believes, instead, that the king's orders were logical, feasible, and that the *polemarch's* refusal to comply was due to personal enmity and political intrigue.[355] This dissertation will largely agree with Woodhouse's theory.

Woodhouse's views have not been widely accepted, but it seems undeniable that at least his scepticism towards Thucydides is warranted. We have already mentioned the historians' tenuous grasp of Spartan numbers,[356] and his possible misunderstanding of the nature of the Alesion assault, but we can point to other instances as well.

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[352] See n. 333.
[353] Unclear reasons behind Alesion retreat: see n. 313. Unclear estimate of Lacedaemonian numbers: Thuc. 5.68.2. Unclear grasp of the overall events of the battle: Thuc. 5.74.1.
[354] See n. 277.
[355] Woodhouse 1933, 90.
[356] See n. 278.

Thucydides states that the Spartans were caught completely by surprise when they saw the enemy arrayed for battle so close to them on the fields of Mantinea,[357] despite the fact that they had, allegedly, diverted a stream to draw the enemy out.[358] This implies that Agis neglected to keep watch on his enemy. Our sources rarely mention the use of scouts by Hellenic forces, but Hutchinson notes that silence does not constitute proof of absence.[359] He argues that scouts and look-outs were well attested in the Persian Wars, and would have become so commonplace in the following years as not to warrant mention.[360] Yet even if we accept that Agis left his enemy entirely unsupervised, there was still no way he could have failed to notice they had relocated since, according to Woodhouse, the Alesion is visible from all parts of the plain.[361]

Furthermore, Lazenby points out that Thucydides clearly exaggerated the proximity of both armies, as the Spartans had ample time to deploy and exchange their usual words of encouragement.[362] Surely the Argives and their allies would have exploited the element of surprise if both armies were close, but Thucydides instead claims they waited for their leaders to deliver their pre-battle speeches.[363] Considering the strained relationship between the leadership and soldiery of the Argive army, it seems unlikely that the latter would have suffered their supposedly treasonous officers to prattle on while yet another opportunity was wasted. The Spartans, therefore, must have either been surprised at the fact that the enemy would actually abandon a strong position, or that they had not advanced far enough towards the sink-holes. Either way, their surprise had likely nothing to do with the enemy suddenly appearing before them.

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[357] Thuc. 5.66.2.
[358] Thuc. 5.65.4-6.
[359] Russell (1999, 13–14) holds a similar view concerning military intelligence in general.
[360] Hutchinson 2006, 108 n. 7; Hdt. 5.15.2; 5.100.1; 7. 183.1; 7.192.1; 7.219.1; 8.31.1; 8.35.1; 9.104.1.
[361] Woodhouse 1933, 52.
[362] Lazenby 2004, 120–21.
[363] Thuc. 5.69.1.

In addition, Thucydides' account of the Argive levy's performance in battle is completely at odds with his past descriptions of them: on the one hand he claims that they were so eager to get to grips with the Spartans that they threatened their leaders twice for failing to set them loose,[364] while on the other he asserts they broke rank and fled before a single blow was struck.[365] Fields believes they fell victim to Spartan dread, but this explanation will not do.[366] Where was this fear at Argos, or the Alesion? Sparta's reputation had clearly waned since Pylos. The Athenian skirmishers at Sphacteria came to despise them,[367] and the Argives clearly shared that sentiment. However foolish and unjustified their overconfidence may have been, it seems suspicious that an army would force its officers to lead them against an enemy, only to rout without so much as attempting to fight.

Thucydides generally seems to have had a tenuous grasp over any event involving king Agis. His account of the Argive expedition, conducted a few weeks before Mantinea, is equally problematic (see page 233). Furthermore, he credits the king with an impressive slew of mistakes that went unpunished on the field of battle: 1) a seemingly insane assault on the Alesion, 2) unexpectedly falling upon an army whose presence he should have anticipated, 3) failing to account for the allegedly inevitable drifting of hoplite armies, 4) and sending a set of inane orders that led to the needless death of many men, and allowed the Athenians and Argives to escape.[368] It seems unreasonably to suggest that luck alone brought victory after so many blunders.

Furthermore, the two *polemarchs* who disobeyed him, quite reasonably if one follows the narrative, were exiled for cowardice.[369] Lawrence Tritle claims they were 'clearly scapegoats for Agis' bungling',[370]

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[364] First occasion at Argos: Thuc. 5.59.4; 5.60.5-6. Second occasion on the Alesion: Thuc. 5.65.5-6.

[365] Thuc. 5.72.4; Hutchinson 2006, 114; Rusch 2011, 113.

[366] Fields 2013, 203.

[367] Thuc. 4.34.1-2.

[368] For Athenian and Argive escape: Thuc. 5.73.3; Woodhouse 1933, 92 'In order to check the enemy's too pronounced success on the left, he saw himself compelled to intervene with the main body of his troops, and thus to acquiesce in the escape of the Athenians before he had quite done their business for them'.

[369] Thuc. 5.72.1. Theodoratos agrees: 2007, 191 n. 6.

[370] Tritle 2010, 125.

but Lazenby notes that insubordination was not regarded as a crime in Sparta, citing the case of Amompharetus who went against Pausanias at Plataea and endangered the entire coalition army.[371] Despite his actions, Herodotus listed Amompharetus among the bravest fighters of the battle,[372] with Lazenby claiming this judgment reflected Spartan views.[373] Krentz also views the *polemarchs'* banishment as proof that they could have carried out their orders.[374]

In light of these discrepancies, perhaps we should reconsider Woodhouse's view that Thucydides simply misunderstood the battle of Mantinea, and misjudged king Agis. He believes that the *polemarchs* were never meant to fill the gap, but rather to strike at the victorious Argive left while they were busy slaughtering the left wing, or at the very least act as a buffer between the victorious Argive right and the rest of the Spartan army. Such a manoeuvre would be far more realistic than what Thucydides describes, and more in line with the battles of Delium, Syracuse, and Solygia which also feature parts of an army travelling from one wing to the other in order to assist a beleaguered section and strike a victorious enemy from the rear.

Woodhouse believes all this would have been planned before-hand, with Agis placing his most expendable yet solid troops on the left to face the Argive elite while his own Spartans faced the enemy levy.[375] This point, however, is uncertain for according to Thucydides the Skiritai always held the left, and so their placement there was a matter of tradition, not planning.[376] On the other hand, the placement of the neodamodeis and the Brasideans was perfect if Agis intended to sacrifice them.

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[371] Hdt. 9.53.2-57.3; Fields 2013, 186; Rusch 2011, 113.
[372] Hdt. 9.71.2.
[373] Lazenby 2004, 124–25.
[374] Krentz 2007, 156. *Contra* Fields 2013, 202–3.
[375] Woodhouse 1933, 73–74.
[376] Thuc. 5.67.1.

Thucydides makes no mention of any tradition regarding these units, so we need not assume they would have been placed there regardless of what was arrayed against them.[377]

Thucydides' narrative also claims the *polemarchs* disobeyed their king because he had given them no prior warning,[378] but this seems unlikely. As we saw, Thucydides had always portrayed the Spartan king as undecisive, unpopular, and secretive due to his past actions in a cancelled expedition and at Argos. [379] Such traits could lead to mistrust and disobedience in battle, especially if we accept Thucydides' claim that Agis warned his officers too late. Unlike Mantinea, however, these past events could be corroborated by the allied leaders, who would have all been unaware of the purpose of Agis' cancelled expedition (Thuc. 5.54.1), and outraged at his unilateral truce with Argos (Thuc. 5.60.2). Yet there was no one beside the exiled *polemarchs* who could have given Thucydides a first-hand description of the events surrounding the king's orders: the allies were not involved in these particular commands, and other Spartans would have probably remained silent due to their state's secrecy.[380] As such, we can reasonably dismiss Thucydides' narrative as hostile, and we should probably assume that the king warned his officers prior to the battle, not during the advance. Woodhouse suggests that the *polemarchs* would have disobeyed the king due to political intrigue,[381] not because they did not trust his capabilities or because they thought his orders were beyond their own abilities.

Enmity, spite, and competition were quite common on the Greek battlefield. This aspect of Greek warfare, and the disastrous effect it can have on the transmission of orders, forms a key part of our third chapter (see page 168). For now, however, we may suggest that the tactics of Mantinea did not fail because they were beyond the abilities of the Spartans: Agis' orders do not seem too far from what

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[377] As we saw, Agis had more than enough time to deploy his army and allow them to exchange words of encouragement. It seems likely he could have rearranged them according to his wishes instead of simply deploying them in the order in which they marched.

[378] See n. 338.

[379] For Agis' reputation in Sparta: Thuc. 5.63.1-4. For secrecy: see note 288.

[380] Thuc. 5.68.2.

[381] See n. 355.

the Corinthians did at Solygia, or what the Athenians did at Syracuse. Nor did they fail because of poor leadership or tactical choices from the king: Thucydides' narrative is riddled with inaccuracies, and his account it clearly hostile towards the king, possibly due to the nature of his sources. It is, unfortunately, unclear why the *polemarchs* failed to carry out their duty, and so perhaps we should follow Woodhouse's example and seek a justification outside the field of battle.

Conclusions

Too many fifth-century leaders have led their men mid-battle to maintain the idea that such a thing was beyond the abilities of Greek generals. The piece-meal information among our sources necessarily limits our understanding, but the battles of Delium, Oenophyta, first Syracuse, Solygia, and first Mantinea suggest the following.

The events of the battle of Delium prove that a general could influence the course of an on-going battle through tactical communications. The fact that such an undeniably effective use of communications coincides with the deployment of a deep phalanx could also be significant: perhaps a deeper formation offered the general additional security and accessibility, which in turn would translate to better control of the army. On the other hand, it probably also made it harder to communicate with the bulkier formation. This drawback must have been seen as a fair exchange compared to the benefits.

Leaders like Myronides and Lamachus could personally travel to where they were needed, bearing news or reinforcements, whereas men like Pagondas, Lykophron, and Agis could rely on others to transfer their orders, and on their subordinate officers to see them through. The fact that both methods were used effectively suggests that generals did not personally deliver their orders because of bad communications, but rather because they felt they could gain something in return: Lamachus was no longer needed on the left, and Myronides could trick his men into *believing* he was also no longer needed on the left.

Generals like Pagondas, Lamachus, and Lykophron could position themselves on one end of the phalanx and still influence events on the other. Whether they personally noticed the developments that led to their intervention, or were made aware of them through messengers is never truly stated in our sources. Some of them (Pagondas and Lamachus) may have benefited from height elevations that could have allowed them to supervise their men, while others (Lykophron) probably did not.

Other generals, like Agis, could chose to position themselves at the centre of the army. Judging by the sheer number of messages exchanged at Mantinea, it would seem that leading from the centre

allowed the general to communicate more easily with all parts of his phalanx. Leading from the wings, however, may have ensured absolute control over that section of the army, as Agis is the only leader included in this dissertation that failed to send his intended reinforcements from one part of the line to the other.

Fifth-century generals were capable of commanding small units, and sending them on impromptu missions in the middle of battle, provided they were not engaged in combat. These units could be comprised of cavalry (Delium), of picked regiments (*Logades* at Syracuse), experienced line troops (Argives at Syracuse), or regular hoplites (Solygia). The Spartans seem to have been the only Greeks confident enough to issue mid-battle orders to the whole phalanx.

Some generals, like Pagondas, Lamachus, and Lykophron, likely never expected to issue their respective mid-battle orders. Others, however, like Myronides and Agis could possibly have built their entire strategy on the correct assumption that they would be able to communicate effectively with their forces when the time came. This would suggest that military communications were not necessarily a tool of last resort, but could take on a central role in a general's arsenal. Agis' actions during the Argive expedition (see page 213) further demonstrate how seriously he took military communications.

Finally, while most of our cases revolve around vocal orders, the assault of the Alesion suggests that an advancing army could come to a halt, and begin the process of retreating, anywhere between 27.9 and 102.6 seconds provided the order was issued through a trumpet signal.

Chapter 3: The hollow square

Another important element to consider in our discussion on Greek tactical communications is the hollow square formation, or *plaision*.[382] As we shall shortly demonstrate, this was an unusual formation that required a high level of communication to properly function.[383] In this chapter, we will analyse three out of the four recorded cases where the hollow square was used in the fifth century BC, namely the battle of Lyncestis in 423 BC, the Athenian retreat in Syracuse in 413 BC, and the first stages of the march of the Ten Thousand in 401 BC. The fourth case involved an Athenian hollow square used in support of the phalanx during the first battle of Syracuse, but Thucydides does not offer us enough information to include it in our discussion.[384]

This chapter will be structured into two parts. The first will introduce our three case studies as well as the *plaision* itself. By the end of this first part, we aim to prove that the *plaision* was not necessarily a military formation restricted to unusually trained and experienced armies. The second part will be a detailed examination of our three case studies, and how tactical communications likely functioned within the hollow square.

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[382] As Lee (2007, 156) plausibly suggests the formation commonly referred to as the 'hollow square' could not and would not form a perfect square on the field. The formation's actual shape could vary, more often taking on the appearance of a rectangle. This paper shall accordingly follow Lee's example and make use of the term 'hollow square' without insinuating that the formation was, in fact, a perfect square.

[383] Contrary to what is argued in this chapter, Hutchinson (2006, 162–63) has claimed the hollow square was a typical Greek formation, while Wylie (2007, 434) has in turn asserted that the tactics adopted specifically by Brasidas' *plaision* were 'orthodox Spartan tactics'. Pritchett (1974, 211) also uses Brasidas' pre-battle speech to compare Spartan and Illyrian training, incorrectly implying the Brasideans had trained in the Spartan fashion (see page 120 for training level in Brasidas' army). Considering there are only four recorded cases of the *plaision* in the fifth century (see below), it would be a stretch to consider it a typical military formation. As for Wylie's views, Brasidas' army was composed of helots, Peloponnesian mercenaries, and Thracian Greeks: there was nothing 'Spartan' about them, and so their tactics should not be considered as such either. At best we should substitute the word 'Lacedaemonian' for 'Spartan', but even this semantic change would not be enough to justify Wylie's argument since the Lacedaemonians can lay claim to only one of the four recorded uses of the hollow square: the Athenians adopted the formation twice during the fifth century, while the last recorded use was made by the Ten Thousand Greek mercenaries under Cyrus (see below). In short, the hollow square and its associated tactics cannot be seen as either 'orthodox' or truly 'Spartan'. We are left to wonder, for example, why the Spartans failed to use it while they withdrew to the fort of Sphacteria when they were pelted from all sides (Thuc. 4.35.1-4).

[384] Thuc. 6.67.1.

Part One: The hollow square

1) *Presenting the formation.*

The hollow square was a defensive formation used by the Greeks in some of their retreats. The army would separate its heavy infantry into four different sections, each forming one side of a square, while the centre was occupied by any unarmed elements of the army, such as camp followers, slaves, prisoners, beasts of burden, or others. The light infantry was also, occasionally, stationed in the centre of the formation (Figure 20 and Figure 21).[385]

Figure 20: Terracotta statuette of a slave baggage-carrier, dating from the end of the fourth century (Staatliche Museen zu Berlin. Inv. No. TC 7820). Despite the late date, a baggage-carrier of the fifth century would have looked much the same.

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[385] Xen. *Anab.* 3.2.28; 3.4.32-33; Lee 2007, 159–60. Lee claims the non-combatants were placed near the sides of the square, instead of the precise centre of the formation (Figure 21). This setup would allow individual companies to keep themselves supplied, while also facilitating the army's logistics. However, it could also tempt a soldier to care more for his baggage than his position in the line: Xen. *Anab.* 4.3.30.
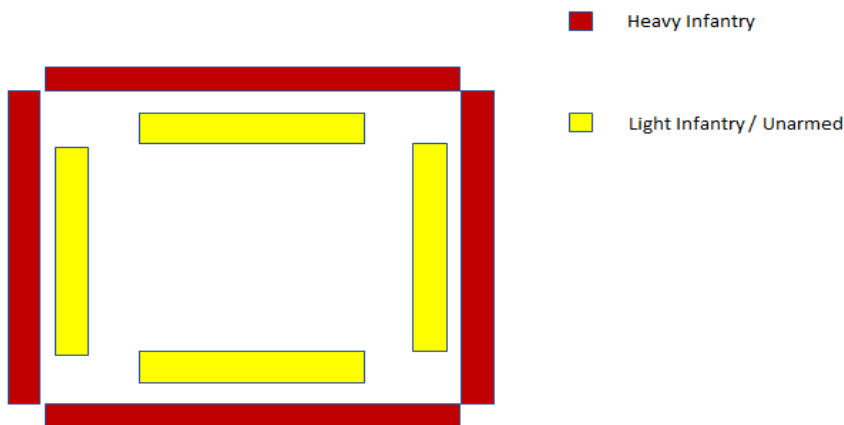
Figure 21: Example of a typical Greek hollow square, as described by Thucydides and Xenophon.

Unlike the more common phalanx, the purpose of this formation was not to attack but to execute a fighting retreat. The only known case where a hollow square was used in a pitched battle was during the first battle of Syracuse in 415 BC, when the Athenians created a reserve force behind their main phalanx.[386] These men formed up in square formation, placing any non-combatants in the centre. This particular *plaision,* however, seems to have played no part in the battle. We are even left to wonder whether or not the square followed the Athenian phalanx when it set off: the presence of a considerable number of unarmed men in its midst, as well as Thucydides complete silence on the matter, could suggest they remained stationary.[387] According to the narrative, the formation's purpose was to assist the front line in case of an emergency, which could mean they might have at least tried to keep up with the phalanx.[388] Alternatively, if their chief goal was to protect the baggage train and unarmed followers from

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[386] Thuc. 6.67.1.

[387] Konijnendijk (2018, 57) briefly addresses the Athenian hollow square of the first battle of Syracuse and accepts that it did not move during the battle.

[388] According to Thucydides (6.69.1), the Athenians began their attack while some of the Syracusan levy troops were still in the city. These stragglers nevertheless had enough time to join the Syracusan army and take up their place in the phalanx before the Athenians made contact. This would suggest the Athenians had a considerable distance to cover before they could reach their opponent. As such, the reserve forces would have had to move with the phalanx if they wished to reinforce them effectively.

enemy cavalry, they would have likely stayed put. At any rate, Thucydides does not provide enough information on the battle to support any definitive argument.

- *The battle of Lyncestis.*[389]

During the middle of the Archidamian War (431-421 BC), Brasidas led a Lacedaemonian expedition to Thrace to assist the Chalcidians and Macedonians against the Athenians.[390] Brasidas was in close contact with king Perdiccas II of Macedon who funded part of his expedition.[391] In return, the Spartan lent his aid to the Macedonian King in suppressing the revolt of one of his subjects.[392] Perdiccas had also called upon some of his Illyrian allies for assistance against the rebels, though both sides ultimately engaged in battle before these reinforcements could arrive.[393] Brasidas and Perdiccas prevailed, but news arrived that the Illyrians had joined the enemy.[394] This threw the Macedonian army into disarray, and they fled during the night. Perdiccas eventually followed his men in their disorganized retreat, abandoning Brasidas without a single word of warning.[395] Brasidas now had to withdraw over rough terrain, and under constant attack by superior numbers of skirmishers.[396] For the first time in recorded Greek history, he decided to draw his hoplites into square formation, with his light infantry taking up the centre. He also created a picked regiment of 300 men under his personal command to reinforce the rear and tasked his lightest, and

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[389] Thuc. 4.125.2-128.3.

[390] Thuc. 4.80.5-81.1.

[391] Thuc. 4.107.3; Hornblower 1996, 340; M. Roberts 2015, 181.

[392] Thuc. 4.124.1.

[393] Thuc. 4.124.3-4; Lendon 2010, 349. For a description of what the battle might have been like: M. Roberts 2015, 191–92.

[394] Thuc. 4.125.1; Hornblower 1996, 393; Hutchinson 2006, 84; M. Roberts 2015, 194; Wylie 2007, 434.

[395] It is worth noting that both leaders had previously agreed on withdrawing, so the retreat itself was no surprise. The issue was that neither leader had agreed upon a common schedule, and so the Macedonian withdrawal left the Lacedaemonians dangerously exposed. See page 168.

[396] Thuc. 4.125.2; M. Roberts 2015, 171, 174.

possibly youngest hoplites (*ekdromoi*) with launching counter-attacks wherever the enemy chose to attack.[397]

- *Athenian retreat in Syracuse.[398]*

In 413 BC, during the final stages of the Sicilian expedition, the Athenians decided to withdraw from Syracuse following a series of major setbacks.[399] Much like Brasidas had done ten years earlier, the Athenians formed up in square formation and marched for eight days under incessant attacks by Syracusan skirmishers and cavalry. After a few days of fighting, the Athenians attempted a night-march and split their forces in two in the confusion (see page 168).[400] The Syracusans isolated each half of the Athenian army and defeated them.[401] Unlike the Lacedaemonian *plaision* of Lyncestis, there is little information concerning the details of the Athenian square. Thucydides does not mention any specialized detachments like the *ekdromoi* or Brasidas' picked regiment. Likewise, Thucydides largely fails to mention the role of the Athenian light infantry and cavalry in the struggle.

Contrary to what is argued for in this dissertation, historians such as Kagan, Ray, and Brice suggest that the Athenians formed into two squares, one under Nicias, the other under Demosthenes.[402] This would be contrary to all other generals we will examine in this dissertation, who each held command of a

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[397] Hutchinson 2006, 85; Lendon 2010, 350. Thucydides never mentions the age of the *ekdromoi*. Xenophon, on the other hand, claimed that by 391 BC these soldiers would be drawn from the youngest age groups: Xen. *Hell*. 4.5.14. Whether this age-selection was standard practice during the Archidamian War, and whether Brasidas would have adopted it himself, is unknown. This was apparently the first time the Spartans made use of *ekdromoi*, and so perhaps the tactic had not yet been perfected: Hutchinson 2006, 85. We first hear of Spartan mobilization by age groups during the Argive expedition of king Agis II, five years after the events of Lyncestis, though the practice could have been in effect before that: Van Wees 2004, 104; Thuc. 5.64.3. Rawlings (2000, 239) and Lee (2013, 156), both suggest the Spartans would have always used their youngest men to perform such strenuous tasks. Age, however, might not have been the only requirement for a successful *ekdromos*. Brasidas' helots, for example, would have been particularly well-suited to the role owing to their previous experiences as light infantry. We should, thus, consider the possibility that Brasidas chose to recruit his light hoplites exclusively from among these former slaves, regardless of age.

[398] Thuc. 7.75.1-85.4.

[399] Thuc. 7.55.1-2; 7.72.1-4; Kagan 1981, 334–35; J. T. Roberts 2017, 205–14.

[400] Thuc. 7.80.4.

[401] Thuc. 7.81.2- 82.3; Thuc. 7.84.4-85.4.

[402] Brice 2013, 638; Kagan 1981, 340, 2003, 317; Ray 2009, 229.

single flank of the formation, rather than an entire square (see below). The Athenians had split their forces in the past to facilitate their naval crossings,[403] but Thucydides never explicitly describes such a thing during the retreat. He instead claims the Athenians formed their army into hollow square formation with Nicias' detachment leading the march and Demosthenes' bringing up the rear (Thuc. 7.78.2). Instead of assuming that each general led one half of the army, it would be more reasonable to suggest they were both in charge of different sections of the same formation: Nicias commanding the vanguard, Demosthenes leading the rearguard, and their colleagues Menander and Euthydemus, who otherwise go unmentioned during the retreat,[404] leading the wings. Such a disposition would have made for a bulkier formation, but it would have also helped lessen the burden shouldered by any single officer.[405]

A single hollow square would also lend itself better to the number of generals present at the start of the retreat: as we shall see during the course of this chapter, each flank of a hollow square had to be led by at least one officer, meaning that a single *plaision* would necessarily require at least four high-ranking officers while two of them would require at least eight. The Athenians only had four generals at the time of their retreat, and so would have been forced to draw capable men from among their subordinate officers. They had done so once before, when the assembly elected to raise Euthydemus and Menander to act as temporary generals following Nicias' letter to Athens.[406] The army, however, did not have the time to go through this procedure again. A quick on-the-spot promotion would have also been unlikely, as proven by Xenophon's account. According to the Athenian mercenary, the Ten Thousand were called to replace most of their officers after they were murdered.[407] This process, however, took some time and required both discipline and confidence, something the Athenians sorely lacked. Xenophon claims the Ten

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[403] Thuc. 6.42.1; 62.1.
[404] See n. 484.
[405] The army contained some forty-thousand men, both soldiers and civilians: Thuc. 7.75.5; Gomme, Andrewes, and Dover 1970, 452; Green 1971, 319 n. 3; Hornblower 2008, 1061–66; Kagan 1981, 337. It was so large that Nicias could declare they were nothing less than a moving city: Thuc. 7.77.4, Hanson 2005, 219; Kagan 1981, 338.
[406] Thuc. 7.16.1.
[407] Xen. *Anab.* 2.5.31-32, 3.1.2.

Thousand spent an evening in despair before taking action around midnight, but only after Xenophon himself went to great lengths to rouse them.[408] The ensuing elections lasted until daybreak.[409] Xenophon may have exaggerated his role in this process,[410] but it seems clear that the Ten Thousand had to overcome their initial shock to even consider replacing their officers. The Athenians, on the other hand, wasted two days before finally setting off, but spent all that time packing up rather than shoring up their leadership.[411] This dissertation will thus assume that the Athenians deployed into a single *plaision* instead of two.

-   *The retreat of the Ten Thousand.*

Following the inconclusive battle of Cunaxa in 401 BC, the Greek mercenaries under the late Cyrus were left stranded in enemy territory. After losing their leaders, the Hellenes decided to fight their way to safety. Xenophon claims that out of all the assembled officers, he was the one to propose that they should march in square formation, only for his comrades to unanimously agree with him.[412] Regardless of whether or not Xenophon should receive full credit, the Ten Thousand made good progress and beat back several attacks from enemy light infantry and cavalry.[413] It should be noted that the Ten Thousand only adopted the hollow square for the first part of their journey in Mesopotamia, and did not maintain the formation throughout their retreat. This dissertation will therefore primarily focus on the actions of the mercenaries in Mesopotamia, but will also take into consideration their crossing of the Carduchian mountains.[414] While the Ten Thousand adopted a column formation to cross the mountains, I would argue

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[408] Xen. *Anab.* 3.1.13-14, 16, 32-34, 38.

[409] Xen. *Anab.* 3.2.1.

[410] See n. 413.

[411] Thuc. 7.74.1.

[412] Xen. *Anab.* 3.2.36

[413] Lee 2007, 155–67; Waterfield 2006, xi. For the many cases self-aggrandizement from Xenophon's part: Flower 2012, 129–30. According to Lee (2007, 165–66), the Athenian mercenary had a vested interest in flaunting his own achievements in the rearguard and those of Cheirisophus in the vanguard, and would therefore purposefully omit to mention the actions of the wing leaders.

[414] See Xen. *Anab.* 4.1.1- 4.3 for the crossing of the Carduchian mountains.

that as far as order transmissions are concerned the parameters remained largely the same. In this, I follow Lee's example (2007, 163 n132) who considers the Carduchian column to have essentially been a modified version of the *plaision*. Much like when they had marched in hollow square, the Greeks could expect an attack at any minute and from any side.[415] Furthermore, they were forced to simultaneously march and fight,[416] and most importantly of all, the leaders of the vanguard and the rearguard had to communicate with each other over great distances, as their lines of communications were severely stretched,[417] a difficulty shared by the hollow square.[418]

2) *Who could use the hollow square?*

All of our case studies share the following traits: firstly, the Greeks were stranded in enemy land. Secondly, they were trying to flee after a disastrous development. Thirdly, the terrain was broken and treacherous. Lastly, the enemy had access to superior numbers of light infantry and cavalry, with Lyncestis a possible exception.[419] In summary, the hollow square was a last-ditch formation that required the Greeks to perform under the worst possible conditions for heavy infantry.

This, however, does not mean that only highly experienced armies could hope to adopt the formation, otherwise there would also be a correlation between experience and effectiveness. Yet if one were to rank each army's performance in the use of the square, based on their reported casualties, their effectiveness in dealing with enemy attacks, and their final fate, then the Lacedaemonians would rank first, the Ten Thousand second, and the Athenians decisively last. This order, however, is not indicative of

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[415] As happened to the rearguard when they attempted to cross a narrow passage with their baggage train: Xen. *Anab.* 4.2.11-20.

[416] Xen. *Anab.* 4.1.17; Lee 2007, 166.

[417] See n. 511.

[418] Xen. *Anab.* 3.4.42.

[419] Whitby 2004, 229. Though the Lacedaemonian square never comes under attack by enemy cavalry in Thucydides' description of the retreat, we know that king Arrhabaeus' forces contained enough cavalrymen to challenge the Macedonian horsemen: Thuc. 4.124.3. Unless they had somehow all perished in the first day's fighting, or were simply too demoralised to intervene, one has to imagine they would have joined the pursuit as well.

each army's level of experience since while we can reasonably assert that the Athenians and the Ten Thousand were a cut above the average city-state army, most of Brasidas' men were not.

Thucydides repeatedly stresses the fact that the Athenians and their allies sent their best men to conquer Syracuse, with the latter drawing their hoplites from the rolls.[420] According to the reported pre-battle speeches of the Athenian general Nicias, the invaders seem to have been confident of victory solely based on the fact they would be facing an untrained militia.[421] Even during the army's darkest hours, Nicias would remind his men of their quality.

> Look at yourselves, mark the numbers and efficiency of the heavy infantry marching in your ranks, and do not give way too much to despondency, but reflect that you are yourselves at once a city wherever you sit down, and that there is no other in Sicily that could easily resist your attack, or expel you when once established. (Thuc. 7.77.4. Crawley 1910)

Of course, Nicias could have exaggerated his speeches to bolster morale, but the Syracusan general Hermocrates also reportedly stated that the Syracusans were pitting untrained levies against the most experienced soldiers of Greece, at least according to Thucydides.[422] Furthermore, many in the Athenian army had been fighting for the better part of two years by the time of the retreat. This hard-won experience would have set them apart from most other Greek armies.[423] Furthermore, as Hanson pointed out, the Athenian soldiers were often able to carry the day despite inept leadership from their officers,

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[420] Despite supplying the bulk of the expeditions' forces, Athens relied heavily on her allies as well. Mainlanders such as the Argives and Mantineans were expected to supply both heavy and light infantry, while their Sicilian allies, such as the Leontinians, Egestans, and Sicels would provide the Athenians with much-needed cavalry, as well as anything else they could afford to offer: Thuc. 6.43.1; 6.98.1; Brice 2013, 624–25.

[421] Thuc. 6.68.1-2.

[422] Thuc. 6.72.3.

[423] Konijnendijk (2018, 153) believes those two years of experience are the main reason why the Athenian army was capable of adopting the hollow square formation.

suggesting there was some truth to Nicias' boasting and Hermocrates' concerns.[424] The Ten Thousand

mercenaries under Cyrus were also hardened men of war who could call on the leadership of experienced

officers.[425]

Brasidas' men, however, were another thing entirely, despite the fact that some historians also

view them as exceptional troops.[426] The Brasideans have garnered a fierce reputation for their actions in

Thrace as well as the first battle of Mantinea in 418 BC, and by the time of that particular battle they had

indeed been moulded into a remarkable fighting force. Nevertheless, the men that fought under Brasidas

at Lyncestis in 423 BC should not be viewed in quite the same light. Brasidas may have begun his

expedition with a solid group of hoplites, but their actual combat experience was limited. More

importantly however, more than half of his army on that day was made up of local levies (see below).

Brasidas set off from the Peloponnese with one thousand mercenaries and seven hundred helots,

all fighting as heavy infantry.[427] The helots would have been kept away from weapons and any real form

of training prior to the expedition, as was Spartan practice.[428] That is not to say they would have had no

combat experience whatsoever: regardless of her fears, Sparta was often forced to make use of slaves to

complement her armies, and so helots often fought next to their masters, though only as light infantry.[429]

Thucydides also states that Sparta distrusted these men, and selected them for the expedition specifically

to be rid of them.[430] This in turn suggests the helots could not have been *neodamodeis*, a trusted group

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[424] Hanson 2005, 212–13.

[425] Diod. 14.23.4; Xen. *Anab.* 1.1.6; Hutchinson 2000, 61; Roy 2004, 267–70; Waterfield 2006, 3, 79.

[426] Cf. M. Roberts 2015, 178; Whitby 2004, 230. Roberts considers Brasidas' men to have been veterans even before the battle of Lyncestis, while Whitby affirms that they were all 'well-trained and determined troops'. Naiden (2017, 70) implies that the Brasideans were, essentially, a typical Spartan army, as he sees the opening stages of Lyncestis as a failure of the Spartan command and control system.

[427] Thuc. 4.78.1; 80.5.

[428] Hooker 1980, 140; Kagan 2003, 171; Lendon 2010, 292; J. T. Roberts 2017, 141–42. The Spartans went to great lengths to prevent their helots from acquiring weapons: Xen. *Lac.* 12.2-4.

[429] Hdt. 9.28-29; M. Roberts 2015, 144; Schwartz 2009, 139–40.

[430] Thuc. 4.80.2-5; Foster 2017, 304; Hooker 1980, 140.

of slaves who could potentially receive phalanx training.[431] Brasidas' helots' therefore, would never have trained in phalanx warfare,[432] lending credence to Lendon's colourful description of the seven hundred helots 'jangling in their unaccustomed gear'.[433] Concerning the Peloponnesian mercenaries, Roberts claims that Sparta would have sent word to gather the best available fighting men not currently on campaign.[434] We, unfortunately, do not have much information on these men, but in light of Thucydides' silence we must assume that most of them would have had some training and experience in hoplite warfare, at least compared to the seven hundred helots. Any Mantineans, Corinthians, Tegeans, Eleans, or Sikyonians among their ranks could have taken part in various actions during the war, such as the battles of Olpae or Solygia.[435] These mercenaries were to form the backbone of Brasidas' army upon exiting the Peloponnese.

The Brasideans had been under arms for over a year by the time of the battle of Lyncestis, and we can reasonably assume they underwent some training under their new leader. They certainly marched tirelessly, even through the winter months.[436] Regardless of this presumed training however, Brasidas never pitted them against an enemy that posed them any credible threat: he first led them against an

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[431] Van Wees 2004, 275 n. 31. They would eventually attain that status, however, as evidenced by the events of the battle of Mantinea where they were distinguished from the other helots of the army (see page 100). Their actions in Thrace evidently earned them the respect and trust of their Spartan masters.

[432] Van Wees 2004, 275 n. 32. Despite the narrative, Brasidas' helots are still sometimes referred to as *neodamodeis*. Roel Konijnendijk (2018, 97) has recently used the term to refer to these men, but since his passage focuses on Brasidas' speech rather than the nature of his forces, he does not address the issue further.

[433] Lendon 2010, 292. For an opposing view on the nature of the seven hundred helots: Tritle 2010, 97. Tritle argues the helots under Brasidas would have been *mothones*, helot-slaves educated in the *agoge* alongside true Spartans to act as their servants in a process that turned them into trained and loyal troops. This theory is based on a suggestion by Michell Humfrey (1952, 40), though both historians concede there is no evidence to support it. Tritle claims there is an implied distinction in Thucydides' narrative between Brasidas' helots and the *neodamodeis* at Lepreum (Thuc. 5.34.1) which could be used to argue the former were *mothones*. However, while the narrative does separate both groups, there is no reason to assume the Brasideans were anything more than simple helots. Furthermore, this theory fails to explain why the Spartans would send away loyal slaves when they were specifically trying to get rid of troublesome ones.

[434] M. Roberts 2015, 144.

[435] Olpae: Thuc. 3.107-108.3. Solygia: see page 76.

[436] Thuc. 4.102.1. For the bonding effects created by constant marching: Lee 2007, 140.

Athenian army in 424 at Megara, but neither side committed to battle.[437] Upon arriving in Thrace, they

took part in several other bloodless, or near-bloodless, military actions: the first was an earlier expedition

against Arrhabaeus, where Brasidas chose negotiation over battle.[438] The second was the liberation of

Acanthus, where Brasidas persuaded the population to open their gates.[439] They then proceeded to

capture the important city of Amphipolis where the citizens, again, let them in.[440] After Amphipolis,

Brasidas ordered two minor assaults against Eion, held at the time by Thucydides.[441] The attacks, however,

seem to have been half-hearted at best, otherwise Thucydides would have surely spent more time

describing the successful Athenian defence under his leadership.[442] Brasidas then led his men in a night

assault against the city of Torone.[443] The gates were opened through treachery and Brasidas' army

swarmed the streets, meeting with only minor resistance from fifty half-asleep Athenian hoplites.[444] Their

final military action before the battle of Lyncestis was an attack against Lecythus, a small fort garrisoned

by what remained of the fifty Athenian hoplites of Torone, as well as some of the pro-Athenian elements

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[437] Thuc 4.73.4; Hutchinson 2006, 74; Wylie 2007, 427.

[438] Thuc. 4.83.2; Hutchinson 2006, 76; Lendon 2010, 332–33; M. Roberts 2015, 174–75.

[439] Thuc. 4.84.2-88.1.

[440] Thuc. 4.106.2-3; Kern 1999, 97–134; M. Roberts 2015, 180; Strauss 2007, 239; Tritle 2010, 105–6. Lendon notes that the population of Amphipolis was unusually fractious and prone to treachery even by Greek standards, with some elements loyal to Perdiccas, others to the Chalcidians, and a few to Brasidas himself: Lendon 2010, 334; Thuc. 4.103.3. Even the small garrison standing watch over the bridge leading to the city was compromised: Thuc. 4.103.5. With such an unruly and disunited population, it is small wonder that Amphipolis fell so easily.

[441] Thuc. 4.107.2; Lendon 2010, 336; M. Roberts 2015, 180; Wylie 2007, 430.

[442] For a review on Thucydides' account of the events that led to his exile: Wylie 2007, 431–32. Wylie convincingly claims that Thucydides purposefully withheld information to safeguard his reputation. Kagan (2003, 176–78) points out that Eucles, the Athenian commander of Amphipolis, was apparently not punished for his own failures, which might indicate the *demos* was not frantically looking for scape-goats, but rather based its decision to exile Thucydides upon facts we will never know. Consequently, if the attack against Eion had been a worthwhile endeavour, Thucydides would not have failed to write about it to bolster his image. Demosthenes (Thuc. 3.102.3-4) and Brasidas (Thuc. 2.25.2) had also found themselves in situations where the fate of a city rested on their shoulders, though both acted decisively. Perhaps it was this form of quick action the assembly had expected of Thucydides.

[443] Thuc. 4.110.1-113.3.

[444] Lendon 2010, 339–40; Wylie 2007, 433. The plan that led to the fall of the city of Torone depended on the actions of twenty men (only seven of which had the courage to carry out their orders). For a full description of the events: M. Roberts 2015, 183–85. Considering the responsibility for this operation rested entirely on the infiltrators, and the fact that the army itself simply swarmed an essentially sleeping city that offered only token resistance, we can hardly consider Torone to have been a true baptism by fire. Brasidas does not even appear to have lost a single man in the action: Kern 1999, 97–134; Strauss 2007, 239.

of the city.[445] The fortifications were finally taken by luck rather than force of arms, due to the accidental collapse of a makeshift tower that sent the defenders fleeing in panic.[446] All these actions would have certainly familiarised the Brasideans with small-scale 'irregular' warfare (see page 153), but we should be careful not to exaggerate their experience.

The most important element to consider, however, is the fact that these original Peloponnesian troops did not make up the bulk of Brasidas' forces during the battle of Lyncestis. Brasidas left a considerable number of his men to garrison some of the cities he had liberated from Athenian control. No less than five hundred of his mercenary Peloponnesian hoplites were assigned to the defence of Mende, meaning that half of what must have been his best troops were not present at Lyncestis.[447] He had also left an unknown number of men, later also identified as Peloponnesians, in Scione.[448] To make up for these losses, Brasidas bolstered his ranks with the levies of local Greek cities.[449] Their exact number is uncertain, but according to Thucydides, there were three thousand Greek hoplites present at Lyncestis.[450] At best, only one thousand two hundred of these men could have been part of Brasidas' original army, and quite likely significantly fewer once we factor the unknown number of Peloponnesians guarding Scione, as well as any casualties that might have occurred during the campaign. This means that, at the very least, 60% of Brasidas' troops were local recruits.

We, unfortunately, know little about these reinforcements, but it seems unlikely they would have been anything beyond regular city-state troops.[451] Some of them may have taken part in the battles of

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[445] Thuc. 4.115.1-2; Hornblower 1996, 352.

[446] Thuc. 4.115.3; Hornblower 1996, 354; M. Roberts 2015, 186–87. Curiously, Wylie (2007) does not mention the events of Lecythos despite the fact that this was arguably the most hard-fought skirmish of their careers so far.

[447] Thuc. 4.123.4; Hutchinson 2006, 84; Lendon 2010, 348–49. These men must have been drawn from the Peloponnesian mercenaries, rather than the helots, since Thucydides always distinguished the two groups when describing Brasidas' army.

[448] Thuc. 4.121.2, 131.1; Lendon 2010, 342.

[449] Mostly Chalcidians and Acanthians: Thuc. 4.124.1; Ray 2009, 189.

[450] Thuc. 4.124.1; Hatzopoulos 2015, 106–7; Lendon 2010, 349. Hutchinson (2006, 84) claims that some Macedonians served under Brasidas before the battle of Lyncestis, though there seems to be no evidence to support this statement.

[451] Thuc. 6.68.1-2.

Potidaea (432 BC) or Spartolos (429 BC), and Sparta's supporters came from the wealthier men of their cities, but Brasidas himself did not value them highly, as evidenced by Thucydides' description of the battle of Amphipolis.[452]

> [Brasidas] did not venture to go out in regular order against the Athenians: he mistrusted his strength, and thought it inadequate to the attempt; not in numbers—these were not so unequal—but in quality, the flower of the Athenian army being in the field, with the best of the Lemnians and Imbrians. (Thuc. 5.8.2 . Crawley 1910)

Some of them would have likely served as garrison and patrol troops (see page 153),[453] but they probably had not gone through the same presumed training as the Brasideans. Spartan officers had great difficulties imposing their own standards on non-Spartan troops, and were often met with anger and disobedience rather than compliance.[454] Nevertheless, Brasidas' elite supporters, who had summoned the Spartan in the first place,[455] may have been committed enough to the endeavour to undergo some training. We must, therefore, not exclude the possibility entirely.

The locals had also played little to no part in Brasidas' campaign prior to Lyncestis. We only hear of them accompanying the Lacedaemonian expedition during the bloodless capture of Acanthus and Amphipolis.[456] Furthermore, Thucydides fails to mention whether these allies were there in force, or merely acted as guides and informants.[457] Only part of the population of Torone seems to have participated in urban warfare, however briefly.[458] It would seem, therefore, that experience was not the

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[452] Humble 2006, 222.
[453] See n. 592.
[454] Hornblower 2000, 72–74; Konijnendijk 2018, 48–49; Plut. *Lys*. 15.5. For the difficulties of imposing discipline in Hellenic armies: Van Wees 2004, 108–13.
[455] Thuc. 4.81.1.
[456] Thuc. 4.84.1; 4.102.1.
[457] The citizens of Argilus, for example, seem to have only acted as guides after their defection to the Lacedaemonians: Thuc. 4.103.4.
[458] Thuc. 4.113.1.

most important element in the hollow square. Instead, the narrative points to three other factors for success: size, discipline, and leadership.[459]

As far as size is concerned, a larger army will be more difficult to manage than a smaller one, especially if discipline has broken down.[460] Thucydides, for example, directly blamed the size of the Athenian army for their disastrous separation (for a different view see page 168).[461] As for the Ten Thousand, they too formed a large body of men, and even though they were disciplined, the first day of their march saw them lose a considerable number of troops to a comparatively small Persian detachment simply due to their lack of adequate skirmishers.[462] This shortcoming was quickly rectified through the creation of two detachments, one of slingers and one of horsemen,[463] but the fact remains that these men had initially been forgotten in the throngs of their large army. Considering the fact that the Ten Thousand had been campaigning alongside, as well as against, Persian forces for an extensive period of time, there can be no excuse for their failure to account for their enemy's most basic and well-known tactic.[464] This otherwise glaring negligence could possibly be explained by the fact that the replacement officers of the Ten Thousand were not yet familiar with the troops under their command.[465] The Lacedaemonian army, on the other hand, was much smaller in comparison, and thus more manageable. Thucydides also makes no mention of any non-combatants within Brasidas' ranks, though this does not necessarily mean they were not present: the Chalcidian and Acanthian levies would have likely brought some attendants with them, as citizen soldiers often did. On the other hand, perhaps the slave background of Brasidas' helots

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[459] Whitby 2004, 232.

[460] Konijnendijk 2018, 152.

[461] Thuc. 7.80.3-4. See n. 405.

[462] At first, the Greek skirmishers were poorly equipped and poorly positioned: Xen. *Anab.* 3.3.6-10; Lee 2007, 162.

[463] Xen. *Anab.* 3.3.16-20.

[464] Ducrey 2019, 198; Rawlings 2000, 2007, 87.

[465] Xen. *Anab.* 3.1.2; Lee 2007, 53; Prevas 2002, 117. The officers' unfamiliarity with their troops is betrayed by Xenophon, who had to be informed of the presence of the Rhodians: 'Now I am told that there are Rhodians in our army, that most of them understand the use of the sling' (Xen. *Anab.* 3.3.16, Brownson 1968a).

could have led them to travel alone. This lesser number of non-combatants would have likely facilitated things for Brasidas even further.[466]

As for discipline, the Athenians most of all suffered from a lack of morale that arguably doomed them from the start.[467] The Ten Thousand and the Brasideans were certainly shocked at their respective misfortunes, but both armies recovered quickly enough to operate effectively.[468] Morale, however, is but one facet of discipline, and arguably the greatest flaw shared by both the Athenians and the Ten Thousand was their split command structure. The Athenian expedition was under the shared command of Nicias, Demosthenes, and to a lesser degree Menander and Euthydemus, all of which seemed to enjoy a more or less equal status in military decisions and were often at odds with each other.[469] The Ten Thousand were more of a patchwork amalgamation of different armies rather than a united host,[470] and were commanded by a plethora of bickering officers each vying for greater control and authority.[471] Brasidas, on the other hand, shared his command with no one, and not a single case of friction, hesitation, or insubordination can be found in Thucydides' narrative of the battle of Lyncestis.[472] We will examine the detriments of split leadership in more detail later on in this chapter (see page 168).

In conclusion, the square formation could apparently be used effectively if the army was not overly large and overburdened with camp followers, if the men kept at least some semblance of morale, and if

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[466] The Ten Thousand destroyed much of their baggage before setting off and eventually abandoned many of their camp followers in the mountains to increase their marching speed, free up manpower, and reduce food consumption: Xen. *Anab.* 3.3.1; 4.1.12-13.

[467] Thuc. 7.72.4; 7.75.2-6; 7.84.3; Hanson 2005, 220. One of the most indicative passages concerning Athenian morale is Thucydides' claim that his countrymen apparently failed to even consider asking for permission to recover their dead after the naval defeat that forced them to retreat from Syracuse: Thuc. 7.72.2; Hutchinson 2006, 162.

[468] Ten Thousand: see n. 408. Brasideans: Thuc. 4.126.1-6.

[469] See n. 638.

[470] For a detailed analysis of the contingents making up the army of the Ten Thousand: Lee 2007, 44–48.

[471] Xen. *Anab.* 5.6.25; Lee 2007, 58; Roy 2004, 268; Waterfield 2006, 79. The Ten Thousand would only agree upon a single leader towards the end of their ordeal: Xen. *Anab.* 6.1.18. For a discussion on contingent loyalties within the Ten Thousand: Lee 2007, 48–59.

[472] Russell (1999, 228–29) notes the importance of having a single figure at the centre of a network when it comes to military intelligence. This was true for city networks as well as armies. See below for more information on the effect of personal friction in communications.

they were led by a clear command and control structure. Experienced troops were neither a requirement for, nor a guarantee of, success. If that had been the case, Brasidas' *plaision* would not have survived Lyncestis. It would be unreasonable to believe the hollow square was reserved only to elite formations when its first and most successful use is attributed to an army largely composed of levies. This should not be taken to mean that the hollow square was somehow simple to use, but should rather lead us to reconsider the qualities and capabilities of well-led militias. While it seems beyond doubt that the average Greek hoplite was a far-cry from what we would consider a trained soldier, the battle of Lyncestis seems to suggest that, at least if the above conditions were met, Hellenic levies could be relied upon to operate outside their comfort-zone, and even adopt formations never before seen in the Hellenic world.[473]

Part Two: Tactical Communications in the hollow square

The hollow square was clearly an ambitious formation. The tactical situation in which it was used meant that it called for a greater degree of organization and coordination than the more usual phalanx: while the latter only required the Greeks to advance in a single line over a relatively short distance, the former demanded that the army break into four distinct groups and march over miles of unfamiliar and broken terrain under enemy attack. Considering the phalanx's notorious proclivity to lose its cohesiveness, one can only imagine how difficult it must have been for the Greeks to operate in square formation without one flank peeling away from the rest, as eventually happened to the Athenian square.[474]

The only way to successfully carry out such a task was through the careful cooperation of all four sides of the square, and the only way to cooperate in war is through communication. As we will see, there were

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[473] *Contra* Konijnendijk 2018, 3.
[474] For the issue of keeping the phalanx together: Konijnendijk 2018, 55–56; Rawlings 2007, 88; Van Wees 2004, 186; Thuc. 5.70. For the already substantial difficulties of marching in column: Lee 2007, 140–47; Waterfield 2006, 109–10.

three levels of communications within the hollow square, with decreasing levels of magnitude: at the highest level we find inter-flank communications, where each flank kept in touch with the others to ensure the formation's integrity (Figure 22). Secondly, there were intra-flank communications, with each flank-leader issuing the necessary orders to his section of the square (Figure 23). Finally, there were micro communications used within smaller groups of specialists such as the *ekdromoi* (Figure 28).

1) *Inter-flank communications.*
A) *The flank-leaders*
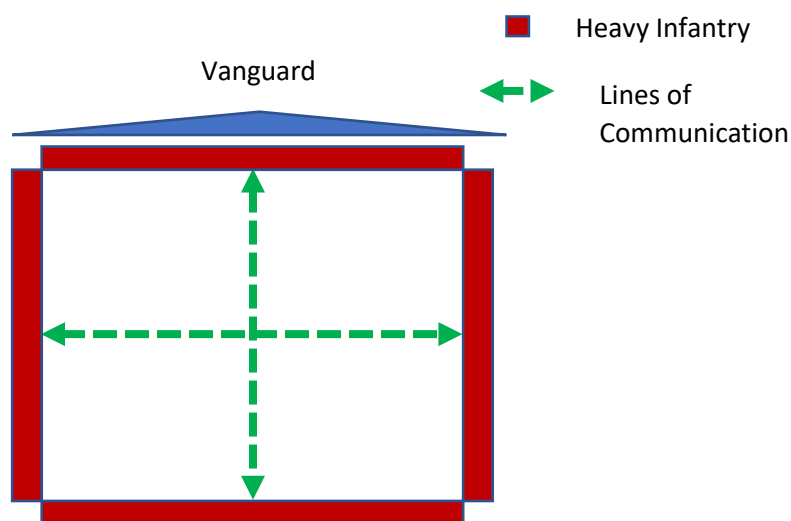
Figure 22: Inter-flank communications in the hollow square.

One thing we must understand when studying the hollow square is that no man was in a position to know and do everything at the same time.[475] Furthermore, since the square could expect an attack from anywhere, all four sides had to be able to perform on their own without depending on outside instructions.[476] Consequently, each flank had to enjoy constant and independent leadership: no single general could hope to be everywhere at once, and so he would necessarily delegate much of his authority

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[475] Xen. *Anab.* 3.4.39; 4.1.17.
[476] Thuc. 7.79.5; Xen. *Anab.* 3.4.14.

to his subordinates.[477] As such, the hollow square was a formation that necessitated a clear and rigorous command-and-control structure. The officers in charge of one of the square's flanks shall from now on be referred to as 'flank-leaders'.[478] Xenophon's account makes it clear that each section was to be led by one or more such officers, so that no time was wasted in deliberations in case of an attack.

> It should be settled at once who are to lead the square and marshal the van, who are to be on either flank, and who to guard the rear, we should not need to be taking counsel at the time when the enemy comes upon us, but we should find our men at once in their places ready for action (Xen. *Anab*. 3.2.36. Brownson 1968a).

It would also seem that the survival of the flank-leaders was essential for the overall survival of the square. Brasidas' uncharacteristic restraint during his retreat seems to suggest as much. Towards the end of their withdrawal, the Lacedaemonians noticed the Illyrians were occupying a strategic hill in an effort to block their escape. Brasidas ordered his bodyguard of three hundred *logades* to dislodge the enemy, but refrained from leading them in person.[479] The Spartan general had previously always led from the front, and would do so again in the future, from his daring actions at Methone and Pylos, all the way to Amphipolis.[480] Here, however, he must have recognised his survival was imperative to that of his army, unlike his previous and future battles. The defence of Methone did not require Brasidas' survival: whether he lived or died was inconsequential so long as his force entered the settlement. The same could be said for the landing at Pylos: Brasidas was not in charge of the Spartan forces on that day, and was more

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[477] Lee 2007, 160. In light of this, perhaps the hollow square also allowed the competing mercenary leaders of the Ten Thousand to each enjoy some level of leadership, and thus lessen tensions between them: see n. 471.

[478] There is no official military title for such an officer. The flank-leaders of the Athenians and the Ten Thousand were *strategoi*, but the same cannot be said of Brasidas' army.

[479] Thuc. 4.127.2-128.2; M. Roberts 2015, 197; Wylie 2007, 435.

[480] Defence of Methone: Thuc. 2.25.2; Hutchinson 2006, 65; Kagan 1974, 59; Lendon 2010, 128; J. T. Roberts 2017, 78; Tritle 2010, 88. Landing at Pylos: Thuc. 4.11.4-12.1; Hanson 2000, 67; Hutchinson 2006, 70–71; Kagan 1974, 229, 2003, 143; Lafargue 2015, 68; Lendon 2010, 259–62; J. T. Roberts 2017, 124–25. Battle of Amphipolis: Thuc. 5.10.5-8; Hanson 2000, 114; Kagan 1974, 328; J. T. Roberts 2017, 153–56. Brasidas had also personally led a picked force of three hundred men in an attempt to secure the city of Megara: Thuc. 4.70.2; Konijnendijk 2018, 156.

interested in driving his fellow soldiers into acts of self-sacrifice. As for Amphipolis, his survival was, again, unimportant.[481] Things, however, were radically different at Lyncestis, and as such, Brasidas could simply not allow himself to risk his life that day.

The Athenian retreat from Syracuse also seems to support the fact that flank-leaders had to protect their lives at all costs. As we saw in chapter one, the vast majority of defeated generals lost their lives in their final battle, yet both Nicias and Demosthenes survived the worst slaughter of the Peloponnesian War and were captured alive.[482] Clearly, neither of them was fighting in the front lines. Xenophon was also admonished by his colleagues for abandoning his post and needlessly risking his life on at least two occasions. [483]

The square formation could, thus, not survive without a clearly defined command-and-control structure, and we must assume that its use alone implies the presence of however many officers could be needed to command all four sides of the square, even if our sources sometimes fail to mention them by name.[484] These flank-leaders had to be autonomous, but autonomy does not imply isolation, and rather than imagine them as solitary leaders unconcerned with what happened beyond their area of command, we should rather see them as the principal cogs of an intricate network of communications.

B) *Leading and communicating: the role of the vanguard*

Any examination of inter-flank communications in the hollow square must unfortunately restrict itself to the vanguard and the rearguard, since our sources only ever focus on these sections to the

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[481] See chapter 1.
[482] Thuc. 7.82.2-3; 7.85.1.
[483] Xen. *Anab*. 3.3.11; 4.6.19.
[484] Thucydides, for example, never mentions the role of Menander and Euthydemus during the Athenian retreat: Thuc. 7.16.1; 43.2. We last hear of them during the naval battle that took place immediately before the retreat (7.69.4), but since they are not listed as dead, we may reasonably assume they led the wings during the retreat. Thucydides also failed to name a single officer other than Brasidas during the Lacedaemonian retreat. Xenophon stated the wings were left to the command of the two oldest generals of the army (Xen. *Anab.* 3.2.37), though they too are largely omitted from the narrative.

detriment of the wings.[485] Despite this unfortunate lack of evidence, the conclusions we will draw should also be applied to the wings since there seems to be no indication they operated any differently from the rest of the *plaision*, at least as far as communications are concerned. We will thus begin by examining the vanguard.

The first element of a hollow square we should concern ourselves with is navigation.[486] Naturally, one would assume such a task would fall on the overall leader of the army, but that does not appear to have always been the case since Brasidas opted to lead the rear rather than the van. According to Xenophon, the duty of leading the entire square fell on whichever officer was placed in command of the front of the formation.[487] This man shall be referred to as the 'leading officer', though in this case 'leading' indicates his physical place within the formation rather than his actual rank. The Athenians were thus led by Nicias, the Ten Thousand by Cheirisophus, and the Lacedaemonians by an unnamed officer.

Xenophon's narrative suggests the leading officer was the only man with a clear view of what lay ahead of the square, and his account allows us to fill in the gaps of Thucydides' own report. According to Xenophon, Cheirisophus noticed the Persians had occupied a hill in front of the Greek army.[488] The leading officer then sent word to the rear, asking Xenophon to bring his peltasts to the front.[489] Unlike Cheirisophus, however, Xenophon was clearly unaware of the Persians until he reached the vanguard, as their subsequent exchange proves.

He rode forward himself and asked, 'Why are you summoning me?' Cheirisophus replied,

'It is perfectly evident; the hill overhanging our downward road has been occupied, and

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[485] See n. 495. As far as Thucydides is concerned the omission is hardly out of place since he generally provides little information on the workings of the *plaision* to begin with. On the other hand, Xenophon's own silence could be attributed to his vanity see n. 413.

[486] Lee 2007, 140.

[487] Xen. *Anab.* 3.2.36; 4.1.7.

[488] Xen. *Anab.* 3.4.37

[489] Xen. *Anab.* 3.4.38

there is no getting by unless we dislodge these people' (Xen. *Anab*. 3.4.39. Brownson 1968a).

This episode seems to prove that the rest of the flank-leaders were oblivious to what lay ahead of the army.[490] Consequently, besides his primary duty of guiding the *plaision*, the leading officer was also responsible for communicating with his colleagues and notifying them of any impeding obstacles he came across.

Thucydides describes a similar scenario in Brasidas' retreat, when the Illyrian turncoats occupied a strategic hill in front of the Lacedaemonians to cut off their escape.[491] Unlike Xenophon, Thucydides offers very little information and simply states that Brasidas perceived (ὁ δὲ γνοὺς) the intentions of his enemy from the rearguard.[492] Considering that both armies were presented with the exact same problem, it would seem reasonable to suggest they resolved it in a similar manner, and that Brasidas was made aware of the occupied Illyrian hill through his leading officer.[493]

It also seems likely that the leading officer had to communicate the lie of the land to the rest of the square. Terrain was one of the principal enemies of the *plaision*: while an occupied hill was a threat to the army's advance, natural obstacles were a threat to its cohesion, and much like the phalanx, a square that lost its cohesion could face complete collapse.[494] Xenophon addressed this issue in detail when

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[490] We are, unfortunately, unaware of exactly *how* Cheirisophus sent word to Xenophon. We will examine this question later on in this chapter: see page 138.

[491] Thuc. 4.127.2.

[492] Thuc. 4.128.1.

[493] *Contra* Hutchinson (2006, 85) who believes that Brasidas personally noticed the danger.

[494] Lee 2007, 140. Demosthenes and his men were surrounded and annihilated in a wooded area: Thuc. 7.81.4. Nicias' portion of the Athenian army fell into disorder while trying to cross a river: Thuc. 7.84; Kagan 1981, 348–49, 2003, 320. For dangers of terrain to the phalanx: Pritchett 1985, 82–85; Van Wees 2004, 186; Aristot. *Pol*. 5.1303b; Plb. 18.31.

describing the drawbacks of the *plaision*, most notably how the wings tended to break up upon hitting an obstacle.[495]

> Then it was that the Greeks found out that a square is a poor formation when an enemy is following. For if the wings draw together, either because a road is unusually narrow or because mountains or a bridge make it necessary, it is inevitable that the hoplites should be squeezed out of line and should march with difficulty, inasmuch as they are crowded together and are likewise in confusion; the result is that, being in disorder, they are of little service. Furthermore, when the wings draw apart again, those who were lately squeezed out are inevitably scattered, the space between the wings is left unoccupied, and the men affected are out of spirits when an enemy is close behind them. Again, as often as the army had to pass over a bridge or make any other crossing, every man would hurry, in the desire to be the first one across, and that gave the enemy a fine chance to make an attack (Xen. *Anab*. 3.4.19-20. Brownson 1968a)

Seeing as the leading officer would not fail to notify his comrades of enemy presence ahead, it would stand to reason he would do so as well upon spotting a natural obstacle; in this, he was assisted by local guides.[496] Xenophon claimed the only time he ever argued with Cheirisophus was when the latter's actions cost them the services of such a man.[497] Even though this statement was untrue,[498] it nevertheless emphasizes how important navigation was to the *plaision*. If the flank-leader neglected this duty, then we can reasonably expect a similar end to Demosthenes' army in Aetolia: the retreating Athenians lost their guide, and their scattered elements were destroyed as they wandered into traps and impasses.

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[495] Lee 2007, 159; Whitby 2004, 232. Despite Xenophon's criticism of the hollow square, he was not blind to its merits, and recognized that such a formation allowed an army to march with confidence when they would have otherwise routed: Xen. *Anab.* 7.8.16.

[496] Lee 2007, 167; Thuc. 7.80.6; Xen. *Anab.* 3.2.20; 4.1.3; 4.1.22; 4.2.24; 4.6.17.

[497] Xen. *Anab.* 4.6.3.

[498] For other instances of friction between Cheirisophus and Xenophon, see page 168.

[The Athenians] […] at last turned and fled, and falling into pathless gullies and places that they were unacquainted with, thus perished, the Messenian Chromon, their guide, having also unfortunately been killed. A great many were overtaken in the pursuit by the swift-footed and light-armed Aetolians, and fell beneath their javelins; the greater number however missed their road and rushed into the wood, which had no ways out, and which was soon fired and burnt round them by the enemy. (Thuc. 3.98.1-2. Crawley 1910)

In short, the *plaision* was a four-pronged formation with three blind elements relying on the directions of the fourth. The leading officer was the eyes and ears of the square. He was the one who would steer the formation towards safety, and the one responsible for avoiding any obstacles that might lie ahead.

C) Keeping the formation together: the role of the rearguard

The rearguard had the unenviable task of repelling the worst of the enemy attacks. Both Xenophon and Thucydides' narratives suggest this was the most targeted part of the *plaision*.[499] Yet apart from acting as a shield for the entire formation, the rearguard also had to maintain its connection to the rest of the army. This was by no means the sole duty of the leader of the rearguard, but the task was considerably harder for him due to the constant pressure he was exposed to, as well as the fact that his flank was not in direct contact with the vanguard.[500] The rear thus had to be in constant communication with the van to avoid being left behind.

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[499] The Athenian rearguard under Demosthenes saw far more action than the vanguard under Nicias: Thuc. 7.79.5; 7.81.4; Kagan 1981, 344. Furthermore, the fact that Brasidas chose to take command of the rear rather than lead the square further indicates this was indeed the most dangerous and trying spot of the formation: Thuc. 4.125.3. Lendon 2010, 350. The rearguard was a natural target since the hoplites would be marching with their backs turned, rendering their shields useless. One would assume the right wing of the square would be targeted for the same reasons, but our sources remain silent on that matter.
[500] Hutchinson 2006, 163.

Examples of this close communication feature prominently in the *Anabasis*.[501] Xenophon describes

how he would request Cheirisophus to halt whenever the rear was under attack.[502] Cheirisophus, in turn,

would always oblige, with one known exception which will be analysed in the following parts of our

chapter.[503] The survival of the entire formation thus depended on this close cooperation between the

front and rear.

The Brasideans themselves seem to have operated along the same lines as the Ten Thousand, even

though Thucydides does not go into as much detail as Xenophon. Whenever the enemy engaged, they

were met by the *ekdromoi* and Brasidas' chosen while the rest of the army apparently stopped their

advance until the attack was dealt with.

> Whenever they renewed the attack the Lacedaemonians received and repelled them
>
> again, and when they ceased, proceeded with their march (Thuc. 4.127.2. Jowett 1881).

It would appear that the Athenians also adopted the same tactic, at least before their eventual

separation. Their *plaision* only encountered heavy resistance on the third day of their retreat, whereupon

the army seemingly stopped to fight without risking the integrity of their formation.[504] We can infer as

much by the fact that they made no progress on that day and were forced to return to the same camp

they had slept in. This was unlike the first day, where enemy resistance was light allowing the Athenians

to advance a little over four miles; or the second day, where enemy resistance was non-existent allowing

them to advance two miles before stopping for food. [505] On the fifth day, the Syracusans would

unsuccessfully attempt to isolate the rear from the rest of the army, but the Athenians maintained their

cohesion, presumably by stopping the formation when necessary.[506] Thucydides' description of these

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[501] See Xen. *Anab.* 3.4.38-39; 4.1.16-17; 4.2.24-26.
[502] Xen. *Anab.* 4.1.16-17.
[503] See pages 138 and 168.
[504] Thuc. 7.78.6.
[505] Thuc. 7.78.4.
[506] Thuc. 7.79.5-6

events could, thus, imply that Nicias abandoned a strategy he and his colleagues had previously followed closely when he eventually left Demosthenes to his fate.

> […] when day came and the Syracusans and allies found that the Athenians were gone, […] and hastily pursuing by the road which they had no difficulty in finding that they had taken, overtook them about dinner-time. They first came up with the troops under Demosthenes, who were behind and marching somewhat slowly and in disorder, owing to the night-panic above referred to, and at once attacked and engaged them, the Syracusan horse surrounding them with more ease now that they were separated from the rest, and hemming them in on one spot. The division of Nicias was five or six miles on in front [of Demosthenes], as he led them more rapidly, thinking that under the circumstances their safety lay not in staying and fighting, unless obliged, but in retreating as fast as possible, and only fighting when forced to do so (Thuc. 7.81.1-3. Crawley 1910).

Nicas was about 9 kilometres ahead of Demosthenes by the time the rearguard was intercepted. Both sections, however, must have been considerably closer prior to their separation.[507] Furthermore, Thucydides' phrasing suggests Nicias knew that fighting was an option in this situation, and that he actively chose to flee. We should, therefore, not assume that he was unaware of Demosthenes' situation.

D) The nature of inter-flank communications

In order to determine the nature of inter-flank communications in the hollow square we must once again turn to Xenophon for information. We will, therefore, examine the two cases we have already touched upon: the assault on the Persian hill when Cheirisophus asked for Xenophon's assistance at the front; and the moment when Cheirisophus failed to wait for Xenophon during the crossing of the

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[507] See page 168.

Carduchian mountains. Both of these episodes describe interesting details of miscommunication, and can help us identify how the Ten Thousand possibly communicated from one flank to the other.

> As soon as Cheirisophus observed that the spur was already occupied, he summoned Xenophon from the rear, directing him to come to the front and bring the peltasts with him. Xenophon, however, would not bring the peltasts, for he could see Tissaphernes and his whole army coming into view; but he rode forward himself and asked, 'Why are you summoning me?' Cheirisophus replied, 'It is perfectly evident; the hill overhanging our downward road has been occupied, and there is no getting by unless we dislodge these people' (Xen. *Anab.* 3.4.38-39. Brownson 1968a)

> Here the enemy began a vigorous attack, and in the narrow places on the road came close up to discharge their bows and slings. The result was that the Greeks were forced to give chase and then fall back, and hence made but slow progress; and time after time, when the enemy pressed them hard, Xenophon would send word to Cheirisophus to wait a little. Now while Cheirisophus was accustomed to wait whenever such word was given, on this occasion he did not do so, but led on rapidly and passed back the order to keep up with him. It was evident, therefore, that something was the matter, but there was no time to go forward and find out the reason for his haste; consequently the progress of the rearguard became more like a flight than a march (Xen. *Anab*. 4.1.16-17. Brownson 1968a)

Here, we should first note that these cases of miscommunication, though by far the most detailed instances of tactical communications provided by Xenophon, were the exception rather than the norm. Xenophon clearly states that, apart from this single exception, Cheirisophus always waited for him when

asked. He also stresses how closely the rearguard and the vanguard cooperated after the incident, hinting at very close levels of communication between the two.[508]

> Accordingly, whenever they blocked the march of the van, Xenophon would push forward from the rear to the mountains and break the blockade of the road for the van by trying to get higher than those who were halting it, and whenever they attacked the rear, Cheirisophus would sally forth and, by trying to get higher than the obstructing force, would break the blockade of the passage-way for the rear; in this way they continually aided one another and took zealous care for one another (Xen. *Anab.* 4.2.25-26. Brownson 1968a).

The actions described by Xenophon would not have been possible without solid inter-flank communications: there was no way for the van or the rear to know the other was in danger unless they informed each other and asked for assistance. If Cheirisophus found that his progress was impeded, he would have to send word to Xenophon and ask him to clear the way for him, presumably giving him information concerning troop numbers, elements, and location in order to ensure success. The fact remains that a failed instance of communication makes for a better story than a successful one, which is why the author provided us with lengthy descriptions of the former, but mere hints and allusions to the latter. Furthermore, the retreat through the Carduchian mountains lasted for seven days, and was apparently the most challenging part of the Ten Thousand's journey up until that point.[509] Provided Xenophon did not omit any other instances of miscommunication,[510] it is remarkable that he could only point to a single breakdown within that week considering the fact that the Greeks were penned in a

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[508] For a detailed examination of miscommunication see page 168.
[509] Xen. *Anab* 4.3.2.
[510] Perhaps in an effort to improve his image.

narrow pass and attacked from all sides while their men and lines of communication stretched over several kilometres (Xen. *Anab.* 4.1.10-4.3.).[511]

Returning to our two cases, Xenophon essentially claims that on both occasions Cheirisophus omitted to give him the full picture of what was going on when a few words would have sufficed. After spotting the hill, the leading officer simply ordered him to bring his peltasts to the front without telling him why he should do so. Xenophon, however, could see the enemy was threatening the rearguard, and so he left his men behind.[512] Likewise, Cheirisophus neglected to offer an explanation as to why he would exceptionally refuse to wait for Xenophon in the Carduchian mountains. The Spartan simply ordered Xenophon to make haste, drastically worsening his situation.[513] Xenophon was finally able to meet with the Spartan during a lull in the fighting, whereupon he learned that Cheirisophus had attempted to occupy a strategic position before the enemy.[514]

Unfortunately, Xenophon neglects to mention exactly *how* he communicated with his colleague in the vanguard. There are, however, only two possibilities to choose from, namely pre-arranged trumpet signals, or a simple messenger.[515] Both methods had benefits and drawbacks: a messenger could be relied upon to deliver more details than any instrument, whereas a trumpet-call could deliver information faster over greater distances,[516] albeit at the cost of clarity.[517]

Two out of our three case studies include large armies that could have benefitted from a faster method of communication, especially once the Ten Thousand had entered the Carduchian mountains.

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[511] The mountain pass was so narrow that it took the army an entire day to cross the first summit: Xen. *Anab.* 4.1.10. Their supply lines were particularly vulnerable, as they stretched over a long distance: Xen. *Anab.* 4.2.13. The distance within the hollow square of the Ten Thousand seems to have been considerable even before they entered the mountains, as Xenophon claimed it would take too long for the peltasts of the rearguard to travel to the vanguard: Xen. Anab. 3.4.42.

[512] Xen. *Anab*. 3.4.40.

[513] Xen. *Anab.* 4.1.18; Whitby 2004, 237.

[514] Xen. *Anab*. 4.1.19-20.

[515] Visual signals would have been less effective in a winding mountain pass.

[516] A salpinx could be heard from a distance of 50 *stadia*, or 8.9 km: Krentz 1991, 113; Pollux. *Onom.* 4.88.

[517] Russell (1999, 143–44) notes the same when comparing messengers to fire-signals. For the benefits of messengers: Xen. *Anab* 4.3.10-13; 4.3.28.

Trumpet signals were used sparingly in Greek warfare,[518] but they were a mainstay of everyday Greek life: according to Peter Krentz, trumpets were often used as a form of summons in city-states, and could be used for a variety of reasons, from summoning distracted actors (Pollux. *Onom.* 4.88), to convening the public assembly (Aesch. *Eum*. 566-606; Dem. *On the Crown*. 169), or even summoning the gods in religious festivals (Plut. *De Iside* 364f).[519] Moreover, trumpet signals feature prominently in the *Anabasis*, and the Ten Thousand seem to have been frequent users of the *salpinx*.[520]

 More importantly, however, such a method of communication could explain why Cheirisophus' messages lacked in clarity. Perhaps the Ten Thousand thought their lines of communication stretched too far, and agreed upon a set of sound queues with different meanings to them, i.e. one long blast could mean 'send help to the front', two long blasts could mean 'send help to the rear', while three short blasts could mean 'everyone move forward'. Peter Krentz believes that such a system was possibly adopted in Athens, when a trumpet-signal was used to summon the cavalry to the Anakeion.[521] This could possibly mean the Athenians had established a code that could communicate a specific gathering point to a specific group of soldiers,[522] though Krentz also concedes that the trumpeter could have simply stood at the Anakeion.

> They summoned the Generals and bade them proclaim that citizens resident
>
> in Athens proper were to proceed under arms to the Agora; those between the Long Walls
>
> to the Theseum; and those in Peiraeus to the Agora of Hippodamus. The Knights were to
>
> be mustered at the Anaceum by trumpet before nightfall (Andoc. 1 45. Maidment 1968).

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[518] Krentz 1991, 110.

[519] Krentz 1991, 113.

[520] Trumpet signals used to sound the charge: Xen. *Anab.* 1.2.17; 3.4.4; 5.2.14-15; 6.5.25; 6.5.27; 7.4.16. Trumpet signals used to sound the retreat: Xen. *Anab.* 4.4.22. Trumpet signals used to convey information: Xen. *Anab.* 4.2.1; 4.2.7-8. Trumpet signals designed to confuse the enemy: Xen. *Anab.* 4.3.29-32.

[521] Krentz 1991, 114.

[522] This seems to be supported by the fact that *salpinktai* were to be found among hoplites, archers, peltasts, and horsemen: Krentz 1991, 117.

Nevertheless, simple messengers appear more likely: for starters, the mercenaries seem to have used trumpets mainly to signal an attack or a retreat.[523] The only exception was when a small detachment was ordered to sound their *salpinx* after capturing an enemy position, so as to coordinate a second attack with the rest of the army.[524] There is, otherwise, nothing in the *Anabasis* to suggest that trumpets were used to act as a form of summons, or to communicate complex information.[525]

Furthermore, the Ten Thousand already employed trumpets to orchestrate their sallies, when the hollow square was particularly hard pressed and counter-attacks became necessary.[526] One would assume that the flank-leaders would need to communicate during these moments of highest danger. As such, there would have been a very real danger of one signal overlapping the other if the Ten Thousand made use of their instruments to simultaneously communicate with the men under their command and with their fellow flank-leaders.[527] It would, therefore, appear that messengers were the better solution, despite their limited speed, and we must look to other reasons to explain the miscommunications.[528]

The Athenians and the Lacedaemonians seem to have operated in much the same way. Unlike Cyrus' mercenaries, neither army seems to have used trumpet signals during their respective retreats, at least not according to Thucydides' account. Assuming he did not simply omit to mention the use of such instruments, we must presume both armies relied on messengers to relay their orders and information. This seems plausible, and perhaps even desirable, for the smaller Lacedaemonian army. Their lower numbers may have allowed them to make do with this simpler, clearer, albeit slower, method of communication.[529] Furthermore, Brasidas never used trumpet signals throughout his expedition, either

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[523] Krentz 1991, 115–16.
[524] Xen. *Anab.* 4.2.1.
[525] Russell 1999, 146.
[526] Xen. *Anab.* 3.4.4. See page 162 for more information on sally tactics.
[527] Signal overlap is still an issue in modern military forces: Christ and Evans 2002, 33.
[528] See page 168.
[529] In his study on the *salpinx* (1991, 118) Peter Krentz argues that one of the reasons why the Greeks did not make more extensive use of instruments in their military communications was that verbal orders were effective in their own right, and perfectly covered the needs of the Hellenes. This seems like a plausible argument when it comes to the battle of Lyncestis.

before or after Lyncestis. The only time he made use of anything other than vocal orders was during his night assault on Torone, but even then, he favoured fire-signals over instruments.[530] We should also perhaps consider the possibility that Brasidas used his peltasts as dedicated messengers. According to Thucydides, these men were placed in the centre of his *plaision*, despite the fact that skirmishers were apparently useless in that position.[531] Despite the drawback to their fighting abilities however, they would have been perfectly positioned to transfer orders from one flank to the next.[532]

The Athenian army, on the other hand, was the polar opposite of the Lacedaemonians. Their numbers were vast, at least once the unarmed mob is taken into consideration.[533] Despite the fact that their ranks were whittled down by attrition, they would have still made up a considerable force.[534] Such a large army could have benefited from the expediency of trumpet signals, but they apparently only made use of instruments to signal the charge in their pitched battles prior to the retreat.[535] Furthermore, the Athenians also eventually made use of sally tactics during their retreat (Thuc. 7.79.5) and considering their previous use of instruments, it seems likely they would have used their trumpets to orchestrate these counter-attacks as well. As a result, they would have been subject to the same limitations as the Ten Thousand, and would not have used instruments for their inter-flank communications for fear of mixing up their signals. We should thus assume that all three armies relied on messengers to send information from one flank to the other.

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[530] Presumably to maintain the element of surprise: Thuc. 4.111.2.

[531] Brasidean skirmishers: Thuc. 4.125.2; Lendon 2010, 350. Skirmishers useless in the middle of the square: Xen. *Anab.* 3.4.26.

[532] This initial deployment does not exclude the possibility that the skirmishers were still used principally for battle: see page 147.

[533] As it should be: the larger the unarmed mob, the larger the square. The hoplites would have to spread over a greater distance, which would increase the chances of miscommunication and isolation: see n. 460 and 461.

[534] Hutchinson 2006, 162.

[535] Thuc. 6.69.2.

This information could, in turn, help us estimate the effective range of a messenger in the hollow square by calculating the distance between the flanks of the Brasideans and the Ten Thousand.[536] To carry out these estimates we will need to divide the number of hoplites in each army by four and assume a uniform depth of eight shields per flank.[537] These calculations will necessarily be approximations, as the manpower and depth of each flank would not have been identical throughout the formation. In addition, a moving *plaision* would have certainly not maintained a perfectly square shape even on flat terrain.[538] We will only provide estimates following Krentz' view of a six feet interval between soldiers,[539] as it seems unlikely a tighter formation would have been adopted during the march (see below). Our calculations will also not include Lee's theory that the Greeks would have maintained a gap of five meters between each *lochos* to facilitate their sally tactics since there is no way of estimating how many *lochoi* would have been present within the Lacedaemonian army.[540]

As their name implies, the Ten Thousand had about 10 000 hoplites at the start of their retreat. If we divide them equally among the 4 flanks of the *plaision* and assume they were deployed 8 deep then each flank would have been roughly 570 meters long with 40 acres of space inside the square.

As far as the Lacedaemonians are concerned, the distance between their flanks was not immense. Assuming they split their 3 000 hoplites evenly between their flanks and adopted a depth of 8 shields, each flank would have sported a frontage of approximately 172 meters. This amounts to somewhere

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[536] According to Thucydides, the Athenians army numbered around forty thousand men, half of which were soldiers: Thuc. 7.75.5. It seems unclear, however, how many of them were hoplites, and so we will not include them in these calculations.

[537] Lee 2013, 152; Wheeler 2007a, 206. Pritchett (1971, 135–37) has made a list of the different depths mentioned in ancient sources between the years 471 and 190 BC. The eight-shield model is the most recurrent one, with eight recorded instances of its use. This recurrence has spawned a number of arguments and views about its implications. As Konijnendijk (2018, 127–29) notes, we should not consider that eight instances among hundreds of engagements indicate a norm. Thucydides and Xenophon never mention the depth of the hollow squares. The only *plaision* that was clearly recorded as using a uniform depth of eight shields was the Athenian square of the first battle of Syracuse: Thuc. 6.67.1. In order to complete our calculations, we will adopt the most recurring option for our estimates, without implying that an eight-shield depth was standard in the Greek world.

[538] See n. 382.

[539] See n. 170.

[540] Lee 2007, 158; Xen. *Anab.* 3.4.15; 5.4.22; 3.3.7-8; 3.4.26-30.

around 3.5 acres of space. The distance between each flank was thus small enough for a runner to cover swiftly.

While the range between each flank was relatively short within Brasidas' square, the messengers of the Ten Thousand, and presumably the Athenians, had to traverse considerable distances. Our calculations would, thus, suggest that a Greek messenger could be relied upon to deliver a message at a distance of anywhere between 172 and 570 meters. Yet we should also remember that messengers remained effective in the Carduchian mountains, where the formation of the Ten Thousand would have been elongated far beyond the above estimates to fit through the roads, meaning our calculations are far from exhaustive.[541] Furthermore, hollow-squares must have advanced in a long and thin rectangle, even on open ground, if only to make maximum use of whatever roads were available to them.[542] This elongation would have naturally affected communications, especially between the vanguard and the rear. Unfortunately, there is no way to accurately establish the true distance between each side of the square beyond the above estimates.

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[541] See n. 511.
[542] See n. 382.

2) *Intra-flank communications.*

We will now focus on the more localised tactical communications found within a single flank. We will first examine the duties of a flank-leader and demonstrate how vital intra-flank communications were to the continued existence of the hollow square. We will then examine how sub-companies, such as the *lochos* could become the centrepiece of intra-flank communications in a Greek *plaision*.
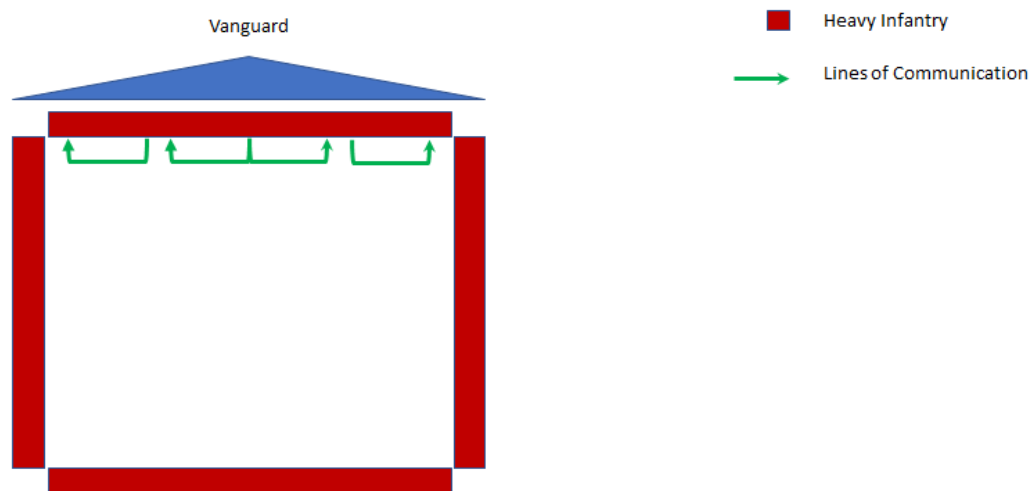

Figure 23: Intra-flank communication.

A) *The need for constant communication.*

The flank-leader's principal duty was to see that his section could march and fight at a moment's notice. This might seem elementary, a mere matter of 'start' and 'stop', but the ramifications are enormous. Even in the event that no enemy attack occurred, a flank-leader could not simply order the advance in the morning, quietly march alongside his men, and then issue the order to stop towards the evening. Any marching army is subject to issues that must be addressed if order is to be maintained. As a rule, Greek armies did not march in formation, and so order was neither required nor expected of them.[543] The hollow square, however, demanded discipline.

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[543] Konijnendijk 2018, 57.

In his analysis of the march of the Ten Thousand, Lee summarizes the difficulties inherent to any marching army, and stresses that no military force can maintain order without supervision.[544] One of these issues is the staggered manner in which military columns advance (Figure 24). Even in modern armies the initial movement of a marching column will not be uniform: the last elements will always begin and end their advance a few moments after the leading elements.[545] The overall motion of a marching army is, thus, more reminiscent of a spring rather than a train.
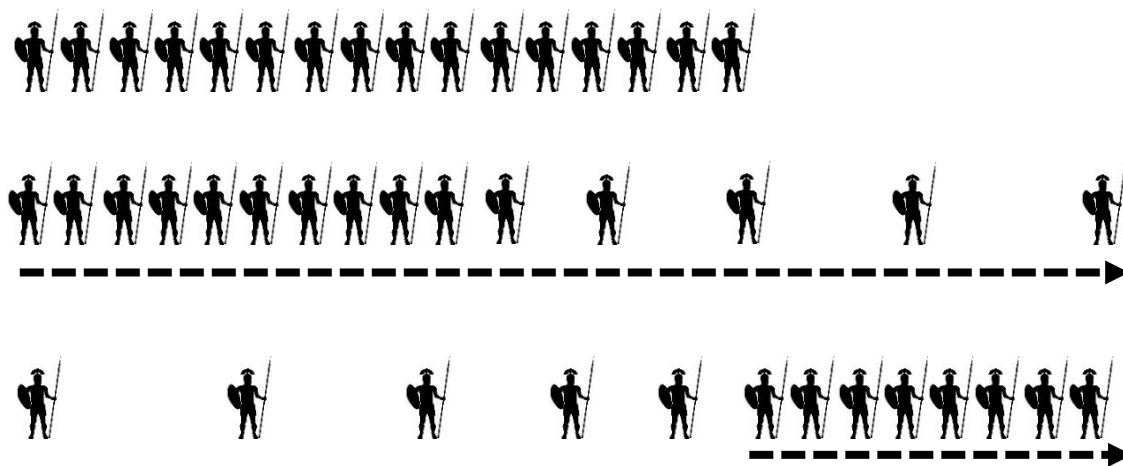
Figure 24: Column marching and halting.

Let us imagine, for example, a small host of a thousand men split up into ten detachments of a hundred hoplites, each marching in line, four abreast, and coming to a halt. According to Lee's calculations, this basic manoeuvre would take up to two minutes to execute if we assume that each rank would take half a second to halt. If we extend this to the Ten Thousand, and assume each flank was composed of two thousand five hundred men, then each wing would require around five minutes to come to a halt if they deployed their soldiers four abreast. The vanguard and rearguard, however, could possibly start and stop faster, since their formation would not be nearly as deep as the wings. These uneven delays

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[544] Lee 2007, 140–47.
[545] My own, limited, experiences in the army confirm this. Parades are the obvious exception to the rule.

would have to be managed carefully, and could be one of the reasons why Demosthenes' contingent could not keep up with Nicias.[546]

Obstacles, such as hills or chokepoints, would further exacerbate this issue. For instance, once the first elements of a unit came up the summit of a hill and started marching down, they would inevitably pick up speed and increase the gaps in their formation (Figure 25).[547] These gaps are harmless in small self-contained formations, but they can quickly add up in larger ones and lead to catastrophe if left unchecked. Thucydides' description of the final hours of the Athenian army demonstrates what could happen to a hollow square that did not manage its spacing: maddened by fear, exhaustion, and thirst, the Athenians abandoned all discipline and rushed to a nearby river, trampling each other to death.[548] Troop distancing was also important to the Ten Thousand, and Xenophon took care to order his men to slow down when it looked as though a gap might ensue.[549]
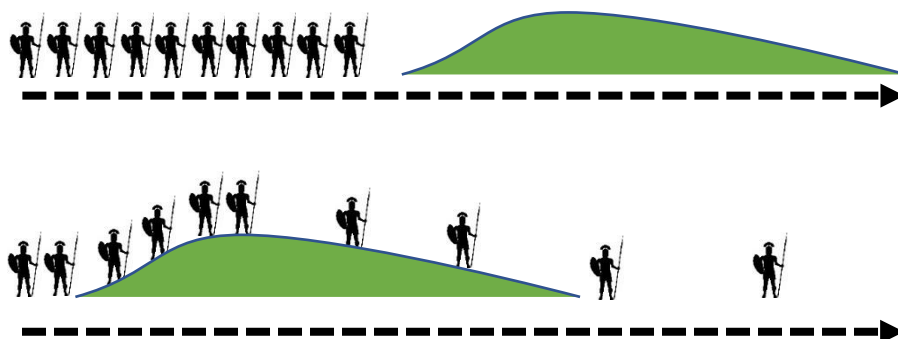

Figure 25: *Column marching over a hill.*

Furthermore, in the event of an enemy attack, the flank-leader would have to order his men to shift from marching order to battle order. According to Lee, hoplites could not advance in the same formation they fought in, and would instead have to widen their ranks during the march and then close

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[546] Athenian rearguard struggling to keep up: Thuc. 7.80.4. Athenian generals managing troop distancing: Thuc. 7.78.1.
[547] Lee 2007, 164–65; Xen. *Anab* 4.2.8; 4.2.16.
[548] Thuc. 7.84.3.
[549] Xen. *Anab.* 4.2.16.

them up again to fight.[550] Lee's argument, however, bases itself on the assumption that hoplites stood at an interval of three feet from one another during battle. As such, the transition from marching order to battle order would potentially have been less complicated if we accept Krentz' view on troop distancing. Yet even so, it would still be impossible to expect thousands of men to maintain parade ground order on the field, and a flank-leader would still need to watch out for the inevitable gaps that would appear throughout his ranks.

We must also not assume the formation would be marching in the same shield-depth it would be fighting in. Let us imagine, for example, a hollow square trying to march through a narrow pass. The flank-leaders would logically increase their ranks and decrease their files in order to present a narrower front, (Figure 26). If the hollow square were to be suddenly attacked during this stage, then one would assume the flank-leaders would reform their men into a formation more suited to repel an assault.[551]
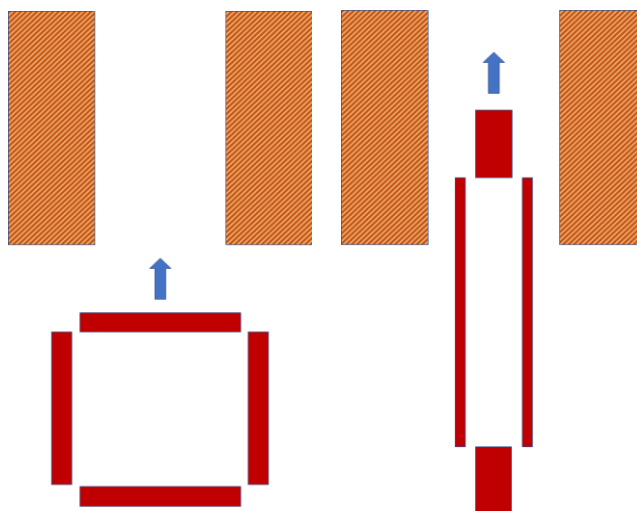

Figure 26: Marching through a narrow pass.

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[550] Lee 2007, 142. He believes their gear would have interfered with their march if they set off in close formation. The siege of Plataea possibly indicates as much: while attempting a sortie, the defenders kept their distance from one-another so that the clang of their weapons would not betray their presence (Thuc. 3.22.2), possibly indicating that clashing weapons was not uncommon on the battlefield.

[551] This is, presumably, what happened when the Ten Thousand crossed a gorge while Mithridates gave chase: Xen. *Anab.* 3.4.1-5.

Transitioning from marching order to battle order was also an issue for the phalanx.[552] The hollow square, however, would exacerbate the problem since anytime a flank-leader trimmed his ranks, altered the depth of his line, or simply allowed his men to create large gaps, he ran the risk of breaking the entire formation, as Xenophon himself described.[553] The Ten Thousand seem to have been the only ones to come up with a solution to this problem by creating six picked regiments for the sole purpose of plugging any holes, thus freeing the flank leaders of an important duty and delegating it to six subordinate officers.[554] This, presumably, means that the Athenian and Lacedaemonian flank-leaders would have to communicate with each other before altering their flanks, or else risk weakening the integrity of the formation.

Furthermore, at least in the case of the Ten Thousand, the flank-leaders had to carefully maintain several gaps in their lines through which their skirmishers could operate (Figure 27).[555]
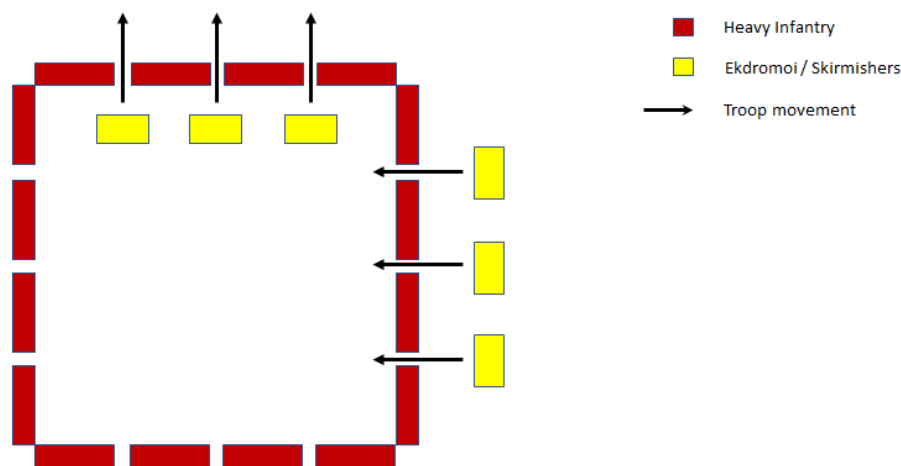

Figure 27: Troop formation in the Ten Thousand.

While this tactic is not mentioned in either the Lacedaemonian or the Athenian retreat, it seems likely that both armies made use of it as well. Thucydides claims that Brasidas had access to an undisclosed

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[552] Thuc. 5.66.1-2; Xen. *Hell*. 6.5.18-19
[553] Xen. *Anab.* 3.4.19-20.
[554] Xen. *Anab.* 3.4.21-23.
[555] Lee estimates these gaps at a reasonable five meters, though there seems to be no evidence to support any definite number, see n. 540.

number of skirmishers which he chose to place in the centre of his formation, even though skirmishers were useless when trapped within the confines of a square.[556] However, even though these men are never heard from again, it seems unlikely they were kept away from the fight. Thucydides may have ignored them simply because his readers would have scoffed at the sight of Brasidas shamelessly making use of light infantry tactics moments after describing them as cowardly.[557] Perhaps the skirmishers stayed in the centre because they were too few to be effective if dispersed among the flanks. These men could act as a reserve force that would lend their aid wherever needed, thus making maximum use of their small numbers. The Ten Thousand followed a similar line of thought, keeping a reserve of skirmishers in the centre of their formation during their march through the mountains.[558]

The Athenian case offers even less information than the Lacedaemonian one. The only thing worth noting is that Demosthenes had great experience fighting with and against light infantry: he was soundly beaten by skirmishers in Aetolia and had learned his lesson well.[559] He also fought at Sphacteria alongside Cleon, where his skirmishers managed to force the Spartans to surrender.[560] With such a past, it seems improbable he would have failed to make effective use of light infantry during his retreat. We should, therefore, accept that both the Athenian and the Lacedaemonian hollow square likely made at least some use of their skirmishers, which would have forced them to maintain gaps in their flanks. The fact that Thucydides does not mention these actions can be attributed to Greek prejudice against the use of light infantry.[561]

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[556] See n. 531.

[557] Thuc. 4.126.5-6; Hanson 2000, 13–14. If Brasidas' speech was accurately conveyed by Thucydides, it seems likely the Spartan commander would have purposefully misrepresented the danger posed by light infantry in order to encourage his hoplites: Crowley 2012, 101–2.

[558] Xen. *Anab.* 3.4.43. See n. 598.

[559] For the Aetolian campaign: Thuc. 3.94.3-98.5. For the effect this defeat had on Demosthenes' strategy: Thuc. 4.29.4-30.1; Hutchinson 2006, 36–50; Kagan 2003, 132; Lafargue 2015, 53–54; Wheeler 2007a, 220.

[560] Barley 2015, 56–57; Ray 2009, 175.

[561] Such omissions evidently worked: Pritchett (1974, 211) considers Brasidas' speech and the subsequent events as proof of the superiority of heavy infantry over skirmishers. For Greek failure to acknowledge skirmishers: Van Wees 2004, 62–65.

These issues are arguably the most basic and self-evident aspects of leading a flank of the *plaision*. Yet we can point to many others, such as stopping the men for a short midday rest or a quick meal, making sure their baggage was close at hand and stocked with the necessary supplies, finding suitable sleeping quarters, or rotating the various units during the march.

B) *Sub-companies in the hollow square.*

How, then, were these orders relayed? As far as the Ten Thousand are concerned, the answer seems straightforward: their flank-leaders could rely on their *lochagoi*, the subordinate officers in charge of the *lochos*, to transmit their commands or take actions in their stead.

> Upon hearing these words the generals and captains went away and proceeded to do as Clearchus had directed. And thenceforth he commanded and they obeyed (Xen. Anab. 2.2.5. Brownson 1968a)

> Thereupon it was decided to call together the captains, both of peltasts and hoplites, to set forth to them the existing situation, and to ask if there was any one among them who would like to prove himself a brave man and to undertake this expedition as a volunteer. Volunteers came forward, from the hoplites Aristonymus of Methydrium and Agasias of Stymphalus, while in rivalry with them Callimachus of Parrhasia said that he was ready to make the expedition and take with him volunteers from the entire army; 'for I know,' he continued, 'that many of the young men will follow if I am in the lead' (Xen. Anab. 4.1.26-27. Brownson 1968a)

> Then some of the captains, unable to proceed by this route, would try another, and they kept this up until darkness came on (Xen. *Anab*. 4.2.4. Brownson 1968a)

Then and there, accordingly, with words of cheer to one another, they charged upon the hill with their companies in column *(Xen. Anab. 4.2.11.* Brownson 1968a)

Xenophon wheeled his troops […], and gave orders to the captains that each man of them should form his own company by squads, moving each squad by the left into line of battle; then the captains and squad leaders were to face toward the Carduchians and station file closers on the side next to the river. (Xen. *Anab*. 4.3.26. Brownson 1968a)

This order they proceeded to carry out, and meanwhile Xenophon passed word to all the peltasts to advance with hand on the thong, so that they could discharge their javelins when the signal should be given, to the bowmen to have their arrows upon the string, ready to shoot upon the signal, and to the slingers to have their bags full of stones; and he despatched the proper persons to look after all these things. (Xen. *Anab*. 5.2.12. Brownson 1968a)

The importance of these officers is betrayed by the fact that Xenophon almost always mentions them in tandem with the generals of the army.[562] Furthermore, Xenophon's first action when trying to rouse the Greeks after the death of their leaders was to address the *lochagoi* of the late Proxenus.[563] A flank-leader of the Ten Thousand could, thus, rely on his subordinate *lochagoi* to lead a portion of his flank the same way his general could rely on him to command a portion of the *plaision*.

Lee believes that each *lochagos* would stand at the head of his company, and had access to a trumpeter to help him perform his duties.[564] There seems to be no evidence, however, to support this claim, and the issue of signal overlap mentioned previously would have rendered this method ineffective

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[562] Xen. *Anab.* 1.7.2; 1.9.17; 2.2.3; 2.2.5; 2.2.8; 2.3.28; 2.5.25; 2.5.29-30; 2.5.36; 3.1.2; 3.1.4; 3.1.29; 3.2.2; 3.5.7; 4.1.12; 4.3.9; 4.6.7; 5.6.37; 5.7.34; 6.5.12; 6.6.30; 7.1.3; 7.1.13; 7.2.13; 7.2.16; 7.2.29; 7.2.35-36; 7.3.10; 7.3.15; 7.3.21; 7.5.2-3; 7.5.11; 7.8.23.
[563] Xen. *Anab.* 3.1.15.
[564] Lee 2007, 142.

at any rate. Intra-flank communications seem to have been, once again, verbal, as the *Anabasis* indicates: Xenophon was trying to lead the rearguard through a heavily defended area of the Carduchian mountains when he left three *lochoi* to secure a strategic hill. He led his remaining men and captured two other elevations when he was approached by one of the three *lochagoi* posted at the first height who reported to him that his colleagues had been killed along with most of their men.

> Xenophon, […] left three captains upon the hill, Cephisodorus, […], Amphicrates, […], and Archagoras, […]; meanwhile Xenophon proceeded to climb the abandoned height with his youngest troops, […] then they were to advance along the road and halt under arms on the plateau at the top of the pass. At this time Archagoras the Argive came up in flight and reported that the Greeks had been dislodged from the first hill, that Cephisodorus and Amphicrates had been killed, and likewise all the rest except such as had leaped down the rocks and reached the rearguard (Xen. *Anab*. 4.2.13-17. Brownson 1968a).

There is nothing in either Xenophon or Thucydides to suggest that intra-flank communications were any more complicated than that – the flank-leaders would contact their subordinate officers, presumably either personally or through a messenger, and they, in turn, would do the same to communicate either with their superior or their own men. In that regard, at least, the phalanx and the hollow square were similar.

The *lochos* was a common military unit throughout the Greek world, but its strength varied greatly.[565] The Ten Thousand themselves seem to have favoured unusually small *lochoi* of 100 men, a testament to their skill and discipline.[566] These formations could then be further subdivided through additional subordinate officers, similarly to how the Spartans operated.[567] Yet while *lochagoi* are well

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[565] Van Wees 2004, 98–100. Considering the many variations of the *lochos* throughout the Greek World, it might be more accurate to declare that the *term*, rather than the *formation*, was popular in Hellas.
[566] Lee 2007, 82.
[567] Konijnendijk 2018, 140 n. 5; Xen. *Anab.* 3.4.21-22.

attested throughout the *Anabasis*, Thucydides does not mention their presence within the Lacedaemonian or Athenian armies.[568]

Nevertheless, once we examine the actions of the Athenians and the Lacedaemonians prior to their retreats and compare them to those of the Ten Thousand, we can point to several reasons why both armies would have likely been well-versed in the use of small squadrons in a manner similar, though by no means identical, to the Ten Thousand.

The *lochoi* of the Ten Thousand were extremely flexible: they fought as heavy infantry in the phalanx, as skirmishing heavy infantry in the mountains, as raiders, ambushers, and *ekdromoi*. Much of the success of the Ten Thousand can be attributed to this flexibility. Such was their experience and effectiveness that most historians today agree the Ten Thousand were incomparable to most other Greek fighting forces of their day, and we should indeed not expect to find the same level of skill, discipline, or subdivision within the ranks of the Lacedaemonian and Athenian armies.[569] This clear disparity in skill and experience is probably the reason why the Ten Thousand where the only ones to improve upon the hollow square through the addition of their six specialised *lochoi*,[570] make use of combined arms tactics during their sallies,[571] and successfully transition to other formations besides the *plaision* over the course of their retreat. Nevertheless, such skill levels may not have been necessary to form a basic square, and once we

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[568] With the possible exception of a group of three hundred men: Thuc. 7.83.5; Hutchinson 2006, 165. Thucydides never refers to them as a *lochos* and instead simply mentions that 'some three hundred men' (Τριακοσίων μάλιστα ἀνδρῶν) broke the enemy lines during the retreat. The Athenians, however, had previously made use of picked regiments of that size during the siege: Thuc. 6.100.1-2; 6.101.4. While there is no evidence to suggest these were the same men, one could suppose they were part of a three-hundred-man *lochos*: while forming their own picked regiments, the Ten Thousand maintained the same number of soldiers between their regular *lochoi* and their elite *lochoi*. If the Athenians followed the same practice, the three hundred soldiers mentioned by Thucydides could well have been a *lochos* in their own right.

[569] Lee 2007, 88; Wheeler 2007a, 204; Whitby 2004, 239. Konijnendijk summarized the issue thusly: 'The mercenary army's unique military situation and extensive shared combat experience probably allowed them to experiment with tactics that other Greeks were unable to replicate' (2018, 114).

[570] See n. 553.

[571] See page 162.

consider the reasons why the *lochoi* of the Ten Thousand became so versatile, and why they came to rely on them so much, we can identify some striking similarities between all three armies.

In his discussion on the tactical functions of the *lochoi* of the Ten Thousand, Lee surmises that the mercenaries placed so much emphasis on them because most of the Greek troops under Cyrus had previously been hired to act either as garrison or siege troops.[572] These activities would have forced them to fight in a manner where smaller regiments would be more effective than massive blocks of infantry.[573] This theory aligns with Louis Rawlings' own views that Greek hoplites were not as inflexible as commonly thought. He claims instead that their longevity from the Archaic throughout the Classical Period was due to their versatility.[574] According to Rawlings, the hoplite would carry out many tasks other than phalanx-warfare, such as rowing, siege operations, or small-scale raiding.[575] Street-fighting was also common during the fifth century,[576] a time when internecine conflict between rival factions of the same city would often escalate into violence.[577] Even if one side were to defeat the other, the conflict would often drag on, with the loser carrying out small-scale operations against their rivals.[578] Patrols and garrison duty were

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[572] Lee 2007, 86–87. Lee further argues that Cyrus' pretence of launching his campaign to chastise the Pisidians could indicate the Greeks were also used in 'anti-partisan operations': Xen. *Anab.* 1.1.6-7; 1.2.1. This would mean that the ranks of the Ten Thousand would have comprised many hoplites used to mountain warfare.

[573] Pitched battles were rare during sieges, and most of the fighting would be limited to small skirmishes and feats of engineering: see n. 584. Garrisons, on the other hand, would vary in size according to the importance and scale of the town or fort they were stationed in, but their numbers would also be limited: see n. 588.

[574] Rawlings 2000, 233. *Contra*: Gomme 1945, 10; Grundy 1911, 244; Ober 1991, 173. They all emphasize the apparent absurdity of favouring heavy infantry in the mountainous terrain of Hellas.

[575] Lee 2013, 157–58; Rawlings 2000, 234–35. Wheeler (2007a, 199, 215) also believes participation in various forms on non-phalanx warfare would have made the Greek heavy infantryman more flexible: 'Hoplites also participated in […] situations outside the phalanx […] the notion of hoplites helpless outside the phalanx is a myth'. Raiding was particularly common in the Archaic age (Thuc. 1.5.1) but had not died out during the Classical period either: Osborne 1987, 138–40; Thuc. 4.66.1; 5.115.2; Plato. *Laws* 823b-c. Barley (2015, 55) has recently noted that 'the first notable battle descriptions of the Peloponnesian War were not hoplite engagements, but rather city-fighting, siege breaking, and clashes between hoplite forces and light infantry.'

[576] For an overview of the nature of urban warfare: Lee 2001. Lee makes use of the archeological remains of Olynthus to describe what the Macedonian assault must have looked like. The remains of sling bullets and arrowheads seem to indicate the defenders initially defended the streets before taking refuge within their houses. The Macedonians would then have to clear them out, one house at a time (2001, 16–19).

[577] Hdt. 7.155.1-2; Thuc. 1.24.5; 3.70.6; 3.72.1-3. Barley notes that Aeneas Tacticus stressed the importance of small formations during urban combat: Barley 2015, 51–53.

[578] Thuc. 1.115.4-5.

another common activity, and men serving in such fashion could be expected to see some action.[579]

Hoplites would also sometimes operate in small groups as marines, where they would have to contend

with the added difficulties of fighting onboard a rocking ship.[580] All of these sub-facets of warfare called

for flexibility and small numbers.[581] The Ten Thousand were used to many of these methods of warfare,

and were thus able to field small, versatile units that helped them with their intra-flank communications.

Yet both the Athenians and the Lacedaemonians met several of these criteria, albeit to a lesser

degree. The Athenians had conducted a gruelling two-year campaign, where flexibility was required above

all else. One of the characteristics of the siege of Syracuse was the heavy use of forts and stockades, where

both sides used small groups of men to build, defend, or attack fortifications.[582] The Syracusans had

evidently known from the start how important these small garrisons would be, as they immediately sent

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[579] Rawlings 2000, 236. For patrols in combat: Thuc. 4.67.2. For Spartan use of garrisons: Thuc. 4.55.1. Thucydides further claims that Sparta's decision to garrison her frontiers was 'a form of warfare where mobility was what counted' (Warner 1972), unlike her more usual strategy of meeting the foe head-on. For Athenian garrison: Thuc. 2.13.6-7; 19.2. Athenian garrison duty was left to the youngest men of the state going through their military initiation. Hans van Wees (2004, 94) suggests the milder Athenian model of military initiation is more likely to reflect wider Greek practices. For Amphipolitan garrisons: Thuc. 4.103.5. For Corinthian garrisons: Thuc. 4.42.3. For Megarian garrisons and patrols: Thuc. 4.67.3-68.1. Thucydides mentions the presence of an ἄρχοντα (4.67.3), which Richard Crawley, Rex Warner and Benjamin Jowett all translate as a watch officer. For watch commanders in the Greek world: Russell 2013, 482.

[580] Rawlings 2000, 236; Thuc. 3.95.2; Plat. Laws 4.706c. Brasidas also fought from the deck of a ship during the battle of Pylos: Thuc. 4.11.4. Hans van Wees argues that Athenian marines were often drawn from the *thetes*, a view shared by Kagan, and would have some experience with seamanship though wealthier men could theoretically volunteer: Kagan 1974, 205; Van Wees 2004, 210–11; Thuc. 6.43.1. Pritchard has recently criticized van Wees for ignoring *IG I³ 1032*, an inscription listing the crews of Athenian triremes and showing that some of the marines owned slaves, something a common *thes* could not afford: Pritchard 2018, 42. While van Wees does not mention the inscription, he states that wealthier hoplites would be called to serve more often as marines during times of hardship (2004, 211 n.40), and since the inscription is dated after the Sicilian Expedition his argument accounts for it even if it does not mention it. Pritchard provides two further cases to support his argument, though both are also dated after the Sicilian expedition: Lysias. 6.46; Athens, Attic marble tombstone: National Archaeological Museum, inv. No. 752. Nevertheless, wealthy Athenian hoplites apparently served during Demosthenes' Aetolian campaign in 426 BC, when Athens was ascendant, indicating that service as a marine could indeed be fluid: Thuc. 3.98.4. These men may have been wealthier citizens frustrated by the inaction imposed upon them by the Periclean strategy and eager to fight in any way they could. For Athenian aggression and frustration: Kagan 1974, 188; Plut. *Per*. 27, 2.

[581] The final stages of the siege of Plataea demonstrate the effectiveness of small units, and the potential flexibility of hoplites: Thuc. 3.22.1-8; Barley 2015, 56. This episode also contains valuable information on strategic communications and will be examined in detail in chapter 4.

[582] See Garlan 1974, 120–21.

out some of their soldiers to occupy surrounding villages and strong-points.[583] The Athenians, on the other

hand, wasted no time in raising their own fortifications and attempted to blockade the city of Syracuse by

erecting a circumvallating wall. These operations could not be conducted by large bodies of men: each

army had to delegate small numbers of troops to certain engineering tasks while keeping the bulk of their

forces in reserve in order to meet a possible attack. [584] The Athenian generals also embarked their land

forces onto their ships for offensive purposes on at least one occasion.[585] Plutarch remarks that the

Athenian skirmishers suffered a marked decrease in their capabilities during this naval-battle, but makes

no such claim for the hoplites.[586] This either means that hoplite warfare was not affected by a rocking

ship, an unlikely proposition, or that these hoplites had some prior experience we know nothing about.

Finally, Demosthenes had a history of subdividing his men into small-size squadrons of 200 hundred men,

as his actions at Sphacteria demonstrate.[587] These formations of light infantry were larger than the *lochoi*

of the Ten Thousand, but considerably smaller than the 500 Argives or the 300 *logades* Lamachus made

use of (see page 73).

The Brasideans, on the other hand, may have never faced a serious threat prior to Lyncestis, or

been called to execute complex manoeuvres on the field of battle, but they had fought small urban

skirmishes against whatever meagre opposition they encountered.[588] These modest engagements would

have encouraged them to fight in small, flexible groups: the capture of Torone, for instance, forced them

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[583] Thuc. 6.45.1.
[584] For small-scale operations in the Sicilian expedition involving forts, engineering, and small units: Thuc. 6.62.3; 66.2; 70.4; 75.1; 94.2; 96.3; 97.5; 98.2; 99.1-3; 100.1-2; 101.1-2; 101.3-6; 7.2.3; 3.4; 4.1-6; 37.2; 19.3; .22.1-24.1; 25.6-8; 26.2; 43.1; 43.2-7.
[585] Thuc. 7.60.2-3; Kagan 1981, 330.
[586] Plut. *Nic*. 25.2.
[587] Thuc. 4.32.3. Thucydides is rather unhelpful in his description of Demosthenes' detachments, claiming he divided his forces roughly into squadrons of two hundred men, some with more and some others with less. The vagueness of his statement leaves it open to the possibility that some of Demosthenes' detachments could have been considerable in size, but the average of two hundred men remains.
[588] Cf. Barley 2015, 59: 'It is more likely that the expertise of [Brasidas'] troops lay in methods of engagement other than pitched battle, such as ambush, ruse, and shock attacks'.

to disperse throughout the city while Brasidas led a small contingent to conquer the high ground.[589]

Brasidas had also created a small corps of a hundred skirmishers to invest the city before the bulk of his

forces could follow.[590] The Brasideans could also be called to act as garrison troops if need be and had

spent some time raiding the enemy countryside.[591] As for the local levies that swelled up Brasidas'

numbers, they came from highly fractious cities where one group could be expected to fall upon the other

in an instant. Such a tense atmosphere would have forced them to be on guard, and garrison duty and

street watches were evidently common practice: the Amphipolitans, for instance, kept the bridge that led

to their city under watch, while Brasidas' men had to kill some Toronian guards in order to break open the

gates.[592] Furthermore, at least some of the citizens of Torone took part in the street-fighting when

Brasidas entered the city, though whether they had time to organize themselves or merely fell upon their

adversaries pell-mell is unknown.[593] Considering the fact they had been forewarned of Brasidas' invasion,

it seems likely there would have been some order among them to tell friend from foe during urban warfare

in the middle of night.

We can, therefore, assume that the Lacedaemonian and Athenian flank-leaders would have been

able to rely on their own subordinate officers to pass on their orders throughout the flank. This does not,

in any way, mean that all three armies would have mirrored each other perfectly: unlike the Ten

Thousand, the Athenians and the Lacedaemonians eschewed any form of officer below the rank of

lochagos, and almost certainly fielded larger companies than the mercenaries. The Athenians and their

allies seem to have favoured units ranging from 500 men to possibly 150, rather than the smaller and

more uniform *lochoi* of the Ten Thousand.[594] Brasidas, on the other hand, had been known to make use

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[589] Thuc. 4.112.3.
[590] Thuc. 4.111.1.
[591] Raiding: Thuc. 4.109.5. Garrison duty: see n. 447.
[592] Amphipolis: Thuc. 4. 103.5. Torone: Thuc. 4.110.2.
[593] Thuc. 4.113.2.
[594] Their *logades* formed up in groups of 300 (Thuc. 6.101.4), and we know of at least one other unknown formation of three hundred men that distinguished itself during the retreat: see n. 568. It is safe to assume that the allied

of formations ranging from anywhere between 100 and 300 men.[595] Yet while Brasidas' helots and

mercenaries would possibly have had the experience to operate in smaller *lochoi* by the time of the battle

of Lyncestis, the local levies that made for more than half his army probably did not, and would thus have

likely operated in larger groups. Consequently, both the Athenian and Lacedaemonian hollow squares

would have presented a mixture of both larger and smaller companies.

This would, in turn, suggest that the greater flexibility and subdivision of the Ten Thousand may

have been necessary for some of their more complicated manoeuvres,[596] or to improve upon the hollow

square, but not to ensure basic intra-flank communications in the formation. What was required, instead,

was at least some level of experience in small-scale military operations, which, judging by the performance

of the Brasidean levies, could be acquired through commonplace activities such as garrison or patrol duty.

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elements of the army would have formed up as they saw fit: the Argives formed up in one group of 500 men (see n. 247), and the 250 Mantineans who took part in the first Athenian landing (6.43.1) probable formed up alone. We unfortunately do not know the details of the Athenian order of battle: the first armament sent against Sicily contained some 5100 hoplites, only 1500 of which were Athenians (Thuc. 6.43.1). Thucydides never speaks of *lochoi* but of tribes (6.98.4; 6.101.5). If all ten of the Athenian tribes were present at the expedition, then they would each have been composed of 150 hoplites. The Athenians would have likely not subdivided these groups any further. The second Athenian armament included an additional 1200 Athenian hoplites (Thuc. 7.20.2). It is unknown if these reinforcements would have been amalgamated into the pre-existing formations of the first group, or if they would have formed up on their own.

[595] One hundred men: Thuc. 2.25.2; 4.111.1. One hundred fifty picked men: Thuc. 5.8.4. Three hundred picked men: Thuc. 4.125.3.

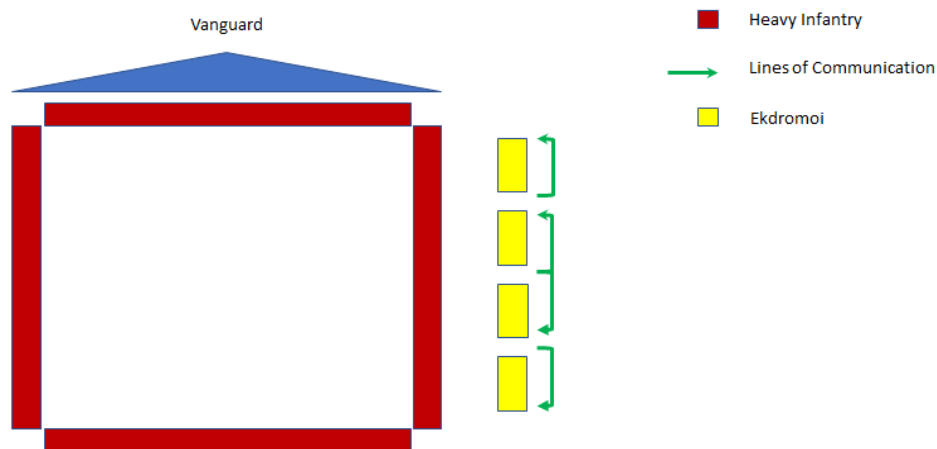[596] See page 162.

3) _Micro communications_

Figure 28: Micro Communications.

The third and final form of communication within the _plaision_ was far more localized than the ones we addressed so far. Apart from the broad operations of each flank, the hollow square often saw the deployment of smaller groups of soldiers that sometimes operated outside of the normal command- and control-structure, and thus required their own level of tactical communications.

The Lacedaemonian army placed great emphasis on such units. One of Brasidas' first actions during the battle of Lyncestis was to create two different detachments that would stand apart from the rank and file. He thus organized a body of three hundred picked men, and gathered the army's fastest hoplites into a separate group called the _ekdromoi_. The picked men were to act as a reserve force for the rearguard and took their orders exclusively from Brasidas.[597] The _ekdromoi_, on the other hand, were told to sally out at their own discretion, and pursue the enemy wherever the pressure was highest. We do not know whether the _ekdromoi_ were distributed evenly throughout the flanks of the square, or drawn up into an independent body. Both options had their merits: a few dedicated light hoplites on all four sides of the _plaision_ would enable each flank to react immediately against an attack, whereas a distinct and

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[597] Thuc. 4.125.3.

separate corps would allow the Lacedaemonians to use all of their light hoplites in a single counter-attack.[598] Regardless of which formation the Lacedaemonians adopted, the mission remained the same: a few skirmishing hoplites were to sally out from the safety of the square and pursue the enemy.

Contrary to Brasidas, the Athenians and the Ten Thousand did not immediately organize any specialized corps. This is particularly odd as far as the Athenians are concerned, considering their previous use of small groups of *logades* during the siege of Syracuse.[599] The retreat ought to have been the perfect opportunity to redeploy such units, though the chaos that reigned throughout the army could reasonably explain why the Athenians apparently failed to make use of their picked-men.[600]

Both armies eventually created their own specialized divisions, though they differed somewhat from the Lacedaemonian *ekdromoi*. Thucydides provides few details concerning the Athenians. The first recorded case of Athenian sally tactics possibly occurred on the fourth day of their march when the Athenians sent some of their men to prevent the Syracusans from building a wall to block their retreat.[601] It is, however, uncertain whether this was a small-scale sally similar to the ones carried out by the

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[598] The Ten Thousand evidently saw the virtue of both options when it came to light infantry. Xenophon's narrative stresses that both the front and rear of the hollow square contained skirmishers: Lee 2007, 56. They were thus in a position to counter-attack without outside aid: Xen. *Anab.* 3.4.3-5; 3.4.43. Nevertheless, the mercenaries also kept a reserve force of peltasts (Xen. *Anab.* 3.4.43; Lee 2007, 54, 160), and later of hoplites (Xen. *Anab.* 3.4.21; Lee 2007, 160) at the centre of their formation. Lee argues that the Ten Thousand would have been forced to shift and share their light infantry around, since the six mercenary contingents that made up their army were all unequal in numbers: Lee 2007, 54–56.

[599] Thuc. 6.100.1-3; 6.101.4. Both of these actions seem to prove that the *logades*, much like the Lacedaemonian *ekdromoi*, were well suited to execute operations far away from the safety of their phalanx. For a recent re-examination of the *logades*: Konijnendijk 2018, 152.

[600] See n. 568 for a possible exception.

[601] Thuc. 7.79.4.

Lacedaemonians, or a more conventional attack.[602] The fifth day, however, provides clear evidence of sally tactics.[603]

> When they advanced the next day the Syracusans surrounded and attacked them on
>
> every side, and disabled many of them, falling back if the Athenians advanced and coming
>
> on if they retired (Thuc. 7.79.5. Crawley 1910).

The Ten Thousand, on the other hand, realized the value of sallies after their first engagement and adopted them as a staple of their retreat.[604] Additionally, Cyrus' mercenaries seemingly went one step further by making use of combined-arms tactics, whereas the Lacedaemonian peltasts and the Athenian skirmishers and cavalry are never mentioned in the narrative.[605] Of course, we must once again bear in mind Thucydides' possible omissions, but we nevertheless cannot point to any confirmed instance of combined-arms warfare in his description of either events.

At first, sally tactics might sound deceptively simple. However, much like marching, they carried significant complications that could only be overcome through solid communications. Firstly, we must not imagine that a sally was a maddened charge.[606] Any troops dedicated to such counter-attacks would

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[602] Cf. Xen. *Anab.* 4.1.26 – 4.2.2: the Ten Thousand organize a detachment of some two thousand men to take an elevated position from the Persians. While these soldiers were certainly conducting irregular warfare, in the sense that they left the rest of the army to dislodge a Persian garrison in the middle of the night, their action was more of an assault rather than a sally. If the Athenian attack carried out on the fourth day of their retreat was anything like the actions described by Xenophon, then we cannot say that the Athenians were making use of sally tactics from the fourth day. Hutchinson (2006, 163), and Ray (2009, 231) both seem to suggest an attack, rather than a sally.

[603] Kagan 1981, 344.

[604] Xen. *Anab.* 3.3.7-10.

[605] Xen. *Anab.* 3.3.14-20. This combined-arms approach raises questions about the type of hoplites the Ten Thousand would have used in their sallies. Since the mercenaries were using cavalry and skirmishers alongside their spearmen, one would assume they could afford to make use of heavier hoplites than the Lacedaemonian *ekdromoi* to add more impact to their assaults. Their mounted troops and skirmishers would provide speed and mobility, while the hoplites would catch up and finish the job: Xen. *Anab. 4*.6.25. The fact that Xenophon felt it necessary to specify that, at least on one occasion, he did employ the youngest men under his command could suggest this might have been the exception rather than the norm: Xen. *Anab.* 4.2.16.

[606] Though this could sometimes happen: Xenophon's first assault might have simply been a mad dash of troops: Xen. *Anab.* 3.3.8. Likewise, the charge of Brasidas' picked men may have been equally chaotic and unruly, with speed and aggression winning over order and caution: Thuc. 4.128.1. Aggression was not necessarily a poor military choice: Xenophon's assault failed because raw violence could never hope to overpower disciplined Persian skirmishers who

almost certainly be outnumbered by the enemy, meaning that any rashness would have seen them overwhelmed and killed, as sometimes happened to victorious generals.

For a visual representation of what these sallies might have looked like we can turn to the tactics adopted by modern riot police. Riots in the western world often involve heavily armed and armoured men using shield-wall tactics against large groups of skirmishers. Footage of Ukrainian officers chasing after protesters shows how the Ukrainian '*ekdromoi'* stay close to one another when sallying out, never straying more than a few meters away from each other.[607] Towards the end of the footage, however (mark 3:10), one rifleman overextends himself and forces another officer to come to his rescue. The protesters nevertheless manage to catch up with them before they can re-join the line. These officers would have likely lost their lives in the context of an ancient battlefield. The *ekdromoi*, therefore, could easily be caught and slain if they acted brashly and individualistically.

Yet apart from the obvious physical danger involved in leaving the square to pursue a faster opponent, and then retreating back to safety,[608] sallies also exposed the men to a psychological threat called 'tunnel vision'. Tunnel vision is a natural reaction of the human body that causes a person to lose his peripheral vision during times of extreme stress, and concentrate only on what lies directly ahead of them. This symptom can occasionally occur as a natural sight defect,[609] but also commonly manifests during battle, or other high stress situations involving physical threats: the soldier, or victim, will focus all of his attention on the threat directly in front of him, to the detriment of his surroundings.[610]

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had no reason to sit still. Brasidas' assault, on the other hand, succeeded because the Illyrians were trying to hold a static position.

[607] See video titled 'Ukrainian Special Police Charged Rioters' at the 2:30 mark (https://sotospithis.wixsite.com/website). Viewer discretion is advised.

[608] The longer the pursuit, the longer the troops would have to retreat back to their original positions, exposing themselves to harassment from their would-be victims. For the dangers of harassment when retreating from a sally: Thuc. 7.79.5; Xen. *Anab.* 3.3.6-10.

[609] The Oxford Dictionary defines tunnel vision as 'Defective sight in which objects cannot be properly seen if not close to the centre of the field of view' and 'The tendency to focus exclusively on a single or limited objective or view.'.

[610] Thucydides and Euripides both reference this phenomenon: Thuc. 7.44.1; Eur. *Supp*. 855. Dr Claudia Herbert, the clinical director for The Oxford Development Centre, a psychology consultancy specialising in stress and trauma

Here I may add my own limited experiences in the modern Hellenic army to further illustrate this point. As part of my training, I took part in several mock assaults. These exercises were carried out using both blank and live ammunition by a small squad of eight men, one of which acted as squad-leader. Much like the *ekdromoi*, our objective was to attack a position by advancing a considerable distance away from our supporting elements. The most important moment came at the end of the assault, when the squad was to slowly advance as one and take the objective.[611] The purpose of this steady advance was to avoid friendly-fire and isolation. This is where I personally experienced the effects and dangers of tunnel vision. Advancing at such a slow pace might sound elementary, but even basic tasks become deceptively challenging under any amount of stress. Consequently, I often found myself inadvertently advancing far ahead of my squad because I was too captivated by the task ahead of me. The squad leader's primary duty during this final stage was to break the psychological effect of tunnel vision, and ensure that none of us broke rank, using nothing more than vocal orders. The fact that every single member of our squad experienced tunnel vision throughout the repetitions of the exercise goes to show how human nature can interfere on the battlefield. Furthermore, unlike the Brasideans, the Athenians, or the Ten Thousand, our own exercises did not involve any actual danger, or even any real sense of urgency. Regardless, we still struggled to perform something as simple as walking in line. The specialist troops of the hollow square, on the other hand, were fighting for their lives and under poor conditions. As such, we cannot imagine

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therapy, described this phenomenon as a form of dissociation and has treated several soldiers suffering from eye defects caused by shock. During our discussion, she explained that there are four ways to respond to threat: fight, flight, tonic immobility, or extreme compliance. Should a person stand and fight, parts of their brain will shut down in order to divert chemicals to those parts of the body that need it most. As a result of this exchange, a person will lose their peripheral vision and hyper-focus on the threat directly in front of him. Herodotus describes a more severe case of this psychological effect during the battle of Marathon where an Athenian soldier was rendered blind despite receiving no physical wounds: Hdt. 6.117.1. This phenomenon is also well-attested in modern warfare, and Dr Claudia Herbert has treated patients suffering from it as well. Lawrence Tritle (2010, 100) is sceptical about Thucydides and Euripides' assertions, and points to cases such as Amphipolis where Brasidas' men were able to carry him off the field: Thuc. 5.10.8. This example, however, does not seem enough to dismiss well-attested psychological reactions to shock.

[611] The *ekdromoi* would have presumably adopted a steady run, closer to the Ukrainian riot police: see n. 607.

that these men would not have also fallen prey to the psychological effect of tunnel vision. The same basic instinct that affected my squad, as well as countless modern soldiers, must have been at work on the ancient battlefield, unless we accept the Greeks were somehow immune to well-attested psychological phenomena.[612] Of course, tunnel vision cannot have been restricted to sallies alone, and we must assume that soldiers in the phalanx must have fallen prey to it as well.[613] Yet the relative rigidity of the phalanx could better protect a soldier from the worst consequences of tunnel vision, or at the very least lessen its effects, while the necessarily looser formations the *ekdromoi* must have adopted during their sallies could only exacerbate them.

What this meant for the Greeks sallying from the square was that every man operating under such conditions must have had a tendency to focus their attention on their target and pursue it doggedly, thus ignoring their surroundings and breaking rank. As we saw, however, such actions could have fatal consequences. The only way the *ekdromoi* and their counterparts could have operated successfully is if they were led by individual officers of their own, whose role would be to communicate with their men and curb their enthusiasm or reticence.[614]

Modern footage from the Hong Kong riots shows this type of leadership in action: at some point during one of the street fights, an officer taking part in a sally breaks formation and recklessly charges ahead. His superior tries to regain control, eventually striking his subordinate's shield to reign him in.[615] Officers in charge of a sally would not necessarily need to be particularly competent as much as they

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[612] The brutal Spartan training might have been enough to condition a man to ignore such psychological effects: Rawlings 2007, 92–93. Plutarch claimed that in a Spartan phalanx 'neither fear nor excessive fury is likely to possess men so disposed, but rather a firm purpose full of hope and courage' (Plut. Lyc. 22.3, Perrin 1955).

[613] See the case of Pelopidas: Diod. Sic. 15.80.5; Plut. *Pel*. 32.6. Perhaps this was one of the reasons why most Greek phalanxes charged the enemy at a run despite the risk of breaking their formation, see: Rawlings 2007, 92. See Konijnendijk's examination of the tactical limits of the phalanx (2018, 55) where he states that 'a combination of terror and bloodlust brought on an urge to charge screaming into the fray'. Schwartz (2009, 234) also points to the cases of 'friendly fire' that sometimes occurred during hoplite clashes as 'proof of the fundamental seclusion of any hoplite'.

[614] For an example of line soldiers curbing each other's excitement while on pursuit: Xen. *Anab.* 1.8.19.

[615] See video titled '*Hong Kong Riots*' (https://sotospithis.wixsite.com/website). Viewer discretion is advised.

would need to be forceful and loud. Their duty was not tactically demanding and, as such, any level-headed man capable of shaking a fellow soldier from his battle-induced stupor could realistically do the job.

4) *Miscommunication in the hollow square*

As noted previously, the most detailed accounts of tactical communications in the *Anabasis* concerns two cases of miscommunication.[616] These instances have already been examined (see page 139), but we will include them once more below for further study. Once again, we must emphasize that Xenophon was quick to affirm these cases were the exception rather than the norm.[617] Nevertheless, it is worth considering the reasons behind these lapses, seeing as both of them had negative impacts on the army's performance: during the incident of the hill, Xenophon failed to bring his peltasts to the front because he was not given a valid reason to weaken the rear while the enemy was closing in; and during the incident in the mountains Xenophon had to personally go to Cheirisophus to learn why the Spartan refused to wait for the rearguard.

These two incidents, however, might have been caused by personal choice rather than a faulty system of communication. The fact that Cheirisophus twice sent incomplete orders to the same man suggests motive rather than happenstance, and I would rather suggest that personal enmity and competition were the reason behind both cases.

Trust is key to any form of effective communication, and even men thrust in the most dangerous of circumstances and the highest of positions can be surprisingly petty when communicating with, or through, people they do not approve of. Nicias, for example, did not trust his messengers when sending word back to Athens, and insisted on writing down his report.[618] Cleon also openly distrusted the

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[616] Xen. *Anab.* 3.4.38-39; 4.1.17.
[617] See page 138.
[618] Thuc. 7.8.2; Green 1971, 237. Disloyalty on the part of messengers also troubled Aeneas Tacticus: 31.4-5.

messengers that brought news of the events at Pylos, though he only did so in order to shift blame away from his earlier political actions.[619]

Perdiccas also proved how crucial trust could be in military communications by possibly using Brasidas as a human shield, and abandoning him without a single word of warning, seemingly out of spite for his past insubordination.[620] Thucydides himself does not state whether Perdiccas actively betrayed Brasidas or whether he was simply swept off the field by his fleeing army. Hutchinson and Lendon both give Perdiccas the benefit of the doubt, unlike Wylie whose cynical approach seems the likeliest one based on the many previous instances of friction between Perdiccas and Brasidas.[621] It should also be noted that Brasidas had deserted the Macedonians almost in the exact same way during their first expedition against the rebels.[622] Perdiccas also signed a peace treaty with the Athenians immediately after Lyncestis, supposedly out of hatred for Brasidas.[623] Personal relations and distrust could, therefore, affect the dispatch, contents, and reception of a message.

A) *The Carduchian mountains and the Athenian separation.*

We will first examine the case in the mountains, since Cheirisophus' refusal to explain why he would exceptionally not wait for Xenophon could also possibly explain how and why the Athenian rear and van split during their ill-fated night march.

> When the enemy pressed them hard, Xenophon would send word to Cheirisophus to wait
>
> a little. Now while Cheirisophus was accustomed to wait whenever such word was given,

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[619] At least according to Thucydides: Thuc. 4.27.3.
[620] See n. 395.
[621] Hutchinson 2006, 84–85; Lendon 2010, 349. *Contra* Wylie 2007, 434. King Perdiccas had been asking for Brasidas' help since the very start of the expedition: Thuc. 4.79.2; 4.83.1-3; M. Roberts 2015, 171. The Macedonian king and the Spartan officer did not see eye to eye (Hutchinson 2006, 84; Kagan 2003, 180; Lendon 2010, 333), and their relationship soured from the very beginning after Brasidas refused to follow Perdiccas' orders: Thuc. 4.83.5-6; M. Roberts 2015, 172, 174–75; Tritle 2010, 98; Wylie 2007, 428.
[622] Thuc. 4.83.6; Hornblower 1996, 274; M. Roberts 2015, 175, 195.
[623] Thuc. 4.132.1.

on this occasion he did not do so, but led on rapidly and passed back the order to keep up

with him. It was evident, therefore, that something was the matter, but there was no time

to go forward and find out the reason for his haste; consequently the progress of the

rearguard became more like a flight than a march (Xen. *Anab*. 4.1.16-17. Brownson 1968a)

The *Anabasis* is filled with allusions that imply Xenophon and Cheirisophus were often at odds

with each other, despite the former's apparent efforts to suggest otherwise.[624] Xenophon claimed, for

instance, that he only clashed with his leading officer once,[625] despite this being a provable lie:

Cheirisophus and the rest of the generals blamed Xenophon during the failed first skirmish,[626] Xenophon

blamed the Spartan for the loss of his two men;[627] and in another telling exchange both leaders possibly

insulted each other's upbringing and social background in front of their colleagues.[628]

Perhaps, then, Cheirisophus did not explain his hurry because he thought the information would

be important to Xenophon's peace of mind, but entirely unnecessary for him to carry out his orders.

Furthermore, Cheirisophus' curt orders cannot be dismissed through any presumed laconism on his part,

considering Xenophon's insistence that prior to this incident he 'was accustomed to wait whenever such

word was given', and that both leaders 'continually aided one another and took zealous care for one

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[624] Xenophon claimed to have nominated the Spartan as de facto leader of the army: Xen. *Anab.* 3.2.37.

[625] Xen. *Anab.* 4.6.3.

[626] Xen. *Anab.* 3.3.11.

[627] Xen. *Anab.* 4.1.18.

[628] Xen. *Anab.* 4.6.14-19. I add here the word 'possibly' because it is impossible to accurately convey irony and intonation in a written text: the Greeks were trying to make their way through enemy-held mountains when Xenophon proposed that they should 'steal' as much terrain as possible from the enemy without being detected. He then turned to Cheirisophus and told him he should do this since Spartans were expert thieves from childhood by virtue of their training. Cheirisophus countered that Xenophon should lead instead, since the Athenians were the best at stealing public funds. When Xenophon accepted, Cheirisophus immediately second-guessed him and ordered him to call for volunteers instead of abandoning his post at the rear, a possible jab at Xenophon's earlier actions during the first skirmish where the Athenian had needlessly put his life at risk much to the displeasure of his peers. An optimist could possibly see this exchange as nothing more than amicable banter, and Cheirisophus' last comment as concern for the wellbeing of a dear colleague, but I would suggest a more cynical reading. See Lee (2008, 157) for another instance where Xenophon might have glossed over possible instances of friction between the leaders of the army.

another' after it.[629] It seems, therefore, that this spirit of sensible cooperation was the usual nature of Cheirisophus' command style, and that the case of miscommunication was simply enmity winning over common sense on at least one recorded occasion. Xenophon's depiction of Cheirisophus throughout the *Anabasis* oscillates between half-compliments and veiled criticism. Perhaps the author, who often emphasized his own importance in the expedition, felt he could not take credit for every single positive event of the retreat. As such, the best way for Xenophon to bolster his own image would be to occasionally acknowledge his de facto leader, despite their differences.

Leaving a rival behind was certainly not unheard of in Greek warfare: aside from the aforementioned case of Perdiccas and Brasidas, Pausanias had also knowingly abandoned his colleague, Amompharetus, at Plataea, after the latter refused to retreat with the rest of the army. Both leaders argued intensely through the night before Pausanias eventually left without him.[630]

In light of no less than three recorded instances where one part of the army was left behind because of enmity between high-ranking officers, we should perhaps reconsider our judgment of the Athenian army and the cause behind their own separation. Rather than accept that the Athenian square was split in two due to confusion and size, we should instead consider the possibility that they too suffered because of bad blood between their officers.

According to Thucydides, the blame for the separation of the Athenian *plaision* should be placed on the army's size, coupled with the inevitable confusion of night marches.

> [The Athenians] accordingly lit a number of fires and set out by night. Now all armies, and
> the greatest most of all, are liable to fears and alarms, especially when they are marching
> by night through an enemy's country and with the enemy near; and the Athenians falling
> into one of these panics, the leading division, that of Nicias, kept together and got on a

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[629] Xen. *Anab.* 4.1.18; 4.2.26. Translations by Carleton L. Brownson.
[630] Hdt. 9.53.2-57.1

good way in front, while that of Demosthenes, comprising rather more than half the army,

got separated and marched on in some disorder (Thuc. 7.80.3-4. Crawley 1910)

The night march, however, did succeed in avoiding the Syracusans for a time,[631] which means that Nicias and Demosthenes were, theoretically, in a position to notice and deal with any emergency without external distractions. Furthermore, Thucydides claims that Nicias' vanguard kept their order and made good progress, while only Demosthenes' rearguard fell into confusion. Had both sections of the army been in complete disarray, or under attack, then we might accept a case of miscommunication out of hand, but it seems unlikely that Nicias marched unopposed, and in good order, while failing to notice the fact that half the army was being left behind. We do not know how close the rearguard and the vanguard were at the moment of their separation, but Thucydides informs us that Nicias was 9 kilometres ahead of Demosthenes when the latter was intercepted by the enemy.[632] This action, however, took place during the morning after the separation (περὶ ἀρίστου ὥραν).[633] The vanguard, therefore, marched in good order for several hours while the rearguard lagged behind, thus creating the large gap. Demosthenes and Nicias must have been much closer to each other during the separation: the Syracusans were previously unable to separate the rearguard from the rest of the formation,[634] but now had no difficulty surrounding them.[635] The only confirmed instance of miscommunication within the Athenian army occurred the day after the destruction of Demosthenes' rearguard: the Syracusans sent word to Nicias, informing him of their victory, but Nicias sought to confirm it for himself, evidently unaware of his colleague's fate.[636] It took, however, all day for the Syracusans to defeat the Athenian rearguard, all while Nicias was still marching ahead, thus further increasing the 9 kilometre distance.[637] The Syracusan

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[631] Thuc. 7.81.1.
[632] See page 138.
[633] Thuc. 7.81.1.
[634] Thuc. 7.79.5.
[635] Thuc. 7.81.2.
[636] Thuc. 7.83.1.
[637] Thuc. 7.82.1-3.

messengers reached him the morning after the battle, some 24 hours after they had intercepted

Demosthenes. The fact that Nicias was unaware of Demosthenes' defeat should, therefore, not be taken

as proof that he would have also been unaware of their separation. The rear and van must have been

relatively close to one another at the moment of the separation, which means the split was possibly the

result of a decision on Nicias' part, not faulty communications.

Both Athenian generals conducted war in radically different ways, with Nicias favouring caution

and Demosthenes embracing risk.[638] From the moment Demosthenes arrived in Sicily both leaders were

of different minds: Demosthenes immediately wanted to go on the offensive, while Nicias maintained that

a retreat was in order. Demosthenes seemingly saw Nicias as an example to be avoided, and was keen on

taking all the decisions he felt Nicias should have made from the start.[639] Nevertheless, after his own

attack ended disastrously, Demosthenes advocated for a naval retreat while it was still possible. Nicias,

however, suddenly changed his mind, dragging the siege on.[640] While Nicias was initially willing to debate

the matter with his colleagues, he would soon adopt a far more stubborn attitude after a lunar eclipse.[641]

A particularly pious man, Nicias refused to even consider the possibility of a retreat until an excruciating

twenty seven days had passed, as dictated to him by his soothsayers.[642] Demosthenes remained adamant

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[638] Nicias had opposed the Sicilian Expedition from the start, and had always waged war cautiously: Hanson 2005, 217; Kagan 2003, 293; J. T. Roberts 2017, 206–7. He also actively avoided risks or difficult commands for fear of angering the Athenian people, who often punished defeated generals: Kagan 2003, 131; Plutarch *Nicias* 6.2; Thuc. 3.98.5; Thuc. 6.61.6. The Syracusans were aware of Nicias' character flaws, and tricked him into inaction: Kagan 2003, 316; Thuc. 7.73.3; Diodorus 13.18.5. His command of the Sicilian expedition was severely criticized in Athens (Paus. 1.29.11-12), and modern scholarship has been no kinder to his memory: Green 1971, 237–38; Hanson 2005, 212–13, 216; Hutchinson 2006, 137–38, 155; Kagan 2003, 294–95, 321–23; J. T. Roberts 2017, 218–19. Demosthenes, on the other hand, was very aggressive: Thuc. 3.94.3-95.3; 4.3.4; 7.42.3; Kagan 2003, 129; Lafargue 2015, 53. According to Roisman (1993, 11), Demosthenes is often portrayed in a positive way in modern scholarship because of the unusual emphasis he placed on light infantry and surprise attacks. Roisman notes, however, that Demosthenes' defeats could also be attributed to recklessness (1993, 71–74), particularly to a tendency of planning beyond his means.

[639] Thuc. 7.42.3; Green 1971, 281–82, 290.

[640] Thuc. 7.47.3-48.1; Brice 2013, 637; Hutchinson 2006, 154; Kagan 2003, 308–10; J. T. Roberts 2017, 211–12.

[641] Thuc. 7.50.4; Kagan 2003, 310–11; Ray 2009, 227.

[642] This inexplicably long delay has led Peter Green to surmise that Nicias' soothsayers might have been under Syracusan pay: Green 1971, 298. According to Green the average waiting period after an eclipse was three days

that the army should leave at once, and one can only imagine how enraged he must have been at this criminal waste of time and opportunity.[643]

Nicias' new-found zeal was due to self-preservation, not bravery: he would soon tell his fellow officers that they all stood a better chance of avoiding censure back home if they stayed in Sicily and hoped for the best.[644] Nicias was putting all his hopes on information from Syracusan informants, who claimed the city would soon capitulate due to internal division and economic hardship.[645] While this may have truly been accurate information, as Thucydides claims it was,[646] the fact that Nicias refused to share his intelligence with his colleagues and instead simply chose to hint at it further emphasizes the level of distrust and dislike that reigned in the Athenian camp.[647] It would seem reasonable to suggest that he kept the details of his informants to himself in order to claim all the glory of the fall of Syracuse.

Demosthenes and Nicias, therefore, had good reason to dislike each other intensely, and Nicias had proven by the time of the retreat that he was not above putting his own interests and life above those of his men, an accusation that Plutarch later levelled against the old soldier.

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instead of twenty-seven: Plut. *Nic*. 23.6; Diod. 13.12.6. He also cites the writings of the third century seer Philocorus, who claimed that a lunar eclipse should be interpreted as a favourable omen for a retreating army, to further emphasize how suspicious this delay was: Plut. *Nic*. 23.5. This last argument is, perhaps, not very convincing, since divination was not an established science with universal interpretations: Kagan 1981, 323. What is, however, beyond doubt is the fact that the Syracusans fully exploited those twenty-seven days: Thuc. 7.51.2. Furthermore, Thucydides described another instance of Syracusan counter-intelligence when they used double-agents to further delay the retreat: Thuc. 7.73.3-4. This second incident could potentially support Green's statements. Hutchinson (2006, 155, 161) uses the actions of the double-agents to explain Nicias' previous delays and poor decisions, and claims that Syracuse may have maintained a counter-intelligence ring specifically designed to fool Nicias. Kagan similarly declares that the Syracusans probably employed spies to sabotage the Athenian war effort: Kagan 1981, 331. Thucydides also alluded to a possible Syracusan spy-network active at the start of the Sicilian expedition: Thuc. 6.45.1.

[643] Thuc. 7.49.2; Hutchinson 2006, 155–56.

[644] Thuc. 7.48.3-4; Brice 2013, 637; Kagan 2003, 293–94, 309–10, 322; J. T. Roberts 2017, 218–19.

[645] Thuc. 7.49.1.

[646] For Syracusan informants providing valuable and accurate information: Thuc. 6. 64. 1. For Syracusan internal-division: Thuc. 6.103.4.

[647] Thuc. 7.49.4; Green 1971, 282. Peter Green suggests that at least on one occasion Nicias was justified in keeping his intelligence to himself, for fear that the information might leak and reach the ears of the Syracusans. This argument falls rather short, however, once we remember how easily Nicias was fooled by Syracusan double-agents (Thuc. 7.73.3-4), clearly military secrecy was the last thing on the old general's mind. Whether this was one of Nicias' character traits, or the unfortunate and inevitable result of exhaustion, sickness, and old age, we cannot know.

When he saw that his generalship involved him in great peril, then he was content to betray the common good at the price of his own safety (Plut. *Comp*. *Nic*. *Crass*. 3.2. Perrin 1955)

Consequently, the failure of the Athenian *plaision* does not seem to have been the result of faulty communication. Nicias's section of the army had kept its order and was marching unimpeded, and could not have failed to notice the absence of over half their numbers. It would instead seem more likely that Nicias was aware of the separation and opted to carry on, knowingly abandoning his colleague behind much like Cheirisophus, Perdiccas, and Pausanias.

B) *The Persian hill*

Unlike the miscommunication in the Carduchian mountains, the information omitted by Cheirisophus during the incident on the Persian hill was vital since he gave Xenophon no real reason to weaken the rear while it was still threatened.

As soon as Cheirisophus observed that the spur was already occupied, he summoned Xenophon from the rear, directing him to come to the front and bring the peltasts with him. Xenophon, however, would not bring the peltasts, for he could see Tissaphernes and his whole army coming into view; but he rode forward himself and asked, 'Why are you summoning me?' Cheirisophus replied, 'It is perfectly evident; the hill overhanging our downward road has been occupied, and there is no getting by unless we dislodge these people (Xen. *Anab*. 3.4.38-39. Brownson 1968a)

As the rearguard was under threat when Cheirisophus made his request, Xenophon had every reason not to dispatch his peltasts: his embarrassing performance during the first skirmish was due to a lack of adequate skirmishers (Xen. *Anab.* 3.3.7). A comfortable supply of light infantry was indispensable

to men facing the Persians. Xenophon's decision thus makes perfect sense, and Cheirisophus himself could not argue with it.[648]

Yet this exchange might also be further proof of dissension and enmity within the ranks of the Ten Thousand. Their army was made up of several contingents of unequal strength, something which, according to Lee, would have forced them to exchange manpower to ensure their hollow square was relatively well proportioned.[649] Lee surmises that this would not have sat well with many of the officers, most of whom had come to their positions only recently after the murder of their predecessors and had yet to cement their authority over their men.[650] Xenophon would have been particularly hard pressed to do so, since by his own admission he had first joined the army as an observer rather than a soldier.[651]

The incident of the hill seems to illustrate how officers could jockey for possession of valuable manpower. Indeed, the events that followed strongly suggest that Cheirisophus had actually sought to strengthen his own position at Xenophon's expense.

> Then Xenophon, with the remark that he was the younger, elected to go [capture the hill],
> but he urged Cheirisophus to send with him some troops from the front; for it would have
> been too long a journey to bring up men from the rear. Cheirisophus accordingly sent with
> him the peltasts at the front, *replacing them with those that were inside the square* (Xen.
> *Anab*. 3.4.42-43. Brownson 1968a. The emphasis is my own.)

The Ten Thousand had sensibly kept a pool of skirmishers at the centre of the formation to act, presumably, as a reserve force for whichever flank leader might need additional light infantry support

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[648] Xen. *Anab*. 3.4.40.
[649] Lee 2007, 54.
[650] Lee 2007, 54. See n. 465.
[651] Waterfield 2006, 121.

without weakening any of the other flanks. Why then would Cheirisophus order Xenophon to lend him his own skirmishers if not to try and weaken a rival?

If true, Cheirisophus' gamble would have been based on very thin odds, especially if his request was as dry as Xenophon cared to describe it. The Spartan must have known how valuable those skirmishers were. It thus seems highly unlikely he would not have given Xenophon a very good reason to send for them. As such, rather than accept that Cheirisophus' messenger inexplicably failed to give Xenophon vital details, we should perhaps assume that the Athenian general was made entirely aware of the situation, but simply refused to comply with such an unreasonable demand.

Even though his decision was unimpeachable, Xenophon might have been trying to further justify his refusal by failing to disclose the entire content of his orders to his readers. Furthermore, this could also have been an attempt to downplay the embarrassing display of two Greek generals bickering over lower class soldiery.

Bad blood and competition thus seem to be at the core of every recorded case of miscommunication in the hollow square. In the case of the Ten Thousand, this was apparently limited to only two cases with ultimately no significant impact on the formation's integrity. The mercenaries quickly outgrew the worst of their rivalries, and cooperated effectively enough throughout their campaign.[652] On the other hand, internecine conflict quite possibly led to the Athenians' destruction. As for the Lacedaemonian army, the fact that they were led by a single officer can reasonably explain why not a single case of friction or miscommunication can be found in Thucydides' description of Brasidas' retreat.

Competition, disloyalty, and disobedience were absolutely not limited to the hollow square, however: Greek armies often suffered from such divisions, which in turn significantly impacted their

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[652] Lee believes that the necessities of the march slowly broke down regimental identity, since the Ten Thousand were forced to share their resources and their men regardless of what contingent they originally belonged to: Lee 2007, 48–59.

effectiveness and abilities (see page 105).[653] This fact, however, should not be considered as an argument against Greek methods of communication. Disobedience or unhealthy rivalry is a human error, and while it can often prevent effective communication, the fault lies with the user, not the system.

Conclusions

The three recorded cases of the hollow square offer us a great level of insight into the limits and capabilities of Greek tactical communications, and Classical Greek armies as a whole. A comparative study of all three cases allows us to complement our information and come up with a clearer picture of how this formation worked, and what was required for its successful use.

Firstly, the very first hollow square of the fifth century was half composed of largely untrained and inexperienced militia troops. This would, in turn, suggest that that Greek levies could, at least on occasion, be flexible enough to use hitherto unknown formations. Greek armies seem to have been able to adopt the *plaision* so long as their morale was not shattered, they enjoyed competent and united leadership, and did not contain too many soldiers and camp followers within their ranks.

The hollow square relied on three layers of communication to properly function: inter-flank communications, intra-flank communications, and micro communications. Inter-flank communications ensured the cooperation of all four sides of the square: the vanguard led the rest of the formation and provided information on the lie of the land, while the rearguard kept in touch with the van to ensure the integrity of the square. The role of the wings is unclear. The survival of the flank-leaders was evidently paramount to the survival of the formation. Intra-flank communications ensured the daily running of each flank: among other tasks, subordinate officers helped their flank-leaders in managing gaps, halting or moving the men, and delivering information. No great degree of experience was required to adopt this basic system, only some familiarity with small-scale warfare that could apparently be acquired through

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[653] Konijnendijk 2018, 144.

common activities such as guard duty. Micro communications were to be found within smaller specialist regiments tasked with sallying out of the square. These soldiers had to maintain some order between them to avoid isolation and break the effects of tunnel-vision. This could be ensured through the addition of unskilled, but forceful, officers who could break their comrades' battle-induced stupor.

Despite its complexity and rarity, the *plaision* did not make use of any overtly sophisticated methods of communications, and instead largely relied on the same tools as the more common phalanx, namely vocal orders, and messengers. The fact that these methods were enough to ensure the cooperation of all four flanks under difficult conditions and rough terrain proves that, though primitive, they were undeniably effective, and enough for their users to execute complicated formations.

Nevertheless, despite the many instances of successful cooperation and communication hinted at throughout the narratives of both Thucydides and Xenophon, we may also locate several instances of miscommunication. These cases, however, can all be attributed to internal divisions among the officers of the Athenian army and the Ten Thousand. Their actual tools and methods of tactical communications were not defective, rather the fault lies in human error and unhealthy levels of rivalry or outright enmity.

Part I: Conclusions

There are too many examples of effective tactical communications in the fifth century BC to maintain the idea that Greek armies could not be led effectively on the field of battle. A Greek general of the fifth century might not have been able to lead his troops like Alexander, Pyrrhus, or Caesar, but we can certainly state the following.

There was no rule dictating where a leader should place himself in battle. Many generals obviously preferred to fight at the front, and some may have even been driven to do so despite their wishes in order to meet their soldiers' expectations. Nevertheless, at least some officers chose to lead from the rear, and where thus in a position where they could, theoretically, command their troops, as the actions of men like Pagondas, Myronides, Agis, or Xenophon seem to prove.

This alone did not grant control over the army, as the length of the phalanx coupled with the inevitable visual obstacles of any battlefield would have kept large parts of their forces from their view. Furthermore, if all Greek generals fought on foot, the arms and armour of their own men would have further obstructed them. Nevertheless, a rear-line officer could send and receive messengers more easily than a front-ranker, and could thus both survey and influence an ongoing battle.

Tactical communications were almost always delivered through vocal orders. Despite being primitive by any standard, such a method is not ineffective: vocal orders could sometimes be loud enough for the enemy army to understand, and modern militaries still make prolific use of them in a day and age where warfare has become loud enough to literally deafen the modern soldier. It is a testament to the efficiency of vocal orders that well-funded militaries such as the US army, with the means to transition entirely to radio communications, still choose to carry on in a manner largely similar to ancient Greek warfare when it comes to small-unit communications among their troops.

The Greeks themselves evidently saw the benefit of effective tactical communications well before the fourth century BC, a time usually associated with a presumed rise of Greek methods of communications.

This is visible through the evolution of their protective headgear throughout the fifth century, where a clear shift towards open-faced helmets can be discerned. This transition came at the cost of protection, further suggesting that the Hellenes were willing to actively risk their lives in order to ensure better battlefield cooperation.

Greek generals could either deliver their orders personally or send them via messengers. The former practice was not adopted because of supposedly poor methods of communications, but rather because there came a time when a general was no longer needed at his initial position, or could stand to gain something from moving. This usually related to the morale boost that the general's presence would bring to his troops, as the battle of Oenophyta seems to prove.

A *strategos* could also either place himself at the centre of his phalanx or on either of the wings. The former practice ensured better overall communications with the army, as First Mantinea seems to suggest: king Agis stood with his guard in the middle of his line and sent four different sets of orders, while receiving a fifth message from his right flank. Generals stationed at the wings may have been confident that they could lead regardless of where they were stationed: Lamachus, Pagondas, Lykophron, and Brasidas all noticed events occurring on the other side of their army, either personally or via messengers, and took steps to redress the situation. Furthermore, Greek generals may have considered a station at the wings to be tactically advantageous despite the inevitable increase of their lines of communications: Hellenic manoeuvres almost always involved and targeted the wings, and so the general's presence could ensure that at least one flank of the phalanx would receive and obey his orders. It is certainly striking that Agis, the only general who undoubtedly led from the middle, was also the only one who failed to bring reinforcements from one part of the phalanx to the other. Pagondas' deep phalanx may have also been a way for the general to better communicate with his men, as it provided additional protection and accessibility to messengers, who could easily spot their leader's position from afar.

Some generals, like Pagondas only resorted to mid-battle tactical communications to deal with an unexpected emergency. Others, like Myronides, may have planned their entire strategy around the fact that they could successfully command their troops when the time came. If the accounts of the battle of Oenophyta are correct, then Myronides may have trusted in the fact that his voice could carry all the way across his right flank and to the enemy army, emboldening the former and sowing despair among the latter. King Agis may have also planned both his retreat on the Alesion and his unusual orders at First Mantinea. Furthermore, the retreat on the Alesion indicates that a trumpet signal could be used to bring an army of 9 000 men to a halt anywhere between 27.9 and 102.6 seconds.

Fifth-century generals, however, were apparently only capable of commanding small units during battle. These consisted of either cavalry (Delium), picked troops (Syracuse), experienced line troops and skirmishers (Syracuse and First Mantinea), or regular levies (Solygia and Lyncestis). Only the Spartans attempted to issue orders to their entire army, though the actions of Brasidas' levy troops and Agis' allied soldiers should temper any view on the alleged limitations of non-Spartan, non-elite forces.

Furthermore, Greek tactical communications were clearly effective enough to allow the use of highly demanding formations such as the hollow square. This formation contained at least three levels of communication: intra-flank communications, inter-flank communications, and micro communications. Cooperation was imperative to its survival, and the fact that vocal orders and messengers were enough to ensure it is further proof of their effectiveness.

One of the greatest obstacles to effective tactical-communications was personal enmity, competition, and insubordination within an army. There are many instances where cooperation was hampered because of these reasons, such as Pausanias and Amompharetus, Brasidas and Perdiccas, Nicias and Demosthenes, Xenophon and Cheirisophus, or Agis and his *polemarchs*. Some generals, like Xenophon and Cheirisophus, could work through their differences and limit the damage they inflicted on each other, whereas others, like Nicias, could bring destruction upon their forces. Friction and disobedience could actively prevent the

implementation of tactical commands when they could otherwise have been followed through. This likely stemmed from the absence of what we would now consider a true military hierarchy. Greek generals of the Classical age were usually private citizens temporarily holding a military office before stepping down. As such, they could not discipline or punish their men, essentially their fellow citizens,[654] in the same way modern leaders can. Soldiers and officers could thus act in a manner that we would consider today as grossly insubordinate.[655] The Lacedaemonians themselves seem to have made some use of physical punishment, at least compared to the rest of the Greek world,[656] but even a Spartan king, whose word Thucydides claimed was law on the field of battle,[657] could apparently be questioned. The fact that Agis' disobedient *polemarchs* were tried at Sparta indicates the king could not punish them on the spot (see chapter 2).[658] Yet while friction and insubordination were arguably one of the main obstacles to battlefield orders, they do not reflect a flaw in the *method* of Hellenic tactical communications: when the fault lies with the user the system is not at fault. In short, what truly kept the Greeks back was not an inadequate method of communication, but rather a relative absence of consequence regarding insubordination, at least compared to modern practices. To improve their tactical capabilities on the field of battle, the Greeks would first need to reshape both their society and their concept of military hierarchy before even thinking of improving their actual methods of communications.

In short, a fifth century Greek general could be expected to influence the course of a battle through tactical communications. These examples may fall short of what later forces of Antiquity were capable of, but at least as far back as the Peloponnesian War a non-Spartan general could make use of small units (picked or otherwise) to intervene on the other side of the battlefield, provided he chose not to fight in

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[654] Van Wees 2004, 111.
[655] See n. 454 and Thuc. 7.73.2.
[656] Hornblower 2000, 251–56.
[657] Thuc. 5.66.2-4.
[658] Though we should note that the Spartans were more accepting of discipline and corporal punishment than other Greeks: Van Wees 2004, 110–11.

the front ranks, and provided those units were not engaged themselves. Archaeological finds suggest that

the Greeks actively took risks to ensure their equipment allowed for tactical communications: a good

indication of their mind-set regarding the issue. While primitive, Greek tactical communications were

sufficiently effective to allow the adoption of hitherto unknown formations, even by armies half

composed of levies. We must look beyond the unfortunate silence of our sources to gather this

information, but no understanding of Hellenic warfare is possible without an examination of their

transmission of orders.

Part II: Strategic Communications

Chapter 4: Fire-Signals

Fire-signals were widely used in the Greek world.[659] Aeschylus' *Agamemnon* begins with the lamentations of a watchman patiently waiting for a fire-signal bearing news of the fall of Troy, suggesting that such methods were well-known in the early fifth century BC.[660] Yet despite this common use, very little information survives on how these signals actually worked. In the fourth century BC, Aeneas Tacticus wrote the first known Hellenic treatise on military communications, and even came up with an innovative device of his own known today as the hydraulic telegraph. His work, however, only survives through the writings of Polybius, who provides us with our first detailed description of two forms of Greek fire-signalling methods: Aeneas', and his own improved system.[661] Polybius claimed that his investment in the topic stemmed from the fact that none of his predecessors had ever taken an interest in fire-signals before him.

> The method of signalling by fire, which is of the highest utility in the operations of war,
> has never before been clearly expounded; and I think I shall be doing a service if I do not
> pass it over, but give an account of it adequate to its importance (Plb. 10.43.2. Shuckburgh
> 1889)

This lack of information, coupled with Polybius' unflattering summary of Greek communications prior to his era (see below), has formed the basis for our knowledge, and assumptions, on fire-signalling practices in the Greek World.[662] The purpose of this chapter will be to prove that, contrary to Polybius'

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[659] Ceccarelli 2013, 86–88; Forbes 1958, 171.
[660] Aesch. *Ag*. 5, 20, 280-290.
[661] Liddell 2017, 127; Plb. 10.43-47. A brief reference to Aeneas' lost texts can be found in his surviving work *How to Survive Under Siege* (7.4).
[662] See Hershbell 1978, 84.

assertions, the Greeks may have been capable of communicating unforeseen events through their fire-signals in the fifth century BC.

Fire-signals have the distinct advantage of speed over any other conventional method of communication. Provided a *polis*, or general, had taken the necessary steps, one could theoretically relay a message from one fire-station to the next and deliver information over any form of terrain, including seas and mountain ranges, in a very short period of time.[663] A fire-signalling network thus consisted of at least two points in visual range of one another. As described by Aeschylus, each station signalled to its neighbour, thus carrying a message across the line until the information reached its final destination, most usually a city or an army.[664]

Hephaestus, from Ida speeding forth his brilliant blaze. Beacon passed beacon on to us by courier-flame: Ida, to the Hermaean crag in Lemnos; to the mighty blaze upon the island succeeded, third, the summit of Athos sacred to Zeus; and, soaring high aloft so as to leap across the sea, the flame, travelling joyously onward in its strength the pinewood torch, its golden-beamed light, as another sun, passing the message on to the watchtowers of Macistus. He, delaying not nor carelessly overcome by sleep, did not neglect his part as messenger. Far over Euripus' stream came the beacon-light and signalled to the watchmen on Messapion. They, kindling a heap of withered heather, lit up their answering blaze and sped the message on. The flame, now gathering strength and in no way dimmed, like a radiant moon overleaped the plain of Asopus to Cithaeron's ridges, and roused another relay of missive fire. Nor did the warders there disdain the far-flung light, but made a blaze higher than their commands. Across Gorgopus' water shot the light, reached the mount of

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[663] Fire-signals over sea: Thuc. 3.80.2. Over sea and mountains: Aesch. *Ag*. 281-310. The Argive expedition, analysed in detail in chapter 5, offers another example of fire-signals across mountain ranges.
[664] Ober 1985, 197, 205.

Aegiplanctus, and urged the ordinance of fire to make no delay. Kindling high with unstinted force a mighty beard of flame, they sped it forward so that, as it blazed, it passed even the headland that looks upon the Saronic gulf; until it swooped down when it reached the lookout, near to our city, upon the peak of Arachnaeus; and next upon this roof of the Atreidae it leapt, this very fire not undescended from the Idaean flame (Aesch. *Ag*. 281-310. Smyth, Herbert Weir 1926)

Such a chain of forts, stations, or towers allowed one to circumvent visual obstacles and physical barriers. If, for example, a mountain separated a city from a watchtower, one could place a second watchtower on the mountain itself and link both places.[665] This basic system was repeated across the world and throughout the ages, but each civilization brought its own unique touch and developed methods that diverged widely across the globe.[666] The Byzantines, for instance, used a relay-system of beacons to connect Constantinople with the fortress of Loulon (near the modern-day village of Hasangazi). The meaning of their signals depended on the hour they were raised: a message sent at 12:00 pm could mean 'send help', while another sent at 06:00 am could mean 'send money'. This line of communication stretched over some seven hundred twenty kilometres, yet a message could still be relayed from one end to the other in under an hour.[667]

Expediency, however, came at the cost of clarity: no matter how detailed and sophisticated a fire-signal is, it will never convey information as clearly as a person or a missive. This was Polybius' chief criticism against earlier methods of strategic communications: the Greeks, allegedly, were unable to

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[665] See chapter 5.
[666] See Earley-Spadoni 2015, 22–23.
[667] Foss 1991.

deliver precise information through their signals, especially when it came to troop numbers or unexpected military developments.[668]

> Now, formerly, as the art of signalling by fire was confined to a single method, it proved in very many cases unserviceable to those employing it. For as it was necessary to employ certain definite signals which had been agreed upon, and as possible occurrences are unlimited, the greater number of them were beyond the competence of the fire signals to convey. To take the present instance: it was possible by means of the signals agreed upon to send the information that a fleet had arrived at Oreus or Peparethos or Chalcis; but it was impossible to express that 'certain citizens had gone over to the enemy,' or 'were betraying the town,' or that 'a massacre had taken place,' or any of those things which often occur, but which cannot be all anticipated. Yet it is precisely the unexpected occurrences which demand instant consideration and succour. All such things then were naturally beyond the competence of fire signalling, inasmuch as it was impossible to adopt an arbitrary sign for things which it was impossible to anticipate (Plb. 10.43.5-10. Shuckburgh 1889)

Most of our sources, admittedly, seem to confirm Polybius' views. Ancient authors rarely expand upon the topic of fire-signals, and what information they do provide usually suggests that the systems in question could only communicate a single message.

> As the smoke that goes up into heaven from some city that is being beleaguered on an island far out at sea - all day long do men sally from the city and fight their hardest, and at the going down of the sun the line of beacon-fires blazes forth, flaring high for those that

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[668] Moore 2017, 120. For Polybius' views on troop numbers: Plb. 10.45.1-6.

dwell near them to behold, if so be that they may come with their ships and succor them

(Homer. *Il*. 18.211. Butler 1898)

[The Carthaginians] go aboard their ships and light a smoking fire. The people of [Libya]

see the smoke, and, coming to the sea, they lay down gold to pay for the cargo, and

withdraw from the wares (Hdt. 4.196.1. Godley 1971)

[Mardonius] intended to signify to the king at Sardis by a line of beacons across the islands

that he held Athens (Hdt. 9.3.1. Godley 1930)

Fire signals were raised to alarm Athens, and a panic ensued there as serious as any that

occurred during the war. The idea in the city was that the enemy had already sailed

into Piraeus; in Piraeus it was thought that they had taken Salamis and might at any

moment arrive in the port (Thuc. 2.94.1. Crawley 1910)

[The Brasideans] raised the fire-signal as had been agreed, and took in by the market gates

the rest of the targeteers. (Thuc. 4.111.2. Crawley 1910)

Meanwhile the warnings of the fire-signals and the sudden increase in the number of fires

on the enemy's shore informed the eighteen Athenian ships at Sestos of the approach of

the Peloponnesian fleet (Thuc. 8.102.1. Crawley 1910)

These examples all corroborate Polybius' claim: the signallers simply raise a single flame, or a relay

of single flames, and convey one pre-arranged message. In the first case, the defenders can only ask

for help, without providing additional information such as enemy troop numbers. In the second case,

the Carthaginians communicate their presence, but they cannot explain the contents of their cargo,

nor their prices, or anything else that might be of value to them as merchants. In the third case,

Mardonius can only communicate a single message to his king. In the fourth case, the Athenian

watchers warn their city of danger, but can evidently go no further than that since the citizens are left

to assume the enemy's location.[669] In the fifth case, The Brasideans can only signal that the gates are open. They could not, however, warn their allies that their plans had been delayed: the men stationed outside the city had already started to converge upon their target, evidently anxious that their troops within were taking longer than expected.[670] Finally, the Athenian fire-signals at the Hellespont can only vaguely warn of the approach of an enemy fleet, without any additional information, such as ship numbers. The fact that the Athenian fleet received just as much information from their fire-signals as they did from the enemy campfires proves how few details the former could convey. These systems, coupled with the one described by Aeschylus, are extremely basic: one message is conveyed by raising a signal (i.e. 'Troy has fallen' 'we are under attack', 'merchandise on the beach', 'Athens is ours', 'enemies near' 'the gates are open', 'enemy fleet approaching'), and the opposite message is implied through its absence ('Troy stands', 'all is well', 'nothing to sell', 'Athens stands', 'all clear', 'the gates are closed', 'all clear').[671] This seems to be the '*single method*' of communication (ἁπλῆς) Polybius was referring to: all it entailed was for one party to raise a flame and another one to see it.

Aeneas had apparently tried to address the deficiencies of his predecessors through the invention of his hydraulic telegraph in the fourth century. Polybius, however, rightly maintained this did not solve the issue.[672] The device involved the use of two identical containers filled with an equal amount of water, and two valves at the bottom. Two identical rods were then inserted from the top of the containers. The rods were marked at the exact same intervals, and a message was assigned to each demarcation. Both teams would then coordinate their actions through fire-signals and open the valves of their respective containers at the same time. As the water drained from each container the rods would lower, and as soon as the desired message was reached the signalling team that initiated the message would raise a torch to

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[669] D. W. Moore 2017, 114–15.
[670] Thuc. 4.111.2; D. W. Moore 2017, 114.
[671] The same seems true for many other signalling methods not involving the use of fire such as raised shields, banners, or trumpet signals: Hdt. 6.115.1; Thuc. 1.63.2; 8.95.4; Xen. *Anab*. 4.2.1; 6.3.15.
[672] Plb. 10.44.1-45.5; D. W. Moore 2017, 120.

indicate the closing of the valves.[673] This allowed for the delivery of many messages instead of only one, but free communication was still impossible, since there was no way to communicate anything not written upon the rods. Furthermore, much like the fifth century methods, Aeneas also made use of a single light source per signalling team for his telegraph. Unlike them, however, he could convey different meanings thanks to careful coordination between both teams, and the timing of the raising and lowering of the flame.

Polybius contrasted all previous methods of communication with his own improved system, originally introduced by Cleoxenus and Democlitus: he separated the alphabet into five letter-groups, each containing five letters with the exception of the last which only contained four (Figure 29). He then suggested to raise two sets of torches, one on the left and another on the right. The number of torches on the left would indicate the letter-group, while the number of torches on the right would indicate the specific letter. For example, two torches on the left and three on the right would refer to the letter *Θ* (see below). The message, therefore, was now directly linked to the number of torches raised, and as long as the signallers trained in the use of this system they could be expected to communicate freely in a manner similar to modern-day Morse-code.[674]

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[673] See Appendix.

[674] Plb. 10.45.6-46.9 Polybius failed to specify what improvements he actually made on Cleoxenus and Democlitus' system.

	1	2	3	4	5
1	Α	Β	Γ	Δ	Ε
2	Ζ	Η	Θ	Ι	Κ
3	Λ	Μ	Ν	Ξ	Ο
4	Π	Ρ	Σ	Τ	Υ
5	Φ	Χ	Ψ	Ω	

Figure 29: The Polybius Square

The fifth century, therefore, undoubtedly saw the use of unsophisticated signalling methods far below the standards of either Aeneas or Polybius. This, however, does not mean that we cannot find exceptions. There are other cases in the Peloponnesian War that seem to disprove Polybius' harsh judgement on the limitations of early Greek fire-signals. Two notable events, namely the siege of Plataea and Alcidas' naval expedition against Corcyra, strongly suggest that Greek communications could be more complex than what was noted above, and could, perhaps, even communicate unforeseen events and complicated information. We will also examine Aeneas' fourth-century invention, and propose that the hydraulic telegraph was possibly only the most practical method of communication in a world of part-time soldiers, not the most sophisticated or effective one.

The siege of Plataea

During the final stages of the siege of Plataea, part of the city's garrison tried to break through the joint Peloponnesian and Boeotian blockade and flee towards Athens.[675] The Peloponnesians had previously failed to capture the city by storm and were now trying to starve it out by building a circumvallation wall.[676] The Plataeans thus decided to scale it during a rainy and stormy night. In order to do so, however, the defenders had to ensure the nearby city of Thebes, located some 12.5 kilometres to the north (Figure 30), was not alerted to their actions. They did so by effectively 'jamming' the Peloponnesian fire-signals with some of their own.[677]
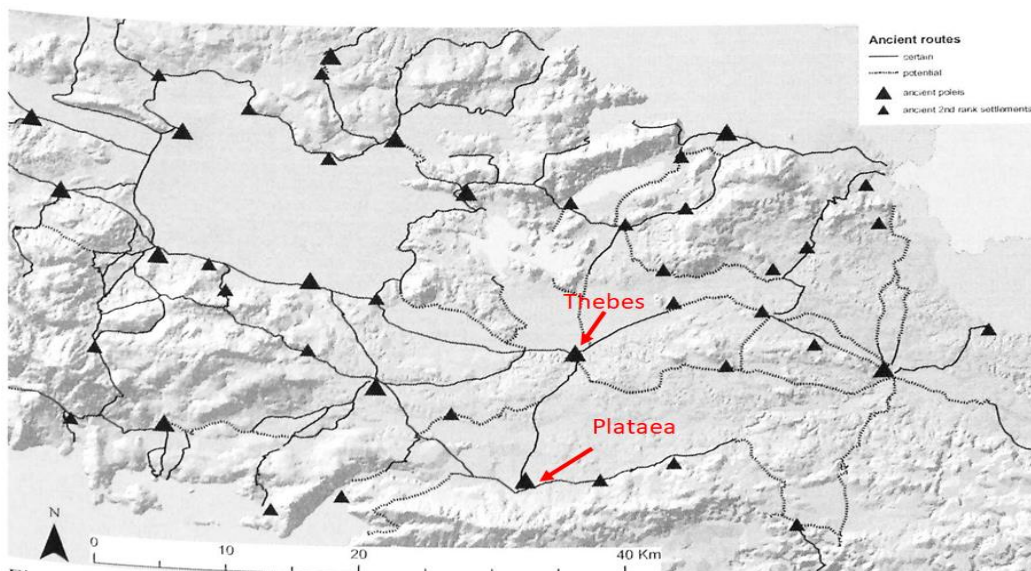
Figure 30: Roads of Ancient Boeotia. Dashed lines represent potential routes, continuous lines represent archeologically testified roads. City names in red are my own addition. (Farinetti 2011, 44 fig. 5).

The Plataeans decided that half of them would escape while the rest would attack another part of the circumvallation wall as a diversion.[678] As the Plataeans were fighting their way out of the blockade,

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[675] Thuc. 3.22.1-24.2.
[676] Theban invasion: Thuc. 2.2.1-4.7. Siege Preparation: Thuc. 2.6.4.
[677] Thuc. 3.22.7-8.
[678] Thuc. 3.20.1-2.

the besiegers raised fire-signals to alert Thebes and request reinforcements.[679] The Plataeans, however, had anticipated this. As soon as the enemy sent their warning, whatever defenders remained inside the city raised several fire-signals of their own from the city walls.[680] Their goal was to drown out, or alter, the Boeotian message, and confuse the Theban watchers as to its precise meaning. It was hoped this tactic would delay Theban reinforcements until the Plataeans could escape. The plan, it would seem, was a complete success, and Gomme notably holds this moment of the Peloponnesian war as possible proof against Polybius' criticism of the limited effectiveness of fire-signals prior to his era, as it seems to imply the Peloponnesian communications were more complicated than any of the fifth century cases previously noted.[681] Thucydides, unfortunately, does not provide much more information than that, and we are left to wonder how the Peloponnesian signalling system worked, and how the Plataeans could have countered it by raising additional signals.

> Fire signals of an enemy attack were made to Thebes; but the Plataeans in the town also
> displayed a number of fire signals from their own walls, having them all ready made for
> this very purpose, so as to make the enemy's signals unintelligible, to stop help coming
> from Thebes, and to prevent the Thebans from having a true idea of what was happening,
> until their own men who had gone out had escaped and got into safety (Thuc. 3.22.7-8.
> Warner 1972).[682]

One possible interpretation of this passage would be that the Plataeans raised enough fires to brighten the horizon to the point where the Thebans could not see that their garrison was trying to get

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[679] Thuc. 3.22.7.
[680] Thuc. 3.22.8. There is a possibility that this task fell to the 110 slave women of the garrison rather than actual soldiers. Thucydides, unfortunately, does not specify who raised the signals.
[681] Gomme 1956a, 284.
[682] Unlike Warner, Hobbes, and Jowett, Dent's translation of the events inexplicably omits the fact that the Plataean signals were raised from their walls (παρανῖσχον [...] ἀπὸ τοῦ τείχους φρυκτοὺς πολλοὺς). This is an important detail we will analyse later on, see below.

their attention. Thucydides, however, states that the signals raised by the besiegers were rendered ἀσαφῆ. The Liddell-Scott-Jones Greek-English Lexicon translates this word as 'indistinct', 'dim', or 'faint', Hobbes translates it as 'insignificant', while Jowett, Dent, and Warner all opt for 'unintelligible'. All interpretations of the word, save perhaps for Hobbes', thus denote uncertainty and vagueness rather than outright invisibility: the Thebans could apparently still vaguely see that their garrison was trying to communicate with them, but could somehow not understand the message.[683] Furthermore, we must note that Thucydides used the plural form when referring to both the Peloponnesian fire-signals (φρυκτοί τε ᾔροντο) and the Plataean counter-signals (φρυκτοὺς πολλοὺς). This could suggest that the besiegers made use of a relay system to send messages to Thebes;[684] or that the meaning of their signal somehow depended on the number of torches raised, which would have in turn led the defenders to raise their own counter-signals (see below). Both scenarios are not mutually exclusive.

What seems clear, however, is that the circumvallation wall made use of a system of communication more complicated than the 'single method' such as the ones noted above. It would have been useless for the Plataeans to light additional torches if a raised signal from the besiegers could only mean one thing to the Theban watchers, i.e. 'send help'. Signals with a single meaning will always be understood, provided they are seen, whether they be 'indistinct', 'dim', or 'faint'. None of the fifth century cases cited above would have been affected by the raising of additional counter-signals: all of them could only mean one thing, and no amount of extra torches could possibly change that. A truly basic single-message system of communications is, therefore, out of the question.

This remains true even if we assume a slightly more complex method, such as the one described by Thucydides' scholiast. According to him, the Greeks would communicate the approach of a friend or a

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[683] Thucydides could have used the word 'ἀφανῆ' if he meant to say the Peloponnesian signals were completely invisible: Thuc. 3.45.5; 5.103.2.

[684] Ancient authors seem to have always used the plural form when referring to relay systems: Homer. Il. 18.211 (πυρσοί); Hdt. 9.3.1 (πυρσοῖσι); Thuc. 2.94.1 (φρυκτοί); Thuc. 8.102.1 (οἵ τε φρυκτωροὶ ἐσήμαινον); Cf Hdt. 4.196.1 (καπνόν); Thuc. 4.111.2 (τὸ σημεῖόν τε τοῦ πυρός).

foe in two separate ways: a raised torch held perfectly still indicated an ally, while a waved torch signalled the approach of an enemy.[685] His idea, presumably, is that the Plataeans would have held their torches still in order to convince the Thebans everything was in order. The Plataean counter-signals, however, seem to have been raised after the besiegers raised their own, as the word παρανῖσχον (Thuc. 3.22.8) is usually translated as 'raised in answer'.[686] This means that there must have been a moment when Thebes was able to see that their garrison was trying to communicate with them. One would assume that window, however brief, would have been enough for a watcher to realize the besiegers were waving their torches. In addition, Gomme noted that if waving a torch was a signal for concern, then the added Plataean signals would have only exacerbated the effect, and would have appeared even more urgent to the eyes of the Thebans.[687]

The only truly basic system that could have been effectively countered by raising additional torches from the walls of Plataea would be if the Peloponnesians used a signal to indicate precisely where they were being attacked. This would effectively change the nature of their message from 'send help' to 'send help *here*', and would make use of one signal to communicate two pieces of information simultaneously: danger and location. If the Plataeans lit several torches across their battlements, it would seem from afar as though the entire palisade was under attack, since the circumvallation wall would be roughly following the outline of the city it enveloped. This theory, however, does not explain why the besieging garrison itself did not know where the attack was taking place.[688] According to Thucydides, only the three hundred picked men raised for just such an emergency knew where to go in order to beat back

[685] For references to the scholiast's comments: Gomme 1956a, 284; Riepl 1913, 59–90. This method of communication is also supported by Hershbell: 1978, 85–86. The scholiast offers no reason or source for his claim about Greek fire-signalling methods. It is possible he was projecting the practices of his own era onto the Classical world.

[686] Definition from the Liddell-Scott-Jones Greek-English Lexicon.

[687] See n. 681. Moore (2017, 115 n. 19) agrees with Gomme that the scholiasts' claims are not enough to explain the situation.

[688] Thuc. 3.22.5-6.

the Plataeans. Surely this would not have been the case if the fire-signal had been raised at the precise location of the attack: even if the Plataeans raised their own signals, the besieging garrison ought to have been close enough to distinguish between a signal coming from their wall and those coming from within the city. In addition, the timeframe between the lighting of the Peloponnesian signals and the counter-signals ought, once again, to have been enough for the guards to know where the original sign had been raised from, at least roughly. A more plausible scenario would be to suggest that the beleaguered section of the wall raised the initial alarm vocally, since the three hundred picked men were guided by shouts (*βοἠ*) rather than any visual cue.[689] After this initial stir, the rest of the garrison, though unaware of where exactly the action was taking place, could have raised their signals towards Thebes.

Grote suggested that the besiegers must have been using fire-signals throughout the length of the two-year siege in order for the Plataeans to come up with their plan.[690] This would have familiarized the defenders with the enemy's communication system and allowed them to both prepare and tailor their own counter-signals.[691] This might be possible, as Thucydides states the defenders were ready and actively waiting for the signals to be raised.[692] However, it also assumes the besiegers were using a distinct system of communication unfamiliar to the Plataeans, and presumably the wider Greek world. Furthermore, there was very little the Peloponnesians could have communicated with their fire-signals during those two years, considering the Plataeans were never reinforced, and never attempted to break through the blockade. If the besiegers had been using a known signalling method instead, then the defenders could have presumably anticipated and countered it without witnessing it beforehand. This second scenario seems the likeliest one: the fact that Thucydides did not feel the need to describe the

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[689] Thuc. 3.22.7.
[690] Grote 1851, 320 n. 1.
[691] The Plataeans prepared extensively for their escape, and spied on their enemy to maximize their chances: Thuc. 3.20.3; 3.21.4.
[692] Thuc. 3.22.8.

Theban and Plataean communications in any real detail would seem to suggest his readers would have been familiar with them.

In short, the Plataean ploy upon which their entire escape plan rested could only have worked if we accept that Greek fire-signalling methods could go beyond single-message systems. Moreover, these practices should not necessarily be seen as an exceptional case. Michael Seaman has noted that, despite many scholars viewing Plataea as the epitome of Greek siege tactics, not a single ancient source, including Thucydides himself, seems to suggest the tactics each side resorted to were out of the ordinary.[693]

Communications at Plataea

I would, therefore, suggest that the circumvallation wall made use of a system that must have been closer, though certainly not identical, to the ones introduced by Aeneas and Polybius, rather than to the other fifth century cases cited above. As previously noted, the Hydraulic telegraph and the Polybius Square respectively relied on the timing and number of raised signals, and the Peloponnesian system could have followed a similar model. The only type of system that could have been affected by the Plataean ploy was one that went beyond the simple raising and viewing of a single torch. The defenders essentially did two things: they added more torches to the horizon, and in so doing, they brightened the night sky more than the original Peloponnesian signal would have done on its own. It follows that the confusion was caused by either, or both, of these two factors. As we saw, the Plataean counter-signals did not completely mask the Peloponnesian signals, they only made them seem 'indistinct', 'dim', or 'faint'. This would not have been enough to muddle the meaning of a single-message system, but it could easily confuse a system that relied on timing since it would be impossible for the watchers to discern precisely when the signal was raised and then lowered.[694] The addition of extra torches would have also gotten in

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[693] Seaman 2013, 649–50. *Contra*: Campbell 2006, 39–40.
[694] Perhaps the delay it took for the Plataeans to raise their counter-signals might have allowed the Thebans to see the raising of the signal, but this would have been useless if they could not witness the lowering.

the way of either system: a watcher looking for timing would not be able to guarantee that the one signal he was tracking among several was the correct one, while a watcher looking to discern meaning through the number of raised signals would have been obviously baffled.[695] This scenario would not require much in the way of resources or manpower from the Plataeans, which perfectly suited their modest means.[696]

This does not mean, in any way, that the Peloponnesian fire-signalling system perfectly mirrored either Aeneas or Polybius, only that it might have relied on the same *mechanics* they did, namely timing and numbers, or possibly a third unknown one.[697] This could maybe lend new meaning to Thucydides' use of the plural when referring to the Peloponnesian signals (Thuc. 3.22.7: *φρυκτοί πολεμίοις*).[698] Perhaps the besiegers made use of their towers to raise several torches at the same time: one tower could mean 'all is well', two could mean 'minor assault', three 'send help', four 'Athenian reinforcements approaching' etc. We are, unfortunately, unable to go beyond this point in our speculations. However, if the besiegers used either timing or numbers to tailor their signals, then their spectrum of strategic communication could range anywhere between sending multiple pre-arranged messages instead of only one, to free communication.

While we are unable to describe the workings and mechanics of the system any further, Thucydides' narrative does allow us to surmise upon some of its other aspects: firstly, it seems likely that the Peloponnesian guards raised their signals from atop the wooden towers that dotted the

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[695] The Plataeans could have either altered or 'overloaded' the meaning of the signal depending on whether or not the sum of raised torches exceeded the number of messages agreed between Thebes and the garrison: if, for instance, one torch meant 'sent help', but two meant 'all is well', the defenders would only need to raise a single torch of their own. On the other hand, the Plataeans could render the entire message ineligible by raising, for example, ten torches if the wall could only send five messages.

[696] The defenders must have been low on provisions that might have otherwise helped them light their signals under the rain: Thuc. 3.22.1. Furthermore, half of their garrison was committed to the escape, while the other half was attacking another part of the wall as a diversion: see n. 678. This means the signals had to be raised by however many defenders were unsuited for battle, or perhaps the slave women: see n. 680.

[697] Frank Russell suggests they would have relied on the number of torches: 1999, 147.

[698] Though it does not mean that the Peloponnesians did not also make use of a relay system, see below.

circumvallation wall.[699] For starters, Thucydides does not mention any other fortifications or natural elevations the besiegers could have used. Furthermore, the counter-signals would have, presumably, only been effective if they were lit roughly on the same location and height as the Peloponnesian signals. This, however, would have been impossible if the besiegers raised their signs from somewhere other than their palisade, seeing as the counter-signals were raised from the walls of Plataea.[700] If the besiegers made use of a nearby elevation, that was either some distance away from the city or simply more elevated than its battlements, then any watcher would have probably distinguished between one light source and the other.

Secondly, the besiegers likely used torches or lanterns, [701] rather than pyres,[702] which would have forced the defenders to follow suit: it seems unlikely that beacons would have been lit on top of makeshift wooden structures.[703] These fortifications were all roofed, meaning that even if the floor failed to ignite, the ceiling would still be a severe fire hazard.[704] The rain on that night might have dampened the wood enough to make such a practice safer (Thuc. 3.22.1), but we cannot imagine that the Peloponnesians relied on a system that could only work when it rained. Furthermore, the Plataean preparations mentioned by Thucydides (3.22.8) need not refer to the work involved in building pyres: simply ensuring that the counter-signals where strategically placed so as to be visible from Thebes would have involved considerable planning and effort.[705] Aeneas Tacticus noted that fire-signals raised from the walls could sometimes not be visible by the city's own commander (22.22), which means the same must have been

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[699] Thuc. 3.21.3. Moore (2017, 115) also assumes that the signals were lit from atop the Peloponnesian fortifications, but offers no arguments to support this theory.

[700] See n. 682.

[701] For use of lanterns: Aeneas 22.21-23; 26.13-14. See below for estimates of light visibility over great distances.

[702] For use of pyres: Aesch. *Ag*. 290-295. The signallers ignite a 'heap of withered heather' (Smyth, Herbert Weir 1926). Note that this fictional relay system also made use of torches: *'λαμπάδος'* (285) '*λαμπαδηφόρων*' (310).

[703] Wooden fortifications were relatively weak: Thuc. 3.23.1; 4.115.2-3; 6.102.2. The besiegers had previously tried to torch Plataea and knew the risks of an uncontrolled fire: Thuc. 2.77.2-6. Herodotus alleged that the Persians destroyed the Athenian palisade around the Acropolis by loosing flaming arrows at it: Hdt. 8.52.1.

[704] Roofs: Thuc. 3.21.4.

[705] For the considerable difficulties of lighting a simple flame: Forbes 1958, 6–7, 11–12.

true for communications between cities, especially if an obstacle such as the circumvallation wall stood between the two. Furthermore, one wonders how the defenders could have possibly kept such pyres hidden from the Peloponnesian watchers on the walls.[706]

Thirdly, it seems likely that the Peloponnesians would have made use of a relay system to link Plataea with Thebes.[707] Thucydides makes no mention of such a thing, and no traces of a fifth century relay system linking both cities seems to survive, but his use of the plural when referring to the Peloponnesian signals could imply it.[708] It seems, at any rate, that Thebes was too far away from the circumvallation wall to ensure stable communications via torches without the use of at least one relay station.[709] If the besiegers could make use of the wooden towers of their circumvallation wall to raise their

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[706] If the defenders neglected to hide their counter-signals, then their plan would have likely failed, since it relied on speed, secrecy, and surprise.

[707] *Contra* Russell 1999, 148.

[708] See n. 684.

[709] Plataea and Thebes stood approximately 12.5 km away: Thuc. 2.5.2. Flames are easily distinguishable even across vast distances: Ogburn 2006, 407. A burning yucca tree was visible from forty-two kilometres away while a fire-signalling system in southern America contained gaps exceeding seventy kilometres (Earley-Spadoni 2015, 25). The Byzantine network maintained gaps larger than ninety-six kilometres: see n. 667. Yet it is almost impossible to accurately establish the theoretical visibility of a light source at a set distance: size, visual acuity, ambient light, air pollution, colour contrast, weather, and particle dispersion all factor into the calculations (Earley-Spadoni 2015, 25; Ogburn 2006, 406). Despite these difficulties, we can propose the following in order to estimate the potential visibility of torches. An experiment conducted by two students at Cornell University established that a candle flame was visible from 2.6 kilometres away (https://arxiv.org/abs/1507.06270v1). This provides us with a minimum distance at which we can reasonably state that a torch would also be visible. Furthermore, in 1891, the United States Light-House Board published the results of an experiment aimed at establishing the effective range of their own fire-signals. This report can, in turn, help us provide a maximum distance for the fire-signals at Plataea. The experiment involved the use of a shore party, and five buoys placed at one, two, three, four, and five miles away in the water: ARUSLHB 1891, 211–15. The experiment established that for each mile, a light had to measure one, three, three, twenty-three, and thirty-three candlepower to be clearly visible: ARUSLHB 1891, 212. These results varied depending on weather conditions and ambient light. Candlepower, or *candela* (cd), is a unit of measurement once used to measure brightness before it was replaced by the lumen (lm). As its name implies, candlepower used the brightness of a single wax candle as its basis of estimation. Nowadays, one cd is the equivalent of 12.57 lm. Once we convert the last result into kilometres and lumens, we can see that one would need to make use of a light source of 414.8 lm to be visible at a distance of eight kilometres. For the sake of reference, an average 40-Watt lightbulb produces around 450 lm. It is, unfortunately, impossible to use these results to estimate the lm necessary to communicate at 12.5 km: the sudden increase from three lm to twenty-three lm between the buoys set three and four miles away indicates that the luminosity required for visibility increases unpredictably, not proportionally, with distance. There is, unfortunately, no way to estimate the luminosity of the average torch or lantern, short of using equipment I do not have access to, however, while it seems reasonable to suggest they could produce approximately as much lm as a lightbulb, it seems unlikely they would exceed it. As such, we should not expect that the circumvallation wall would have been able to communicate with Thebes without the use of at least one relay station, especially not once we factor in the rain that must have reduced visibility well below optimal levels.

signals, it stands to reason they could have either built additional wooden structures, or made use of existing ones that would have left no archaeological traces. Over the last few decades, many scholars have examined the remains of defensive networks across the Greek world. The ruins of watchtowers, forts, and relay stations can be found all across Greece, but more often than not these buildings are dated to the fourth century BC (see page 223). The same is true for Boeotia. Fossey (1992) has done extensive research on Boeotian topography and has taken a keen interest in the defensive networks scattered throughout the area. The many ruins he has located indicate a strong level of supervision in the fourth century BC, possibly suggesting they were the product of the Theban hegemony. Nevertheless, he believes it is highly improbable that the Boeotians would not have had some form of network well before that, possibly dating as far back as the Archaic, and Mycenaean periods.[710] This would, in turn, suggest the networks still visible today were not an innovation of the fourth century, but rather the continuation and perfection of an older practice.[711]

Plataea, therefore, seems to contradict Polybius' pessimistic view. While Thucydides' silence does not allow us to describe the workings of the Peloponnesian signalling system in detail, the Plataean ruse strongly suggests it was more complicated than a single-message system. Adding more torches to the horizon would not have obstructed any basic method of communication. We must, therefore, assume that the Thebans added an unknown mechanic to their fire-signals through which they could send and receive multiple messages. Polybius' own system relied on the number of raised torches, while Aeneas' simpler invention relied on timing. Any system that relied on either of those two mechanics would have likely been affected by the defender's plan. If the besiegers made use of either timing or number of torches, then their communication capabilities could range anywhere from those of the hydraulic telegraph to those of the Polybius square, though the latter seems highly unlikely.

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[710] Fossey 1992, 128.
[711] Ober shares the same view on the Athenian network. Most of the surviving towers and forts are dated to the fourth century, but there is strong evidence for their presence in the fifth as well: Ober 1985, 193.

Naval expedition against Corcyra

Gomme further argues that Plataea could potentially vindicate another passage in Thucydides, where a Peloponnesian fire-signalling station at Leucas accurately conveyed the numbers of an incoming Athenian fleet to the Spartan admiral Alcidas,[712] who had laid anchor with his own fleet at Sybota, some seventy-five kilometres away.[713] Such detailed information concerning the enemy's numbers is precisely what Polybius claimed was impossible to do before his time.[714]

> But the Peloponnesians, after devastating the land till about midday, retired. And at
>
> nightfall the approach of sixty Athenian vessels was signalled to them from Leucas. These
>
> had been sent by the Athenians under the command of Eurymedon the son of Thucles
>
> when they heard of the revolution and of the intended expedition of Alcidas to Corcyra.
>
> The Peloponnesians set out that very night on their way home, keeping close to the land,
>
> and transporting the ships over the Leucadian isthmus, that they might not be seen sailing
>
> round (Thuc. 3.80.2-81.1. Jowett 1881)

Here we must note that it is unclear whether Thucydides simply added the information concerning the numbers and location of the enemy fleet to his description of the fire-signals. However, the siege of Plataea already demonstrates that Greek communications could be more advanced than what they have been given credit for. It is, therefore, possible that Thucydides' description is accurate.

Another possibility is that the historian compressed two different events into a single sentence: 1) The Peloponnesians were first vaguely warned of the approaching Athenian fleet through fire-signals.

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[712] Thucydides depicted Alcidas as overtly timid, and claimed he failed to assist the Mytilenean revolt due to his slow pace: Thuc. 3.27.1., 29.1. He also claims the Spartan commander stubbornly refused several alternative plans of action after hearing news of the fall of Mytilene: Thuc. 3.30.1-31.2. Roisman (1987), convincingly claims that Thucydides' depiction of Alcidas is openly hostile. See particularly p. 393-394, 396 for arguments concerning the alleged delay, and p. 397-400 for the reasons behind Alcidas' rejection of the alternative plans.

[713] Thuc. 3.80.2; Gomme 1956a, 367.

[714] See n. 668.

2) They then received more detailed information via some other means, possibly a vessel that had examined the fleet and could report on its strength.[715] Aeneas Tacticus encouraged such practices, and advised that any fire-signal should be followed by a runner (in this case a ship) to ensure the message had been accurately received.[716] The Peloponnesians had recently sent at least two ambassadorial vessels in the area that could have possibly doubled as scouts and messengers.[717] It seems highly improbable, however, that such a scenario played out here.

According to Thucydides, the Peloponnesians received the fire-signals at dusk, when their fleet was anchored at Sybota and the crews were about to settle for the evening.[718] They then set sail during the night, and made for Leucas themselves. Yet instead of sailing around they hauled their vessels across the Isthmus to avoid the Athenian ships who were doubtlessly anchored somewhere in the area.[719] Yet it would have been strategically unsound for the Peloponnesians to set sail before receiving detailed information about the enemy.

The Peloponnesian fleet was committed to the capture of Corcyra. They had recently won a victory against an enemy fleet,[720] and Brasidas, who acted as Alcidas' councillor,[721] was advocating in favour of a decisive attack.[722] It would have been unwise for them to abandon such a promising opportunity unless they were certain the reinforcements bearing down on them were too powerful to overcome. Furthermore, Alcidas had to sail towards the very enemy he wanted to avoid in order to withdraw from Corcyra. Even if the withdrawal was made at night, such a manoeuvre would not have

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[715] This is presumably what Rhodes believes happened: Rhodes 1994, 197. He accepts the scholiast's insights on simplistic Greek fire-signals (see n.s 685 and 687) and refers the reader to (Thuc. 3.80.2) without explaining how the Peloponnesians could have communicated the precise number of Athenian ships with only two variations in their fire-signals. A secondary source of information would have solved the issue.

[716] Aeneas Tacticus 6.5. The Greeks used messenger-ships to coordinate their efforts during the battle of Thermopylae and the naval battle of Artemisum: Hdt. 8.21.1. See Russell 1999, 143.

[717] Thuc. 3.70.2; 3.72.2.

[718] Thuc. 3.80.2. Base at Sybota: Thuc 3.76.1; 3.79.2; 3.80.2.

[719] Thuc. 3.81.1. Fleets would typically stop for the evening to rest their crews: Morrison 1995, 58–59.

[720] See n. 732.

[721] Thuc. 3.69.1.

[722] Thuc. 3.79.3. The Peloponnesian fleet had been sent there specifically to exploit the Corcyrean civil war.

been advisable unless the Peloponnesians knew exactly where in Leucas the Athenians had dropped anchor. If the fleet set sail blind, there would have been a real threat of encountering the enemy.[723] As Polybius himself wrote, 'how is one to take proper measures for relief without knowing the number or direction of the enemy?'.[724] Consequently, the Peloponnesians must have been aware of the enemy's numbers and location from the moment they decided to withdraw, which means that any presumed messenger-ship would have to reach them before they decided to set sail.

This scenario, however, is simply impossible to consider. A messenger-vessel would have necessarily reached the Peloponnesian fleet much later than the fire-signal itself: the ship would have to be close to Leucas in order to examine the Athenian fleet and report their numbers with any degree of accuracy. The distance between both fleets, however, was considerable. No less than seventy-five kilometres separate Sybota from the isthmus of Leucas.[725] If we assume the messenger-ship set sail at dusk when the fire-signal was raised, and if we also assume she reached a speed of 7.5 knots, the average speed for an oared trireme travelling in a hurry under optimal conditions,[726] then it would have taken her approximately 5:30 hours to reach Alcidas.[727]

Such a delay is impossible to reconcile with the narrative. A typical Greek summer night, including dusk and dawn, lasts about nine hours, from 21:00 pm to 06:00 a.m. Within the span of those nine hours

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[723] Anchored fleets would set look-out vessels to warn the rest of enemy approach: Thuc. 1.117.1. Look-out ships are also recorded in the Persian Wars: Hdt. 7.179.1; 7. 183.1. Furthermore, falling upon an encamped fleet was no guarantee of victory, and could instead lead to a lengthy and costly investment that Alcidas could not afford: Thuc. 3.33.3; 6.34.5; Morrison, Coates, and Rankov 2000, 101. Furthermore, if Alcidas' fleet rowed to Leucas, as is likely the case (see n. 727), they would have been too tired for a fight.

[724] Plb. 10.45. Shuckburgh 1889.

[725] This is the distance in a direct line from Sybota to Leucas. The actual distance the messenger-ship would have to sail would have been longer if it hugged the coast.

[726] Morrison, Coates and Rankov estimate the 'average speed for an oared warship in a hurry' to have been between 7 to 8 knots: 2000, 102–6. Morrison (1995, 57–58) puts the highest recorded speed of a single trireme at 7.37 knots. Rankov (2012, 150) has more recently postulated that the maximum cruising speed of a trireme would have been around 7.5 knots.

[727] Triremes were faster when using their oars rather than their sails: Morrison, Coates, and Rankov 2000, 97, 102–3; Xen. *Hell*. 6.2.27. It thus seems likely that the presumed messenger ship, as well as Alcidas' fleet, would have rowed rather than sailed.

Alcidas had to be alerted, agree upon a course of action, rouse his camp, put his anchored fleet to sea, race to Leucas, and haul his ships across the isthmus before sunrise.[728] If more than five of those nine hours were spent waiting for confirmation on the enemy fleet, the Peloponnesians would never have made it to Leucas in time. A single scouting ship would have, of course, outpaced the Athenians, but the Peloponnesian fleet itself would have been far slower.[729] If we accept that a messenger-ship was sent, then the fleet would have to travel at an average speed of 11.5 knots to make it to the isthmus in 3:30 hours.[730] This speed is simply impossible to consider for any oared vessel, much less a fleet of fifty-two ships travelling in formation and at night.[731] In addition, the Peloponnesians had recently taken part in a naval engagement, and spent the last few days, including the afternoon before the retreat, ravaging the enemy coast.[732] They would already be exhausted, and even if we accept the impossible and assume the fleet somehow reached Leucas in 3:30 hours, they would still be too late to haul their ships across the Isthmus before dawn.

Consequently, the only way the Peloponnesians could make it in time was to sail immediately at dusk, upon receiving the fire-signal. As a result, we should follow Gomme's theory, and accept that

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[728] Considering the fact that Alcidas was in a hurry, this chapter assumes that the Peloponnesians would not have stopped for food or rest, as fleets usually did: Morrison, Coates, and Rankov 2000, 94–106. They would have likely eaten their evening meal sometime before receiving the signals, and their morning meal after crossing the isthmus: Mindarus' fleet could travel in sets of 72.2 km, 48.1 km, 125.9 km, and 103.7 km before stopping for food, so Alcidas' men should have been able to sail to the isthmus without stopping: Morrison, Coates, and Rankov 2000, 98 Map 11. If they had somehow missed their evening meal, they could have eaten while rowing, as sailors sometimes did when the circumstances demanded it: Thuc. 3.49.3; Morrison, Coates, and Rankov 2000, 96.

[729] There is no definite measure of a trireme's average speed though estimates range from between four to five knots for a steady pace. Morrison, Coates and Rankov (2000, 102–6) provide estimates for ships either in a hurry or accompanying supply vessels (7 to 8 knots for the former, 5 knots for the latter). Speed and rhythm depended on the quality of the crew and weather conditions. Some exceptional vessels, like the second Athenian trireme sent to Mytilene, could traverse some three hundred kilometres in twenty-four to thirty-two hours. Twenty-four hours: Hanson 2005, 261; Morrison, Coates, and Rankov 2000, 104. Thirty-two hours: Morrison 1995, 59. Provided the crew did not stop to rest and eat, they could outdistance other ships: Thuc. 3.49.3. A fleet, however, could only move as fast as its slowest vessel: Hanson 2005, 261; Morrison, Coates, and Rankov 2000, 105.

[730] This is assuming they had already prepared the fleet for a retreat and left immediately upon receiving the additional information.

[731] The Peloponnesian fleet numbered fifty-three ships at the start of the expedition (Thuc. 3.76.1), but one was lost in battle: Thuc. 3.78.1.

[732] Naval battle: Thuc. 3.77.1-78.4. Raiding: Thuc. 3.79.3; 3.80.2

Thucydides did describe at least one case where fire-signals were used to communicate detailed enemy numbers and location.

When it comes to the message related to the Peloponnesians at Sybota, our information is, unfortunately, even more limited than Plataea. It seems, however, unlikely that the message was sent and received directly from Leucas without the assistance of at least one relay station. The considerable distance of seventy-five kilometres is not necessarily the reason why.[733] As stated previously, there are recorded cases of similar, or even larger, gaps in other fire-signalling networks that seemingly did not prevent communications.[734] Furthermore, visual range at sea level can reach up to 150 km under perfect conditions.[735] Terrain obstruction, however, may have prevented Alcidas from communicating directly with Leucas. Thucydides does not mention the exact location of Alcidas' mooring, but if he laid anchor on the northern shores of either Sybota or its neighbouring islands (modern day Mourtos, Agios Nikolaos, and Megalo Mourtemeno) he would have needed at least one suitably elevated position to look beyond the local vegetation and hilly terrain.[736]

The Peloponnesians could have dropped a handful of their crewmembers at strategic locations around Sybota. Brasidas is known to have used fire-signals on at least one occasion during the capture of Torone, though admittedly this use was far less ambitious or complicated than what is hinted at here.[737] Thucydides, in any case, does not describe anything of the sort, and though this could certainly be another instance where he neglected to expand upon the workings of military communications, the fact that Alcidas arrived in Corcyra with the exact same number of ships he had departed with could indicate he did not part with any member of his crew along the way.[738] It is, however, equally possible, that the

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[733] *Contra* Gomme 1956a, 367.
[734] See n. 709.
[735] Ogburn 2006, 407.
[736] Thucydides does not provide the exact location of Alcidas' mooring.
[737] Thuc. 4.111.2.
[738] Initial strength: Thuc. 3.69. Strength upon arrival: Thuc. 3.76.

admiral selected fire-signallers from many different crews instead of one. Such a practice would have given him plenty of available manpower without significantly hampering the effectiveness of his fleet. There is no definite answer as to how many men were needed to act as signallers, but Aeneas advised no less than three, with at least one veteran among them.[739] Considering Alcidas set sail with fifty-three vessels, he could comfortably establish seventeen signalling posts (far more than what he would have likely needed) by sacrificing one rower from only fifty-one of his ships.

The naval expedition of Corcyra, therefore, strongly suggests that it was possible to relay unpredictable information, such as troop numbers, as far away as 75 kilometres.

The Hydraulic telegraph: practicality over effectiveness

In light of this, Polybius' views on early Greek fire-signalling methods should be questioned. Furthermore, the motives behind his criticism should be taken into consideration. It would have been easy for Polybius to exaggerate the merits of the system he personally perfected considering that, by his own admission, almost none of his predecessors had written anything about military communications that could disprove him. In addition, the fact that next to no sources other than Aeneas existed before his own suggests Polybius' insights into the matter suffered from the same lack of information concerning the fifth century we do.

Furthermore, the fact that Aeneas' hydraulic telegraph was incapable of communicating complex information or unforeseen events in the fourth century should not lead us to believe, as Polybius evidently does, that previous methods of communication were equally limited.[740] A brief look at other civilizations proves that the art of fire-signalling was not always a linear progression. For example, the highly effective Byzantine system of communication mentioned at the beginning of this chapter was clearly used in the

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[739] Aineias Tacticus 6.1-3.
[740] *Contra* Hershbell 1978, 84.

ninth century A.D., but it soon fell out of practice only to be partially reinstated a few centuries later.[741]

In addition, Polybius' claim that Aeneas' hydraulic telegraph was meant to address the fact that fire-signals could not convey unforeseen events seems suspicious – why would Aeneas create a new system that suffered from the very same problem it was allegedly designed to fix? [742]

Perhaps Aeneas' invention was not so much the epitome of fire-signalling practices up until that point in time, but rather an attempt to streamline and standardize a practice that otherwise varied considerably between each *polis*. The hydraulic telegraph was certainly not perfect but, unlike Polybius' own system, it was simple enough for the amateur soldiers of Greece to use effectively.[743] After conducting a practical experiment involving a modern reconstruction of the hydraulic telegraph (see Appendix), I discovered that the average person could be reasonably expected to make use of this system with only a few hours of training. All it required to function was basic synchronization skills from the part of its users. Consequently, Aeneas' telegraph should perhaps be viewed as a middle-ground solution in a world of part-time soldiers where military practices diverged significantly, rather than the most sophisticated and effective system of its day.

Conclusions

While the fifth century does not contain much information concerning strategic communications, what little details survive seem enough to dismiss Polybius' criticism against early Greek fire-signalling methods. The siege of Plataea seems to suggest, at the very least, that Greeks could go beyond single-message systems of communications, and Alcidas' expedition suggests that fire-signals could sometimes

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[741] See n. 667.
[742] Plb. 10.43-44.
[743] The difficulties of adopting Polybius' system have been noted by Hershbell: 1978, 88–89. Forbes has also noted that no less than ten men would be required to raise so many torches, far more than what Aeneas required: Forbes 1958, 172. Polybius himself insisted his method was only effective after intensive training: Plb. 10.47. This type of training is exactly what most Greeks of the Classical period refused to go through: Konijnendijk 2018, 39–40; Rawlings 2000, 242.

communicate complex information and troop numbers, regardless of Polybius' claim to the contrary. They also indicate that fire-signals could take on a central role in military campaigns (a fact we will explore in more detail in chapter 5). The Plataean wall of circumvallation may have operated along the same lines as the hydraulic telegraph or the Polybius square by linking the meaning of its message to either the number of torches raised, or their timing. As for Alcidas, the timeline of his retreat indicates that he received precise information concerning the enemy's numbers and location through a fire-signalling network stretching over seventy-five kilometres.

Even though we cannot point to any other strong cases for effective fifth century communications, the fact that the Plataeans were able to effectively counter the Theban signals seems to indicate that they at least had a solid theoretical grasp of the system. We must remember that our sources simply do not expand upon military communications in any real way. It is, thus, within the realm of possibility that the systems of both Sybota and Plataea were repeated, however infrequently (see below), without being recorded. This, coupled with the fact that Thucydides did not deem it necessary to actually describe either system could suggest the Greek world was familiar with them. 'Familiarity', however, is not the same as 'proficiency': most of us today are aware of Morse Code, but entirely unable to make use of it.[744] Herodotus once claimed that fire-signals were used by the Hellenic coalition at Artemisium to possibly warn that three Greek ships had been captured by ten Persian ones.[745] If true, then there would be at least one precedent for advanced Hellenic communications as far back as the early fifth century,[746] but Herodotus' description is too vague to draw such a conclusion.

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[744] Cf. Eur. *Phoen*. 1390. Euripides describes the 'Thessalian feint' to his audience. Rawlings has suggested that this might be an indication that many among the crowd would have known about the move, even if they could not necessarily perform it: Rawlings 2000, 243.

[745] Hdt. 7.183.1. I add here the word 'possibly' because we do not know how much information Herodotus referred to with the word 'ταῦτα'. He might have meant that the Greeks were simply informed of the approach of the Persian fleet.

[746] Riepl (1913, 57–58) believes this could have been done using between two and four signals, while Forbes (1958, 171–72) believes two would have sufficed. Riepl adds that the fire-signal would have only been used if messenger ships could not be used instead. D. W. Moore 2017, 109 n. 6.

Overall, while Polybius' statements seem to have been exaggerated, we should not be too eager to overestimate the abilities of the Greeks either. It seems unlikely that the communications of Thebes and Sybota were the norm rather than the exception. It seems beyond doubt that *most* fifth century communications were single-message systems. Perhaps the systems of Thebes and Sybota were simply too complicated, or cumbersome, to be effectively adopted by all Greeks: for instance, if the Theban system relied on the number of torches raised, then every single relay station would need to raise that same amount of signals each time. This would require considerable planning and manpower. It is worth noting that potentially both systems saw Spartan involvement: the fleet at Sybota was led by Lacedaemonians, while the siege of Plataea was initially conducted by king Archidamus.[747] As such, perhaps both methods owed their complexity and efficiency to Spartan professionalism. Yet while Alcidas' system can safely be attributed to the Lacedaemonians, Thebes' own method of communication may have been its own. Perhaps their system was the product of their unusual circumstances rather than Spartan intervention, though both scenarios are not mutually exclusive: Thebes essentially acted as a reserve garrison for the circumvallation wall for the duration of the two-year siege of Plataea. The Thebans had to be on stand-by in order to intervene quickly to a situation close to their land. Perhaps this task would have motivated them to come up with their system. Unlike the Athenian expedition of Syracuse, which also lasted for two years, the Thebans had a solid base from where to plan, and no enemy intervention to distract them. Of course, Thebes was not the only *polis* with an openly hostile neighbour.[748] The Thebans, however, could not relax their vigilance at any time during the year: the Plataeans were invested and starving, and so could be expected to attempt a breakthrough at any time during the year, not just the

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[747] Archidamus' own son, king Agis II, was clearly aware of the importance of strategic communications in military campaigns. See chapter 5.

[748] See page 223 for Argos. The Argive network of communication seems to have been more basic than the Theban one.

summer months where campaigns usually took place. As such, they might have deemed this situation warranted a more complex method of communication.

Finally, the fact that Aeneas' hydraulic telegraph was incapable of communicating unforeseen events in the fourth century does not mean that all previous forms of strategic communications were similarly limited: the advantage of the hydraulic telegraph probably lay in how intuitive and accessible it was in a world of part-time soldiers, not in its sophistication.

Chapter 5: Strategic Communications in the Argolid Campaign

This chapter is a case-study of the invasion of Argos in 418 BC by the Spartan king Agis II. This military action saw great use of strategic communications by the defenders, and a strong grasp of the enemy's defensive network by the invaders. This campaign shows how a *polis* could supervise and defend her territory through the use of watchtowers, relay-stations, and informants, and how a Greek general aware of his opponent's resources could build his entire strategy for the purpose of beating the enemy's communications. The following chapter will be separated into four main parts. The first will examine the events on the eve of the campaign, when the Argives used detailed military intelligence to ambush the Spartans at Methydrium. The second part will present the Argive network of communications. The third part will present a reinterpretation of Agis' strategy. Finally, the fourth part will explore how Agis overcame the Argive network.

Ambush at Methydrium: Argive Strategic Communications in Arcadia

In 418 BC, Sparta was in crisis. The defeat at Pylos in 425 had cost her dearly as both her allies and her slaves were more restless than ever.[749] After failing to protect Epidaurus from Argive aggression, and suffering yet another loss of face, Sparta decided to finally challenge her Peloponnesian rivals head-on.[750] Agis II thus instructed his allies to gather at Phleius, north-west of Argos, in order to invade the Argolid from the north.[751] This decision broke with Spartan practice: in the past, the Lacedaemonians had always attacked Argos from the south, something that directly affected the Argive network of communications

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[749] Forrest 1980, 112; Kagan 1974, 248; Lazenby 2004, 73–79, 84–85.
[750] Thuc 5. 53.1-56.1.
[751] Thuc 5. 57.2

(see below).[752] This new mustering point would thus force Agis to make a large detour. What, then,

motivated the king to march to Phleius instead of following standard Spartan practice?
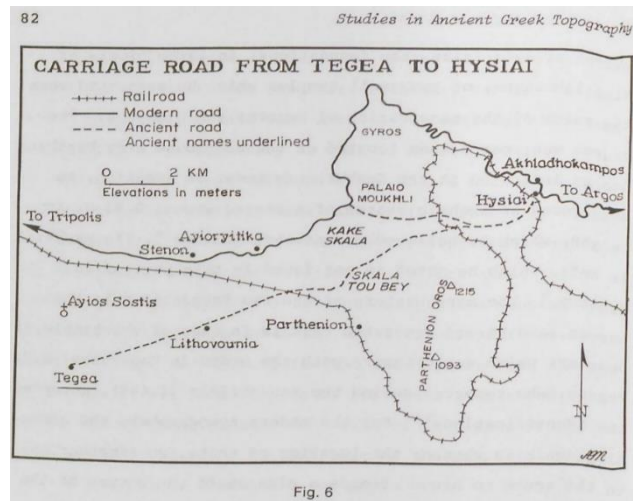

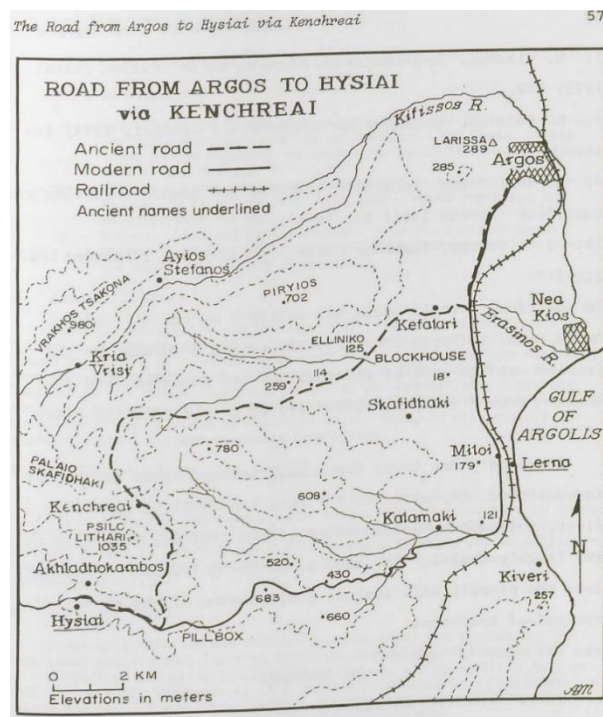*Figure 31: Road from Tegea to Hysiai, from Pritchett 1981, 82.*

Figure 32: Road from Hysiai to Argos, from Pritchett 1981, 57.

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[752] Battle of the Champions: Hdt. 1.82.1-2. Battle of Hysiai: Paus. 2.24.7. The most direct route to Argos went through Tegea, Hysiai, and then the southern Argolid (Figure Figure 31 and Figure 32): Pausanias 8.54.5; Gomme, Andrewes, and Dover 1970, 152; Pritchett 1981, 54–102, 1995, 223 n. 22. The Spartans had taken this road before, during their past invasions of Argos, and were defeated by the Argives at Hysiai in 669 BC. They also attempted to use it a third time, but were forced to resort to a naval landing following unfavourable sacrifices at the border (Hdt. 6. 76.2.).

According to Pritchett, Phleius was a city of great strategic importance as it allowed entrance into Nemea, Kleonai, Corinth, and Argos. As such, it would often be used in the future as a gathering point for the members of the Spartan League.[753] Of all the examples he cites, however, only Thucydides and Xenophon refer to Phleius as a gathering point for Spartan allies.[754] Polybios and Livy refer to Macedonian armies coming from the north and passing through Phleius, while Plutarch speaks of a Spartan army returning home by way of the *polis*. Nevertheless, these examples still prove that Phleius was a key location for operations in the Peloponnese. Agis seems to have been the first to recognize the importance of the city and use it as a gathering point for his army. Agesipolis would later use it himself for his own successful invasion of Argos.[755]

The Spartans had, admittedly, not been accompanied by allied troops during their southern invasions of Argos.[756] Yet it seems unlikely that Agis chose Phleius in order to spare his northern allies a dangerous march through enemy Mantinea. The Spartans never hesitated to endanger their allies in such a way: we know, for instance, that Agis would later force his allies to gather at Orestheum before the battle of Mantinea, forcing them to travel across enemy lands.[757] He would do so again for his second invasion of Argos, a year later, this time opting to invade from the south.[758] Since, then, both past and future invasions of Argos came from the south, and since Agis did not have any qualms about putting his allies at risk, it seems unlikely he would go to any lengths to accommodate them now, especially if it put his own Spartans in danger. Consequently, the fact that the allies were given a convenient rendezvous point may have only been a fortuitous consequence of Agis' decision.

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[753] Pritchett 1969, 96.
[754] Thuc. 5.57.2; 83.3; Xen. *Hell*. 4.7.3, Polyb. 4.67.9; Livy 28.7.16; Plut. *Kleom*. 26.3.
[755] Xenophon. *Hell.* 4.7.3.
[756] See note 752.
[757] Thuc 5.64.3-4.
[758] Thuc 5.83.2.

We will therefore argue that Agis opted to march to Phleius in an effort to conceal his forces from the enemy, avoid a premature battle, and invade the Argives from a location not fully covered by their defensive network of communications.[759] Gomme believes that such large preparations and troop movements could not be concealed, yet if that were truly the case, we are left to wonder why Agis would go through the trouble of meeting his allies at Phleius, when an easier solution was available to him.[760] It was not unheard of for armies to conceal their movements from the enemy, provided they moved quickly or under cover of darkness or terrain.

> [Brasidas] was met on his march at the river Enipeus by certain of the opposite party who forbade his further progress, and complained of his making the attempt without the consent of the nation. To this his escort answered that they had no intention of taking him through against their will; they were only friends in attendance on an unexpected victor. Brasidas himself added that he came as a friend to Thessaly and its inhabitants; […] he neither would nor could proceed against their wishes; he could only beg them not to stop him. With this answer they went away, and he took the advice of his escort, and pushed on without halting, before a greater force might gather to prevent him. Thus in the day that he set out from Melitia he performed the whole distance to Pharsalus, and encamped on the river Apidanus; and so to Phacium, and from thence to Perrhaebia. (Thuc. 4.78.3-6. Crawley 1910)

> word was brought to Demosthenes and the Acarnanians that the Ambraciots from the city, […], were on the march with their whole levy through Amphilochia to join their countrymen at Olpae, knowing nothing of what had occurred. Demosthenes prepared to

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[759] See page 223.
[760] Gomme IV 1970, 80.

march with his army against them, [2] and meanwhile sent on at once a strong division to beset the roads and occupy the strong positions […]. Meanwhile the Ambraciots from the city arrived at Idomene. Idomene consists of two lofty hills, the highest of which the troops sent on by Demosthenes succeeded in occupying after nightfall, unobserved by the Ambraciots, who had meanwhile ascended the smaller and bivouacked upon it. (Thuc. 4.110-112.1. Crawley 1910)

Brasidas now marched against [Amphipolis] […] and so got across the bridge, and immediately became master of all the property outside; the Amphipolitans having houses all over the quarter. The passage of Brasidas was a complete surprise to the people in the town; and the capture of many of those outside, and the flight of the rest within the wall, combined to produce great confusion among the citizens; especially as they did not trust one another. (Thuc. 4.103-104.1. Crawley 1910)

Philip suddenly started from Larisa with an army of three thousand hoplites armed with brass shields, two thousand light-armed, three hundred Cretans, and four hundred horse of the royal guard; and having transported them into Euboea and thence to Cynos he came through Boeotia and the Megarid to Corinth, about the time of the winter solstice; having conducted his arrival with such promptitude and secrecy, that not a single Peloponnesian suspected it (Plb. 4.67.6-7. Shuckburgh 1889)

Furthermore, the king had previously organised a military expedition without ever revealing his target to any of his allies, with Thucydides himself seemingly unaware of the objective.[761] This may have been an early attempt by Agis to keep his movements hidden from his enemies.

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[761] Thuc. 5.54.1.

King Agis thus set out for Phleius with his Spartans. Yet instead of taking the more direct route through enemy Mantinea, he decided to travel west of Mount Mainalon, across western Arcadia, in an effort to reach Phleius by way of the city of Methydrium (Figure 33).[762] Despite the mountainous terrain, there were two main roads capable of accommodating Agis' army, namely a westerly road commencing near the area where Megalopolis would eventually be built, and an easterly route near modern-day Tripolis (Figure 33).[763] While we do not know the exact path Agis chose, it is likely he opted for the westerly road since the one from Tripolis would have taken him dangerously close to Mantinea.[764] Furthermore, Gomme and Pikoulas both believe that Agis would have enrolled local Arcadians in his army during his march.[765] The Tripolis road would, therefore, have been doubly ineffective as it would have forced the king to limit himself to the inevitably sparse levies of the mountain tribes. The western road, on the other hand, offered several advantages. It would take Agis through the territory of the Parrhasians, who had recently been freed from Mantinean domination by the Spartans (see below), and lived on a plain. Agis would thus be able to gather levies from the more numerous plain dwellers and go through an easier route instead of entering the mountain roads sooner than necessary. Furthermore, he would place the mountain range of Mainalon clearly between himself and his Mantinean enemies, which would further conceal his troops, or act as a natural barrier if stealth failed him.[766]

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[762] Kagan 2003, 222.
[763] Westerly road: Paus 8.35.5-7, 36.1. Tripolis road: Paus. 8.35.8.
[764] Pikoulas 1995, 307.
[765] Gomme, Andrewes, and Dover 1970, 81; Pikoulas 1995, 306.
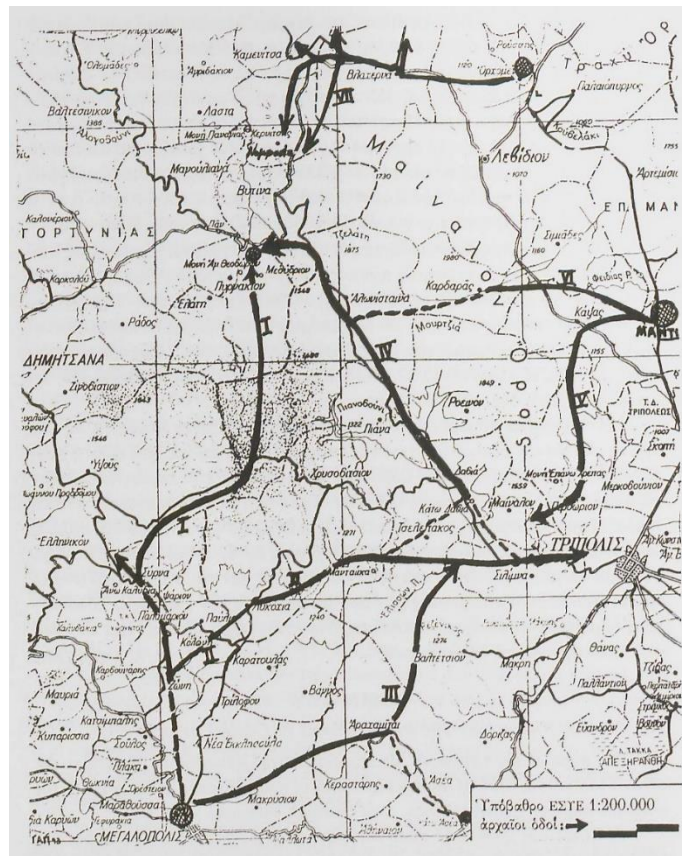[766] For a detailed study of the roads of Arcadia see Pikoulas 2002, 361–66.

Figure 33: Pikoulas' map of the road networks in Arcadia (2002, 366). Megalopolis can be seen in the lower left and Methydrium is located at the junction of the two Northern roads starting from Megalopolis and Tripolis.

Nevertheless, despite these precautions, Thucydides claims the Argives not only discovered Agis' plans, but were aware of them from the very start (*τό τε πρῶτον*).[767] As such, they decided to seize the initiative and successfully intercepted the Spartans at Methydrium. Their intention was, presumably, to engage Agis before he could link up with the rest of his forces, and put an end to the invasion without ever putting their own *chora* at risk.[768]

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[767] Thuc 5.58.1; Sheldon 2012, 82.
[768] Gomme, Andrewes, and Dover 1970, 81; Kagan 2003, 222; Lazenby 2004, 114; Pikoulas 1995, 306; Rusch 2011, 106.

Thucydides does not reveal how the Argives came by this information. Perhaps they were informed by travellers who remained, even in times of war, a common source of information throughout Greece.[769] In any case, Gomme believes that Argos would have been notified at least of the rendezvous point at Phleius.[770] Yet as we saw, this was the first time Phleius was used as a gathering-point, and as Pikoulas' map shows there was more than one path Agis could have taken to reach his destination. As such, the timely and precise interception of the Spartan troops at Methydrium, as well as Thucydides phrasing 'τό τε πρῶτον', points rather towards concise and detailed military intelligence rather than simple hear-say. Two plausible explanations come to mind: the Argives could have been notified of the Spartan movements through the Arcadian allies of Mantinea,[771] or the interception may have been the fruit of treachery.

By the second half of the fifth century BC, Mantinea had greatly expanded in Western Arcadia, taking advantage of the Peloponnesian War to further her sphere of influence.[772] It is hard to know how far their reach extended into Arcadia. Pausanias lists numerous communities located in the region of Mount Mainalon, yet we do not know which of them were allied to Mantinea and which to her rival, Tegea.[773] It is, at any rate, clear that the westerly road went through regions firmly under Spartan control. It began in the territory of the Parrhasioi, located on the western side of the plain of Alpheius west of Mount Mainalon.[774] The Parrhasioi had once been allies of Mantinea,[775] yet in 421 the full Spartan levy, under the command of Pleistoanax, invaded their territory after pro-Spartan elements of the community urged the Lacedaemonians to come to their aid. Pleistoanax successfully wrested control of the region from

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[769] See page 239. The Sicilians, for example, would rely on the words of passers-by just as much as on their own spies to gather information on the vast fleet sent against them: Thuc. 6. 45.1.

[770] Gomme, Andrewes, and Dover 1970, 80.

[771] Argos and Mantinea shared strong bonds of loyalty. When the Mantineans left their city to confront the Spartans they trusted the Argives to hold it for them: Thuc. 5.33.2; Hornblower 2008, 79.

[772] Thuc 5.29.1; Gomme, Andrewes, and Dover 1970, 24. Hornblower (2008, 65) suggests that the Mantinean expansion happened during the Archidamian War, when Thucydides briefly mentions an inconclusive conflict between Mantinea and Tegea: Thuc. 4.134.1. He does mention however the possibility that both Tegea and Mantinea had started expanding before their recorded struggle: Hornblower 1996, 416–17.

[773] Paus. 8.27.3; Gomme, Andrewes, and Dover 1970, 32.

[774] Gomme, Andrewes, and Dover 1970, 31, 34.

[775] Thuc 5.33.1; Pikoulas 2002, 281–87.

Mantinea and made it independent.[776] After that, it would seem that most of the Mainalian people were loyal to Sparta, as their presence is attested at the battle of Mantinea where the Mainalians (with no distinction being made as to their individual communities and tribes) were placed next to the Heraeans, yet another West-Arcadian people (Figure 34).[777]
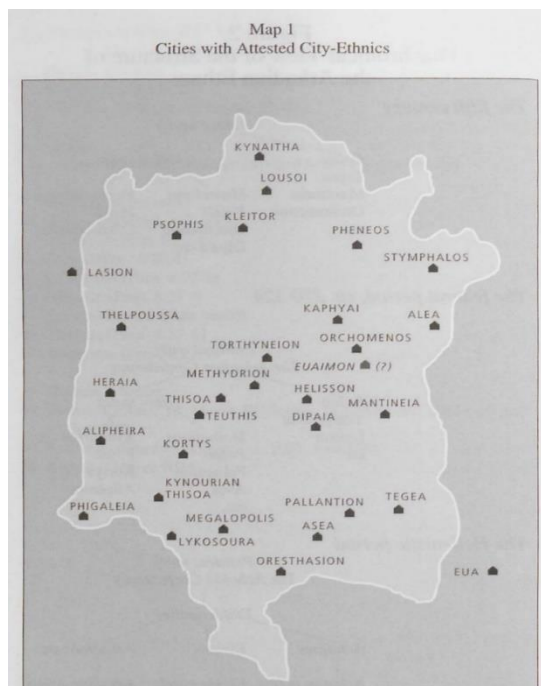

Figure 34: Arcadian cities and communities. Map from Nielsen 1996, 151.

Nevertheless, Mantinea still had some modicum of influence in Arcadia. Thucydides, for instance, mentions the presence of several Mantinean allies who are usually identified as Mainalians and Orchomenians.[778] These particular Mainalians, however, lived in the northern parts of the mountains and would thus probably have been too far from Agis' route to spot him on time. Any Mantinean ally would have to spot the Spartans well before Methydrium, deep into Spartan-controlled land, in order to alert the Argives in time for them to act on the information. Finally, Methydrium itself was likely a member of

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[776] Thuc 5.33.1-3.
[777] Thuc 5.67.1; Gomme, Andrewes, and Dover 1970, 104.
[778] Thuc. 5.58.1; 5.67.2; 5.81.1; Gomme, Andrewes, and Dover 1970, 104; Hornblower 2008, 65; Pikoulas 2002, 284–85; Nielsen 1996, 135, 143.

the Peloponnesian League and not under Mantinean influence.[779] It, thus, seems unlikely that Agis's army was spotted by Mantinea's allies.[780]

It therefore follows that Agis' position was probably betrayed to the Argives by Arcadians ostensibly allied with Sparta and harbouring pro-democratic feelings. Indeed, while Nielsen is correct in claiming that the Spartan invasion had ended the Parrhasian alliance with Mantinea, we must not assume that the people the Spartans had 'liberated' would all be grateful to the Lacedaemonians.[781] After all, only a small element had asked for Spartan assistance, and nothing prevented another group from collaborating with the Mantineans and Argives in turn.[782] Treachery was ever present in Greek warfare. One of the most common sights of the Peloponnesian war was small groups scheming with an outside force in order to assume control over their *polis*.[783] The Spartans knew how effective treachery could be, and used it themselves.[784] Agis would also favour the use of informants and traitors in his second invasion of Argos, perhaps suggesting he learned of their potential the hard way.[785] In addition, it seems more than likely that Sparta's enemies could count not only on her dubious allies for information, but also on her Helot slaves who had been greatly encouraged to act against their masters since 425.[786] In light of these facts, Agis' decision to march through Western Arcadia and gather more men may have also been an attempt to re-affirm Spartan authority in a region whose loyalty could not necessarily be counted upon. Sparta

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[779] Hornblower 2008, 151.
[780] Pikoulas (2002, 283) also notes the close ethnic ties between the Mainalians and the Tegeans who were among Sparta's most loyal allies. Whether those ethnic ties would encourage the Mainalians towards philolaconism is uncertain (see below).
[781] Nielsen 1996, 135.
[782] Thuc 5.33.1.
[783] Thuc. 4.110.2-111.2; 5.81.2; 5.82.2; Garlan 1974, 179–83; Strauss 2007, 239, 244. Such instances of treason form the basis of Losadas' study on fifth columns (1972, 1–4). Aeneas Tacticus heavily emphasized the dangers of treason within a city: Aen. Tact. 2.1, 2.7, 3.3, 10.3, 10.15, 10.25, 11.13-15, 22.5-6, 22.17, 30.1. For a list of cities taken by treason in the Peloponnesian War: Ducrey 2019, 338, 367–82.
[784] Thuc. 4.110.1.
[785] Thuc. 5.83.1.
[786] Thuc 4.41.2-3.

knew all too well, after all, how mercurial her allies could be. An internal act of treachery would also reasonably explain how the Argives knew 'τό τε πρῶτον' of the Spartan plans.

The Argive Defensive Network of Communications

Despite this interception, Agis managed to avoid battle by slipping away during the night, whereupon the Argives returned to Argos.[787] The only obvious path the Spartans could use to enter the Argive plain from Phleius was the Tretos road (called the 'Nemean road' by Thucydides) which connected Argos to Kleonai and Corinth.[788] The Spartans would only need to travel a short distance from the Phleiasian plain to reach the road and then proceed south towards their objective (Figure 35).[789]
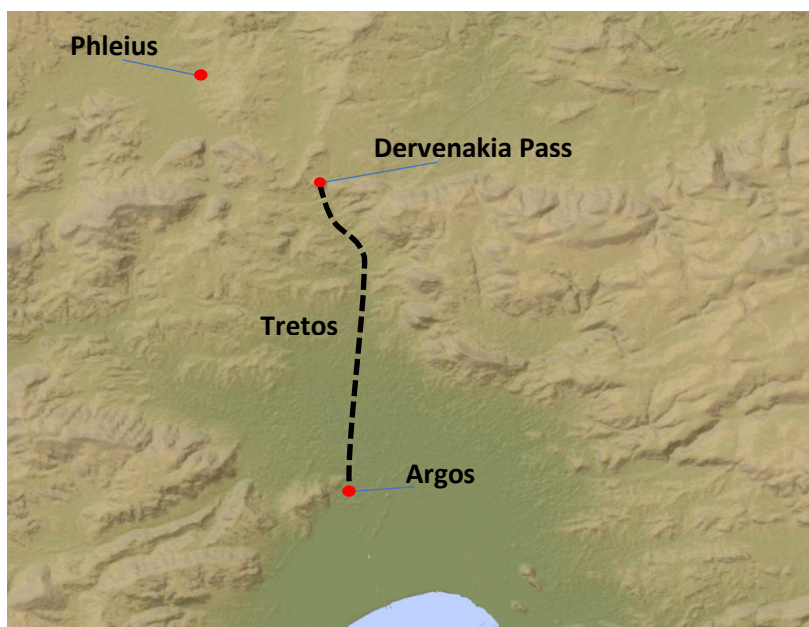

Figure 35: Phleius and Argos.

The Argives accordingly opted to occupy the Tretos road, possibly at the narrow mountain pass of modern day *Dervenakia* and wait for the enemy to engage them in a space where their superior numbers would be rendered useless.[790] Agis, however, divided his army into three groups and ordered each to

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[787] Thuc. 5.58.2; Lazenby 2004, 114.
[788] Paus. 2.15.2; Henderson 1927, 307; Hornblower 2008, 152; Pikoulas 1995, 308–9.
[789] Gomme, Andrewes, and Dover 1970, 81.
[790] Pikoulas 1995, 309.

invade from a different location, an unusual and ambitious plan for Greek warfare. We shall argue that Agis' plans and aims have been misinterpreted by modern evaluations and will propose our own view (see page 233). However, before we address Agis' strategy, we must first study the topography of the Argolid, and more specifically the vast defensive Argive network that forced Agis to take such drastic actions to overcome it.

The city of Argos boasted a vast network of communications, and no less than 43 forts, towers, and relay stations have so far been identified, dotting the entirety of its *chora*, with some being used without interruption from the Mycenaean Age all the way to the Hellenistic Period.[791] The main plain of Argos itself is marvellously flat allowing for perfect visibility on clear days.[792] Furthermore, the city is defended by two citadels, the Acropolis of Larissa and the hill of the *Aspis*.[793] Both of those elevations, besides their obvious defensive value, offer a plunging view into much of Argos' territory and are in direct line of sight with many of the aforementioned outposts granting the *polis* a formidable optical control over most of its territory (Figure 36).[794]

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[791] The most detailed work on Argos' communications network remains, to my knowledge, Pikoulas' *Οδικό Δίκτυο και Άμυνα* (1995). Pikoulas deals in detail with both the Argive road network as well as their outposts, studying each one individually.

[792] Kazantzes 1988, pitcture 47.

[793] Livy 34. 25; Plut. *Cleom*. 17.5, 21.3, 32.1; Tomlinson 1972, plates 4, 6.

[794] Aristotle highlighted the importance of an ideal state being able to supervise the entirety of its territory: Arist. *Pol*. 7. 1327a. See Tomlinson 1972, plate 2 for view from the *Aspis*; Pikoulas 1995, maps 1 and 3 for the Argive network.

Figure 36: View towards the North-East from the Larissa Acropolis. The peak of Profitis Ilias may be seen in the distance. The forested elevation of the Aspis can be seen on the lower right. Photo by Sotirios Peithis.

According to Pikoulas' map (Figure 37) most of the Argive towers and outposts are located near the south-western border of the Argolid, far away from where Agis was attacking. Yet the Tretos road itself, as well as the rest of the Argive territory, is well supervised thanks to fewer, but expertly placed, outposts which were in continuous use since the Mycenaean Age. Outpost number 7 on Pikoulas' map, nowadays referred to as the *Anemomylos*, dominates the entrance to the Tretos road and offers a clear line of sight all the way to the plain of Nemea as well as the citadels of Argos.[795] From there a watchman would be able to follow the movements of an enemy coming from Nemea, Corinth, or Phleius and relay them directly to the city. Yet the Argives did not bet everything on the watchfulness of this single outpost. Their most important watchpoint was located on modern day mount Harvati, above ancient Mycenae (number 12 on Pikoulas' map).[796] Pikoulas was so impressed with the strategic position of this outpost, again in use since the Mycenaean Period, that he referred to it as the 'eye' of Argos.[797] Nowadays the location is

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[795] Pikoulas 1995, 175.
[796] Watchpoint 12 on Pikoulas' map.
[797] Pikoulas 1995, 187.

occupied by the monastery of Profitis Ilias and has a clear line of sight with most of the communication and relay stations located by Pikoulas, as well as both of the citadels of Argos (Figure 36, Figure 39, Figure 40). It also offers an outstanding field of view over the entire plain (Figure 38), with only a small part of the western region of Fikhtia being hidden from it, an important matter we shall address later on.

Figure 37: Map of the Argive towers and outposts from Pikoulas 1995, figure 1.

Figure 38: View of the main plain of Argos from the top of Profitis Ilias, looking to the West. Photo by Sotirios Peithis.

Figure 39: The peak of Profitis Ilias, viewed from outpost 11 of Pikoulas' map, near Fikthia, looking to the East. Photo by Sotirios Peithis.
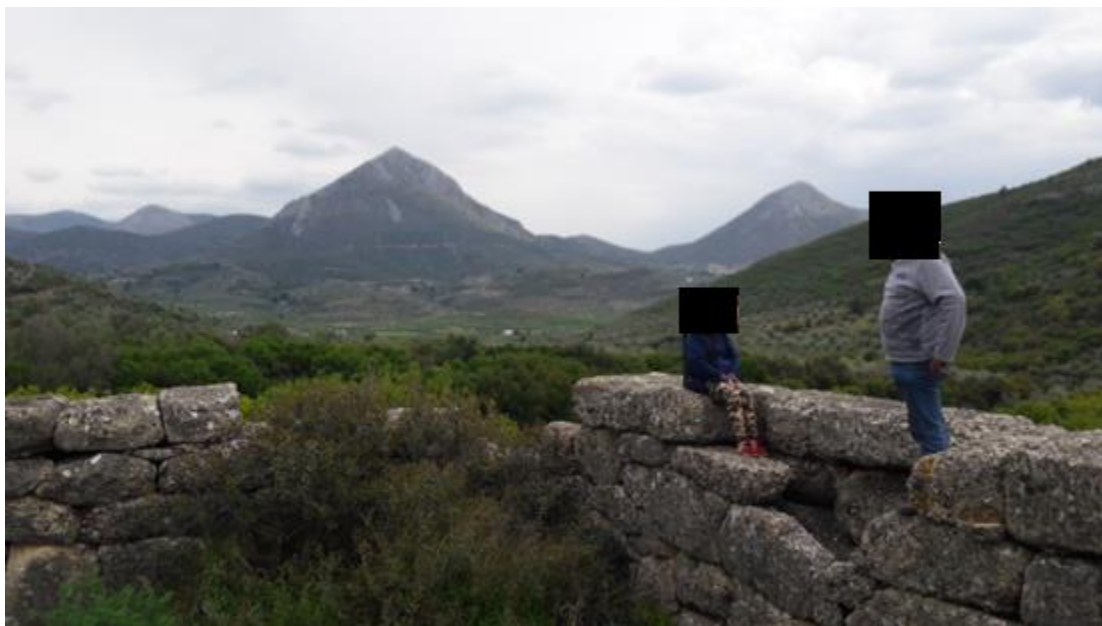
Figure 40: The peak of Profitis Ilias, viewed from outpost 8 on Pikoulas' map, near Fikthia, looking to the East. My guides, the Mitrovgenides, are in the foreground. Photo by Sotirios Peithis.

The eastern Argolid, is also heavily guarded with watchtowers. Argos seems to have built at least three outposts there. Pikoulas deals in detail with the Pyrgouthi outpost, which seems to have acted as both a relay station and possibly a small fort.[798] Unlike most of the other watchpoints we are dealing with, the Pyrgouthi is not in an elevated position compared to its immediate surroundings, which leads us to surmise that it acted mainly as a relay station for the Profitis Ilias outpost.[799] Whether it was part of an even wider network is unknown. Pikoulas believes it might have been a small 'φυλακείον', and while its strategic position guarding the exit of the Kontoporeia, an eastern path that leads to Corinth, is beyond question, the ruins themselves appear to be too small and, more importantly, in too vulnerable a location, to have been a truly effective fortified position.[800]

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[798] Pikoulas 1995, 171.

[799] Morris and Papadopoulos point out that many surviving Greek towers were clearly unsuitable for either defence or communication: 2005, 158. This would mean that at least some towers could be built to exploit local resources and slave labor, and act as residential farming structures. There is too little material evidence to determine if such was the case at Argos, however the fact that the north and north-western towers are in visual contact with each other suggests they are compatible with defensive purposes.

[800] See Munn 1993, 19.

Yet can we be certain that these towers were truly present during Agis' invasion of 418? Historians such as Pikoulas, Ober and Fossey have spent years trying to date ancient Greek watchtowers, with Pikoulas focusing on Argos and Arcadia, Ober on Attica, and Fossey on Boeotia. All three, however, have faced the same problem, namely the fact that secluded outposts that have generally undergone vast changes throughout the years, have been poorly preserved, and contain next to no material evidence other than the ruins of their walls are impossible to date with absolute accuracy.[801] Even after personally visiting most of these sites, Pikoulas is always hesitant to assign specific dates. The small byzantine fort located near Karya, for example has no apparent traces of any pre-existing ancient structure, yet two Neolithic stone-axes were found on the grounds suggesting that the site was known and in use, one way or another, for many years.[802]

Pikoulas nevertheless hazards some educated guesses. By cataloguing the towers according to their size, structural form (as far as the condition of the ruins allows), and the materials used in their construction, he separates the outposts into several groups which can then be dated more precisely.[803] The first of these groups includes outposts 8, 9, 11, 14, and possibly 23. All of these watchpoints are located in Western Argos, with the exception of watchpoint 23. Pikoulas believes them all to be contemporary because of their shape, which favours sharp corners (γωνιαίος οδηγός) unlike most of the other watchtowers in Argolis, and the conglomerate stone (κροκαλοπαγής λίθος) used in their construction.[804] He deduces that this group should be dated to the fourth century BC, principally because their distinct shape only became popular from that period onwards. He does admit, however, that several monuments dating well before the fourth century have been discovered bearing the same shape, casting

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[801] Earley-Spadoni 2015, 22; Fossey 1992, 111; Ober 1985, 205–7; Pikoulas 1995, 332. As a result of these difficulties in dating, Pikoulas warns that his chapter contains 'suggestions and theories, rather than determined views and definite datings.' (personal translation from modern Greek).
[802] Pikoulas 1995, 207.
[803] See Pikoulas 1995, 333–46.
[804] Pikoulas 1995, 334.

some doubt on his conclusions.[805] For instance, historians such as Tsountas have gone so far as to date those outposts to the sixth century.[806]

The largest category of watchtowers in Pikoulas' work includes outposts 5, 10, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31, again selected according to the same criteria described above. Of these, outposts 19, 20, 24, 25, 26, 27, 28, and 29 are all assigned to the fifth century BC. Outposts 15, 16, 17, 18, and 31 may have belonged to the fifth century as well, but Pikoulas felt unable to confirm it, while outpost 30 is dated to the fourth century.[807] This means that a great number of these towers would have likely been present during Agis' expedition, unlike the stations of the first category.

Ober has offered a list of arguments to suggest that the Athenian watchtowers would have been built somewhere in the fourth century BC, but his ideas do not apply to Argos and so the Argive stations may predate those of Attica. Ober's controversial study focuses on the highly developed defence network of Athens from the late fifth to the fourth century BC. Much of Ober's effort revolves around dating the forts and towers surrounding the Attic countryside and, as such, he faces the same difficulties as Pikoulas.[808]

Ober was able to estimate the most probable date of construction following a few logical steps. Firstly, he asserts that Athens would have likely not gone through the considerable expense of building her network between 450-404 BC since, at that time, she did not rely overmuch on her *chora* for her income, and had instead all the weight of her imperialistic tithes to finance her actions. Fortifying her *chora* would have been too great an expense in the hopes of defending something she did not depend upon. According to Ober, Athens only decided to invest on the defence of her *chora* upon losing her comfortable stream of allied tribute.[809] Secondly, he argues that building such a highly developed network in one's own lands

[805] Pikoulas 1995, 332–33, 334.
[806] See Pikoulas 1995, 334 n. 182.
[807] Pikoulas 1995, 339–40.
[808] See n. 801.
[809] Ober 1985a, 53, 206–9.

hints at a defensive behaviour at odds with Athenian attitude during the second half of the fifth century.[810]

It is Ober's belief that dotting one's landscape with defensive structures gives an essence of finality and clearly defined borders at a time when Athens had plans to expand both by sea and by land.[811] Finally, he suggests that it would make little sense for Athens to invest so much time and money into forts and relay stations located outside the *polis* when her foremost strategy throughout the Peloponnesian War consisted of retreating behind her walls and abandoning her cultivated lands to a frustrated enemy.[812]

Many have opposed Ober's views concerning the nature and use of the Athenian defensive network, and this dissertation will not argue in support of them.[813] His arguments against a fifth century date for the Athenian towers, however, can perhaps be transposed to the context of the Argive expedition. Up until 418 BC, Argos had known a period of roughly forty years of relative peace. Her last serious engagement had been a defeat at Tanagra in 494.[814] We certainly do not find in Argos the same imperialistic ambitions we do in Athens. Furthermore, we know the Argives eventually created a standing force of one thousand *logades*, possibly in an effort to match the Spartans.[815] Contrary to Athens, therefore, they thought defensively, not imperialistically, and may well have looked to the safe-guarding of their lands, knowing that sooner or later they would have to defend them against the Lacedaemonians.[816] In addition, the Argives clearly valued their *chora* more than the Athenians ever did.

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[810] Ober 1985, 51–53.

[811] Ober 1985, 206.

[812] Ober 1985, 206–9.

[813] Ober 1985, 130–81. Ober argues for the existence of a preclusive defence system of forts around the Athenian borders that would keep an invading army busy, giving the main Athenian force time to intercept them. For an opposing view: Harding 1988; Munn 1993, 18–25. Harding notes that is unclear if the defensive network of Athens was a fourth century invention, or rather a "sophistication of an earlier fifth-century system" (1988, 62–64). He also notes control of the black sea trade was far more important to Athens than its *chora* (1988, 66–69).

[814] Thuc. 1.108.1

[815] The Argive elite corps was much larger than other picked regiments, such as the three hundred Spartan *hippeis* (Thuc. 5.72.3) or the three hundred Athenian and Boeotian *logades* (Boeotian: Thuc. 3.22.7; Athenian: Thuc. 6.100.1). Once we consider this fact along with the dozens of watchtowers protecting the south-western border of Argos from where the Spartans usually attacked, we may understand just how much they feared for their safety, and how far they were willing to go to ensure their survival.

[816] Kazantzes 1988, 81.

Argos may have been a commercial city in her own right thanks to her harbour and her alliance with Athens, but she did not resort to the Athenian strategy of retreating behind her walls. On the contrary, the Argives twice attempted to deal with Agis far away from their lands, once at Methydrium, and then at the pass of the Dervenakia. Perhaps it would have been easier for them to withdraw within the safety of their walls and garrison their twin citadels. Judging by the Spartans' underwhelming performance during sieges, a large city boasting two such defensive locations would have been hard to take, provided the garrison could sustain itself.[817] Argos, therefore, was radically different from Athens: where the Athenians valued their trade, the Argives valued their *chora*; where the Athenians retreated behind their walls, the Argives rushed head-on into danger; where the Athenians thought of expansion, the Argives looked to Sparta with dread. Ergo, if Ober is correct about the Athenian network being a product of the fourth century rather than the fifth, his arguments do not apply to Argos.

Despite this theory, however, one must ultimately rely on the material evidence, and Pikoulas' discoveries allow us to understand two things about the Argive defensive network. Firstly, the network was disproportionally dense and well developed in the south-western border. Even if it turns out that outposts 17, 18, 15, 16, and 31 did not belong to the fifth century, we are still left with eight stations all supervising the Argive border with Mantinea and Tegea. The Argives most certainly erected these outposts in an effort to check Spartan aggression, which was most likely to come from this direction, as we previously saw.[818] Secondly one can easily notice that, since outposts 8, 9, 11, 14, and 23 probably belong to the fourth century, the western part of Argos was left relatively unsupervised, particularly around the area of Fikhtia were the hills obstruct one's view from Profitis Ilias.

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[817] The Spartans often had difficulties when it came to siegecraft (Thuc. 1.102.1-2) as was made evident throughout the Archidamian War, at Oenoe (Thuc. 2.18.1-19.1), at Pylos (Thuc. 4.11.2.-4.12.1; Lazenby 2004, 71–72), or at Plataea (Thuc 2.75-78).

[818] Kazantzes 1988, 81.

These strengths and weaknesses in the Argive defensive network may, thus, explain why Agis chose to gather his army at Phleius and attack Argos from the north for the first time in Spartan history. Had he chosen to take the more direct approach and invade Argos from the south he would have to cross a heavily supervised part of its *chora*. By opting to invade from the north, however, the Eurypontid king could hope to take advantage of the flaws in their defences and catch the Argives unawares.

Agis' Strategy

The Argives were waiting for the Spartans on the Tretos. Yet instead of marching all his men down the road, Agis separated his army into three groups and gave them each a different route from which to invade the Argolid by night. The first group, led by the Boeotians, were to proceed through the Tretos, the only road capable of accommodating their cavalry.[819] The other two groups, one led by the Corinthians and the other by Agis and his Spartans, were each to take different unnamed roads through the mountains. At dawn Agis' forces were the first to emerge into the plain and the Argive army made to intercept them. While on their way they happened upon the Corinthians, but the Argives pushed past them and met the Spartans deep in the *chora* of Argos, with the Lacedaemonians at their front and the Boeotians and Corinthians closing in on their rear.[820]

While the paths followed by the Boeotians and the Corinthians are known, historians disagree on the exact paths that Agis chose for his own section of the army.[821] One theory supports that the Spartan king flanked the Argives from the east by taking a road called the Kontoporeia, while the Corinthians entered the Argolis from the west at Fikhtia, yet it is equally possible that Agis opted for a more direct route,

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[819] Pikoulas 1995, 57. For an in-depth study of the roads of Arkadia see 15-26, 31-159, 273-323.

[820] Thuc. 5.58.4.-59.3

[821] For a detailed study of the routes followed by both the Spartans and their allies from Laconia, to Phleious, and then to Argos: Gomme, Andrewes, and Dover 1970, 81–82; Pikoulas 1995, 305–16. While both agree that the Corinthians emerged from Fikhtia, as well as on the fact that Agis flanked the Argives from the West, they disagree on the exact path followed by the king.

marching through the mountains west of the Tretos and entering the plain south of the Corinthians themselves (Figure 41).[822]
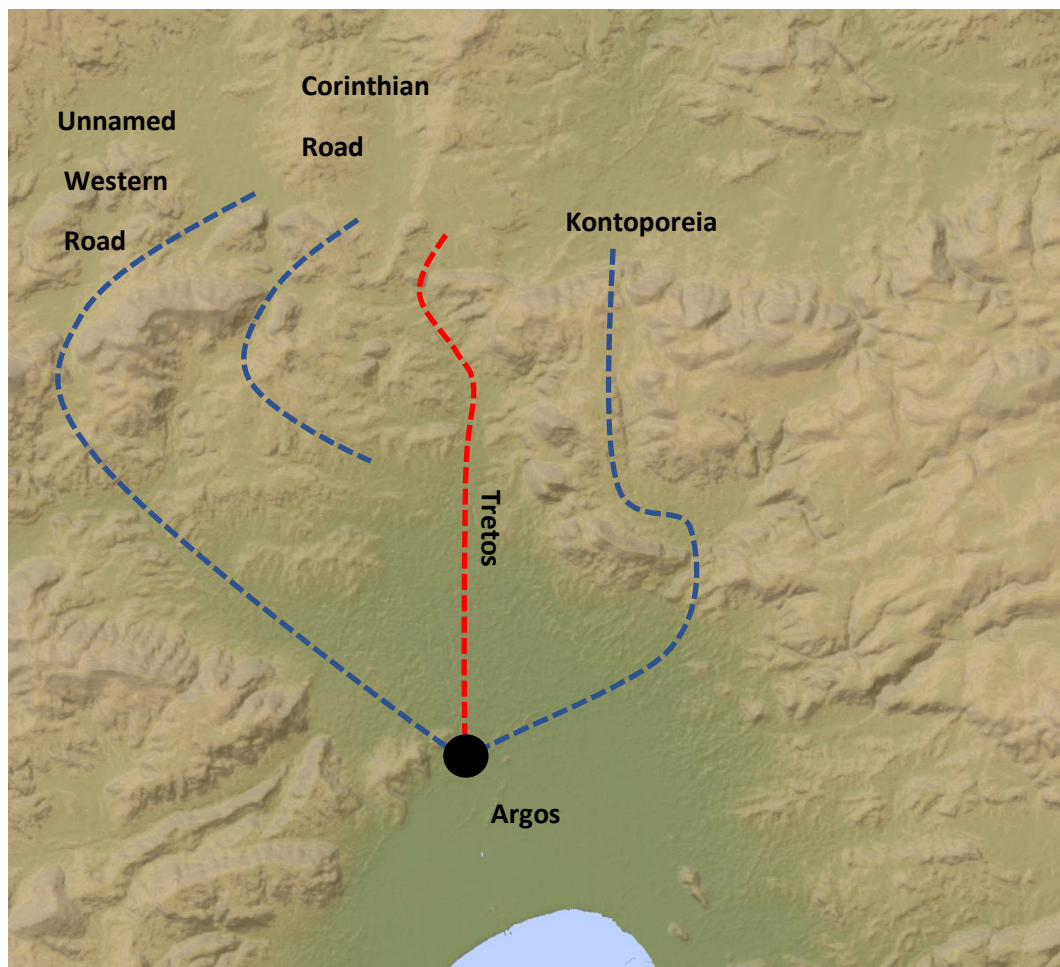

Figure 41: Possible invasion routes.

It seems unlikely, however, that Agis would opt for an eastern approach as the entrance of the Kontoporeia is far removed from his starting point at Phleius compared to the Western mountain passes. This dissertation will accordingly follow Pikoulas' interpretation, and accept that Agis invaded from the west.[823]

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[822] Plb 16.16; Ferguson 1927, 270; Gomme, Andrewes, and Dover 1970, 81; Kagan 2003, 224; Pikoulas 1995, 309.
[823] The only way to understand Agis' route would be to locate Saminthus: Thuc 5.58.5. See Pikoulas 1995, 263, 311–12. Pikoulas' in-depth study and personal exploration of the area leads him to surmise that Saminthus lay somewhere south of Orneai (modern day Lyrkeia), and west from modern day Schinochori. See Pikoulas 1995, map 1 and 2.

Yet what was Agis' end-goal? A popular interpretation of Thucydides' text is that the king successfully attempted to draw his enemies out of the Tretos road and trap them between all three of his armies inside the Argive plain.[824] Following this line of thought, all three armies had one common target: the Argive host. Yet the final disposition of the troops does not point to this conclusion. Indeed, splitting one's army into three divisions with the aim of attacking a common foe would only make sense if all three detachments attacked from different locations, thus justifying their separation in the first place. This, however, is not how events unfolded. Agis' section made no move against the Argives, and instead started ravaging the land.[825] If the aim of the Spartans was to conjointly engage the enemy's army with the other contingents, then this absence of movement could only mean that they wished to draw the Argives' attention and lead them back into the plain whereupon they would envelop them. This scenario, however, has one glaring flaw, namely that if the Argives were to enter the plain to defend their valuables from the Spartans, as they eventually did, the Corinthian and Boeotian sections would both be placed directly behind them (Figure 42).[826]

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[824] Carr 2012, 89–90; Kagan 1981, 93–101; Lazenby 2004, 115; Pikoulas 1995, 311, 314; Tritle 2010, 123.

[825] Thuc. 5.58; Kagan 2003, 224.

[826] Something Pikoulas fails to notice in his description of the events but is clearly visible in his narrative: Pikoulas 1995, 314. Lazenby also states that the Corinthians were positioned above the Argives, on the hills, and that the Boeotians were positioned just behind the Corinthians: Lazenby 2004, 115.
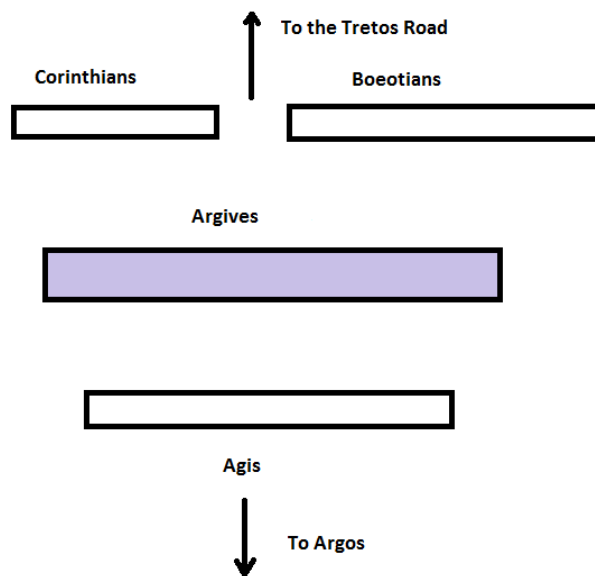
Figure 42: Final positions of the armies.

The danger to the Argive army would undeniably be great, but both the Corinthians and the Boeotians would be threatening their rear.[827] Why would Agis separate the Corinthians from the Boeotians and order the former to go through a steep route through the mountains if the end goal of the strategy would place both groups in the same final position? The outcome would have been the same if they had not been separated at all. Why, then, create a third section?

The answer could be that Agis' own section was never supposed to come into contact with the Argives: he never meant to use all three of his forces to strike at the Argive army in the plain, but rather sought to trap them on the Tretos road between the Corinthian and Boeotian detachments while he would threaten the city itself.[828] According to Thucydides, the Boeotians 'had instructions to come down by the Nemean road where the Argives were posted, in order that if the enemy advanced into the plain against the troops

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[827] Henderson (1927, 312) proposes a slightly different position for the 3 armies. He proposes that while the Corinthian and Boeotian hoplites would strike the Argives from the rear, their light infantry and cavalry could swing to the east and strike the Argive's right flank. While this would enable Agis to attack from three different locations at once, it still does not justify his triple separation of the army. This tactic would have still been possible if the Corinthians and Boeotians had stayed together.

[828] Hutchinson 2006, 105.

of Agis, they might fall upon his rear with their cavalry'.[829] Perhaps the Boeotian cavalry was meant to act before the Argives had entered the plain. If so, we may come to a reasonable explanation for the Corinthians' own flanking manoeuvre. If we accept that the Corinthians and the Boeotians were meant to bottle the Argive army on the main road, then Agis' decision to separate his army in three seems reasonable. In this light, every detachment serves a different purpose, and the skirmish between the Corinthians and the Argives may not have been the product of two armies happening upon each other,[830] but possibly an unsuccessful attempt from the Corinthians to follow through with their orders and keep the Argives pinned and far away from Agis. The area near Mycenae, located some ten kilometres away from the city of Argos, would have perfectly served this purpose, as it would allow the Corinthians to deploy from Fikhtia, and would also serve the needs of the Boeotian cavalry (Figure 43).

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[829] Thuc 5.58.4. Crawley 1910.
[830] Thuc. 5.59.1.

Figure 43: The area near Mycenae, where the Corinthians and Boeotians would have trapped the Argives, viewed from the top of Profitis Ilias, looking towards the North-West. The terrain is wide enough for cavalry to operate. Photo by Sotirios Peithis.

Finally, we come to the issue of Agis' positioning. If the enemy army was successfully trapped on the Tretos, the Lacedaemonians would be free to threaten the city of Argos itself. There is no clear indication in Thucydides' text concerning Agis' exact position on the Argive plain,[831] Yet we may surmise that the king was close to the city by the fact that Thucydides twice mentions the fact that the Argives were enraged to have let the Spartans escape while they were so close to their city walls.[832] Since Agis did not wish to engage the Argive army personally, the only reason for him to move closer to the city of Argos would have been to threaten its walls. The argument has been made that there was a strong garrison at

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[831] Gomme, Andrewes, and Dover 1970, 83.
[832] Thuc 5.59.4; 5.60.5.

Argos which would have prevented a direct attack and would have provided support to the army outside the walls.[833] Yet in that regard Thucydides remains silent, and no troops seem to have attempted to exit the city during the stand-off between the Lacedaemonians and the Argives.[834]

Perhaps more significantly, however, one must remember that the Argives were not above leaving their city vulnerable even in the presence of immediate danger, as was proven a few weeks later, on the eve of the battle of Mantinea, when the Epidaurians invaded the Argolid and made short work of what few troops were left behind to guard it.[835] Yet on the day of Agis' invasion, his section of the army included the entire Spartan levy as well as troops from his Arcadian allies and the very same Epidaurians who would, a few days later, get their revenge on Argos. The overall strength and size of Agis' army was undoubtedly greater than the one produced by Epidaurus alone. The Epidaurian raid nevertheless met with great success, which only indicates the threat that Agis' own contingent must have presented even to a garrisoned Argos.

Beating the Argive Network

Agis thus fully exploited the weaknesses of the Argive network. By launching his attack from Phleius he avoided the heavily defended southern border, and by marching two of his sections from the largely unsupervised western Argolid, he further showed how knowledgeable he was concerning the Argive network. This final piece of information was possibly given to him by the Phleiasians who joined his expedition and likely acted as guides for the Corinthians.[836]

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[833] Gomme, Andrewes, and Dover 1970, 83–84.

[834] Considering the non-negligible amount of time it would have taken for the Argives and the Spartans to deploy for battle, and afterwards for Agis to initiate and conclude his diplomatic negotiations, it seems unlikely that the garrison, if there was one at all, would have failed to at least exit the city especially if it was composed, as Gomme suggested of as many as one third of the Argive army: Gomme, Andrewes, and Dover 1970, 84.

[835] Thuc 5.75.

[836] Pikoulas 1995, 231. Allies were a common sources of information: Russell 1999, 83–85; see page 244.

We do not know how much Agis knew about the northern portions of the Argive network at the start of his expedition. Commanders often relied on the guidance of locals to navigate enemy terrain, though they were not entirely unknowledgeable themselves. Demosthenes, for instance, relied upon his Messenian allies during his Aetolian campaign,[837] but part of the reasons he embarked upon this expedition was the hope that he could then proceed to invade Boeotia by passing through Ozolian Locris, Kytinium, and Phocis after marching north of Mount Parnassus.[838] This suggests he was at least somewhat familiar with those regions. It may be that Agis was not privy to every single detail prior to his arrival at Phleius, but the apparent speed with which he organized the routes of all three sections of his army suggests he knew enough to act immediately upon arrival.[839] Agis had previously led an army as far as the isthmus, and could have gathered intelligence on the northern Peloponnese prior to his expedition.[840] Alternatively, there might have simply been enough information circulating around the Argive *chora* for the Spartans to have a solid idea of what to expect. As Russell notes (1999, 63–102), there were many non-hostile ways for a general to gather information on foreign lands. Envoys could be used, though the nature of their work limited their effectiveness.[841] Heralds (1999, 73–75), and *proxenoi* (1999, 76–83) could also serve similar functions. Merchants and travellers were also known to convey information.[842] Any presumed Spartan officials, however, would have likely entered the Argolid from the south, leaving merchants and travellers as the likeliest source of information.

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[837] Thuc. 3.97.1-2, 98.2.
[838] Thuc. 3.95.1.
[839] Thuc. 5.58.1-3.
[840] Thuc. 3.89.1.
[841] Russell 1999, 64, 67–70.
[842] Merchants: Russell 1999, 92–93. Potential travelers included, among others, itinerant philosophers, musicians, doctors, craftsmen and actors: Russell 1999, 98.

As a result of Agis' planning, his two flanking forces were not spotted before sunrise. The Corinthian road was especially well chosen since, as was previously mentioned, Fikhtia was largely unsupervised and its hilly terrain could obstruct one's view even from Profitis Ilias (Figure 44).

Figure 44: View of Fikhtia from the top of Profitis Ilias, looking to the West. Photo by Sotirios Peithis.

We should also consider the possibility that Agis' complex plan had an additional benefit other than stealth. The king's strategy was great both in its scope and complexity. Yet as difficult as it must have been to organize, it must have been even harder for the defenders to understand, communicate, and react to it, especially at night. As we saw in chapter four, while there might be evidence to suggest that some Greek armies could make effective use of fire-signals and relay complicated messages across vast distances, there is also evidence of the opposite. The Argive network was probably the latter.[843] Perhaps Agis chose to send two sections to flank from the west to fluster any potential enemy watchers that might have been in a position to spot them: one can reasonably assume that the Argives had a pre-arranged signal to indicate that an army was coming from a general direction (i.e. North, West, East, or South), but

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[843] There is, at any rate, no argument to support the opposite.

they most likely could not communicate the fact that *two* armies were invading from the west, taking slightly different roads. As such, even if Agis had been detected, the Argives would have been hard pressed to accurately convey what they were seeing.

In such cases, the solution was straightforward. Aineias Tacticus advised that a watchman should always complement his signal with a messenger.[844] This solution, however, might not have always been feasible: Agis and the Corinthians went through passages that were not suited for cavalry, which means that any Argive lookout who might have spotted them would have probably been similarly crippled and would have to carry his message on foot,[845] possibly explaining why the Argive army was never warned, and instead had to personally witness the fact that Agis had outflanked them.[846] Furthermore, we should also consider the route some of these messengers would have to take: a high vantage point came with the benefit of a clear field of view, but it also made it harder for a messenger to climb back down. The watchpoint of Profitis Ilias is a perfect example. The path leading up to the summit is very treacherous, and impossible to use by night (Figure 45).[847] This means that the sentries of Argos' greatest watch-point would have possibly been unable to send a runner to further explain their signals.

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[844] See n. 716.
[845] Hunt (2007, 119) notes that the lack of horseshoes meant that mounts could easily go lame on rough terrain.
[846] Thuc. 5.59.1.
[847] I can attest this through personal experience. There is no archaeological evidence of any kind of road or steps that would have made the climb easier.

Figure 45: Mountain path to Profitis Ilias. Photos by Sotirios Peithis

Finally, the most obvious flaw of the network would have been the result of the very same years of peace that had allowed its creation. Considering the Argives had not been engaged in any serious campaign prior to their dealings with the Epidaurians, they must have lacked any truly experienced soldiers to man their outposts.[848] Aineias Tacticus heavily insisted on the importance of appointing seasoned men as scouts. Raw recruits could easily misinterpret the enemy's movements and sow chaos in their city by conveying false information.[849] The Argive network was untested and manned by inexperienced men called to deal, in the first real challenge of their network, with one of the most unusual and ambitious strategies of the Classical period. The difference a battle-hardened scout could make is depicted through the actions of Cleon and Brasidas at Amphipolis.[850] Both commanders took it upon themselves to scout the battlefield and observe their opponent. Cleon was unable to divine Brasidas'

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[848] The war between Argos and Epidauros was limited to a series of raids and skirmishes: Thuc. 5.56.4.
[849] Aineias Tacticus 6.1-3. Russell (1999, 140) has also noted how much a lookout might alter or omit in his report depending on what he deemed to be pertinent information. He gives the example of an army wearing red cloaks. An inexperienced watcher might consider this detail unimportant, and thus fail to let his fellows know that the enemy potentially had some Spartan soldiers among them.
[850] Thuc 5.7.1-10.5.

intentions, or numbers, whereas Brasidas accurately estimated the enemy numbers, as well as the quality of their troops.[851] He was also allegedly able to understand the enemy's disposition and intentions simply by the way they were hanging their heads and carrying their weapons.[852] Of course, Thucydides' open dislike of Cleon and clear admiration for Brasidas cast some doubt on his narrative. Nevertheless, the fact remains that, as a former soldier, he firmly believed that an experienced scout could turn the tide of the battle, while a poor one could lead his army into ruin.[853]

Conclusions

In conclusion, in light of the immense effort required by the Spartans to beat this incomplete network of communications, we can certainly say that it was *imperfect*, but not that it was *ineffective*. As for the invaders, Agis' actions prove that Greek generals were not necessarily blind to the importance of communications and intelligence. The Spartan king evidently built his entire strategy of invasion around the Argive network, and exploited its flaws to the fullest. Once we couple his example with the likes of Alcidas, we can safely state that at least some Greek generals valued strategic communications during their campaigns. Generals did not necessarily have to rely on spy rings to gather information on foreign lands: they could instead rely on travellers, dignitaries, or neighbouring allies to collect enough information to conduct a successful campaign.

The Argive network was evidently not exceptional in the way it operated. There was apparently no single way for a polis to detect and report the enemy's location, though our sources once again remain largely silent on the matter: the Syracusans made use of spies, double-agents, and mounted scouts, who

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[851] Thuc 5.8.2
[852] Thuc 5.10.5; Hutchinson 2006, 91–92; Kagan 2003, 184–86; M. Roberts 2015, 216–18.
[853] Russell 1999, 141.

could all report what they saw back to their generals.[854] The invaders were relentlessly hounded for the better part of a week during their retreat,[855] presumably being spotted thanks to the efforts of the Syracusan cavalrymen, who distinguished themselves on multiple occasions during the war.[856] The Syracusans also sent some companies to hold key locations throughout their land in order to hinder the Athenians.[857] This tactic would be encouraged in the fourth century BC by Aeneas Tacticus, who insisted a *polis* should attempt to defend the strategic locations of their *chora* instead of just relying on her walls.[858] Through this combination of scouting and road-blocks, the invading army was destroyed piecemeal.

The Corinthians, on the other hand, operated differently, as the battle of Solygia seems to suggest. They had no cavalry with which to organize patrols,[859] and their own opponents usually came from the sea. As such, they seem to have largely relied on watchers to spot the enemy, and would then communicate through fire-signals to ensure their army intercepted the invaders.[860] Nevertheless, they clearly did not blindly trust their defensive network, as half of their army was left behind to defend Cenchreae in case another Athenian army appeared. Their caution, however sensible, was unwarranted, and the fact that Corinth could only bring half of its forces to bear against the Athenian expedition certainly contributed to its defeat.

The Argives seem to have relied on a mixture of both methods outlined above, which could suggest that no proper 'model' existed in Greece. They had no cavalry to speak of, as we saw, but they nevertheless intercepted the enemy at Methydrium. This strategy bears some resemblance to the

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[854] Syracusan spies: Thuc. 6.45.1. Syracusan double-agents: Thuc. 7.73.3-4 and n. 642. Syracusan cavalry as scouts: Thuc. 6.65.3; Russell 1999, 13. The Athenians also relied on mounted patrols to guard their territory: Thuc. 7.27.5. For mounted scouts in Greek warfare: Russell 1999, 15–17,

[855] Thuc. 7.78.1-85.4.

[856] Syracusan cavalry distinguishes itself: Thuc. 6.101.4; 7.4.6; 7.6.3; 7.11.2-4; 7.13.2; 7.42.6; 7.44.8.

[857] Thuc. 7.74.2; 78.3-5; 7.79.4; 7.80.6.

[858] Barley 2015, 45, 51 n. 37; Aen. Tacti. 15.

[859] See n. 265.

[860] Thuc. 4.42.3-4. Thucydides does not specify whether the Corinthians made use of watchtowers, but their use of fire-signals makes it more than likely. Towers are not essential for one to raise a torch, but elevation is always an advantage in visual signalling.

Syracusan method of aggressive defence: 1) locate the enemy, 2) follow him, 3) destroy him piecemeal. The key difference is that the Argives relied on outside information rather than the reports of their own mounted divisions.[861] Furthermore, they went so far as to abandon their *chora* in order to protect it. Once this plan failed, and the army had withdrawn within the Argolid, they resorted to a more static method of defence,[862] possibly more in line with the Corinthian model.

It is worth noting that both the Corinthians and the Syracusan methods of detection were vulnerable to night-marches: the Athenians successfully evaded the Corinthian watchers for a time by sailing during the evening,[863] and they gained a small reprieve against their Syracusan pursuers by retreating during the night.[864] There was little a general could do if the enemy took the risks involved in a night march: even modern technology has not made night operations advisable outside of highly trained and experienced armies.

Overall, it would seem that city-states surveyed their lands according to the tools they had at hand: cavalry, choke-points, watchers, relay-stations, and outside information were all viable solutions to locate and counter the enemy. Our sources provide very little information for us to establish how far these tactics were pursued. Nevertheless, their silence should not be taken as evidence of the absence of military intelligence. Nor should we believe that the fourth century saw a rise in the importance of military intelligence simply because authors like Xenophon wrote more about them: Frank Russell has noted that while the highly detailed accounts of the *Anabasis*, the *Cavalry Commander*, or the *Cyropaedia* do expand upon the topic of intelligence, the *Hellenica* does not. This wider history gives no greater emphasis to reconnaissance than the analogous works of Thucydides and Herodotus'.[865]

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[861] The Corinthians also initially relied on outside information to intercept the Athenians: Thuc. 4.42.3.
[862] I use the word 'static' here to refer to their watchtowers and watchmen, not the army itself: both the Corinthian and Argive army maneuvered in order to intercept the enemy.
[863] See n. 860.
[864] See page 169.
[865] Russell 1999, 14 n. 15.

Part II: Conclusions

Despite Polybius's claims to the contrary, it seems that the Greeks were capable of communicating complex orders via their fire-signals at least as early as the fifth century BC. Thucydides' account of the siege of Plataea and Alcidas' expedition to Corcyra, while unfortunately lacking in detail, strongly suggests that some Greeks could add some unknown mechanics to their messages to increase their effectiveness.

In the case of the Thebans at Plataea, this may have revolved around the number of torches visible at any given time, or the timing at which they were raised. This would bring their possible range of communication anywhere between that of the hydraulic telegraph, a fourth century invention held as innovative by Polybius, or even Polybius' own square, though the latter is unlikely. The fact that the Plataeans were able to counter it despite never having seen it before seems to suggest that the Theban system was not unknown in the wider Greek world, though this does not necessarily mean it was practiced anywhere else. As for Alcidas, we do not have enough information to speculate on how his system operated, but the timing of his retreat strongly suggests he could receive accurate and actionable intelligence as far as 75 km away.

Nevertheless, while we should probably tamper our dim view of the capabilities of fifth century communications, we must also take care not to overcorrect. There are still too many examples of truly basic uses of fire-signals to suggest that *all* Greeks knew how to operate them effectively. 'Primitive' and 'basic', however, are too often wrongly equated with 'ineffective'. No matter how simple the Argive early warning system may have been, it still forced king Agis to take great risks with his forces, and adopt an ambitious strategy in an effort to overcome it.

Strategic communications could evidently play an important, even central, role in Greek warfare: the Plataeans clearly felt that blocking the enemy's communication was as important to their plan of escape as measuring the height of the wall they intended to climb, or establishing the habits of the patrols. Alcidas, on the other hand, made sure that his fleet was not cut off from friendly territory. Agis himself

seemingly built his entire invasion of Argos with the goal of fooling the enemy's network of communication. He avoided every single one of its strong-points and exploited every one of its weaknesses. It would seem that Greek *poleis* gathered information concerning their enemy chiefly through outside information, either from their allies, their dignitaries, or even passers-by. The Syracusans evidently had a spy-network through which they gathered information on the Athenian expedition, but they seemed to have relied on information from travellers just as much as from their own *kataskopoi*.[866]

There was apparently no defined model for a *polis* to supervise her *chora*. Each city-state made do with the tools available to her. The Syracusans made excellent use of their cavalry, and took care to block as many strategic locations within their land as possible. This ensured that the invaders were never afforded a moment's peace, and were eventually whittled down and destroyed piecemeal. The Corinthians, on the other hand, relied on static watch points and fire-signals to defend their own lands, and while they were skilled enough to meet the Athenian invasion of Solygia, they felt the need to leave half of their forces behind in case their network had failed to spot a second enemy army. The Argives, it would seem, blended both methods of aggressive and static defence: the initially relied upon external information to intercept part of the enemy army far away from their own land, before quickly retreating back to Argos in order to block the strategic pass of the Dervenakia. From that moment, it would seem that they relied on their own watch points, in a manner similar to Corinth.

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[866] Thuc. 6.451.

Conclusions

The transmission of orders in fifth century Greece was not, in any way, comparable with that of later centuries. The Greeks retained an approach to warfare that could rightly be qualified as 'amateurish', and the many limitations so often noted by scholars, such as the lack of proper training among soldiers or lack of professionalism among officers, are all too well attested to ignore. Nevertheless, we should not assume that Greek communications were poor simply because their armies do not meet later, or modern, standards of military excellence. Nor should we judge their abilities by the numerous cases of intelligence or communication failures.

Greek generals, while unprofessional and prone to putting themselves in danger, were often seen deeper within the phalanx than modern scholarship sometimes assumes. From there, they could reasonably expect to lead their army. The high mortality rate among Hellenic *strategoi* is no proof that they fought in the front ranks since it would appear that most of them perished in the later stages of a pitched battle, where the ranks of the phalanx had broken on either side.

Once safely located in the rear lines, the Greek general could deliver his orders from one end of the phalanx to the other through messengers. He could also witness events across his entire battleline, either personally or through the help of yet more messengers. This was all done though vocal orders, the most primitive method of communication an army can employ. 'Primitive', however, is not the same as 'ineffective': modern armies still rely on vocal orders for much of their tactical communications, and there is good reason to believe that the Greeks could generally hear, understand, and follow their commander's instructions, provided they were not engaged in combat.

Hellenic armour seems to have evolved to facilitate communications. The hoplite's panoply gradually became lighter as the fifth century progressed, with a clear emphasis placed on open-faced helmets. This evolution could be explained by a wish to render the equipment cheaper, and thus more

accessible, but some changes clearly indicate that communications were also taken into account: the Corinthian helmet, whose only real advantage lay in its near complete protection, eventually sported ear holes and a wider opening between both cheekpieces, near the mouth. These alterations, both of which clearly avail tactical communications, lessened the sole benefit of the cumbersome Corinthian helmet. This suggests that the Greeks valued their ability to communicate on the field of battle enough to sacrifice protection for the sake of battlefield clarity.

Many fifth century generals took actions that clearly suggest it was far from impossible for a *strategos* to change the outcome of a battle once it had begun. They could do so in a number of ways: men like Lamachus and Myronides could personally travel across their battleline and deliver much needed reinforcements or news, while men like Pagondas and Lykophron could order their subordinates to do so in their stead. The Spartans seem to have been the only ones confident enough to issue mid-battle orders to their entire army, while the rest of the Greeks relied on smaller groups of soldiers that had not yet been engaged. These could range from picked regiments, like the 300 Athenian *logades* at Syracuse, to non-elite companies such as Lykophron's Corinthians and Lamachus' Argives. Non-hoplite troops such as cavalry and skirmishers could also be employed, as evidenced by Pagondas and Lamachus.

Hellenic tactical communications were apparently effective enough to allow the Greeks to operate in hollow square: a demanding formation that relied on solid cooperation between all four sides of the *plaision* and sported at least three decreasing layers of communication. This formation was adopted by the experienced Athenian army, as well as the Ten Thousand, but it was first utilized by the Brasidaeans at Lyncestis. Half of that army was composed of levies from the local Greek city-states who could not boast the same level of experience as the Athenians at Syracuse or Cyrus' mercenaries. This would suggest that more commonplace sources of military experience, such as patrol duty, raiding, or urban warfare could be enough to allow well-led militias to adopt previously unknown formations.

That being said, the amateurish nature of Greek warfare often hampered them on the field of battle. A notable absence of strict hierarchy and military discipline meant that orders could be ignored and disobeyed, sometimes without consequence. Rivalry and personal enmity, whether between officers of different states or compatriots, could also prevent the execution of tactical orders. While this drawback does not reflect an issue with the *methods* of communications used by the Greeks, it nevertheless prevented them from carrying out operations they would otherwise have had the discipline to see through.

As for strategic communications, the idea that fifth century fire-signalling methods were primitive single-message systems must be questioned. The siege of Platea and Alcidas' expedition strongly suggest that *some* Greeks had already introduced one or more mechanics to improve upon their fire-signals by the latter half of the fifth century. This could possibly revolve around the number of torches raised, their timing, a combination of the two, or another unknown option. Our sources, unfortunately, do not contain enough information to accurately establish how these systems operated, but we may at least dismiss Polybius' exaggerated criticism of earlier Greek practices.

While some commanders were evidently heedless of strategic intelligence and communications, others such as Agis could craft their entire military expeditions around them. The Argive campaign strongly suggests that the Spartan king purposefully avoided the strongest parts of the enemy early warning system, while exploiting all of its weaknesses. This meticulous planning allowed him to invade the Argolid almost undetected, though he had to go to extreme lengths to evade Argive vigilance. The Argives, for their part, relied on strategic intelligence gathered from their allies, and possibly disloyal Spartan subjects, to intercept their enemy miles away from their land. After their attempts failed, they fell back on their static defences. This defensive strategy bears some similarity to Syracusan and Corinthian practices, suggesting that there was no such clear cut 'model' to defend one's land. Early warning system, at any rate, are well attested across the Hellenic world, and while experts such as Ober or Pikoulas agree that

most ruins can be tenuously dated to the fourth century BC, they all believe that some form of supervision would have existed well before that.

It would seem, therefore, that the supposed inefficiency of fifth century Hellenic communications has been exaggerated. While there is a clear difference between the practices of the fifth and fourth centuries, much of this could be explained by our lack of adequate primary sources. Our conclusions concerning Hellenic communications align with those of many previous scholars, and contribute to the overall re-evaluation of Greek warfare that has defined ancient military history over the past few years. Seeing as military communications influence every single aspect of warfare, any inference on this topic could have wide-ranging impacts. The information uncovered on tactical communications, for instance, may contribute to a re-examination of the capabilities of hoplite militias when led by competent officers. The hollow square, in particular, ought to be examined as much as the phalanx, and certainly far more than it currently is. Its implications concerning tactical flexibility and generalship are too important to ignore, and could be a valuable addition to the ongoing hoplite debate. Our conclusions on strategic communications, on the other hand, seem to confirm Russell's views on Hellenic military intelligence. While it remains impossible to describe the systems of communication at Plataea and Sybota in any real detail, this dissertation has attempted to go one step further than to simply note their importance. It seems more than likely that some Greeks had already introduced complex mechanics into their fire-signals, which opens up a wide range of potential practices as early as the late fifth century BC.

In addition, any light we might have shed on fifth century communications can, and should, be used to go further back in time into the lesser-known period known as the *Pentekontaetia*: a poorly documented gap between the end of the Persian wars and the start of the Peloponnesian war. As Lee points out, this abrupt shift from one war to the other can create the impression that the Peloponnesian war was a revolutionary period of drastic change in Greek military practices.[867] Yet change, as Wheeler

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[867] Lee 2013, 143–44.

notes, is never instant in warfare.[868] According to Lee, the *Pentekontaetia* is particularly ripe with possibilities for military historians. Closer examination has recently revealed traces of early developments in the use of combined arms tactics, surprise attacks, and naval expeditions. This would, in turn, suggest that the armies and tactics of the Peloponnesian War were not the fruit of an extraordinarily violent conflict, but rather the result of decades of slow and steady evolution.[869] If the roots of the tactics and strategies of the Peloponnesian War can indeed be traced back to the *Pentekontaetia*, then perhaps the same could be true of effective transmissions of orders.

The main challenge to such a project will, of course, be the lack of evidence. As such, a wide approach to earlier Greek communications will be almost impossible. Every single snippet of information will have to be meticulously analysed on its own, following the same approach as this dissertation. Whatever information is uncovered will then have to be compared with later practices in order to establish differences or similarities. One particularly promising method in our quest to better understand Hellenic communications will be practical experimentation. Most locations where experts such as Pikoulas have identified watchtowers are easily accessible to even middling outdoors-men, and as such can still be used today. One of the earlier goals of this dissertation was to organize an expedition with a local scout group, and see to what extent we could communicate via fire-signals in the Argolid.[870] The same could be done at Plataea, Sybota, or any of the numerous Greek islands.

Yet the main goal of this dissertation was, and remains, to hopefully highlight how important military communications should be to any study of military history. While some questions, such as the hoplite debate, seemingly go on forever, others are left unfinished, and no work on Hellenic warfare

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[868] 'The search for dramatic change can ignore continuities over time and more subtle incremental changes (differences of degree rather than innovation)' Wheeler 2007a, 187.

[869] Lee 2013, 144; Wheeler 2007a, 202, 215, 221–22.

[870] The great forest-fires of 2018 put a stop to this project, hence the smaller experiment included in the final dissertation: see appendix.

should be considered complete without a solid view on how the Greeks communicated on the field of

battle.

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<u>Appendix</u>

- <u>Hydraulic Telegraph: Practical Experiment</u>

Date: 30/11/2019

Time: 19:00 P.M.

Organizer: Sotirios Peithis.

Participants: Natalia Lorena Gandara; Beatrice Pestarino; Karolina Frank; Alfred Hinrichsen; Victor Salinas Silva; Ariadne Koutsaftis; Sotirios Peithis.

Goal

The purpose of this experiment is to assess whether or not Aeneas' hydraulic telegraph can be used effectively and reliably with minimal training. The hydraulic telegraph is the earliest Greek fire-signalling system whose precise workings are known to us.[871] Polybius claims this fourth century invention was the most effective and sophisticated method of communication of its time (Plb. 10.44). As such, the logical conclusion would be to assume that all prior systems of transmission were, necessarily, less effective. However, Polybius further claims the hydraulic telegraph was still not effective enough to allow the Greeks to communicate unforeseen events or important details such as troop numbers (Plb. 10.45), despite the fact that Thucydides describes at least two instances in the Peloponnesian War that strongly suggest such a thing was possible in the fifth century BC (page 185).

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[871] Despite the name '*hydraulic* telegraph', Aeneas' system still relied on fire-signals to properly function, and thus qualifies as a fire-signalling method.

In light of this discrepancy, we should perhaps consider that Aeneas' invention was not ground-breaking in its sophistication, but rather in its ease of use. Greek warfare was conducted by part-time soldiers with no time to master complicated tools of war. Such a society would naturally be drawn to easier, more streamlined, methods of communication. Consequently, perhaps Aeneas' telegraph was not the most effective system of his time, but rather something he thought could be widely adopted by amateur soldiers. Should this theory prove correct, then it would stand to reason that prior fire-signalling systems were not necessarily less effective than the hydraulic telegraph, which would in turn explain Thucydides' narrative.

In order to establish the truth, I decided to build a hydraulic telegraph based on Polybius' description and enlist the help of a team who had never used, or heard of, such a contraption. If these individuals could use the telegraph effectively with next to no training, it would stand to reason that Aeneas' invention was geared towards simplicity rather than sophistication.

Description of Hydraulic Telegraph used

A detailed description of Aeneas' hydraulic telegraph can be found in Polybius' accounts (Plb. 10.44). Due to material restrictions, as well as my limited crafting abilities, I had to alter the base design of the Hydraulic telegraph. The changes, however, do not alter the fundamental workings of the contraption, and thus do not affect the result of the experiment.

Originally, Aeneas used two identical containers filled with an equal amount of water, and sporting the exact same opening at the bottom. This allowed both tanks to pour water at the same rate. Aeneas then inserted two identical rods in each container. Both rods were marked at precise intervals, and a different message was written on each marking (Figure 47a and Figure 47b). Once the water started flowing, the rods would lower until the desired message was reached.

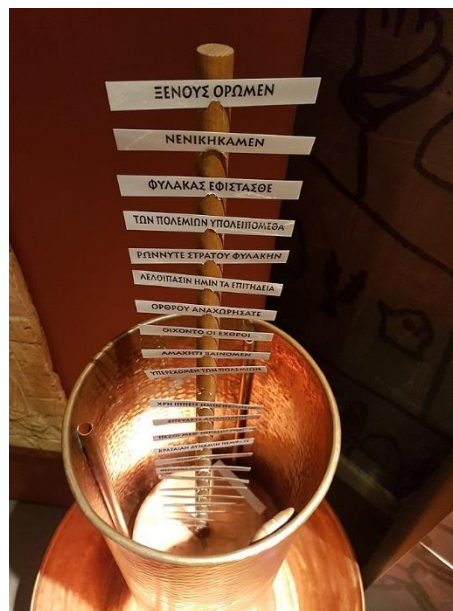Figure 47a: Hydraulic Telegraph, reconstruction of the Thessaloniki Technology Museum

Figure 47b: Interior of the Hydraulic Telegraph, reconstruction of the Thessaloniki Technology Museum

To recreate this, I used two plastic Evian water bottles to ensure both containers shared the exact same proportions. Unfortunately, I could not recreate the rods themselves.[872] I instead decided to inscribe the messages on the containers themselves: both bottles were fluted at regular intervals as a result of their manufacturing process, providing us with premade markings for our messages (Figure 48). Since the bottles were transparent, one could easily see when the water level reached each marking. Obviously, the ancient Greeks would not have had access to a transparent material such as plastic, but this alteration only simplifies the *manufacturing* process of the hydraulic telegraph. The *method* of communication itself remains the same.

I used two rubber wine bottle stoppers, attached to two narrow-headed plastic caps to regulate the water flow more easily. Both the bottle stoppers and the caps were exactly similar to each other,

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[872] The issue was that the rods did not have enough support and kept falling over. This problem could be easily dealt with by any middling craftsman, but was unfortunately beyond my own skills. The easiest way to rectify the issue would be to make the rods form-fitting with the containers to give them extra support. Another solution would be to attach a large base made out of cork at the end of the rod, which would in turn give them both buoyancy and stability (Figure 47).

ensuring an identical flow of water between the two containers (Figure 49).[873] As for the fire-signals, I

used two garden lanterns, each containing a tea candle (Figure 50).

Figure 48: Water Bottle fluting.

Figure 49: Bottle Caps.

Figure 50: Lanterns

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[873] When testing the flow, there would sometimes be a negligible difference of a few tenths of a second. Both bottles presented these discrepancies at turn, meaning the fault did not lie on either of them specifically. It seems more likely the delays were caused by micro differences in the exact time both bottlecaps were opened. Such a thing is unavoidable, and did not hamper or affect the experiment in any way.

Teams

My six participants were split into two teams of three. As the organizer of the experiment, I went back and forth between both teams to gather information and assess the developments. The first team consisted of Natalia Gandara, Alfred Hinrichsen, and Ariadne Koutsaftis. The second team consisted of Karolina Frank, Victor Salinas Silva, and Beatrice Pestarino. None of them had ever used the hydraulic telegraph before, and none of them had taken part in its construction.

As the two tallest members of the group, Alfred Hinrichsen and Karolina Frank were put in charge of the fire-signals. The rest of the team members were responsible for initiating and stopping the water flow, as well as refilling the bottles between each message. To ensure we never ran out of water, the bottles were opened on top of two containers. The water was then recycled for the next message. Each team was also provided with an extra water bottle in case of accidental spills. Polybius does not indicate whether or not Aeneas advised such fail-safes, but their use seems self-evident.

Messages

The bottles were separated into six different sections. However, instead of assigning a message to each section (i.e. 'send help', 'enemies approaching'), I decided to assign specific fire-signals: once the receiving team had obtained the message, they would have to execute the correct fire-signal to let the other team know the right directive had gone through (Figure 51). For example, if team one sent message number six, team two would have to use their lantern to perform the shape of a cross. This added an additional level of difficulty to the process, and allowed both teams to confirm their success or their failure without any verbal communication.
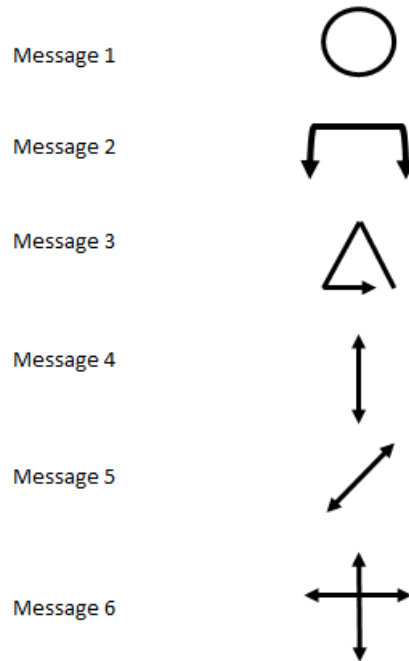
Message 1

Message 2

Message 3

Message 4

Message 5

Message 6

Figure 51: Fire-signals.

Additionally, each team was told to wave their fire-signals from left to right to indicate an error. If, for example, one of the valves failed to open in time, or if the water bottle tipped over, the message could be stopped mid-way and sent again. Much like the containers, this additional failsafe is not mentioned by Polybius, but its use seems just as obvious.

Training

As stated previously, the purpose of the experiment was to establish whether a group of amateurs could reliably use Aeneas' system with minimal training. As such, I briefly explained the theory of the mechanism to every group member and allowed them precisely two trial messages before starting the experiment. This training session was limited to half an hour and uncovered two important facts. Firstly, it proved remarkably difficult to keep an eye on the water level through the opaque plastic at night, something the rods would have avoided. Secondly, the hands of the members responsible for regulating the water flow were soon drenched and cold. This forced the team members to swap roles at regular

intervals. Neither of these issues proved insurmountable in any way, but they are worth noting as they are interesting examples of practical issues that must have affected the Greeks as well.[874]

Experiment

Once the practice session was over, both teams took up their positions. The experiment took place on Greenside Road, next to the Saint Andrew Bobola Polish Church. The street is largely deserted in the evening, and offers low-light conditions that lend themselves well to our experiment. Both teams were standing sixty meters apart from one-another and were instructed not to communicate beyond the use of their equipment. The distance between each team was necessarily small, but since the experiment did not aim to establish the effective range of fire-signals, it did not affect our findings.

In order for the experiment to be successful, each team would have to accurately send, and then receive, five messages, for a total of ten successful messages. The exercise began with Karolina Frank's team sending the signals, and Alfred Hinrichsen's team receiving them. All five messages were sent successfully. Once the roles were swapped, Alfred's team successfully sent 3 messages. On the fourth message, the water flow was initiated too slowly, and as a result they had to raise the signal indicating an error. The message was then re-sent successfully. At the same time, I was forced to replace Natalia Gandara due to the cold. In order to interfere as little as possible with the experiment, my role was limited to holding and refilling the water bottle. The final two messages were thus sent successfully as well.

Conclusions

The six participants needed no more than half an hour of practice in order to use Aeneas' hydraulic telegraph effectively, with the added difficulty of having to use fire-signals as a means of response. The

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[874] Obviously, the opaqueness of the glass would not have been an issue, but we must not underestimate the challenge it would have been for the Greeks to operate in darkness: one has to assume they would not have made use of any secondary light source to avoid a signal overlap.

only skills required were basic synchronization, and concentration. This is in stark contrast with Polybius'

own method of communication (Plb. 10.45-46), or modern systems such as semaphores or Morse code,

all of which require extensive training, as well as a solid grasp of the alphabet.[875] The greatest obstacles

we encountered came from our surroundings, namely the dark and the cold. These issues can be easily

surmounted, but can also severely affect a team's effectiveness if underestimated. Overall, this system

can easily be learned in a few days of training, which would perfectly suit the needs and schedule of

Greece's militia armies.

Consequently, Aeneas' hydraulic telegraph seems to have been geared towards ease of use rather

than effectiveness. His system was not necessarily the most sophisticated of his time, but rather

something he believed could easily be adopted throughout the wider Greek world. This would in turn

explain why Thucydides appears to have described at least two instances that suggest complicated

messages could be sent decades before the invention of the hydraulic telegraph. As for Polybius'

insistence that Greek fire-signals were poor and ineffective prior to his age, we must not forget that, by

his own admission, he asserted that none of his predecessors had ever taken an interest in fire-signals

before him (Plb. 10.43). Polybius, therefore, was plagued by the exact same lack of information that affect

us today. This fact, coupled with the obvious interest he had in promoting the superiority of his own

method (Plb. 10.46), should be enough to make us question his judgment and his assertions.

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[875] For an analysis of writing in military communications: Liddell 2017.