Histos 9 (2017) 108–27

PROOF THROUGH THE NIGHT: REPRESENTATIONS OF FIRE-SIGNALING IN GREEK HISTORIOGRAPHY*

Abstract: This article examines representations of fire-signaling in Greek historiography from Herodotus to Polybius. These historians' depictions of either the extraordinary potential or the possibility for confusion inherent in this form of communication are understood to be indicative of each's broader views on the effectiveness of human communication, most importantly through the writing of history. The distinctive portrayals of fire-signaling in the works of Herodotus, Thucydides, and Polybius, therefore, are shown to reflect shifting perspectives toward both technology and historiography.

Keywords: beacons, fire-signaling, Herodotus, historiography, Polybius, Thucydides.

While technical aspects of fire-signaling in the ancient world have received extensive study from past scholars,[1] this article examines this form of communication from a historiographical perspective. When read in this manner, we will see that the various approaches to fire-signaling evident in Greek historians are indicative of the differing historiographical principles of each author.

The most common and fundamental purpose of the lighting of a beacon fire in Greek sources is to inform a neighboring city of a sudden attack.[2] The signal thus becomes a call-to-arms, which simultaneously warns the neighbors that they may be in danger and, perhaps more directly, summons their aid in defense of the city. Reference to the use of fire signals or beacons to communicate simple messages such as this can be found in ancient Greek literature as early as Homer (*Il.* 18.211),[3] and examples from near-eastern sources indicate

* I would like to thank John Dillery, Ted Lendon, Tony Woodman, and this journal's two anonymous reviewers for their helpful comments on earlier drafts of this article. Many of my arguments here have benefited from the challenges posed by these readers. I am also grateful for the comments of my fellow panelists and the audience members at the 2017 meeting of the *Society for Classics Studies* in Toronto, where I presented an early version of this article. Finally, I thank Christopher Krebs for his timely and gracious efforts as editor.

[1] E.g. Merriam (1890), Riepl (1913) 46–122, Diels (1920), Reinecke (1935), and Forbes (1966) 168–78.

[2] How and Wells (1912) 287. An alternate use involves the lighting of beacons on the shore to inform passing ships of the presence of land or a harbor (e.g. Eur. *Helen* 1130, cf. Hom. *Od.* 10.30).

[3] Cf. Theog. 549–50 and Xen. *Anab.* 7.8.15.

ISSN: 2046-5963 12 September 2017

that such signals were in use even earlier.[4] By the time of Polybius in the second century BCE, the art of fire-signaling had developed into a system of telegraphy with the ability to spell out words and short phrases (Pol. 10.43–7). In the centuries between, references to fire-signaling can be found across the genres of Greek literature including tragedy (see below on Aesch. *Ag.* 281–316), comedy (e.g. Aristoph. *Birds* 1161), and especially history. This paper will focus primarily on this final category in order to reveal the perspectives on fire-signaling evident in the works of the three Greek historians who describe this phenomenon: Herodotus, Thucydides, and Polybius. The unique treatments of fire signals by each of these historians will offer important insight into shifting views toward technology, the idea of progress, and the purpose of history in these authors.

1. Herodotus and the Power of Beacons

The clearest example of the use of fire signals to convey a particular message in Herodotus' *Histories* occurs when the Greek forces stationed at Artemesium in 480 BCE are informed by beacons from the island of Sciathus that three ships sent out as scouts had been captured by ten Persian ships sent in advance of Xerxes' fleet (7.183). In the preceding chapters (7.179–82), Herodotus describes in detail how, after fleeing at the sight of the Persian fleet, each of these three ships—one from Troezen, one from Aegina, and one from Athens—had been captured separately: the ship from Troezen was overtaken immediately (7.180), the one from Aegina put up more of a fight (7.181), and the Athenian ship made it to land where the ship was abandoned but the crew escaped (7.182). Herodotus then claims (7.183.1) that the Greeks stationed at Artemesium learned about these events (*ταῦτα*) through fire signals (*παρὰ πυρσῶν*) from Sciathus.[5]

How exactly all of this information might have been conveyed by fire signals is not clear. Scholars attempting to explain Herodotus' version of events have speculated about ways in which, with some prearrangement, such a message might have been communicated with a minimum of two separate signals to warn at least that the attack had occurred and of the number of Persian ships.[6] But Herodotus is not concerned with details of how the information was communicated; nor does he explicitly limit the scope of this message to

[4] See Dossin (1938) and Forbes (1966) 169–70.

[5] *ταῦτα οἱ Ἕλληνες οἱ ἐπ' Ἀρτεμισίῳ στρατοπεδευόμενοι πυνθάνονται παρὰ πυρσῶν ἐκ Σκιάθου.*

[6] Riepl (1913) 57–8 argues that the basic information that the ships had been destroyed and the number of enemy ships could have been reported using between two and four signals. Forbes (1966) 171–2 similarly speculates that two signals could have sufficiently communicated this message.

these basic elements. Rather, he implies that the details which he has just described in his own narrative were at that time also communicated seamlessly from Sciathus to Artemesium by fire signals. Herodotus' primary purpose in mentioning the fire signals here is to create a connection in his narrative between the events off of Sciathus and his subsequent discussion of the situation at Artemesium. Thus the reader follows the path of the signal from the island back to the mainland. But his willingness to use these signals as a narrative device in such a way reveals the intrinsic assumptions by the historian of the power of communication inherent in this technology. He takes it for granted, without providing details or explanation, that the ability to record and transmit information inherent in his own text is matched by these fire signals: the same information appears to be transmitted by each.

A similar treatment of fire signals by Herodotus appears at the beginning of Book Nine, when the Persian general Mardonius decides to march on Athens in order to sack the city for a second time (9.3), instead of staying at Thebes as his Theban allies had advised (9.2). In attempting to explain the motivation for Mardonius' actions here, Herodotus writes (9.3.1), 'Mardonius was imagining that, with fires through the islands, he would reveal to the king in Sardis that he held Athens'.[7] Unlike the previous example, this passage stands out for its representation not just of a single signal between two locations but of a chain of beacons able to convey a message from island to island across the Aegean Sea. But, as before, Herodotus provides no further detail about how such a message might have been transmitted or the precise route the chain would have followed. Nor does Herodotus claim that this message was ever actually sent: it only exists in the mind of a historical agent.

In addition to the problem of how Herodotus might have known what Mardonius was thinking, practical considerations render it unlikely that Mardonius would have imagined such a scheme possible. Despite reports that networks of beacon chains existed in antiquity,[8] there are no historical examples of messages being sent along this path across the Aegean. But even plausible consideration of such a message by Mardonius would have required previously established and permanently manned stations at each of multiple points across the Aegean. This seems far-fetched given the absence of any evidence that

[7] *πυρσοῖσι διὰ νήσων ἐδόκεε βασιλέι δηλώσειν ἐόντι ἐν Σάρδισι ὅτι ἔχοι Ἀθήνας.*

[8] According to a pseudo-Aristotelian passage (*De Mundo* 6.398a31–2), such a network was created in the Persian Empire to communicate messages from outlying areas back to the capital (see Richmond (1998) 18). Polyaenus reports that relay systems were also set up later by Jason of Pherae in Thessaly (6.2.1) and by Iphicrates on Corcyra (3.9.55). Cf. the more locally oriented web of signals discovered on Crete by Barber (2010).

such a chain was ever actually put to use.[9] Even if these stations did exist, the successful communication of this message would have required prearrangement with Xerxes about the precise meaning of any lighting of the beacons. But Mardonius' current course of action appears to have occurred to him only recently and without consultation with Xerxes (cf. 8.136), thereby precluding the likelihood of any prearranged message to announce specifically the sack of Athens. The infeasible historical context of sending such a message at this point suggests that this image of a beacon chain across the Aegean in fact stems from the mind of Herodotus rather than Mardonius.

But if the idea for this scheme did not originate with Mardonius, then what is Herodotus' inspiration for this comment? As has been previously recognized, a famous passage from Greek literature more contemporary to Herodotus offers an important parallel: the (equally imaginary) beacon chain described in great detail in Aeschylus' *Agamemnon*, by which Clytemnestra learns of the fall of Troy (281–316). The similarities both in the potential route of such a chain and in the intended message—as both were to announce not an attack but the fall of a city—suggest that these passages may in fact be related. While it remains possible that Aeschylus' dramatic (and mythological) beacon chain was inspired by the historical events of 480,[10] the improbable historicity of these events makes it more likely that the memorable scene in Aeschylus' play has influenced Herodotus.[11] By focusing on a method of communication most memorably associated with Agamemnon and the sack of Troy, Herodotus (ironically) frames Mardonius as attempting to match the grandeur of this epic event. The ultimate significance of this parallel is realized when Mardonius finds Athens abandoned and sacks an empty city (9.3.2), a result that appears even more anticlimactic in comparison to the fall of Troy. This negative characterization of Mardonius is consistent with the general lack of sound judgement on the part of Mardonius' in Herodotus' text.[12]

Such an inspiration for the beacon chain imagined in Herodotus underscores again the literary purposes of fire-signaling in Herodotus' work. Herodotus is indifferent to the historical reality or the practical details of such a chain; he is primarily concerned with the impact of the *idea* of sending such a message

[9] Flower and Marincola (2002) 105 are also skeptical that such a chain already existed, noting that when Xerxes sacked the city himself, he sent the message by horseback (8.54). Merriam (1890) 2–4; Diels (1920) 77–8 (who diagrams a possible route for this chain); and Forbes (1966) 171, on the other hand, take this passage as sufficient evidence for the preexistence of this beacon chain.

[10] Thus Tracy (1986).

[11] This is the position of Flower and Marincola (2002) 105.

[12] See Flower and Marincola (2002) 9–11. I thank this journal's anonymous reviewer for raising this point.

as motivation for Mardonius' actions. The power represented by the ability of fire signals to proclaim with great grandeur a successful endeavor across the sea is so appealing to Herodotus that he presents it as overpowering the (subsequently justified) advice given to Mardonius that he remain at Thebes.[13] The magnificence of the beacon signal trumps logical argument.

Both of these examples reveal an assumption by Herodotus that the technology of fire-signaling possessed the ability to transmit even difficult messages successfully and without confusion. This is consistent with the depiction of other human-to-human forms of communication in Herodotus. Unlike messages from divine sources such as oracles, which are often misinterpreted in Herodotus, human messages—even when conveyed in a remarkable fashion—are typically successful. In addition to extraordinary means of sending covert messages in Herodotus,[14] for example, a method parallel to the concept of beacon chains is the series of riders used by Xerxes to send messages rapidly from Greece to Persia (8.98). For Herodotus, no matter how extraordinary such methods of communication may be, all of them are ultimately successful. While the text of Herodotus offers admittedly limited evidence in the case of fire-signaling, these broader examples support the conclusion that Herodotus' treatment of fire-signaling is indicative of a fundamental belief that human-to-human forms of communication are reliable and effective even when overly grand and dramatic. It is not the limitations but the possibilities presented by such communication in which Herodotus is most interested. His inclination in the first passage discussed above (7.183.1) to describe the same information as transmitted both by fire signals and by his own historical narrative raises the possibility of a parallel between these two means of transmitting information as well. In light of this parallel, it will be worthwhile to consider the extent to which Herodotus' optimistic attitude toward the efficiency and grandeur of such communication is reflective of his views on the relatively new genre of historiography.

Despite the general lack of programmatic passages detailing Herodotus' views on historiography, the attitude toward history presented in his preface

[13] As this journal's anonymous reviewer points out to me, grand schemes such as this are characteristic of the Persians depicted in Herodotus (cf. the Athos canal (7.24) and the bridge across the Hellespont (7.36)). This may help to further explain Herodotus' characterization of Mardonius, but it does not, in my opinion, suggest that this idea of this chain originated with Mardonius and not Herodotus.

[14] Memorable examples include the letter sent to Cyrus by Harpagus sewn inside the belly of a hare (1.123); Histiaeus' message to Aristagoras instigating the Ionian revolt, which was tattooed on the head of a slave and then obscured by re-grown hair (5.35.3); and the warning of Xerxes' plans sent by Demaratus to the Lacedaemonians written on a wooden tablet then covered over with wax (7.239).

suggests a similarly optimistic view of its potential. There (1.1.*praef.*) Herodotus famously claims that he has written his work to prevent human affairs from becoming faded (ἐξίτηλα) with time or lacking in fame (ἀκλεᾶ). Unlike in Thucydides, there is no concern expressed here that history might fail to achieve this purpose. Rather, there is an unmistakable assumption here that history will be an effective medium both for the preservation of knowledge about the past and for the spread of that knowledge throughout the world. It is noteworthy, furthermore, that the term he chooses to express the first point (ἐξίτηλα) involves a visual metaphor, as the adjective is used (*LSJ* 1) more literally of the fading of color from objects such as clothing (e.g. Xen. *Oec.* 10.3) or paintings (e.g. Paus. 10.38.9).[15] Similar to fire-signaling, Herodotus imagines history as (literally) making human events visible to others; in neither case does he demonstrate concern for the possibility of misinterpretation or failure in the transmission of this information.

As a counter example to this positive view of the ability of history successfully to communicate information, one might consider Herodotus' famous assertion at the start of the Constitutional Debate in Book Three that, despite the fact that these speeches seemed unbelievable (ἄπιστοι) to some Greeks, they were in fact given (3.80.1).[16] Even in this case, however, Herodotus does not claim that history has failed to record accurately past events. In fact, he is claiming the opposite: reports of this debate (even presumably those in circulation prior to his own work) *are* true and accurate despite doubts to the contrary. The problem Herodotus sees here is not that history has failed to provide an accurate account but rather that readers have failed to believe what has been correctly presented to them. The failure lies not with the medium but with those who ignore the truth of it.

The epic connotations of Herodotus' mention (ἀκλεᾶ) of preserving the fame of the past through the medium of history indicates his faith not just in the ability of history but also its grandeur.[17] Thus Herodotus' vision of historiography and of human communication in general is exemplified both by the complexity of the implied message from Sciathus to Artemesium and by the

[15] For the possible genealogical connotations of this word in Herodotus (cf. 5.38), see Pelliccia (1992) 75–6.

[16] ἐλέχθησαν λόγοι ἄπιστοι μὲν ἐνίοισι Ἑλλήνων, ἐλέχθησαν δ' ὦν. For discussion of this claim, see Brannan (1963), who defends Herodotus' claims of the fundamental historicity of the debate, and Evans (1981). I am grateful to the journal's anonymous reviewer for noting the relevance of this passage.

[17] For the epic features of Herodotus' preface, see e.g. Krischer (1965), Nagy (1987), and Marincola (1997) 35.

magnificence of the imagined beacon chain across the Aegean. Though historically implausible themselves, each example is in its own way indicative of Herodotus' high aspirations and confidence in his task.

II. Thucydides and Problems of Communication

Thucydides' depiction of the use of fire signals does not conform to the optimistic approach of Herodotus. While Herodotus tends not to question the effectiveness of fire-signaling or human communication in general, multiple examples in Thucydides demonstrate the inherent difficulties of such communication, when even simple signaling attempts do not work as intended. At the siege of Torone (4.111), for example, Brasidas arranges with conspirators inside the town to overthrow the garrison and open the gates for one hundred of his peltasts sent in advance to take the city. It was agreed that, when the gates were opened and a signal raised (ὁπότε ... τὸ σημεῖον ἀρθείη, 4.111.1), these troops would enter first. It is confirmed at the conclusion of the chapter that the agreed upon signal for this moment was the lighting of a beacon fire (τὸ σημεῖόν τε τοῦ πυρός, 4.111.2).[18] But when the signal is not lit as planned, the peltasts begin to advance on the city anyway; meanwhile the conspirators inside the city begin the attack themselves by rushing into the forum and allow some of Brasidas' peltasts to enter through a side gate. It is only after this that the signal is finally lit as the rest of the initial one hundred soldiers are let in. Because of the delay in lighting the signal and the impatience of the conspirators in the city, this beacon is of little consequence for its intended purpose of alerting the advance squadron of the start of the attack. Ultimately, the beacon rather becomes a signal for Brasidas, who sees the signal (ἰδὼν τὸ ξύνθημα, 4.112.1) and advances with the remainder of his army. While Brasidas is able successfully to capture Torone at this time, the delay of the signal and resulting confusion produces a more complicated picture of such communication than what we have witnessed in Herodotus. This contrast becomes even more pronounced with further examples.

In a famous passage at 2.94.1, Thucydides describes a signal sent from Salamis to Athens to warn the Athenians of an enemy attack. Despite the relatively straightforward nature of this signal, Thucydides goes on to report the chaos caused by the receipt of this message, as those in the city believed that the enemy had already reached Piraeus, while those at Piraeus thought the enemy might arrive there at any moment. Both interpretations would prove wrong. But Thucydides notes that the disturbance (ἔκπληξις) caused by these

[18] For a similar beacon signal, cf. the scene in Book Two of the *Aeneid*, where Virgil imagines Agamemnon using a fire-signal to communicate to Sinon, who has infiltrated Troy, to indicate that the hidden Greek army is ready to attack (2.254).

inferences was equal to that of any in the entire war. In contrast to Herodotus, Thucydides here emphasizes the limits of fire-signaling and problems of miscommunication. The resulting disturbance, moreover, reveals the serious consequences of misinterpretation as confusion leads to panic and disarray.

A third example (3.22.7–8) reinforces this perspective. During a night-time raid by the Plataeans against the Theban forces besieging their city, Thucydides reports that the Thebans, by lighting fire signals from the tops of their fortifications, attempted to alert their compatriots back in Thebes that they were under attack. Again, this type of call-to-arms is the most basic message to be communicated by fire signals and could easily be expected here to summon reinforcements for the Thebans. But this message fails, as Thucydides indicates that the attacking Plataeans countered this attempted signal by lighting additional fires of their own in order to confuse the message. The practical implications of this passage and the possible meanings of the different signals suggested here are not well understood;[19] nor does Thucydides give any indication of how exactly additional fires might have changed the intended message. Rather, just as Herodotus takes it for granted that complicated messages could be seamlessly communicated with fire signals, Thucydides assumes that such signals are easily disrupted and confused.

In these passages, attempts to communicate relatively straightforward messages are framed by Thucydides as examples of the inherent challenges of such communications and the dangers of misinterpretation. While this approach is in direct contrast to that of Herodotus, it resonates with Thucydides' repeated emphasis in his work on the potential for miscommunication both in human language in general and more specifically in the writing of history. This is evident, for example, in programmatic passages such as his discussion of the contrast between the terms *αἰτία* and *πρόφασις* in a proper analysis of the causation of war and historical events (1.23.5–6).[20] Although Thucydides does not define these terms explicitly, his emphasis on the distinction between them indicates a particular interest in precise terminology. In his famous commentary on the *stasis* at Corcyra, moreover, Thucydides laments the ways that in such times the labels for particular actions and values become perverted (3.82.4).[21]

[19] See Richmond (1988) 18 n. 80. As Gomme (1956) 240 points out, the scholiast's claim that shaken torches warned of an enemy attack while still torches were meant to indicate friends is not sufficient to explain this example. Cf. Leighton (1969) 146–7.

[20] For full bibliography on Thucydides' use of the terms *αἰτία* and *πρόφασις*, see Hornblower (1991–2008) 1.64–6. Allison (1997) 182–5 relates 3.82.4 to 6.54–9, where Thucydides attempts to correct the false *logos* of the tyrannicides, Harmodius and Aristogeiton (discussed below).

[21] *καὶ τὴν εἰωθυῖαν ἀξίωσιν τῶν ὀνομάτων ἐς τὰ ἔργα ἀντήλλαξαν τῇ δικαιώσει.* Hornblower (1991–2008) I.483 translates 'And they exchanged their usual verbal evaluations of

While it has been correctly pointed out that this passage is not to be translated as 'words changed their meanings',[22] Thucydides is suggesting that the same actions were now given new names, which crucially in his opinion did not accurately correspond to the nature of those actions.[23] The clear implication of this passage is that the new labels applied to actions in such times inaccurately reflect reality. While each of these passages refer to specific issues—historical causation and moral disruption—Thucydides' choice to discuss both in terms of language and vocabulary is indicative of the historian's broader concern for the accuracy of language and communication.

The relationship between Thucydides' concern about the difficulties of human communication and the task of writing history is made explicit in the programmatic passages of Book One. Thucydides famously—if problematically—emphasizes accuracy (*ἀκριβείᾳ*, 1.22.2) and clarity (*τὸ σαφές*, 1.22.4) as important qualities of his own work.[24] Just prior to this (1.20.1), however, the historian laments that mankind too readily accepts reports of past events (*τὰς ἀκοὰς τῶν προγεγενημένων*) without proper examination (*ἀβασανίστως*). The primary example cited here by Thucydides is the story of the 'tyrannicides', Harmodius and Aristogeiton (1.20.2). According to Thucydides, the popular belief was that Hipparchus was tyrant at the time of his murder, when in fact Hippias, as the older brother, had succeeded their father, Peisistratus.[25] Further examples of such misconceptions (1.20.3) confirm for Thucydides that there are many other things even contemporary (*πολλὰ δὲ καὶ ἄλλα ἔτι καὶ νῦν ὄντα*) and not forgotten with time (*οὐ χρόνῳ ἀμνηστούμενα*), which are nevertheless incorrectly accepted as true (*οὐκ ὀρθῶς οἴονται*).[26] So lazy (*ἀταλαίπωρος*) is the search for truth by the many, he concludes, who simply believe what is presented to them (*ἐπὶ τὰ ἑτοῖμα μᾶλλον τρέπονται*).

actions for new ones, in the light of what they thought justified'. Swain (1993) discusses the connection between 3.82.4 and Thucydides' comments on the reports of speeches in his work at 1.22.1.

[22] See further Hogan (1980), Wilson (1982), Worthington (1982), and Loraux (1986). For more on the meaning of the term *ἀξίωσις* here, see Allison (1997) 163–86.

[23] So, for example, an act of irrational recklessness (*τόλμα … ἀλόγιστος*) came to be considered (*ἐνομίσθη*) loyal courage (*ἀνδρεία φιλέταιρος*) in such times. Cf. Swain (1993) 37.

[24] On these much-discussed terms, see e.g. (on *ἀκρίβεια*) Hornblower (1987) 37 and Marincola (1997) 68; and (on *τὸ σαφές*) Hornblower (1987) 102.

[25] Davies (1971) 446–8 discusses the historical controversy regarding the relative ages of the two brothers. He ultimately decides in favor of Thucydides' account over the alternate tradition, which he attributes to Hellanicus (cf. Jacoby (1949) 158–9), claiming Hipparchus as the older of the two. See also Thomas (1989) 242–51.

[26] Unlike the story of Harmodius and Aristogeiton, these further corrections appear to be aimed directly at Herodotus. For more on this, see Hornblower (1991–2008) I.57.

This approach to history represents a marked contrast with Herodotus, whose primary concern expressed in the preface to his work was that the past not be forgotten. For Thucydides, on the other hand, the problem expressed here is not that the past is forgotten, but that what is remembered is too often remembered incorrectly. Compare again Herodotus' insistence on the accuracy of his account of the Constitutional Debate. There, Herodotus lamented that what is accurately recorded by history is *not* believed by the multitude. Thucydides' complaint here is just the opposite: the majority are all too willing to believe what has been reported and fail to exert due diligence to discover the truth behind the reports.

Thucydides doubles-down on this pessimistic viewpoint when he revisits the story of Harmodius and Aristogeiton (6.53–9) as part of his criticism of the Athenian response to the profanation of the Eleusinian Mysteries and the desecration of the Herms.[27] In the view of Thucydides, the rash treatment of anyone suspected of involvement in these scandals resulted from the suspicion and fear imprinted on the Athenian mindset as the result of the experiences in the final years of the tyranny (6.53.3). To introduce his version of those events, Thucydides then repeats (6.54.1) his claim that this story demonstrates the lack of accuracy (*ἀκριβὲς οὐδὲν λέγοντας*) about past events (*περὶ τοῦ γενομένου*) demonstrated by his fellow Greeks.[28] Again the purpose of Thucydides' account is to expose the misconceptions that have persisted as the result of inaccurate reports of this story.[29] But Thucydides' claims here are confused by the impression which he gives (6.53.3; cf. 6.60.1) that contemporary Athenians actually seem to get the main points of the story essentially correct.[30] While there may be aspects of Thucydides' version of the story which the Athenians did

[27] For overview and bibliography of this much-discussed passage, see Jacoby (1949) 158–64; Connor (1984) 245–6; Szegedy-Maszak (1998) 202–3; Tsakmakis (1995) 186–225 and (1996); Rawlings (1981) 103–17; Hornblower (1991–2008) III.434; and Meyer (2008).

[28] The version of this story presented by Thucydides is paralleled by the similar account found in Herodotus (5.55–65). The general agreement between these two passages indicate that Herodotus is not the target of Thucydides' complaints here about inaccurate reporting of this story. Gomme, Andrewes, and Dover (1970) 320–1 follows Jacoby (1949) 159 in identifying Hellanicus as the true culprit. Hornblower (1991–2008) III.439–40 suggests that Thucydides target here may simply be general Greek beliefs and not specific literary figure at all (III.439–40). He further notes that, despite the general agreement of the two accounts, Herodotus and Thucydides offer differing perspectives on sexuality in these passages (III.435–8).

[29] For misunderstanding of the past as a pervasive theme in this passage, see Rawlings (1981) 115–17; Stahl (2003) 1–11; and Meyer (2008) 26–34.

[30] See Gomme, Andrewes, and Dover (1970) 325–9.

not properly understand,[31] the significance of historical misinterpretation in this passage appears to be undermined by this apparent incongruity with the preceding narrative at the start of this story. But to the extent that Thucydides' claims about the misinterpretation of the past may be out of place here, the fact that he goes out of his way to exaggerate popular misconceptions about this story further underscores his concern about the accurate transmission of information through the writing of history.[32]

While Thucydides does not make the connection explicit here, moreover, the lack of due diligence in ascertaining the truth about the past emphasized in both treatments of the story of the tyrannicides is directly relevant to the behavior of the Athenians displayed in response to the present scandals. Just as they fail to test properly reports about their own history, so too the Athenians here do not effectively scrutinize informants (*οὐ δοκιμάζοντες τοὺς μηνυτάς*, 6.53.2) who implicate their fellow citizens in the crimes.[33] Thucydides contrasts this with his own account of the end of the tyranny, which he claims is based on more accurate (*ἀκριβέστερον*, 6.55.1) information.[34] The need for diligence in ascertaining the truth, therefore, and the serious consequences of neglecting this task become relevant to Thucydides' surrounding narrative beyond the interpretations of this particular story.

This emphasis on the problems associated with the potential misinterpretation of history again contrasts with Herodotus, who in his own version of this story (5.55–65; see above, note 28) makes no mention of contradictory accounts.[35] While there are instances in Herodotus' text where he seeks to correct alternative versions of events,[36] his approach to history does not share the thoroughly explored concern with misinterpretation evident in these passages of Thucydides. This contrast between the two historians in their view of the reliability of history in conveying an accurate report of past events is reflected in their respective treatments of fire-signaling. For Herodotus, the primary concern that history be written as a testament to past events is reflected by his representation of fire signals, which transmit information easily interpreted

[31] See Meyer (2008) 28–9.

[32] On Thucydides' exaggeration of the Athenians' misinterpretation of their own history here, see Hornblower (1991–2008) III.441–2.

[33] Meyer (2008) 29–30.

[34] Hornblower (1991–2008) III.446–7 discusses Thucydides' use of documentary evidence to support his version of events in these chapters. On the visual nature of Thucydides' evidence in contrast to the aural reports trusted by the majority, see Meyer (2008) 28–31.

[35] Jacoby (1949) 158–9 explains this by speculating that incorrect versions (i.e. that of Hellanicus) appeared between Herodotus and Thucydides.

[36] This is especially evident, for example, in his account of Egypt in Book Two (see Marincola (1997) 115).

and believed without considerable effort on the receiving end. The perspective of Thucydides differs considerably from this, as multiple examples of fire signals in his text demonstrate that—just like history—these signals are not always sufficiently clear in their message and that, without great diligence on the part of the observer, they are subject to misinterpretation. As indicated most explicitly in the case of the message from Salamis, moreover, this can lead to confusion and disorder spreading beyond the interpretation of the message itself.

While successful examples of the transmission of information through fire signals do occur in Thucydides (3.80.2 and 8.102), this should not obfuscate the considerable problems evident with this form of communication repeatedly (and uniquely) highlighted by this historian. None of the messages described by Thucydides, moreover, matches the complexity of the signals in Herodotus discussed above.[37] Nor does the presence of successful signals complicate the parallel with writing history. Thucydides does not claim that *all* historical accounts of the past are inaccurate or misinterpreted; nor do all fire signals fail. But in both cases—unlike Herodotus—Thucydides repeatedly points out that misinterpretation is all too common and that the consequences of failure are grave. Thucydides' concern for the challenges of communication embodied by his depiction of these problematic uses of fire signals is consistent with developing Greek thought—in particular Sophistic philosophy—on the applications of words and clarity of language during his time.[38] In contrast to Herodotus, the allure of extravagant methods of communication has worn off and been replaced by a skepticism of the power of this technology and the potential for seamless human communication which it had seemed to represent.

[37] At 3.80.2 Thucydides claims that the Spartans at Corcyra were warned by beacons that sixty Athenian ships were approaching. While it is uncertain how the precise number of ships might have been communicated through these signals, it is not clear whether Thucydides is suggesting this or is simply supplying the number himself. See Gomme (1956) 367. Nevertheless, even the communication of the number of ships here would fall short of the implausible messages implied by Herodotus.

[38] See Swain (1993) 35–6 with further bibliography cited in n. 4. For Thucydides' interest in the role of language more broadly and his participation in contemporary philosophical debates on this subject, see Allison (1997) esp. 1–18. More specifically, Allison suggests a particularly Protagorean (as opposed to Parmenidean) influence on 3.82.4 (163) and discusses the long-recognized similarities between this passage and Plato's *Republic* 560c.

III. Polybius and the Progress of History

While Polybius also recognizes the problems inherent in communication by fire signals exposed in Thucydides, he seeks to correct the flaws in the system through his own work. In Book Ten, Polybius provides a lengthy description of innovations in the art of fire-signaling to enable the composition of complex messages based on an alphabetical coding system (10.43–7). Polybius here traces the development of this system beginning with the simple (ἁπλῆ, 10.43.5) system of fire-signaling—such as those described in Thucydides—which required prearrangement and were therefore useless (ἀνωφελής). This was followed, Polybius continues (10.44), by a system developed by Aeneas Tacticus, who sought to correct this deficiency by inventing a type of water clock designed to point to a particular message from a pre-arranged list shared by both parties (10.44.1).[39] While this represented a moderate improvement in Polybius' estimation, it still allowed for the transfer only of a limited, prearranged selection of messages and could not account for unforeseen circumstances (10.45.1–5). The final step in the development of fire-signaling described by Polybius is the alphabetical system devised originally by two otherwise unknown figures, Cleoxenus and Democleitus, and then perfected by Polybius himself (10.45.6–46.10). In this system signals using multiple torches were converted into letters of the alphabet, which enabled the composition of complete words and sentences for any circumstance.[40]

At the conclusion of this passage, Polybius indicates the connection between this analysis of fire-signaling and his broader historiographical purposes when he claims that the kind of technical knowledge provided here is the most beneficial (ὠφελιμώτατον) aspect of history properly composed (10.47.13). This is especially true in Polybius' own time, he suggests, because of the progress

[39] For more on the system developed by Aeneas Tacticus, see Forbes (1966) 171–7 and Whitehead (1990) 111–13. Ober (1985) 197–8 notes that the examples of possible signals listed by Aeneas (e.g. 'cavalry approaching', 'hoplites', or 'ships') are indicative of signals sent from frontier towers or naval towers. Forbes (1966) 178 speculates that Polybius may originally have learned about this method from its use by the Carthaginians.

[40] For more detailed discussion of this system, see Riepl (1913) 91–122. Leighton (1969) 148 speculates that this alphabetical code may have derived from a previous system of hand signals. The practical difficulties of this system over long distances are discussed by Riepl (1913) 96–102. Donaldson (1988) 354 believes that Polybius' system was too complicated for use in the Roman imperial period. Chykerda, Haagsma, and Karapanou (2014) 21 suggest that signals such as those described by Polybius might have been used in a web system around Halos and Kallithea in Achaea Phthiotis.

made in technical and scientific knowledge, which had then become systematic (10.47.12; cf. 9.2.5).[41] Although both have recognized the potential problems inherent in the technique of fire-signaling, Polybius here offers a more optimistic view than Thucydides, who simply identifies the problems. As this passage suggests, Polybius' optimism extends beyond this particular technology to a more general assessment of the scientific progress which he sees evident in his own times.[42] Significantly, Polybius sees the proper composition of history as central to this progress.

Polybius is explicit here in his claim that it is the proper role of history to record such technical knowledge for the benefit of the reader;[43] and the interest of this historian, who also wrote a separate treatise on technical matters,[44] in providing this sort of technological instruction is especially prominent in Books Nine and Ten of his history.[45] But the full history of developments in fire-signaling provided here suggest that the significance of this passage extends beyond the simple recording of technical detail in the manner of a technological handbook. By detailing not just the current practice but prior innovations in the technique of fire-signaling, Polybius highlights the role of historians as not just passive compilers of information but as active agents in the process. This applies most obviously to Polybius himself, whose personal role in perfecting the telegraph system is clearly significant for the inspiration of this passage. But the overlap between author and innovator is evident with the other named individuals as well: Aeneas, whose work is directly mentioned (10.44.1);[46] and

[41] For this passage as evidence for a widespread belief in the 'Idea of Progress' during the Hellenistic period, see Edelstein (1967) 142–3. Dodds (1973) 18 recognizes the significance of this passage as well but limits his conclusions to the field of science. While the notion of unfettered and universal human progress over the course of history (the so-called 'Whig' view) is no longer widespread, Polybius' potential acknowledgement of such progress here stands in contrast to the more commonly pessimistic views of antiquity.

[42] While Thucydides also recognizes in at least one passage (1.71.2–3; see Hornblower (1987) 130) and appears to laud the potential for human progress, this potential is specifically attributed to the Athenians (in contrast to the Lacedaemonians) and is, therefore, significantly more limited than the views expressed by Polybius.

[43] On Polybius' uniquely assertive authorial voice, see especially Marincola (1997) 10–11 and Rood (2004).

[44] Polybius himself mentions this work at 9.20.4. For further discussion and bibliography, see Walbank (1972) 15 n. 75

[45] Cf. for example the discussion on the proper length of ladders (9.19.6–7). For more on the special attention in these two books to military science and their possible relationship with Polybius' *Tactics*, see Sacks (1981) 125–30.

[46] See Walbank (1957–1979) II.259.

Cleoxenus and Democleitus, who we must presume were also known to Polybius through their own writings.[47]

In the case of Aeneas and his water clock system, his writings become an important vehicle for the preservation and transmission of his innovation.[48] But the overlap between inventor and writer extends beyond this. Just as Aeneas is described as seeking to correct (διορθώσασθαι, 10.44.1) the flaws of previous systems, Polybius claims at the outset of his work that there is no more ready means of correction (διόρθωσιν) for humankind than knowledge of the past (1.1.1).[49] Aeneas' role as an innovator is closely linked, in Polybius' view, with that of a historian. The case of the latter two authors demonstrates this connection even more directly. Not only do the works of these authors record the details of the new, alphabetical system; they also serve as a platform through which Polybius is subsequently able to improve upon this system himself. Polybius, therefore, reframes himself as a reader of history who takes what he learns from previous authors and improves upon it both in his writings and as an active participant in practical matters.

This is an important reflection on Polybius' concept of what he believes to be the most beneficial kind of history: πραγματικὴ ἱστορία.[50] It is insufficient simply to label such history as a record of practical affairs (τὰ πράγματα). Rather a properly written history in Polybius' view is able to engage directly both the author and the reader in an active manner. Polybius' views on the need for writers of history to be actively involved in practical affairs is expressed most clearly in Book Twelve, where he criticizes Timaeus as an 'arm-chair' historian who lacks practical knowledge of events (see especially 12.28.2–5).[51] Only when authors take an active role in practical affairs, Polybius believes,

[47] See Lammert (1921) and Hultsch (1905).

[48] The importance of Aeneas' technical writings in informing others of his invention is enhanced by the doubts of modern scholars that this water-clock system was ever widely used in practice (see Leighton (1969) 147).

[49] Cf. 16.20.5–9, where Polybius discusses his practice of correcting other authors, specifically Zeno in this case, and calls on others to do the same to him.

[50] Polybius' precise meaning of the term πραγματικὴ ἱστορία has been much debated. For previous discussion, see Gelzer (1955) 87–91; Walbank (1957–79) I.6–11; Pédech (1964) 21–32; Petzold (1969) 3–20; Walbank (1972) 56–8; Mohm (1977) 8–28; Sacks (1981) 178–86; Fornara (1983) 112 n. 31; Meissner (1986); Marincola (2001) 121–2; and McGing (2010) 66–7.

[51] See especially 12.28.2–5. Marincola (1997) 71–5 offers a general discussion of Polybius' emphasis on the need for historians to have practical experience. For the importance of this particular passage in understanding the overlap between Polybius' representations of the proper historian and the statesmen depicted in his work, see Maier (2012).

will history be didactically effective. While each of the innovators in fire-signaling discussed represent positive examples of actively engaged authors, the progressive development of this technology in successive stages connected by the writings of the innovators themselves deepens the connection between history and practical affairs. Historical writing is no longer simply a record of events; it becomes the driver of events as the source of technological innovation with Polybius himself now representing a unique combination of author, reader, and active participant in practical affairs.

This relationship between Polybius' analysis of the art of fire-signaling and the purpose of history extends to the parallel roles of the reader and the one learning to use the new technology as well. In the paragraph following his survey of the historical developments of the technology, Polybius directly compares the process involved in his telegraph system to a child learning to read (10.47). Polybius acknowledges that the complicated nature of his system makes it difficult to master. But like learning to read, he suggests that this can be achieved with practice (*προμελετᾶν δεῖ*, 10.47.3). Thus, a theoretical knowledge of this technique—such as that gained from reading a text—is recognized by the historian as insufficient; true mastery also requires practical experience. This is indicative of Polybius' belief that the study of history more broadly must be supplemented with practical experience to be beneficial as a didactic tool for future statesmen (see e.g. 9.14).[52] Again, the example of fire-signaling informs Polybius' notion of *πραγματικὴ ἱστορία*, which when properly composed can communicate important lessons. But this is only possible if the reader—like the author—is also informed by real-world experience. 'Pragmatic history' is not just about practical affairs; it unites the benefits of practical experience with the study of history through the personal experiences of both author and reader.

IV. Conclusions

As we have seen, the conscious or unconscious use of fire-signaling in historians as reflecting their task in writing history is not unique to Polybius. This technology takes on particular literary significance, however, at this point in its development when the innovations of Polybius and his predecessors enable the conversion of fire signals into an alphabetical text.[53] The connection between this rudimentary but, nevertheless, now literary technology and the task

[52] For more on the balance between these two distinct modes of learning—history and practical experience—in Polybius, see Moore (2013).

[53] For the development of this alphabetical system as potential evidence for the spread of literacy during this period, see Hershbell (1978).

of writing history becomes now even more appropriate. We also see in Polybius' approach a renewed sense of optimism reminiscent of the perspective of Herodotus. But whereas Herodotus represents the great power of fire signals to convey information with little consideration for how this is accomplished, the success of this technology as it is described in Polybius is hard won. While the positive capability of fire-signals identified by Herodotus remains in Polybius, so do the challenges and potential confusion revealed by Thucydides. The correction of the short-comings revealed in Thucydides and the ultimate realization of the potential seen by Herodotus is achieved in Polybius by a long process of improving upon the past through the study of history, led by a historian himself directly involved in the process, and combined with the practice and training of those seeking to learn the technique. Just as the technology of fire-signaling reflects the attitudes of these historians toward the writing of history, it is through the writing of history that this achievement in the progress of fire-signaling is eventually realized.

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