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Archaic Naval Warfare*

Military studies are superficially an accessible subject within ancient history. Lecturers find their classes filled with young men fascinated by warfare, having learnt from mass media of Thermopylai or Alexander. More academically, historians catalogue innovations to create tactical studies. Yet the history of Greek warfare is not primarily exploration of technology. Innovation arose from the socio-political matrix and became meaningful in politics when activated by institutional evolution. In naval warfare, mere technological progress seldom motivated the emergence of hegemonic strategy. Our prime exhibit will be the *trieres* 'trireme'¹, the three-banked warship and standard unit of classical navies.

We explore the context of naval warfare, interweaving three themes: vessel procurement, manning, and deployment, instrumentalities by which combat interacted with other dimensions of *polis* life. Here a distinction in archaic society between categories of maritime *poleis* becomes significant. In one group are Corinth, Chalcis, Eretria, and Miletos (to a degree): states typified by location at intersections of routes; early colonization; and trade intermediated by other communities². In another are Aigina, Phokaia, and Samos, states characterized by placement flanking routes; later and reduced colonization; piracy; and less intermediated commerce.

Consider the trireme's introduction. Thucydides places this at Corinth ca. 700, noting the work of the Corinthian shipwright Ameinokles at Samos (I 13, 2-3), but continues that triremes were not numerous until later, somewhat before the Persian Wars and death of Dareios (I 14, 1-3; cfr. 18.2). This account has in-

*This piece is offered in fond memory of Nikos Birgalios, an esteemed scholar and great champion of philhellenism in our discipline of ancient history. His generosity and energy are sorely missed.

¹ Features: Casson 1971, 82-92; Coates - McGrail 1985; Coates 1995, 137-138; Morrison 1996, 279-285; Morrison et al. 2000, 3-24, 158-178, 191-230.

² Figueira 1981, 192-202; 2002; 2015, 226-230.

vited correction or rejection³. Such arguments ought not to inspire credibility⁴. For example, postulating a lost reference to biremes here offers no solution⁵. To warrant mention, this must be a two-banked warship larger than a pentekontor⁶, a vessel poorly attested (excepting perhaps Hom. *Il.* II 509-510; Thuc. I 10, 4)⁷. Its complexity and complement would place its affinities with the trireme, making the mystery of the trireme's late maturation the enigma of the breme. And the Greek trireme force of Pharaoh Necho (ca. 600) would become inexplicable (Hdt. II 159, 1; cfr. 158, 1)⁸. One must explain the lag in the trireme's predominance, because the plain sense of Thucydides requires that Ameinokles constructed triremes. In the process, we shall note other, albeit later, attestations of early triremes.

An early Attic tradition attempted to account for this gap. Kleidemos (ca. 350), the Atthidographer, tantalizingly linked the trireme with the mythology of Theseus⁹. Unfortunately, Plutarch's text appears questionable at a crucial point. The received text: ἰδίως δὲ πῶς καὶ περιπτῶς ὁ Κλείδημος ἀπήγγειλε περὶ τούτων, ἄνωθ' ἐν ποθὲν ἀρξάμενος· ὅτι δόγμα κοινὸν ἦν Ἑλλήνων, μηδεμίαν ἐκπλεῖν τριήρη μηδαμόθεν ἀνδρῶν ἢ πέντε πλείονας δεχομένην ... (*obeliskos* after Jacoby). As this stands, a prohibition barred triremes from 'receiving' more than five men, i.e., five *epibatai*. That would exclude expeditionary, amphibious warfare where squadrons attempted to dominate other *poleis* through embarked infantry. This *koinon dogma* parallels the Amphictyonic Oath (Aesch. II 115), proscribing certain siege tactics, or the Euboian convention during the Lelantine War prohibiting missile weapons¹⁰. Unfortunately, the next sentence is also problematic, contrasting Jason's suppression of ληστήρια with the *koinon dogma*: τὸν δὲ ἄρχοντα τῆς Ἀργοῦς Ἰάσονα μόνον περιπλεῖν, ἐξείργοντα τῆς θαλάσσης τὰ ληστήρια. Editors postulate a lacuna after περιπλεῖν; Lindskog offered πλείοσιν. A Bodleian manuscript (Barocc. 226) has ... τριήρει πλήρει

³ Davison 1947; Williams 1958, 121; Basch 1987, 185; Meijer 1988; Wallinga 1993, 30-31, 103-118. Intermediate date (seventh century); Morrison - Williams 1968, 158-159; Casson 1971, 80-81.

⁴ Morrison 1979; Papalas 1997, 259-262; Morrison et al. 2000, 32-41.

⁵ Williams 1958, 126-127 (cfr. Williams 1959). On iconography, cfr. Casson 1971, 71-74; Basch 1987, 179-187.

⁶ Damastes attributed the breme to the Erythraians (*FGrHist* 5 F 6).

⁷ Casson 1971, 62-63 suggests a familiarity with such ships is implicit in Thuc. I 10, 4.

⁸ Lloyd (e.g.) 1975; 1980. Cfr. Basch 1977, 8-10; 1980; Wallinga 1995, 46. Priority of the Phoenician trireme (Clem. *Strom.* I, 16, 76) and its structural dissimilarity (*re* the *parexeiresia*) are not critical questions for us here (noting Basch 1969, 157-162, 227-230; 1987, 328-335). Cfr. Casson 1971, 94-96; Morrison 1979, 54-57; 1995a, 63-65; 1996, 196-199, 269-279; Wallinga 1993, 57-63, 111-118.

⁹ *FGrHist* 323 F 17 (Plut. *Thes.* 19, 5). See Jacoby *FGrHist* 3b, 1, 74-75.

¹⁰ Strab. IX 1, 12; cfr. Polyb. XIII 3, 4 (Liv. XLII 47, 5).

ἀνδρῶν ἰκανῶν ..., apparently a gloss that entered the text to provide contrast to the previous clause by asserting that Jason used a fuller ship's complement. Next, Minos clearly acted *παρὰ τὰ δόγματα* by pursuing Daidalos, a fugitive to Athens, *μακρᾶς ναυσί*. After Minos was blown off course and perished, Theseus began building ships. When Deukalion, son of Minos, threatened Athenian hostages, Theseus attacked Knossos successfully. Nonetheless, distortion may run deeper. This tradition may have imagined an agreement forbidding forces larger than five triremes (a typical colonial expedition?). That proviso would provide the logical counterpoint to the actions of Jason, Minos, and Theseus.

Kleidemos rationalizes the Minotaur story. He confutes the Thucydidean tradition of Minos as first thalassocrat (I, 4), also referenced by Herodotus (III 122, 2). Minos is briefly a thalassocrat only through defiance of international agreement; his attack on Attica miscarries. Thucydidean tradition on Minos as the first who suppressed *leisteia* is rejected; Jason is portrayed in that role. Kleidemos visualizes Athens as a potential thalassocrat, but in a manner fundamentally defensive and panhellenic.

This tradition was influenced by classical Attic naval predominance, a perspective also misleading modern analysts. We return, however, from classical fancies to archaic realities. One circumstance shaping deployment should be raised. Usage of equivalent groups of triremes and pentekontors in the same battle line is not attested. When pentekontors appear in the mainly trireme fleets of 480, they comprise a small *polis* contingent. Because only propulsion by oars was used in battle, pentekontors could not hold station in an advancing line without affecting efficiency¹¹. Triremes could, alongside pentekontors, undertake single ship confrontations¹², but would lose any advantages of a massed squadron. The Themistoclean naval program confirms this, preferring to overbuild with less adequate manning rather than create a mixed force better fitting manpower resources¹³. The suggestion that Athens and Aigina once deployed mixed fleets is without a single attestation¹⁴. No evidence reports a victory by pentakontors over triremes.

Triremes infiltrated the force structure gradually. One role was conspicuous display for religious or secular purposes. Circa 600, Athens supposedly sent a trireme to Aigina demanding the statues of the goddesses Damia and Auxesia, stolen from Epidaurus (Hdt. V 85, 1). Theoric ships were triremes, at Athens

¹¹ Coates 1995, 136-138. Contrast fleets combining *polyremes* and triremes (Morrison 1995b, 66-72; 1996, 1-40).

¹² Thus, the Megarians dedicated a single trireme's ram (Paus. I 40, 5) from fighting over Salamis before 550. Cfr. Papalas 2000b, 389-390. See n. 51 below.

¹³ Themistokles Decree (*SGHI* #23, 30-35); Hdt. VIII, 1 1-2; 46, 2.

¹⁴ Cfr. Amit 1973, 24-36.

subsidized from the *naukratic* treasury (Androt. *FGrHist* 324 F 36)¹⁵. The Mytilenaeen ship bearing to Memphis Kambyses' invitation to surrender was a trireme (Hdt. III 13, 1; 14, 5-6). As elites provided ships to archaic governments, triremes gradually infiltrated navies, as aristocratic affluence grew and exhibitionism became a motivating factor¹⁶. The instances where wealthy men provided triremes in the fifth century are a vestige of this phenomenon, stronger earlier when *poleis* possessed a more limited ability for directly exploiting elite resources¹⁷. Early naval organization was conditioned by the interventions of tyrants, who in the supersession of aristocratic regimes emerged as proponents of populism and more integrated administrative apparatuses. Unsurprisingly, therefore, the personal ships of the tyrants of the Chersonese (VI 41, 1-2, cfr. 39, 1), as presumably those of their patrons, the Peisistratids, were triremes.

The disparity in oarsmen of the pentekontor and trireme is striking (50 versus 170). Literary sources are mute on possible intermediates, and relatively reticent on sub-categories¹⁸. More differentia exist for late Medieval/early modern navies¹⁹. Ancient testimonia differ from the iconography, leading scholars to develop nuanced classifications²⁰. Regardless of archaic terminological distinctions, any sub-classes fell into desuetude for classical sources, leaving two basic types, pentekontor and trireme, to be distinguished in pertinent use and basis within logistics and force structure. Cost/benefit calculations in sustaining different size crews militated for the two classes, vessels with around fifty rowers (either *monokrotos* or *dikrotos*), and those with 170. These could only be three-banked without wasting the additional manpower. Mobilizing 200 men²¹ *per* unit created an administrative threshold before large trireme fleets became feasible.

These two classes reside in different spheres of Mediterranean sea fighting: *leisteia* 'brigandage', the 'small war', and fleet confrontation in battle lines²². By the Peloponnesian War, raiding took two forms: devastation by flotillas, sometimes accompanied by sizable landing forces; or by small forces (sometimes in smaller ships), operating flexibly. For the latter, bases were unimportant; landing places were not limited, with any protected beach with water sufficing. The

¹⁵ Cfr. Plut. *Tim.* 8, 1-2.

¹⁶ Note Hdt. V, 47, 1 and the early trireme (with ram) reference by Hipponax, c. 540 (fr. 28W).

¹⁷ Hdt. VIII 17, 2; Plut. *Alcib.* 1; Thuc. VI 50,1; 61, 6; Plut. *Per.* 35, 1.

¹⁸ Sub-classes represent operational features: *tacheiai*, *stratitides*, *hoplitagogoi*, *hippagogoi* (Morrison - Williams 1968, 246-249).

¹⁹ Shaw 1995.

²⁰ Casson 1971, 61-63; Wallinga 1993, 47-48. Basch 1987, 224 offers four pentekontor types.

²¹ Hdt. VII 184, 1-2; 8, 17; cfr. Thuc. VI 8, 1; VIII 29, 1; Dem. IV, 28. See Morrison - Williams 1968, 254-255.

²² Figueira 1993, 330-335, with Guilmartin 2003, 36-38. Cfr. de Souza 1998.

sanctioned taking of *sule* in wartime (i.e., privateering) was derivative. Piratical warfare did not strike against enemy forces or his agricultural subsistence base, but against undefended areas or unprotected littoral communities, and from ambush. It might constitute attritional economic war.

These strategic categories track the distinctions of Thucydides in his *Archaologia*. He emphasizes the piratical character of early seafaring (I 4-5, 3), especially regarding the Trojan expedition (I 10, 4-11, 2). His Achaean fleet is many massed raiding squadrons, busying themselves before Ilion with forays. In this perspective, the pirates of the *Odyssey*, even Odysseus himself, would be conducting merely extended plundering. Thucydides systematically contrasts *leisteia* with thalassocracy. Minos, the first thalassocrat, expels pirates (I 3, 4). Corinth, whose naval activity marks Greece's opening toward the sea, tries to free the Aegean from pirates (I 13, 5). To hold *leisteia* and thalassocracy as opposing combat modes implies that pentekontor warfare and trireme warfare were alike different modalities. This is Athenian fifth-century conceptualization, as in accounts (based on Atthidography) of Kimon's suppression of the Skyrian pirates²³, or in the condemnation of immoral and senseless Aiginetan raids (Aiginetans whom Herodotus styled *thalassokratores*)²⁴. Thucydides' disdain for navies ca. 500 is partly owed to their strategic dependence on *leisteia*. His noting their use of pentekontors and *ploia makra* not only dramatizes a lack of triremes, but also actively disparages continued dependence on the tools of 'small war'²⁵.

Classical thalassocracy must never be confused with modern maritime dominance as formulated in the leading nineteenth-century naval strategist, Alfred Thayer Mahan (1890). Mahanian concepts are irrelevant for Mediterranean galleys, as Guilmartin demonstrated for the sixteenth century²⁶. Classical thalassocracy was expeditionary and amphibious. This insight partially explains the trireme's retarded predominance. Small trireme forces lacked decisive impact because expeditionary warfare demanded mobilizations of scale.

Triremes in number were expeditionary vessels. Here, Thucydides is revealing concerning archaic hegemonism through insular conquests²⁷. Such warfare better approximates protocols of land warfare than marauding, because of its amphibious nature. Triremes could carry enough hoplites to win a battle²⁸;

²³ Plut. *Cim.* 8, 3-5; *Thes.* 36, 1; Nep. *Cim.* 2, 5. Cf. Thuc. I 98, 2; Ephor. *FGrHist* 70 F 191, 6; Diod. XI 60, 2; Paus. I 17, 6.

²⁴ Hdt. V 81, 2; 83, 2; VI 87; see also Diod. XI 70, 2; 78, 3-4. Cf. Ephor. *FGrHist* 70 F 176.

²⁵ Thucydides' disinclination toward expeditionary warfare that included *leisteia* is apparent in his treatment of Alkidas' expedition (427) toward Mytilene (III 16, 3; 25, 1; 26, 1; 27, 1-2; 30, 1-33, 3).

²⁶ Guilmartin 2003, 31-55.

²⁷ Thuc. I, 4; 9, 4; 13, 6.

²⁸ Troop carrying triremes: *IG* I³ 21, 10; I³ 60; Thuc. I 116, 1; VI 25, 2; 43, 1; VIII 25, 1; 62,

their crews could double as infantry upon arrival (e.g., Thuc. IV 32, 2). A large trireme expedition sought landing near an enemy's *asty* to interdict food supplies and mount a siege. Defenders were forced to mass to expel or block the intruding fleet, fight a regular engagement, or finally man their walls. This pattern is discernible in the Spartan expedition against Polykrates (525: Hdt. III 54-57, 1). An earlier, if more obscure, example is a Samian and Megarian battle near Perinthos ca. 600 (Plut. *Mor.* 303E-304C). The trireme expedition was the mainstay of naval operations throughout the fifth century. Note two non-Attic examples in Corinthian campaigns against Corcyra of 435 and 433 (I 29, 1-30, 2; 46, 1-55, 2), although fighting at the Battle of Sybota seemed to Thucydides old-fashioned, like an infantry engagement (I 49, 1-2).

Early Attic examples were Miltiades' Parian campaign (Hdt. VI 132-135, 1) and an expedition against Aigina (VI 88-93), both early 480s. For Athens, the late 490s are the latest moment for the dominance of the trireme. Thucydides' date for the general shift to triremes is imprecise, excepting that the Themistoklean ship-building program consummated it (I 14, 3). For Aigina and Athens, the process was begun by 500²⁹, although both *poleis* possessed fewer than 100 triremes ca. 485³⁰, perhaps around 70. Circa 519, at Kydonia, Aigina crushed the Samian exiles, who had possessed forty triremes in 525 (Hdt. III 44, 1-2; 59, 3), so that Aigina probably had an early advantage. At Athens, the old *naukratic* system, although it did not limit Athens to 48-50 ships, undoubtedly complicated modernization³¹. The impetus for acquiring more triremes may be attributed to the 'Heraldless War' between the two states from 506 (V 81, 1-3; 89, 1-3). The abortive Athenian attack on Aigina in 489/8 (VI 88-93) was probably conducted with triremes, because lately discovered non-seaworthy Attic ships were replaced with twenty Corinthian vessels (VI 89, 2-3), almost certainly reserve triremes (Thuc. I 41, 2). The poorly maintained ships were not the majority of the Attic trireme force. The fleet of seventy confronting seventy Aiginetan ships was probably exclusively trireme. That the Aiginetans won a later battle indicates a comparable trireme force (Hdt. VI 92, 1). Note Miltiades' seventy ships at Paros (VI 132). This reconstruction accords with Athens dispatching twenty triremes to aid the Ionians (498)³². That commitment was risky while Aigina was hostile, and was only viable with a fraction of Athens' fleet and other triremes in reserve. Contemporaneous was the acquisition by Ionian *poleis* of comparable trireme

2; Xen. *Hell.* I 1, 36.

²⁹ Figueira 1981, 29-31. Cfr. Haas 1985, 41-46; Wallinga 1987, 49-55; 1993, 144-164; Papalas 2000a, 2000b.

³⁰ Thus less than the Sicilian tyrants (Hdt. VII 158, 4; Ephor. *FGrHist* 70 F 186) or Corcyreans (Hdt. VII 168, 4), noted by Thuc. I 14, 2 as *nautika axiologa* before Xerxes.

³¹ Figueira 1993, 163-167; 2011, 191-193.

³² Char. *FGrHist* 262 F 10, with Hdt. V 99, 1.

forces, culminating in the flotillas massed at Lade in 494 (VI 8, 1-2)³³.

Expeditionary warfare was pioneered at Corinth. Thucydides' reference to the construction of the first triremes there has already been noted (I 13, 2-3). His supplementary observation that the Corinthian shipwright, Ameinokles, built four ships, presumably triremes³⁴, for the Samians is not only notable for illustrating the precocity of Corinthian shipbuilding and attesting this early alliance, but also because its recipients were not individuals, but the Samian *polis*. Thucydides records the first naval battle between Corinth and Corcyra in 680 or 660 (I 13, 4). Naturally there was earlier sea combat, as Geometric pottery demonstrates³⁵. The eighth-century Lelantine War — Thucydides recognized its importance (I 15, 3) — included sea fighting (Hesiod *WD* 650-662). By first *nau-machia*, Thucydides means a struggle of fleets in battle lines, a structured engagement with political consequences, not a melee with mainly personal or familial ramifications. These developments are dated to the domination of the Bacchiads (Diod. VII 9, 4; 6), an endogamous clan controlling revenues of the *emporion* (Strab. VIII 6, 20). Hence, these first Corinthian triremes were vessels whose procurement lay indeterminately between public and private spheres.

Under the Kypselid tyrants, especially Periander, the Corinthian naval establishment became more closely knitted into state structures³⁶. The Kypselids' sumptuary legislation and confiscations from elite adversaries boosted governmental assets (Hdt. V 92ε, 2; 92η, 1; Heraclid. fr. 20 Dilts; Nic. Dam. *FGrHist* 90 F 58, probably Ephoran). Periander developed a trireme force for use on both Corinthian and Saronic Gulfs (Nic. Dam. *FGrHist* 90 F 58). He built the harbor at Lekhaion, and constructed the *diolkos* to move ships across the Isthmus, enabling him to concentrate forces in either gulf³⁷. Periander conducted amphibious expeditions against Prokles of Epidauros (Hdt III 52, 7; Plut. *Mor.* 403 C-E), Kerinthos in Euboea (Theogn. 891-894)³⁸, and Corcyra (Hdt. III 53, 7; Nic. Dam. F 59). Early in his *Archaiologia*, Thucydides indicated that lack of resources, *achrematia*, not *oliganthropia* 'lack of manpower', limited sea power³⁹. Unsurprisingly, he emphasized Corinthian wealth through its *emporion* (I 13, 5). Thus, absolute lack of community resources was not everywhere the limitation

³³ Cfr. Wallinga 1987, 49-55, 66-72; 1993, 118-140; 2005, 11-22, for an exaggerated Persian role.

³⁴ In 724 or 704 depending on variant backward reckoning. The notice derives from generational counting (open to recalculation through different generation-length), or from a chronicle like that of Athena Lindia (Cary 1946, 28), or, preferably, from Euagon (*FGrHist* 535 T 1), the early Samian historian (Jacoby 1949, 361-362).

³⁵ Morrison - Williams 1968, 30-33, 42; Basch 1987, 200-201.

³⁶ Cfr. Salmon 1984, 222-225.

³⁷ Salmon 1984, 133-135.

³⁸ Figueira 1985, 288-291.

³⁹ Thuc. I 11, 1.

on building naval power, but inadequacy of the *polis*' financial apparatus. Corinth represents a pre-monetary expeditionary trireme navy. Tyrannical leadership was sufficiently strong and charismatic to oversee complex projects like the building of triremes and naval facilities and the mobilization of manpower.

Other incidents suggest limitations on Corinthian naval power. Thucydides reports their lengthy efforts to amass forces in the 430s, first to challenge the Corcyreans besieging Epidamnus, and, second, the protracted preparations for direct attack after Leukimne⁴⁰. This involved equipping new ships, mobilizing laborers from other crafts and acquiring personnel, some colonial allies and others recruited from Attic allies (Thuc. I 35, 3-4; cfr. 31, 1)⁴¹. That this longer mobilization cycle was inherent in Corinthian military organization is indicated by attacks undertaken earlier against local enemies. Amphikrates of Samos attacked Aigina ca. 618-13 (Hdt. III 59, 4), and Thrasyboulos of Miletos assaulted Sikyon ca. 600 (Front. *Strat.* III 9, 7). Corinth probably instigated both⁴². If Corinth, with its naval tradition, could not launch such attacks, some limitations on its mobilization protocols were the cause. Corinth was able to sell Athens twenty ships, presumably reserve craft, ca. 489 (Hdt. VI 89, 2-3); thus it did not lack ships.

The practitioners of *leisteia* and 'small war' exhibit another pattern of warfare. The first corporate activities of Aigina were raids against its former *hegemon*, Epidauros (Hdt. V 83, 1-2). Depredations against Attica triggered the Heraldless War ca. 506 (V 89, 1-3). Interception of an Attic theoric vessel occurred after Marathon (VI 87), prompting further hostilities⁴³. Aiginetan *leisteia*, not confined to Peloponnesian squadrons based there, regularly occurred during fourth-century conflict between Sparta and Athens (Xen. *Hell.* V 1, 2; 29; VI 2, 1), and damage to Athenian interests continued during the conflict with Philip⁴⁴. Aigina was well placed for this: its position and town site were ideal for intercepting Saronic Gulf commerce. Aiginetans were also famous traders⁴⁵. Independently of Polykrates' later raiding, archaic Samians practiced *leisteia*, acting collectively or led by individual aristocrats⁴⁶. Amphikrates' assault on Aigina

⁴⁰ Before Leukimne, Corinth equipped seventy-five triremes (including empty Elean ships, but only thirty of theirs [Thuc. I 27, 2; 29, 1]). Thereafter, they needed two years to prepare 150 triremes, including their ninety (I 31, 1; 46, 1).

⁴¹ Figueira 1998, 489-493.

⁴² Figueira 1993, 23-28; also Salmon 1984, 227.

⁴³ Figueira 1981, 202-206. Cfr. Nep. *Them.* 2, 1-4 (emended).

⁴⁴ Figueira 1993, 338-359.

⁴⁵ E.g., Arist. *Pol.* 1291 b 24; Ephor. *FGrHist* 70 F 176; ΣPind. *Ol.* VIII, 29b. See Figueira 1981, 230-286.

⁴⁶ The name Syloson (Hdt. III 39, 2; 139, 1-41; 144; 146-47; Polyae. VI, 45); interception of diplomatic gifts (Hdt. I 70, 2-3; III 47, 1-3); Aiakes' dedication (*SGHI* #16); Samian exiles' raiding (Hdt. III 57, 1-59, 1); the exiles' sojourn at Kydonia (Hdt. III 59, 1-4); a testimonium from a lost

was noted above. Samian trade is illustrated by Kolaios' famous journey to Spain (Hdt. IV 152, 2-4), and Samian involvement at Naukratis (II 178, 3). The Phokaians penetrated the western Mediterranean in armed pentekontors (III 16, 1-3)⁴⁷. These commercial voyages probably possessed a belligerent dimension. Chios would not sell Phokaian exiles the Oinoussai islands for fear of an *emporion* there (I 165, 1). Justinus has *latrocinium maris* as one source of Phokaian subsistence (XLIII 3, 5). Phokaian *leisteia* stands forefront after displacement westward following the fall of Ionia (Hdt. I 166, 1-167, 4). Later, the Phokaian Dionysios, chosen Ionian admiral at Lade, presumably for experience in combat maneuvers, drilled Ionian triremes in advanced tactics (VI 12, 1-4). Escaping the Greek defeat, Dionysios became a *leistes* in Sicily, preying on Carthaginians and Etruscans (VI 17). Pentekontors were used by Phokaian and Aiginetan *leistai* and traders, and by Polykrates of Samos. Thus, in late archaic Greece, the pentecor was the exemplary vehicle for *leisteia* or armed trade.

Nevertheless, the limits of this paradigm are apparent for the Phokaians. Thucydides thought their navy noteworthy, citing an early victory over Carthage (I 13, 6-14, 1). Upon the Persian advance into Ionia, they resolved to relocate to Alalia, their Sardinian colony (I 164, 2-165, 3). Half the Phokaians, regretting their decision, returned home, leaving 60 of 120 pentekontors to sail westward. In Sardinia, the Phokaian exiles supported themselves by *leisteia* for five years (Hdt. I 166, 1-167, 4). Thereupon they were challenged by 120 Etruscan and Carthaginian ships, which they defeated, unfortunately losing 40 ships with 20 disabled through damage to their rams⁴⁸. The pentekontors' rams were not adequate for sustained combat, although they presumably had appreciable utility in individual duels and for deterrence. Phokaian inability to stand another attack caused a retreat eastward (eventuating in the foundation of Elea).

Triremes with large crews to sustain were usually impractical for trading. Without many triremes, the Phokaians could not defend against more numerous pentekontors. Contrast the Knidian and Rhodian refugees, who as colonists joined with natives to create a *polis* in the Lipari Islands (ca. 580-576). They not only held off Etruscan raiders, but ravaged the Etruscans as raiders themselves (Diod. V 9, 5)⁴⁹. The Liparians were advantaged initially by possessing five triremes. Early in their colonization they annihilated four Etruscan squadrons of five ships (probably pentekontors) in succession, an iconic victory they celebrated at Delphi ca. 500 (Paus. X 16, 7; *SIG*³ 14; cfr. Diod. V 9, 2-3).

Thucydides emphasizes *achrēmata* as impeding the development of sea

Samian historian (*FGrHist* 544 F 3); a bout of *leisteia* by Samian exiles (Plut. *Mor.* 303D).

⁴⁷ Cfr. Wallinga 1993, 67-83.

⁴⁸ Cfr. Papalas 1997, 260-261.

⁴⁹ Figueira 1984, 192-196, noting material derived from the fifth-century historian, Antiochus (*FGrHist* 555 T 1, F 1).

power (I 11, 1). Tyrants like Periander, with his harbors and *diolkos*, and Polykrates with his ship-shed complex, created exceptional facilities. These logistical foundations may be contrasted with Athens, where the beach at Phaleron was long the main base — as development of the Peiraius only began 493/2 under Themistokles (Thuc. I 93, 2) — and Aigina, where harbors north and south of Cape Colonna were used indiscriminately for military and merchant vessels into the 480's, when an advanced military harbor was built⁵⁰. Furthermore, the factor that Thucydides derogates, his refused alternative, *oliganthropia*, should alike be recognized as significant, because it still reflects contemporary speculation. Yet, *oliganthropia* may be determinative only if subtended to *achrēmattia*. Trireme forces had to sustain massive numbers in the context of *polis* demography. By Thucydides' implication, a seventy-trireme force marked the lower range of reputability. Yet it ideally required 14,000 men. Even ca. 550, *polis* treasuries were not very robust. Coinage was still rare; smaller denominations rarer still. Scant issues illustrate the rates at which leading mints (Aigina, Athens and Corinth) disbursed reserves in communal expenditures that could not entirely supersede bullion or pre-monetary media (e.g., cauldrons or spits). Most Greeks, however, were enmeshed in that pre-monetary economy of highly conventionalized exchange among transactors of close social affinity⁵¹.

To transcend the financial and demographic limitations of early naval organization, new state structures had to be erected. Aigina offers indications of adaptation in response to these challenges. Problems in manning ships could be addressed through slavery. While slaves could not be utilized disproportionately as rowers without problems in motivation and compliance, stratified *poleis* managed these obstacles through manipulating manumission and clientage⁵². Slavery performed a broader role in archaic economies by concentrating labor; slaves and freedmen became concentrated within the non-agricultural sector. By 450, the Aiginetan *damos* was primarily of servile extraction⁵³. Clientage networks linked commercial ship captains and sailors from the *damos*. Moreover, a naval treasury supported a larger trireme force⁵⁴, because the sea turtle type of

⁵⁰ Paus. II 29, 10-11. Figueira 1981, 31, 189-191; 1993, 146-148.

⁵¹ More elusive for us is the possibility that creating serviceable rams required a long period of experimental practical engineering. Mark (2008) offers a study of the iconographic evidence for rams with a sustained polemic against their early appearance. This is not without merit but ultimately inconclusive. His treatment of Herodotus on Alalia and Hipponax (n. 16 above) is too dismissive, and other possible cases of early sixth-century ramming like a Megarian dedication (n. 12 above) and the victories of the Liparians also deserve consideration. Yet, if Mark's argument based on engineering challenges turns out to be valid, the tardy development of ramming (after ca. 600) could become another reason for the gradual emergence of large all-trireme navies.

⁵² Figueira 1981, 35-38, 59-60.

⁵³ Figueira 1993, 207-208 (Pind. *Ol.* VIII 20-30 with Σ30c-d, f, i, l; Arist. fr. 475.1 G).

⁵⁴ Figueira 1981, 118-119; 1993, 290-292; 1998, 118-121.

the main mint terminated with the fleet's suspension in 457/6. Another long-existing minting authority then assumed exclusive privileges. This mint celebrated its terrestrial origin with a land tortoise. Lack of evidence, however, forbids proceeding much further in analysis of these masters of *leisteia*.

To understand how *poleis* grappled with organizational challenges in building trireme navies, capable in both modes of sea fighting, we must explore the synthetic administrative approaches of Samos and Athens⁵⁵. Herodotus hailed Polykrates as the earliest thalassocrat, referring to ambitions to dominate Ionia and the islands (III 122, 2)⁵⁶. These endeavors were realized through conventional expeditionary warfare. Herodotus notes his subjugation of islands and mainland cities, adducing Polykrates' capture of a Lesbian fleet assisting Miletos (III 39, 4). Thucydides specifies his insular hegemony (I 13, 6). These operations required the entire strength of Samos, which already included a strong trireme force⁵⁷.

Polykrates sent forty triremes to aid Kambyzes against Egypt, ships staffed by enemies whom he intended to sacrifice (Hdt. III 44, 1-2). Yet Polykrates was still strong enough to fight at sea against this squadron when it defied him (III 45, 1-3). Moreover, Samos deployed sixty triremes at Lade (494: Hdt. VI 8, 2) after a Persian massacre ca. 510 (III 147, 1-2; 149). Thus trireme strength under Polykrates was at least eighty. Ships sent to Kambyzes were captained by elite Samians and manned through traditional clientage, making this an attractive means for Polykrates to remove enemies and eliminate their followers. Otherwise, how could Polykrates acquire information to determine whom to suspect from the non-elite strata of Samos? These ships' crews and their leaders did indeed exhibit solidarity, cohering through five years of vicissitudes (III 45, 1-46, 2; 54-59, 4).

Building on Samian traditions of *leisteia*, Polykrates also acquired 100 pentekontors and 1.000 archers⁵⁸, and thereby conducted pillaging operations (Hdt. III 39, 3). Some were seaborne interceptions; Herodotus would not otherwise be comprehensible, observing how Polykrates did not determine his victims' status, but made restitution only to friends (III 39, 4). The *samaina* was probably developed for his force of pentekontors. A specialized bireme, with swiftness and boar's head ram, it was broader and decked to carry troops⁵⁹. Previously, pen-

⁵⁵ Shipley 1987, 81-99; Wallinga 1993, 84-101 (highly idiosyncratic).

⁵⁶ Cf. Papalás 1999.

⁵⁷ The garbled report of a victory over Kyros perhaps reflects Samian assertion of naval power (as *thalassokratesantes*): I. Malal. *Chron.* VI 12, 122-23 Thurn; G. Cedrinus 242, 24-243, 6 Bekker.

⁵⁸ In his own excursions, Polykrates used pentekontors (Hdt. III 41 2; 124, 2).

⁵⁹ Lysim. *FGrHist* 382 F 7; Plut. *Per.* 26, 3-4; Hesych. *σάμαινα*; Σαμιακός τρόπος; Phot. *Σάμαινα*; Σαμαίνη; *Suda* Σαμίων ὁ δῆμος. See Morrison 1996, 181-184; Wallinga 1991; 1995,

tekontors mainly carried oarsmen, who doubled as deck fighters or disembarked *leistai*. *Samainai* could carry Polykrates' archers and other *epibatai* on interceptions and raids without sacrificing ramming speed. Some have seen Polykrates' mixed-force structure as betokening transition from the heyday of the pentekontor to that of the trireme⁶⁰, but that hypothesis misses the differentiation in the deployment of the two types and Polykrates' maintenance of a specialist pentekontor force.

Alternatively, one should view this naval establishment as a tyrannical initiative blending earlier forms. Circa 600, a Samian fleet of thirty ships was dispatched to defend their colony Perinthos from Megara, but its commanders preferred to conspire with captured Megarians to overthrow the Samian aristocracy, the *Geomoroi*⁶¹. These ships were probably triremes, because Syloson, an antecessor of Polykrates, launched a coup ca. 590, during the Heraia, with the support of trireme crews (Polyaen. VI 45). Therefore, in the early 500s, instead of private warships, which armed traders or *leistai* supplied the *polis*, Samos possessed a trireme force (like Corinth). By the period of Polykrates, the Samian navy involved a cross-section of elites, including aristocrats with ties of *xenia* at Sparta (Hdt. III 47, 1), men acting as 'trierarchs' who mobilized clientages.

Rather than individual aristocrats taking *sule* with political permission, Polykrates appropriated *leisteia* to serve his hegemonic goals. These were intimidation and the institution of a regime of quasi-taxation through confiscation, accompanied by selective redistribution. Hence the apparatus of *leisteia* could achieve unprecedented scale (100 pentekontors), acquire specialized equipment (*samainai*), and enlist professionals (Samian *toxotai* and *epikouroi misthotaï*). The 'thalassocracy' of Polykrates was vitalized by dual military establishments: a 'grand warfare' mechanism with triremes and hoplites, subsidized by the *polis*, and a 'small war' apparatus of 'special forces', supported through resources garnered from regional hegemony. When the expeditionary force for Kambyses defected, Polykrates held citizen women and children hostage in the ship-sheds, which his mercenaries could burn (Hdt. III 45, 4). While just strong enough to repel the Spartans, Polykrates was fatally left vulnerable to blandishments from the satrap of Sardis (III 122, 1-125, 4).

The Athenian *naukraric* order reveals another synthetic system⁶². *Naukraroi* derived from the ship-owning families of coastal Attica — Koliai is the only identified *naukraria*⁶³ — who originally supplied private ships. *Naukraroi* later

46-47.

⁶⁰ Davison 1947, 20-22; Papalas 1999, 3, 6-7; Morrison *et al.* 2000, 40-41; Wallinga 1993, 84-102. Cfr. Morrison - Williams 1968, 129-130.

⁶¹ Plut. *Mor.* 303E-304C; Strab. fr. 56; Jer. *Chron.* 98b; Figueira 1985, 287-288.

⁶² Figueira 1993, 163-167; for detailed discussion, see Figueira 2011, 186-193.

⁶³ *Lex. Seguer*. Κωλιάς; *Anecd. Bekk.* I, 275.

commanded ships on public service, somewhat like classical trierarchs (Poll. VIII 108), but had become officials⁶⁴ over whom higher magistrates, *prytanies*, stood. Herodotus believed the *prytanies* performed important administrative functions during the Kylonian coup (V 71, 2). The *naukraric* system addressed several glaring needs of archaic naval organization.

First, it harnessed the resources of the whole *polis* to supplement assets offered by the maritime sector in its local contexts. Ideally, fleets needed to use coins because their hierarchy of values permitted segmented, spaced disbursements. The *Athenaion Politeia* cites archaic laws on *naukraroi* levying funds and spending from the *naukraric* treasury, and notes their connection with *eisphorai* and *dapanai*⁶⁵. Regarding their role in keeping property registers, testimonia compare *naukraroi* to later demarchs⁶⁶. Thus, the *naukraries* were compared to later trierarchic symmories, and some mechanism for assignment of responsibility existed because one could assert a challenge to assignment (Clid. *FGrHist* 323 F 8; Phot. ναυκραρία). Secondly, the *naukraric* system did not surrender the advantages of ‘small war’. The late discovery by the Athenians of insufficient seaworthy ships to face Aigina shows that *naukraric* ships were based in *naukraric* centers. Each *naukraria* kept ready a ship and two horsemen, who could raise the alarm for quick action (Poll. VIII, 108). Third, *naukrariai* were incorporated into the tribal system, as sub-divisions of first the Ionian tribes and then Kleisthenic tribes⁶⁷. Thus the *naukraries* exploited a larger manpower reservoir than available from the followings of the *naukraroi* or the *naukraric* districts. Difficulties in mobilizing oarsmen still slowed emergence of a large trireme fleet, but the *naukraric* system was progress toward their resolution.

Athens was an unusually large *polis* whose military could interweave disparate social components, in this case fusing a maritime segment which engaged in local trade, coastal transport, and, possibly, *leisteia* with a large, basically agrarian economy. Athenian experience of tyranny embodied the centralization of administrative functions typifying the Corinthian state. Fortunately for Athens, however, the Peisistratids did not break so violently with traditions as dynastic government elsewhere, and an aristocratic backlash could not stifle populist impulses. Also, Sparta lay too distant to shift the political balance toward reaction and oligarchy. Hence, continuous institutional adaptation progressed toward monetization, a flexible, market-based economy, and demographic growth. Elsewhere, I offered a hypothesis for the desuetude of the *naukrariai* in their failing to meet the demands of the Aiginetan war in the 480s, and adduced

⁶⁴ *Ath. Pol.* 8, 3; Harpocration ναυκραρικά; Suda ναυκραρικά; Phot. ναυκραρία; *Lex. Seguer.* ναύκραροι; *Anecd. Bekk.* I, 283.

⁶⁵ *Ath. Pol.* 8, 3; cf. Hesych. s.v. δήμαρχοι.

⁶⁶ *Ath. Pol.* 21, 5; Poll. VIII 108; Hesych. δήμαρχοι, ναύκλαροι; Phot. ναυκραρία.

⁶⁷ *Ath. Pol.* 8, 3; Poll. VIII 108; Clid. *FGrHist* 323 F 8.

Thomas J. Figueira

as evidence an *ostrakon* denouncing the *strategos* Xanthippos (*Agora* 25, #1065)⁶⁸. Eventually, Athens reformulated its navy yet again through creating the trierarchy and instituting the authority of the *Boule*. Fifth-century naval warfare is largely the story of the Athenian fleet and the elaborate mechanisms for its upkeep, subsidization, and manning, which other *poleis* had to imitate in grappling with the ramifications of Attic imperialism⁶⁹. Thus, as we explore archaic maritime warfare, we come not only to comprehend the foundations of Attic power, but also to appreciate better its extraordinary accomplishments.

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⁶⁸ Figueira 1993, 167-172; 2011, 200-201.

⁶⁹ Cfr. Strauss 2000.

Archaic Naval Warfare

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Archaic Naval Warfare

Abstract

An enigma in Thucydides' description of the rise of Greek naval power in his *Archaologia* is his notice on the late eighth-century origination of the trireme, which may be coupled with his further specification that large trireme navies did not emerge until the late archaic period. This paper stands strongly against the tendency to reject the implications of Thucydides' treatment, although it also explains how Atthidography in the person of Kleidemos confronted the challenge of interpreting Thucydides. It argues that the emergence of the large trireme navy required mastering administrative problems, and not merely solving engineering challenges. Resources had to be amassed for the creation and maintenance of trireme forces in early monetizing economies. Manpower had to be mobilized in a manner conforming to prevailing socio-political structures. In this context, the evidence on the appearance of triremes in archaic navies is presented. I propose that *leisteia* 'brigandage' was pervasive in archaic Greece. This 'small war' was particularly suited to the use of pentekontors by commercial *poleis* such as Aigina, Phokaia, and Samos. Corinth, however, is the best example of an early trireme navy, and its naval administration became highly developed under the Kypselid tyrants. This force structure accommodated commerce that was more passive, intermediated, and colonial, but did not lend itself to rapid mobilization. In the late archaic period, the monetization of naval warfare becomes apparent, and slavery plays a role in addressing manpower needs. Moreover, synthetic regimes of naval organization appear on Samos under Polykrates and at Athens in the *naukratic* system — that balance or blend *leisteia* and trireme warfare. The resolution of the challenges of the trireme navy is an aspect of the achievement of the more integrated classical *polis*, which culminated in the breakthrough of the naval *arche* of Athens.