David Whitehead

# Philo Mechanicus: *On Sieges*

Translated with Introduction and Commentary

Historia

Alte Geschichte

Historia – Einzelschriften 243

Franz Steiner Verlag

David Whitehead
Philo Mechanicus: *On Sieges*

**HISTORIA** Zeitschrift für Alte Geschichte | Revue d'histoire ancienne | Journal of Ancient History | Rivista di storia antica

**EINZELSCHRIFTEN** Herausgegeben von Kai Brodersen, Erfurt | Mortimer Chambers, Los Angeles | Mischa Meier, Tübingen | Bernhard Linke, Bochum | Walter Scheidel, Stanford

Band 243

David Whitehead

# Philo Mechanicus: *On Sieges*

Translated with Introduction and Commentary

Franz Steiner Verlag

Bibliografische Information der Deutschen Nationalbibliothek:
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

Dieses Werk einschließlich aller seiner Teile ist urheberrechtlich geschützt.
Jede Verwertung außerhalb der engen Grenzen des Urheberrechtsgesetzes ist unzulässig und strafbar.
© Franz Steiner Verlag, Stuttgart 2016
Satz: DTP +TEXT Eva Burri, Stuttgart
Druck: AZ Druck und Datentechnik, Kempten
Gedruckt auf säurefreiem, alterungsbeständigem Papier.
Printed in Germany.
ISBN 978-3-515-11343-4 (Print)
ISBN 978-3-515-11344-1 (E-Book)

TABLE OF CONTENTS

**Preface** ..... 7

**Conventions and Abbreviations** ..... 9

**Measures, Weights, Volumes** ..... 13
(1) (Linear) Measures ..... 13
(2) Weights ..... 13
(3) Volumes ..... 14

**Introduction** ..... 15
(A) Basics ..... 15
(i) Text(s) ..... 15
(ii) Translations ..... 16
(iii) Sources ..... 17
(iv) Use and Influence ..... 17
(B) The Work and its Author ..... 20
(C) Style, Tone and Terminology ..... 25
(i) Fortification(s) ..... 28
(ii) Machinery ..... 30
(iii) *plagios* and *orthios* ..... 32
(D) The Besieged Community in Aeneas Tacticus and Philo ..... 33
(i) The Polis ..... 34
(ii) Natural Features ..... 36
(iii) Man-Made Features ..... 37
(iv) Women, Children and Families ..... 41
(v) Animals ..... 42
(vi) Slave, Foreigner, Citizen ..... 45
(vii) Constitution and Government ..... 48
(viii) The Military ..... 49
(ix) The Gods ..... 51
(x) Overview ..... 52
Internal (Dis)Organisation of the Treatise ..... 60
Some Textual Issues ..... 63

**Text and Translation** ..... 65

**Commentary** ..... 133
Part A: Fortification(s) ..... 133
Part B: Provisioning and Preparation ..... 219
Part C: Defensive Measures ..... 272
Part D: Attacking Measures ..... 333
Appendix 1: Vitruvius, *de architectura* 1.5.1–8 ..... 404
Appendix 2: Athenaeus Mechanicus 15.13–18.7 (and Vitruvius 10.14.1–3) ..... 409
Appendix 3: Philo-derived passages in the *Parangelmata Poliorketika* ..... 412
Appendix 4: The walls of Skotoussa ..... 417
Appendix 5: Granaries and grain-preservation in *Geoponica* 2.27–30 ..... 425

**Gazeteer** ..... 429

**Bibliography** ..... 439

**Index of Passages Cited** ..... 447

**Greek Index (Select)** ..... 487

**General Index** ..... 495

# PREFACE

Had this book been written a generation ago, it could have begun with the claim that Philo's *Paraskeuastika* and *Poliorketika* (which I here subsume under a title of my own devising: *On Sieges*) has suffered from neglect, not least at the hands of those who ought to have taken particular account of it. In saying so I have in mind, above all, W. Kendrick Pritchett's five-volume *The Greek State at War* (1971-1991), a survey celebrated for its coverage of the relevant ancient sources and the bibliography they have generated. While most of this praise is richly deserved, Pritchett had a blind-spot where Philo is concerned: not a single passage of his is cited. Most of Pritchett's successors have made amends, but even the recent *Cambridge History of Greek and Roman Warfare*, vol. I, categorizes Philo too narrowly as a writer on mechanics and artillery.

Nowadays, those who know Philo's *On Sieges* belong mostly in one of two camps. The larger group mounts targeted raids into the work, to seize and carry off individual nuggets of information. A nucleus of specialists, in fields like warfare and Hellenistic culture, prizes it as a whole within those specialisms. The generalists are likely to be aware (or can readily discover) that translations and/or commentaries already exist, and they might well wonder why another is necessary. The specialists already know that these existing translations and commentaries, for all their many and undoubted merits, do not furnish a totally satisfactory exegetical resource, even in aggregate. Beyond that, if any have contemplated supplying such a resource themselves, the difficulties entailed will have been a deterrent. Ideally, a consortium of experts would undertake the task – but since such a body has shown no sign of coming into existence and setting about its labours, I proffer here one scholar's attempt to do the necessary. My aim, in effect, has been to provide users of this material with the sort of help I would have wished to find myself, for coming to serious grips with it: an Introduction to Philo and the *On Sieges*; a considered view of the text and what it means; a translation closely mapped onto the Greek (see further below); and a Commentary which expounds and explains, to the best of my ability, the many and various matters arising.

On one particular point I did seek advice. Duncan Campbell's opinion was invaluable at a time when my doubts about the transmitted text – on the allegedly defensive use of rams – needed to be either dispelled or confirmed. (Naturally, he shares no blame for other errors of fact, judgment or omission I may be deemed to have made.)

Whatever else it is, this is the first complete translation of Philo's treatise into English; so let me stress that the translation aspect of what I have done here is purely functional. The shrunken, often inept form in which Philo's original work has been transmitted is repetitious and creaky to a high degree. In that and other respects it is the proverbial sow's ear. Conversion into a silk purse would have been quite possible, but would also have been very misleading.

I am grateful to the editors of *Historia*, who have here for the third time extended the hospitality of the *Einzelschriften* series to a work of mine in this austere but compelling genre. Again too I am indebted to my dear wife Arlene Spiers. She must often have wished that less of my energy went into feeding the compulsion, but she has always been unselfish enough not to say so.

Belfast January 2016

# CONVENTIONS AND ABBREVIATIONS

1. All ancient dates are BC(E) unless otherwise indicated.
2. The author of the text which is my concern here – Philon (Φίλων) in Greek, Philo in Latin – is routinely foreshortened to Ph.
   Conventions for abbreviating the names of other ancient writers and their works mostly follow those of standard reference-works such as LSJ, the OCD and the online TLG Canon – any deviations from such standards being in the direction of greater explicitness. (On the impossible matter of consistency between Latinization and transliteration, I enter the usual disclaimer. See also the introduction to the Gazeteer.)
3. The editions of Ph. by Thévenot, Graux, Schoene, Diels-Schramm and Garlan (see Introduction A.i) and the translations by Rochas d'Aiglun and Lawrence (see Introduction A.ii) are all cited by the name of the editor or translator only. Ph.'s material on siege-warfare, the subject of the present book, is cited without title, and primarily by the four content-determined parts (A-D), and short sections thereof, devised by Diels-Schramm and taken over by Garlan, Lawrence and others. In almost all instances I add precision to this by line-numbers within sections. I also give (in italics within square brackets) equivalences in Thévenot pages and lines, since they remain useful for identifying passages which feature in LSJ* and quite frequently, still, elsewhere.
   [Ph.'s *Belopoiika* (*Artillery-manufacture*), which I abbreviate as *Bel*., is cited by Thévenot pages and lines, taken over by Schoene and by Diels-Schramm (Berlin 1919). (Marsden, *Treatises*, reformats with longer lines; see p.15 there.)]
4. For secondary literature, note the following abbreviations:

| | |
|---|---|
| AIO | Attic Inscriptions Online (www.atticinscriptions.com) |
| Austin$^2$ | M. M. Austin, *The Hellenistic World from Alexander to the Roman Conquest* (2nd. edn. Cambridge 2006) |
| BA | *Barrington Atlas of the Greek and Roman World*, ed. R. J. A. Talbert (Princeton 2000) |
| BA(D) | *Barrington Atlas of the Greek and Roman World: map-by-map Directory*, ed. R. J. A. Talbert (2 vols. with continuous page-numbering: Princeton 2000) |
| Bagnall/Derow$^2$ | R. S. Bagnall and P. S. Derow (ed. and tr.), *The Hellenistic Period: historical sources in translation* (2nd. edn Oxford 2004) |

* LSJ wrongly cites *all* of Ph. as '*Bel.*', and further claims that Diels and Schramm also give 'page and line of Wescher'. Of Thévenot, rather. Carl(e) Wescher's *Poliorcétique des Grecs* (Paris 1867) excluded Ph. because he does not feature in the *Parisinus inter supplementa graeca* 607 manuscript, which furnished Wescher's criterion for inclusion; cf. Garlan 287.

| | |
|---|---|
| BNP | *Brill's New Pauly: Antiquity*, ed. H. Cancik and H. Schneider [English edn., ed. C. Salazar] (Leiden & Boston 2003–2010) |
| Burstein | S. M. Burstein (ed. and tr.), *The Hellenistic Age from the battle of Ipsos to the death of Kleopatra VII* (*Translated Documents of Greece and Rome* 3: Cambridge 1985) |
| DCPP | E. Lipinski (ed.), *Dictionnaire de la civilisation phénicienne et punique* (Paris 1992) |
| FGrH | F. Jacoby, *Die Fragmente der griechischen Historiker* (Berlin & Leiden 1926–1958) |
| Harding | P. Harding (ed. and tr.), *From the end of the Peloponnesian War to the battle of Ipsus* (*Translated Documents of Greece and Rome* 2: Cambridge 1985) |
| HCA | A. B. Bosworth, *A Historical Commentary on Arrian's History of Alexander* (Oxford 1980–1995) |
| HCP | F. W. Walbank, *A Historical Commentary on Polybius*, three volumes (Oxford 1957–1979) |
| HCT | A. W. Gomme, A. Andrewes, K. J. Dover, *A Historical Commentary on Thucydides*, five volumes (Oxford 1945–1891) |
| IACP | M. H. Hansen and T. H. Nielsen (ed.), *An Inventory of Archaic and Classical Poleis* (Oxford 2004) |
| I.Alexandreia Troas | M. Ricl (ed.), *The Inscriptions of Alexandreia Troas* (Bonn 1997) |
| I.Cret. | M. Guarducci (ed.), *Inscriptiones Creticae* (Rome 1935–1950) |
| I.Eph. | H. Wankel, R. Merkelbach et al. (ed.), *Die Inschriften von Ephesos* (Bonn 1979–1981) |
| IG | *Inscriptiones Graecae* (Berlin 1873-) |
| IGR | *Inscriptiones Graecae ad res Romanas pertinentes* (Paris 1911–1927) |
| I.Perge | S. Şahin (ed.), *Die Inschriften von Perge*, I (Bonn 1999) |
| ISE | L. Moretti (ed.), *Iscrizione storiche ellenistiche* I–II (Florence 1967–1975) |
| I.Smyrna | G. Petzl (ed.), *Die Inschriften von Smyrna* (Bonn 1982–1990) |
| KP | K. Ziegler at al. (ed.), *Der Kleine Pauly* (5 vols.: Munich 1964–1975) |
| LSJ | H. G. Liddell, R. Scott, H. S. Jones, *A Greek-English Lexicon*, ninth edn., with revised Supplement (Oxford 1996) |
| Maier | F. G. Maier, *Griechische Mauerbauinschriften* I–II (Heidelberg 1959–1961) |
| OCD | S. Hornblower, A. Spawforth, E. Eidinow (ed.), *The Oxford Classical Dictionary*, fourth edn. (Oxford 2012) |

| | |
|---|---|
| OGIS | W. Dittenberger (ed.), *Orientis Graecae Inscriptiones Selectae* (2 vols.: Leipzig 1903–1905, reprinted Hildesheim 1986) |
| PECS | R. Stillwell, W. L. MacDonald, M. H. McAlister (ed.), *Princeton Encyclopedia of Classical Sites* (Princeton 1976) |
| PCairZen | C. C. Edgar and others (ed.), *Zenon Papyri* (Cairo 1925–1940); on-line at p.cair.zen |
| PLond | F. G. Kenyon and others (ed.), *Greek papyri in the British Museum* (London 1893-); on-line at p.lond |
| POxy | B. P. Grenfell, A. S. Hunt and others (ed.), *Oxyrhyncus Papyri* (London 1898-); on-line at p.oxy |
| PSI | *Pubblicazioni della Società italiana per la ricerca dei papiri greci et latini in Egitto* (Florence 1912-) |
| PTeb | B. P. Grenfell, A. S. Hunt and others (ed.), *Tebtunis Papyri* (London 1902–1976) |
| RE | A. F. Pauly, G. Wissowa, W. Kroll et al. (ed.), *Real-Encyclopädie der classischen Altertumswissenschaft* (Stuttgart 1894–1980) |
| RO | P. J. Rhodes and R. Osborne (ed. and tr.), *Greek Historical Inscriptions 404–323 BC* (Oxford 2003) |
| Samama | E. Samama, *Les médecins dans le monde grec. Sources épigraphiques sur la naissance d'un corps médical* (Geneva 2003) |
| SB | F. Preisigke and others (ed.), *Sammelbuch griechischer Urkunden aus Aegypten* (Berlin and elsewhere, 1913-) |
| Schwenk | C. J. Schwenk, *Athens in the Age of Alexander: the dated laws and decrees of 'the Lykourgan era' 338–322 BC* (Chicago 1985) |
| SEG | *Supplementum Epigraphicum Graecum* (Leiden 1923-) |
| SGDI | H. Collitz et al. (ed.), *Sammlung der griechischen Dialekt-Inschriften* (Göttingen 1884–1915) |
| Staatsverträge | H. H. Schmitt (ed.), *Die Staatsverträge des Altertums, dritter Band: Die Verträge der griechisch-römischen Welt von 338 bis 200 v. Chr.* (Munich 1969) |
| Syll.$^3$ | W. Dittenberger (ed.), *Sylloge Inscriptionum Graecarum*, third edition (4 vols.: Leipzig 1919–1924, reprinted Hildesheim 1982) |

# MEASURES, WEIGHTS, VOLUMES

Where Ph. gives exact figures I leave them in their original Greek terms, translated or transliterated, in the Translation but add present-day (metric) equivalents in parenthesis.

## (1) (LINEAR) MEASURES

In the ancient Greek "Olympic" system the smallest unit was the dactyl (δάκτυλος); four dactyls made a palm (παλα(ι)στή), twelve dactyls a span (σπιθαμή), sixteen dactyls a foot (ποῦς), and twenty-four dactyls a cubit (πῆχυς). I follow here B. Cotterell and J. Kamminga, *Mechanics of Pre-industrial Technology* (Cambridge 1990) 19 (Table 2.1) in operating with millimetre equivalents as follows: dactyl 19.25; palm 77; span 231; foot 308; cubit 462. See also E. W. Marsden (*Greek and Roman Artillery: Historical Development* [Oxford 1969] xix; *Greek and Roman Artillery: Technical Treatises* [Oxford 1971] xvii), based ultimately on F. O. Hultsch, *Griechische und Römische Metrologie* (edn.2, Berlin 1882) Erster Theil, §§ 5–11.

Given Ph.'s subject-matter, especially in part A (fortifications), the cubit unsurprisingly features most: see A9.3–4 [*80.13–14*], A10.2 [*80.17*], A11.3 [*80.21*], A12.2 [*80.26*], A13.3 [*80.30*], A17.3 [*80.47*], A17.5 [*80.49*], A18.3 [*80.51*], A19.2–4 [*81.1–3*], A20.4 [*81.9*], A45.3–4 [*83.17–18*], A46.5–6 [*83.22–23*], A69.4 [*84.46*], A70.2 [*84.48*], A71.1–3 [*85.1–3*], A72.3 [*85.6*], B12.1 [*87.13*], B12.5 [*87.17*]. In the few contexts where he needs something smaller, he chooses, as appropriate, the dactyl (B6.4–5 [*86.42–43*]), the palm (C53.7 [*94.49*]) and the span (A29.3–4 [*81.49–50*], C26.2–3 [*93.2–3*], D17.9–10 [*98.12–13*], D31.4–5 [*99.16–17*]). No length is expressed in feet.

Four passages include linear dimensions larger than – or in effect multiples of – the cubit. A45.4 [*83.18*], amidst other figures given in cubits, has a wall-height of six *orguiai* ("fathoms"); an *orguia* is six feet (1.5 cubits), hence 1.85 m. A69.3 [*84.45*], immediately before one recommended trench-to-wall interval given in cubits, gives one of a *plethron*: a hundred feet, hence 30.8 m. And in A38.1 [*82.41*] and B53.3–4 [*90.16–17*] there are long distances measured by the stade (στάδιον): six *plethra*, hence 184.8 m.

## (2) WEIGHTS

Weights in Ph. are confined to specifications of the weights of stone – probably expressed on the Attic-Euboic scale, in widespread "international" use – capable of being discharged by stone-projecting artillery (or by other means: below). I follow

here Cotterell and Kamminga, *Mechanics* 21 (Table 2.2) in operating with metric equivalents of 436.6 gr. for the mina (μνᾶ) and, accordingly, 26.2 kg. for the talent (τάλαντον). See also Marsden, *Treatises* xviii, based ultimately on Hultsch, *Metrologie* Zweiter Theil, § 19.

Such calibres expressed in minas here range from the miniature two (D31.5–6 [*99.17–18*]) through ten (C6.2 [*91.16*], C26.2 [*93.2*], D17.9 [*98.12*]) and twenty (C56.2–3 [*95.10–11*]) to thirty (C57.3 [*95.17*], C67.2–3 [*95.50–51*]). A projector of stones twice the size of the largest of these, therefore, is the 'one-talent' rock-projector mentioned in A29.6 [*82.1*], A70.4 [*84.50*], A71.1–2 [*85.1–2*], and A73.3 [*85.8*]. In C10.4–6 [*91.36–38*], stones of this same size are dropped by defenders through windows, and C8.1–4 [*91.25–28*] has three-talent stones being propelled through a 'pipe': see the Comm. there.

## (3) VOLUMES

In the sections of part B devoted to foodstuffs in general, and recipes in particular, Ph. has occasion to use various measures of volume/capacity, both dry (ξηρά) and wet (ὑγρά). Dry measures mentioned, in B35.1–5 [*88.43–47*], are the specifically Attic (half-)*hekteus* for sesame and the *choinix* for almonds; there are eight *choinikes* to the *hekteus*. That same recipe also specifies quantities of wet ingredients by the (half-)*chous* for honey and the *kotylê* for oil; there are twelve *kotylai* to the *chous*. *Kotylai* (of wine and honey) reappear in B42.5–6 [*89.19–20*], *choes* (of water) in B54.2–3 [*90.25–26*]; and B54.3 [*90.26*] also measures vinegar by the *kyathos*, one-sixth of a *kotylê*.

B55.2–3 [*90.29–30*] mentions a very large vessel, at least four *metrêtai* (forty-eight *choes*) in size, to be used in signalling.

I follow here Hultsch, *Metrologie* Erster Theil § 16 (with Tabelle X) in operating with metric litre equivalents as follows: *kyathos* 0.0456, *kotylê* 0.274, *choinix* 1.094, half-*chous* 1.642, *chous* 3.283, half-*hekteus* 4.377, *metrêtes* 39.39.

# INTRODUCTION

## (A) BASICS

### (i) Text(s)

The principal manuscripts are three in number: E (*Scorialensis graecus* Y-III-11), from the end of the 10th century; V (*Vaticanus graecus* 1164) and P (*Parisinus graecus* 2442), from the beginning of the 11th. Editors have envisaged a variety of stemmatic relationships between them: see in brief Garlan 285–286, with bibliography. References, hereinafter, to 'the manuscripts' will mean these principal ones unless otherwise indicated. Some of the later (15th to 17th century), derivative ones are surveyed in Graux 102–104. For *Vaticanus graecus* 1605 (11th century), which includes a scholiast's text of Ph.'s B32–40 [*88.32–89.10*], see the Comm. to B32 under **ἀφεψηθείσης**.

The *editio princeps* is Melchisédec(h) Thévenot and others, *Veterum mathematicorum Athenaei, Apollodori, Philonis, Bitonis, Heronis et aliorum opera Graece et Latine pleraque nunc primum edita* (Paris 1693) 79–104. Though Thévenot's actual text has long since been superseded, largely because it was based on a single late manuscript (the 16th-century *Parisinus graecus* 2435), his page-numbers and (usually) line-numbers are a referencing-system still widely in use; see above, Conventions and Abbreviations, 3.

The first section (Thévenot 79–86.21) – taken as an autonomous book of *Teichopoiika*, *Fortification-matters*[1] – was re-edited by Charles Graux, 'Philon de Byzance: Fortifications', *Revue de Philologie* 3 (1879) 91–151, posthumously reprinted in his *Oeuvres* (Paris 1886) 2.153–227. This comprises a general introduction, parallel text and translation, and 'notes explicatives'. During the course of it, the co-authorship of the amateur polymath and military specialist Eugène August Albert de Rochas d'Aiglun is acknowledged; see also below, under Translations.

The following three re-editions embrace the complete text:

Richard Schoene, *Philonis Mechanicae Syntaxis libri quartus et quintus* (Berlin 1893). [No page-numbering.] A root-and-branch textual revaluation, incorporating many otherwise unpublished suggestions by August Brinkmann, Franz Buecheler, Hermann Diels, Friedrich Haase, Alfred Schoene (Richard's brother), Hermann Schoene (Richard's son), and Johannes Vahlen.

Hermann Diels and Erwin Schramm, *Exzerpte aus Philons Mechanik B.VII und VIII (vulgo fünftes Buch). Griechisch und Deutsch.* (*Abhandlungen der preussischen Akademie der Wissenschaften, philosophisch-historische Klasse* no. 12: Berlin 1919 [1920]). A new text, with German translation, brief notes, and 33 fig-

1 Erroneously listed as *Technopoiika* by K. Orinsky et al., 'Philon(48)', *RE* 20.1 (1941) cols.53–54, at 54.

ures; and an unpublished 1886 edition (with translation and 'Erläuterung') of Thévenot 79–86.21 by Ernst Fabricius is incorporated.

Diels-Schramm is the text available on the on-line TLG.

Yvon Garlan, *Recherches de poliorcétique grecque* (*BEFAR* fasc. 223: Paris 1974) 278–404. After an Introduction, Garlan gives a parallel text and French translation, and a commentary in the form of endnotes; they are most lavish on the first (archaeological) section of the treatise.

The labours of this succession of scholars (and others), especially in the century which spans Graux to Garlan, have made very significant advances toward the most plausible and satisfactory text of Ph. that can be established. Nevertheless, what he wrote – and/or what he meant by it – remains in many places uncertain.

## (ii) Translations

Into French: Graux, Garlan; see already under Text(s). Also, a few years earlier than Graux, Rochas d'Aiglun published an annotated French translation based on Thévenot's text: *Traité de fortification d'attaque et de défense des places par Philon de Byzance* (Paris 1872).[2]

Into German: Diels-Schramm; see already under Text(s).

Into English. The principal item here is A. W. Lawrence, *Greek Aims in Fortification* (Oxford 1979) 69–107. After an Introduction, he translaties all parts 'relevant, even indirectly, to the study of fortifications'. (This turns out to mean: A1–87 [*79.1–86.21*], i. e. part A complete; B49–53 [*89.46–90.24*]; C1 [*90.46–49*], C3–44 [*91.3–94.20*], C49–59 [*94.32–95.25*], C63–71 [*95.32–96.14*]; D1–11 [*96.27–97.34*], D17–19 [*98.4–20*], D24–27 [*98.34–99.3*], D29–51 [*99.6–100.32*], D55–58 [*100.39–101.2*], D66 [*101.31–35*], D71–75 [*102.3–27*], D111 [*104.40–42*].) There is no continuous Greek text, but the parallel 'analysis and notes' includes occasional textual observations and suggestions amidst the substantive comment.

Brian Campbell, *Greek and Roman military writers: selected readings* (London 2004), provides an all-purpose selection of eight short translated extracts (A20–21 [*81.6–25*], A32–33 [*82.6–21*], B1–2 [*86.21–32*], B49–50 [*89.46–90.5*], C3–5 [*91.3–15*], C32–36 [*93.25–44*], D59–60 [*101.2–11*], D71–72 [*102.3–12*]). W. M. Murray, *The Age of Titans: the rise and fall of the great Hellenistic navies* (Oxford 2012) 283–301 (= Appendix E), is a translation, with footnotes, of the material relating primarily to naval warfare (C51–71 [*94.36–96.14*], D5 [*96.37–41*], D21–33 [*98.24–99.20*], D38 [*99.37–40*], D53–55 [*100.33–44*], D101–111 [*104.1–42*]).

2 It is partially available on-line at http://remacle.org/bloodwolf/erudits/philon/fortification1.htm (or via attalus.org).

## (iii) Sources

Ph. never names his sources, and in all but one instance they are indeterminable by name. The exception, whether he had read it directly or in the epitome by Cineas the Thessalian,[3] is unsurprising: his best-known predecessor in the genre, Aeneas Tacticus (mid-fourth century).

Aeneas's *Procurement* (*Poristikê biblos*, which its author mentions in 14.2) and *Preparations* (*Paraskeuastikê biblos*, mentioned in 7.4, 8.5, 21.1 and 40.8) are both lost, a fact which obscures the most vital aspects of how far they might underpin the recommendations in Ph.'s part B;[4] but other links are clear enough, to varying extents. A particularly striking instance occurs with B55–57 [*90.28–45*], where a system for adding detail to fire-signals by the use of the synchronized outflow from two water-vessels stems from an Aenean invention reported by Polybius 10.44–45. See also (e. g.) the following passages of Aeneas:

7.1 (and 10.4), *re* D2–3 [*96.28–33*];
22.7–8, *re* C34 [*93.32–36*];
24–25, *re* C29 [*93.8–11*] and C35–38 [*93.36–52*];
26.3, *re* C28 [*93.5–8*];
31 (esp. 10–13), *re* D77–82 [*102.31–50*] (esp. D80–81 [*102.40–47*]);
32.8, *re* A76 [*85.22–29*];
32.12, *re* C18 [*92.22–27*];
33.1, *re* C39–41 [*94.1–10*], etc.;
34.1, *re* D34–35 [*99.21–28*];
36, *re* A79 [*85.35–39*];
37.1, *re* C7 [*91.19–24*];
37.3, *re* D32 [*99.18–19*];
39.1–2, *re* C32 [*93.25–29*];
39.6–7, *re* C65 [*95.39–44*] and D41 [*99.48–51*].

On Ph.'s apparent use (direct or indirect) of Hippocratic treatises see below, section B (end), and again in the preface to the Commentary on part B.

## (iv) Use and Influence

The first unambiguous proofs of Ph. being used by his successors in the genre come in two interconnected writers of the second half of the first century: Athenaeus of (?)Seleucia, a. k. a. Athenaeus Mechanicus, and Vitruvius.[5]

3 On Cineas see in brief D. Whitehead (ed.), *Aineias the Tactician: How to Survive under Siege* (Oxford 1990; edn.2 with addenda and corrigenda Bristol 2001) 6; M. Bettalli (ed.), *Enea Tattico: La difesa di una città assediata* (Pisa 1990) 4.

4 See generally Bettalli, *Enea* 337; and (on this and the other passages cited) in the Comm. below.

5 On their interconnection see most recently D. Whitehead and P. H. Blyth (ed.), *Athenaeus Mechanicus: On Machines* (*Historia* Einzelschriften 182: Stuttgart 2004) *passim*.

The latter's *de architectura* mentions Ph. explicitly, in an unchronological list of twelve authorities given in chap.14 of the preface to his Book 7: *Diades Archytas Archimedes Ctesibios Nymphodorus Philo Byzantius Diphilos Democles Charias Polyidos Pyrros Agesistratos*. It is noteworthy that only Ph., in this roster, is thought to need an ethnikon – so as to avoid confusion with homonyms, presumably; and his origins in Byzantium are confirmed by two other (later) writers.[6] In any event, Vitruvius had already drawn on Ph. without citing him by name in an earlier context; for Book 1 chap.5 of Vitruvius sounds unmistakable echoes of what Ph. says, at length, about city-wall construction and related topics in his part A. See **Appendix 1**.[7]

Athenaeus, for his part, does not deal with fortifications and thus does not draw on that material; nor does he proffer a consolidated list of names like the one in Vitruvius. Instead, he introduces his authorities *seriatim*. The one named at 15.13 is 'Philo of Athens' (Φίλων ὁ Ἀθηναῖος) – but since that writer is cited there for the construction of a filler tortoise, χελώνη χωστρίς, as mentioned in our Ph.'s D10.7–11 [*97.25–29*], there can be no doubt that the designation 'ὁ Ἀθηναῖος' is a slip (whether by Athenaeus himself, his immediate source Agesistratus, or a copyist).[8] See **Appendix 2**.

Next comes Onasander's treatise *On Generalship* (*Stratêgikos*), addressed in Greek to the Quintus Veranius who was consul *ordinarius* in 49 CE and subsequently governor of Britain.[9] Though the sources of Onasander's morally-driven – notionally Platonic (Suda o 386) – advice to generals are never stated, there seems little doubt that he had read and absorbed Ph., whether directly or indirectly. Some of the correspondences between the two works are no more striking than would be expected from two writers who cover many of the same topics; and the limits on the scope and extent of those correspondences are unsurprising when one bears in mind that at no point does Onasander take up the stance represented by Ph.'s parts A-C, that of a city-commander who is resisting a siege. On the other hand he does, at

6 Hero, *de automatis* 20.1 (τῶν ὑπὸ Φίλωνος τοῦ Βυζαντίου ἀναγεγραμμένων); Eutocius, *Commentaries on [Archimedes'] de sphaera et cylindro* 60.28 (Ὡς Φίλων ὁ Βυζάντιος). (See Garlan 284.) Both of these allusions are to other parts of Ph.'s output, but the identification is certain.

7 See also, for Babylon and 'bitumen' (Vitruvius 1.5.8), B53.5 [*90.18*] with Comm.

8 Vitruvius does not make the same mistake, but does twice (in chaps.12 and 17 of the Preface to his Book 7) refer to the individual with whom Athenaeus's 'Philo of Athens' should be identified: the architect and writer Philon Exekestidou of Eleusis, second half of the fourth century (OCD Philon(1)); so e.g. Garlan 284; Whitehead and Blyth, *Athenaeus* 108–109. The correction of Athenaeus's slip here was attributed by Whitehead and Blyth to R. Schneider, *Griechische Poliorketiker mit den handschriftlichen Bildern herausgegeben und übersetzt, III: Athenaios, Über Maschinen* (*Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen, philologisch-historische Klasse*, Neue Folge 12 no.5: Berlin 1912) 59–60; however, see already Graux 99.

9 See generally W.A. Oldfather et al., *Aeneas Tacticus – Asclepiodotus – Onasander: with an English translation by members of the Illinois Greek Club* (Cambridge Mass. & London [Loeb Classical Library] 1923) 341–527; C.J. Smith, 'Onasander on how to be a general', in M. Austin et al. (ed.), *Modus Operandi: essays in honour of Geoffrey Rickman* (London 1998) 151–166; C. Petrocelli, *Onasandro, Il Generale* (Bari 2008).

40–42, have his general *prosecute* a siege, and it is in those sections above all that we find him saying much what Ph. (particularly in part D) had said.[10]

In a much later age, Ph.'s treatise, together with others of its kind, exerted a discernible influence upon middle-Byzantine siege-writing.[11] I mention here three prime manifestations of this.

One is the text formerly known as the anonymous Περὶ στρατηγικῆς (*De re strategica*) and dated to the sixth century CE; it is nowadays regarded as one of three parts of the *Military Compendium* by Syrianus Magister, and placed in the ninth or even tenth century.[12] Though Syrianus never mentions Ph. by name – because, like Onasander, it is not his habit to name sources at all – there are some echoes of Ph. in the sections entitled 'How one should found a city' (12) and 'How one should make preparations against the machines of the besiegers' (13). They will be noted in the Commentary where they arise. So too will the occasional echoes (probable or possible) of Ph. in the treatise Ὁπῶς χρὴ τὸν τῆς πολιορκουμένης πόλεως στρατηγὸν πρὸς τὴν πολιορκίαν ἀντιτάττεσθαι καὶ οἷοις ἐπιτηδεύμασι ταύτην ἀποκρούεσθαι (*How the general of a city under siege should withstand the siege and with what sort of methods to repel this*), better and more conveniently known as the *De obsidione toleranda*, compiled apparently in the first half of the tenth century CE.[13]

Ph.'s treatise was also (and more extensively) quarried by his purported fellow-citizen "Heron of Byzantium" – actually another anonymous writer of the tenth century CE. Assigned the title *Parangelmata Poliorketika* (*Siege-warfare Instructions*) by its editor Rudolf Schneider,[14] the work is most easily accessible nowadays in a painstaking re-edition by the American Byzantinist Denis Sullivan.[15] The exemplary list of μηχανικοί who are this Byzantine writer's sources (197.7–

10 See the Commentary to D4 under **εἰ δὲ μή**, D6 under **πρῶτον**, D9 under **ἐπικηρύξας**, D10 under **ἔπαλξιν**, D13 under **καὶ τὸν μὲν δοῦλον**, D16 under **Τοὺς δ' ἀχρείους**, D18 under **Μὴ φανερός**, D20 under **Αὐτός**, D26 under **ποιοῦ**, D27 under **Καὶ θόρυβον**, D68 under **παρακάλει**, D70 under **Ἁλισκομένης**. Otherwise, consult the Index of Passages Cited s. v.

11 For a survey of the miscellany of works which fall under this head see D. F. Sullivan, 'Byzantine military manuals: prescriptions, practice and pedagogy', in P. Stephenson (ed.), *The Byzantine World* (London & New York 2010) 149–161.

12 P. Rance, 'The date of the military compendium of Syrianus Magister', *BZ* 100 (2007) 701–737, with lavish bibliography and discussion (cf. in brief D. Whitehead (ed.), *Apollodorus Mechanicus: Siege-Matters* (*Historia* Einzelschriften 216: Stuttgart 2010) 18 n.7); I. Eramo, 'Sul compendio militare di Siriano Magister', *RSA* 41 (2011) 201–222.

13 H. van den Berg, *Anonymus de obsidione toleranda* (Leiden 1947); D. F. Sullivan, 'A Byzantine instructional manual on siege defense: the *de obsidione toleranda*. Introduction, English translation and annotations', in J. W. Nesbitt (ed.), *Byzantine Authors, Literary Activities and Preoccupations: texts and translations dedicated to the memory of Nicolas Oikonomides* (Leiden 2003) 139–266 (including a reprint of van den Berg's text).

14 R. Schneider, *Griechische Poliorketiker mit den handschriftlichen Bildern herausgegeben und übersetzt, II: Anweisen zur Belagerungskunst* (*Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen, philologisch-historische Klasse*, neue Folge 11 no.1: Berlin 1908 [1909]).

15 D. F. Sullivan, *Siegecraft: two tenth-century instructional manuals by "Heron of Byzantium"* (Dumbarton Oaks Studies 36: Washington DC 2000). Analogously to what Diels-Schramm did

198.7 Wescher[16] = 1.8–18 Sullivan) does not, as transmitted, include the name of Ph., but editors have posited a lacuna in which, after the mention of Apollodorus, Athenaeus and Biton, it could well have featured. For Ph.'s name does occur, twice: as 'Philo of Athens' (reproducing Athenaeus's slip: see above) in 212.11–12 = 12.1–2, at the start of a section (212.11–214.3 = 12.1–25) where the writer presents ideas, drawn from Ph., on opportunistic besieging tactics (D2–4 [*96.28–37*], D73 [*102.12–19*]); and as 'Philo of Byzantium' at 260.5 = 48.1, which introduces Ph.'s D11 [*97.30–34*] (filler tortoises with "rafts") and D74–75 [*102.19–27*] (wall-climbing techniques). In other places, too, it is either certain or probable that our Ph. is the source of unattributed material here. See, principally:

203.2–4 (= 3.43–46), *re* B31 [*88.25–31*] and B40 [*89.8–10*];
204.8–18 (= 4.4–15), *re* (D6 [*96.42–49*]), D9 [*97.9–19*], D18 [*98.13–17*] and D26–27 [*98.45–99.3*];
207.12–16 (= 8.1–5), *re* D36–37 [*99.29–37*];
209.3–212.10 (= 11.1–29), *re* A76 [*85.22–29*], D10 [*97.19–30*], D30 [*99.11–13*], D32 [*99.18–19*], D39 [*99.41–44*] and D43–44 [*100.2–11*];
259.1–13 (47.1–14), *re* D11 [*97.30–34*] and D35 [*99.26–28*];
261.3–10 (= 49.1–9), *re* C65 [*95.39–44*] and A79 [*85.35–39*];
276.15–17 (= 58.8–10), *re* D111 [*104.40–42*].
**Appendix 3** presents these nine *Par.Pol*. passages.

## (B) THE WORK AND ITS AUTHOR[17]

As will already be evident, the 'work' of Ph. which is my concern here formed part of a larger whole. At *Bel*.56.13 he uses a phrase which, when capitalized, has been regarded as its overall title: *Mêchanikê Syntaxis* (Μηχανικὴ Σύνταξις), *Engineering Compendium*. In that same sentence he refers back to its *Introduction* (Εἰσαγωγή), and elsewhere in *Bel*. two other, substantive components are mentioned, as neuter plurals: *Mochlika* (Μοχλικά), *Matters of Leverage*, in 59.18–19 and 61.21–22; *Limenopoiika* (Λιμενοποικά), *Harbour-construction*, at the very start of *Bel*. in 49.1–3, with the implication that it is the topic immediately preceding *Bel*. itself. Thus, the scholarly consensus is, we see Ph.'s first four volumes in order of appearance; three lost ones and the surviving *Bel*.[18] Thereafter the element of conjecture

with Ph., Sullivan divides the *Par.Pol*. into 58 short chapters, each with their own line-numbers, and adds Wescher page numbers (unaltered by Schneider) in the margin. I cite by both systems.

16 See the asterisked footnote in Conventions and Abbreviations.

17 A recent encapsulation, brief but expert, of what follows here is P. Rance, 'Philo of Byzantium', in R.S. Bagnall et al. (ed.), *The [Wiley-Blackwell] Encyclopedia of Ancient History* (Malden MA 2013) 5266–5268 (and on line).

18 Besides the annotated translation of *Bel.* in Marsden, *Treatises* 105–184, see J.G. Devoto, *Philon and Heron: artillery and siegecraft in antiquity* (Chicago 1996) 4–94; and latterly M.J. Schiefsky, 'Technê and method in ancient artillery construction: the *Belopoeica* of Philo of Byzantium', in B. Holmes and K.-D. Fischer (ed.), *The Frontiers of Ancient Science* (Berlin 2015) 613–651.

increases apace,[19] but conventionally placed next is a *Pneumatika* (on devices operated by heated air or fluids), which survives only in a heavily-interpolated Arabic version and a partial Latin translation of another,[20] and then an *Automatopoiika* on the manufacture of mechanical toys and other amusements.

It is after these two lost treatises that Ph.'s recommendations for siege-warfare are nowadays routinely located. Once regarded as a single piece of writing – a position also taken by Garlan – in four parts first discerned by Rochas d'Aiglun (I–IV, followed by Schoene and Lawrence; A–D in Diels-Schramm, followed by everyone else, including me), it is more usually conceived as two halves: an initial *Paraskeuastika*, I–II/A-B, and a subsequent *Poliorketika*, III–IV/C–D. (Ph. himself appears to use the first of these titles, retrospectively, at D92.2 [*103.33*]. The second has no basis in the text but is simply a common-sense description of the topics covered.) Whatever view is taken of the internal organisation and description of this siege-related matter, however, the points of substantive importance are two. One is that Ph. begins (in A-C) by adopting the standpoint of the besieged community, before (in D) reversing the perspective to that of their assailants.[21] And the other is that what we can read of Ph.'s recommendations nowadays, under both heads, is a significant diminution of what he himself wrote. Diels and Schramm entitled it *Exzerpte aus Philons Mechanik B.VII und VIII*, and others have followed them. To my mind the term is (or at any rate might be) ambiguous, implying that selected matter has been transmitted in its full and original form –something which seems highly unlikely to be so. Rather, the impression left on the modern reader is that of a severe, even brutal, epitome or précis overall, with numerous lacunae along the way.[22]

After the poliorcetic coverage, in any event, there may have been a further volume of the *Syntaxis* (forecast in D82.2–4 [*102.48–50*]) devoted to cryptography, and other stratagems either included with it or treated separately.

Who then was the author of this compendious product?

Whether 'of Byzantium' by birth or by naturalization, Ph. cannot be safely identified with any other bearer of his commonplace name, so the meagre set of

19 I have nothing to add to the long-standing controversies in this area, which are well documented and summarized by Garlan 282–283 (and already in his 'Cités, armées et stratégie à l'époque hellénistique d'après l'oeuvre de Philon de Byzance', *Historia* 22 (1973) 16–33, at 16–18).

20 See F. D. Prager, *Philo of Byzantium, Pneumatica: the first treatise on experimental physics, western version and eastern version* (Wiesbaden 1974), whose translations I rely on here. I have not consulted the earlier editions by W. Schmidt (Leipzig 1899, part of his *Heronis Alexandrini opera*) and B. Carra de Vaux (Paris 1902).

21 Compare (but in reverse) book 3, on sieges, of Frontinus's *Stratagems*: sections 1–11 illustrate possible ploys for the attacking side, sections 12–18 do the same for defenders.

22 In this regard Garlan 286 notes, as have others, the sharp stylistic contrast between *Bel.* and the present material, with the latter frequently exhibiting an excessive degree of concision and/or confusing transitions. Garlan postulates, surely rightly, an editor/epitomizer of the early Byzantine period, perhaps the reign of Justinian; cf. W. M. Murray, *Age of Titans* 287 with n.14. (Contrast the fate of Apollodorus (Mechanicus) of Damascus, whose *Poliorketika* underwent not diminution but extensive enlargement in late antiquity; see generally Whitehead, *Apollodorus*.)

facts (and assumptions) about him are all drawn from the *Syntaxis* itself, and particularly from the *Belopoiika*. At *Bel*.51.15–23 he undertakes to recount what he has discovered by associating with *technitai* in Alexandria and *architektones* in Rhodes. Thereafter the name most frequently mentioned is that of Ctesibius (of Alexandria): 56.22–23, 67.43–45, 72.36–43, 77.15–17, 77.46–78.2. A phrase which occurs in the second of these passages, Κτησίβιον τὸν ἐν Ἀλεξανδρείᾳ γεγονότα (67.44–45), has given rise to an orthodoxy that he was no longer alive at the time when Ph. was writing,[23] but unwarrantably so in my opinion; the perfect participle γεγονότα, taken to show this, need mean only that Ctesibius had been born in Alexandria. (Compare e.g. Andoc. 1.127, ἐκ Χρυσίλλης γεγονότα, used of a living son of Callias.) It is not even certain that Ph. had encountered Ctesibius in person.[24] Nevertheless he seems to be a figure of the recent past. Consequently, since Ctesibius's *floruit* is nowadays placed in the second quarter of the third century, under the reign of Ptolemy II Philadelphus,[25] I find no call to question the modern orthodoxy which places Ph. himself in the second half of that century. Further precision than that seems out of reach.[26]

*

Ph.'s *Syntaxis* was written 'in the manner now familiar to us from Archimedes and Apollonius of Perge, that of the literary epistle, with the difference that the books were apparently wholly composed in the epistolary form, and not simply the introduction. They were all addressed to a certain Ariston'.[27] This generalization does appear to be sound, given the formulaic phrase 'Philon to Ariston, greetings', Φίλων Ἀρίστωνι χαίρειν, which opens both the *Belopoiika* (49.1) and, albeit garbled in the Arabic and Latin, the *Pneumatika*;[28] and it has been routinely supplied at the start of the poliorcetic material also, despite there being no express manuscript authority for this.

But who was Ariston? As with the name of the writer himself, identification is thwarted by the sheer number of its attested bearers. Of the ones proposed, arguably the most plausible is the one proffered by Lawrence, who cites Diodorus Siculus

23 Already in Graux 91; see also e.g. P.M. Fraser, *Ptolemaic Alexandria* (Oxford 1972) 2.623 n.446.

24 Fraser, *Alexandria* loc.cit. is insistent that Ph.'s allusion to Ctesibius's water-organ in *Bel*. 77.46–78.2 proves personal acquaintance, given that the device was 'described to him by Ctesibius'. However, Marsden (*Treatises* 153) translates the relevant phrase, ἐπεδείκνυτο δὲ ἡμῖν ὁ Κτησίβιος παραδεικνύων τήν τε τοῦ ἀέρος φύσιν κτλ (77.46–48), as 'Ctesibius, it was explained to us, demonstrated the natural property of air etc.'. Roundly to declare Ph. a 'Schüler des Ktesibios' (Orinsky et al., 'Philon' 53; cf. Fraser, *Alexandria* 1.432, 434) is too bold.

25 So e.g. A.G. Drachmann, *Ktesibios, Philon and Heron: a study in ancient pneumatics* (Copenhagen 1948) 1 ff.; Marsden, *Treatises* 6–9; Fraser, *Alexandria* 1.428 (and 2.622–623 n.445); T. Rihll, *The Catapult: a history* (Yardley PA 2007) 140–147.

26 It is customary, nowadays, to assign Ph. a date of c.200, though Lawrence 71 has tried to place him in the 240s on the basis that he was prompted to write by the campaigns of Ptolemy III Euergetes, in the second half of that decade, which resulted in the conquest of Phoenicia and much of Syria.

27 Fraser, *Alexandria* 1.428–9.

28 On the dedication in the latter work see Prager, *Pneumatica* 46–48; the form of the name he prints (from the Arabic version) is Muristom.

3.42.1 for 'that Ariston who was despatched by Ptolemy ['almost certainly Ptolemy II': Lawrence] to investigate the coast of Arabia as far as the ocean'.[29] Lucianic agnosticism, though, looks like the sounder position.[30]

As regards a generic characterization: in view of the wide range of topics and disciplines covered by the *Syntaxis* as a whole, to envisage Ariston as a practical military man (whether as a commander of troops or on the engineering side)[31] seems to me less compelling than the picture conjured up by the opening of *Pneumatika*, that of an "armchair" theoretician and experimenter. 'Your interest in ingenious devices has been known to me. You say and urge that you want a book about them. I wrote it and send it gladly. May it be an aid to your studies of all these devices. Indeed such matters are worth the attention of learned men'.[32]

*

With no extrinsic information or insight able to be generated through identifying either the writer or his dedicatee, one is driven back to what is either stated in or can legitimately be deduced from Ph.'s text itself, when set in the general chronological and cultural context of Fraser's 'Ptolemaic Alexandria', even if that does not imply or necessitate his fixed domicile (and permanent writing base) there. The recollection in *Bel*. 51.19–23 of time spent in Rhodes (see above) is twice echoed by allusions to that city – which in themselves imply, without expressly claiming, autopsy – in this poliorcetic material: A17–18 [*80.45–51*], A59 [*84.5–8*].[33] Alexandria itself is not mentioned again here, though a passing allusion to Egyptians and their wall-climbing methods is (D75 [*102.23–27*]).[34] References to (?)Ake and Babylon (B53 [*90.14–24*]), for natural products occurring there, might suggest personal acquaintance with either or both of those places, though of course they do not have to.[35] All

29 Lawrence 73 (anticipated, in fact, by a comment *obiter* in Rochas d'Aiglun). An older alternative, less attractive because it belongs in a purely Sicilian context (Ariston Onasou, a general at Tauromenium in the late third century), is mentioned and discounted by Garlan 285 (where 'CIG' XIV 421 should read IG).

30 'Lucianic' because of the exchange between Lexiphanes and Lycinus in *Lexiphanes* 1: when the former announces that he has written a *Symposium* as a challenge to 'the son of Ariston', the latter replies 'there are many Aristons' (Πολλοὶ μὲν οἱ Ἀρίστωνες). Lacking the clue which nevertheless allows Lycinus to identify his friend's Ariston as the father of Plato, students of Ph. cite the passage purely for wit's sake: Graux 94; Fraser, *Alexandria* 2.620 n.427; Garlan 285 (and already in 'Cités' 19).

31 So e. g. F. Haase, 'Philon', in J. S. Ersch and J. G. Gruber (ed.), *Allgemeine Encyclopädie der Wissenschaften und Kűnste* 23 (1847) 428–435, at 429 n.13; Garlan 284–285; W. M. Murray, *Age of Titans* 129.

32 Prager's translation (*Pneumatica* 127).

33 On Rhodes in Ph.'s time see generally R. M. Berthold, *Rhodes in the Hellenistic Age* (Ithaca NY & London 1984); V. Gabrielsen, *The Naval Aristocracy of Hellenistic Rhodes* (Aarhus 1997); H.-U. Wiemer, *Rhodische Traditionen in der hellenistischen Historiographie* (Frankfurt 2001).

34 Note also the casual references to Egyptian artefacts in the *Pneumatika* (2, 6, 16, 60).

35 Another toponym, Megalopolis, might occur in A44.3–4 [*83.8–9*], but only if one can endorse the long and (in my opinion) dubious Diels-Schramm supplement for the lacuna there. See the Comm. thereto.

in all, the siege warfare toward which Ph. directs his recommendations probably needs to be visualized as taking place in what Lawrence calls 'the border-land for which the Ptolemies and Seleucids contended, over more than a century of alternate open war and uneasy peace': in broad terms, Palestine, Phoenicia and Syria.[36]

Whether Ph. was drawing on personal experience of such warfare is another matter. Readers of Aeneas Tacticus, his predecessor in the field, receive the distinct impression that *he* has suffered the travails of being under siege himself, in the sort of mid-fourth-century polis he is writing about (and for); perhaps that he has himself occupied a position of military authority and responsibility in such a place. By contrast one cannot feel at all certain that Ph. had ever had first-hand experience of what it was like to be under (or subject to) siege; nor that he was any kind of *vir militaris* in a practical, hands-on sense.[37]

Such indications as there are, indeed, positively suggest that he was not. Some of these are to be found in the *Belopoiika*, where one recent study comments, for example, that 'Philon's personal inexperience of catapult construction and use is evident in his reliance on other people's testimony when he gives his recommendations for the dimensions of the springs and arms of a palintone'.[38] In that highly technical field Ph. was a dilettante, someone absorbing a given subject via lectures and/or written treatises (by Ctesibius and others, in that instance); and what is true of artillery is likely to be true also of the wider range of topics covered in the poliorcetic material. To put the point bluntly: a civilian's life spent in Byzantium, Rhodes and, especially, Alexandria will not have required Ph. to build a city's fortifications (part A), arrange its food supply (part B), protect it from military attack (part C) or successfully prosecute such an assault (part D). And conversely, it is from the author of the *Pneumatica* that we are unsurprised to see a fanciful suggestion for ladders, too, activated by inflation (D73 [*102.12–19*]).

Of course, characterising Ph. as more of a theoretician than a practician of Hellenistic siege-warfare opens up possible avenues of its own into the intellectual content of his writings and the intellectual influences upon them. Heinrich von Staden has drawn attention to several facets of interplay between Ph. and the works of his contemporary Andreas of Karystos, court doctor to Ptolemy IV Philopator, besides noting that the vocabulary of Ph.'s detailed recommendations on nutrition in the besieged city (part B) is heavily indebted – probably via Andreas and his own teacher Herophilus – to Hippocratic treatises on the subject.[39]

36 Lawrence 70–71 (quotation from 70). A modern analytical narrative corresponding to this terrain is J. D. Grainger, *The Syrian Wars* (*Mnemosyne* Supplements 320: Leiden 2010). On the negative significance – in directing our gaze away from Balkan and Aegean Greece – of Ph.'s assumption that date-palms are likely to be available in his city (B1.7 [*86.27*], B48.5 [*89.42*], B52.7 [*90.14*], C3.2–3 [*91.4–5*], D10.6 [*97.24*] and D17.5 [*98.8*]), see the Comm. to B1 **πρὸς δὲ τοὺς φοινικικοὺς ἄρτους**.

37 On Aineias in this regard see already Whitehead, *Aineias* 34 (citing earlier assessments in the same vein). I did not compare Aineias with Ph. at that time, but doing so now leads me to dissent from (e. g.) W. M. Murray, *Age of Titans* 284 n.3, who writes of 'military men like Aeneas and Philo'.

38 Rihll, *Catapult* 163.

39 H. von Staden, 'Andréas de Caryste et Philon de Byzance: médecine et mécanique à Alexandrie'. in G. Argoud and J.-Y. Guillaumin (ed.), *Sciences exactes et sciences appliquées à Alexandrie*

At more mundane levels Ph.'s reliance on pre-existing material is harder to fathom, beyond the fact (noted already) that he knew and used Aeneas; but what Ph. demonstrates even so is that it was possible to follow in Aeneas's literary footsteps without conveying much sense of real-life conflict.[40]

## (C) STYLE, TONE AND TERMINOLOGY

For the purposes of this section it is particularly important to keep in mind that comment on what 'Ph.' does or does not do – in the poliorcetic material – can mean no more than what we find in this transmitted epitome.

'[W]ritten in the most vivid style … even more vivid than that of Aeneas Tacticus'. Peter Fraser's response to Ph.[41] strikes me as an unduly warm one, rather unlikely to be shared by most modern readers. The contrast with Aeneas, to the latter's disadvantage, is particularly puzzling on several counts, including the (apparent) fact that Ph. chose not to do[42] one crucial thing that Aeneas had so successfully done: to leaven what could otherwise have been a dead weight of didacticism, positive and negative, with specific historical instances, i.e. illustrating where the course of action in question had been either adopted with good results or ignored with bad.[43] If Ph.'s original had, in reality, included historical material of this kind, the summarizer has done us a signal disservice by jettisoning it. In any event, and setting aside any further stylistic comparisons with Aeneas, the fact of the matter with Ph. is that, whatever else he is, he is (in this work) no paragon of Greek prose style. Rather, he says what he has to say in a businesslike manner: plain, often inelegant, and, especially for readers of large stretches of him at a time, repetitive – so much so, indeed, that most translators have felt impelled to introduce some degree of the syntactical variety that he himself, it seems, abjured.

His very opening sentence, it turns out, is a typical one (A1 [*79.1–7*]): Πρῶτον μὲν δεῖ τοὺς οἰκοδομοῦντας πύργους <καὶ τείχη> ὀρύξαντας μέχρι πέτρας ἢ ὕδατος ἤ τινος ἐδάφους ἀσφαλῶς τοῦτον ἀποστερεώσαντας τὸν τόπον ὡς μάλιστα τιθέναι τοὺς θεμελίους ἐν γύψῳ, ἵνα μὴ ἔνδον τῶν θεμελίων οἱ τοῖχοι ῥηγνύωνται μηδ' ὑπορύττηται τὰ τεῖχη. Here at the outset are the twin building-blocks of his mode of presentation: (*a*) the instruction itself and (*b*) the purpose (or result) of following it.

Element *a* is here conveyed by a δεῖ clause, and there will be 59 more instances of this. It is Ph.'s favourite didactic idiom (in this work: *Bel.*, a slightly longer one,

(Actes du colloque international de Sainte-Étienne, 6–8 juin 1996). Publications de l'Université de Sainte-Étienne (Sainte-Étienne 1998) 147–172; Hippocrates point at 166 (with table II) there.

40 Aeneas, for instance, is never guilty of the sort of near-banality that Ph. lapses into (unless a summarizer is to blame?) at D58 [*100.50–101.2*].

41 Fraser, *Alexandria* 1.433.

42 Except in transitory passing at A17.1–2 [*80.45–46*] and A59.4 [*84.8*] (Rhodes), and D75.5 [*102.27*] (Egyptians).

43 See in brief Whitehead, *Aineias* 8; at length M. Pretzler, 'Aineias the historian', in M. Pretzler and N. Barley (ed.), *Brill's Companion to Aineias Tacticus* (Leiden & Boston 2016) chap. 4.

has just 18). He never uses χρή, to vary it. Instead, as in the sentence (A2 [*79.7–11*]) immediately following the one just quoted, δεῖ can be left implicit and the statement simply couched in one or more present infinitives (οἰκοδομεῖν in this instance) that it governs. Hanging participles, like κατασκευάζοντας in A3.2 [*79.12*], sometimes prolong or elaborate the instruction.

In addition Ph. has a small repertoire of other ways of expressing what must or should be done. By far the most common of these, with 49 instances, are gerundive verbal adjectives used impersonally (e. g. ποιητέον in A11.2 [*80.20*]). Other impersonal modes include: third-person imperatives, both singular (e. g. ἀπεχέτω in A10.1 [*80.16*]) and plural (e. g. δεθέντων in A8.4–5 [*80.8–9*]). Something that does happen and is by implication recommended to happen can be expressed by present indicatives, in the third-person singular (e. g. ποιεῖται in A14.1 [*80.32*], συντελεῖται in A15.2 [*80.34*]) or third-person plural (e. g. ἔχουσι in A17.2–3 [*80.46–47*], ἐκτίθενται in A29.3 [*81.49*]), or future indicatives, again singular (e. g. ἔσται in A44.8 [*83.14*], B55.4 [*90.31*] and C23.6 [*92.45*]) or plural (e. g. ἔσονται in A17.4–5 [*80.48–49*] and A65.1–2 [*84.28–29*]). There are also miscellaneous idioms such as ἁρμόσει ('it will be fitting': A5.1 [*79.20*]), προσήκει ('it is appropriate': B30.1 [*88.20*]), συμφέρει ('it is advantageous': B48.1 [*89.38*]), and the five occurrences of ὀρθῶς ἔχει (A84.1 [*86.3*], B1.1 [*86.21*], C3.2 [*91.4*], C32.1–2 [*93.25–26*], C34.2 [*93.33*]), which I translate 'it is good practice'. (*Bel.* has no such instances of ὀρθῶς ἔχει, so I am inclined to think this might be a summarizer's chosen way of expressing himself, not Ph.'s own.)

Greater intimacy – at least notionally – with the recipient Ariston is expressed, here and there, by future indicatives in the first person plural (e. g. οἰκοδομήσομεν in A20.1 [*81.6*]) or by second-person singular imperatives, present (e. g. ποιοῦ in D6.5 [*96.46*], D12.1 [*97.34*], D24.4 [*98.37*], D26.1 [*98.45*]) or aorist (e. g. ἐξοικοδόμησον in B20.3–4 [*87.39–40*]).

Element *b* usually follows *a*, but for exceptions see e. g. A8.1–5 [*80.5–9*], B19.1–5 [*87.32–36*]. It is characteristically a ἵνα-clause, of which there are no fewer than 82 instances. (By contrast, *Bel*. has just two.). Clauses with ὥστε-plus-infinitive do serve as an occasional variant, and the same function can be performed by the alternative means of an explanatory clause with γάρ. Overall, though, one feels bound to suspect that Ph.'s original called upon a much greater variety of expression in these statements of purpose or result than the summarizer thought necessary to retain.

Given that the latter's role was this quintessentially negative or reductive one, little can be safely said about the positive side of Ph.'s stylistic and tonal preferences. We might note the frequency with which it is asserted that the rationale of adopting this or that piece of advice is to make something happen 'easily';[44] since, however, in *Bel*. Ph. never once says such a thing, here again, perhaps, is an idiom – and a mentality – that can be attributed to a summarizer rather than to his original.

*

44 See for this (usually adverb, occasionally adjective) A10.2 [*80.17*], A13.4 [*80.31*], A25.3 [*81.36*], A33.3 [*82.16*], A50.5 [*83.34*], A51.4 [*83.37*], A80.2 [*85.40*], A82.4 [*85.49*], B29.4 [*88.19*], C7.5 [*91.23*], C14.9 [*92.4*], C39.3 [*94.3*], C65.6 [*95.44*], D3.3 [*96.33*], D81.2 [*102.46*].

Within this rather dour didactic framework, the substance of what Ph. originally had to say about siege warfare is transmitted in vocabulary which has caused his translators and commentators numerous headaches. I am no exception.

'Many people feel the multiplication of words to be a curse, and yet it is remarkable how many obscure matters become simplified once enough words are invented so that it is possible to refer to things which are different by words which convey the difference'.[45] Though Scranton was referring to present-day vocabulary (for masonry styles), his dictum is one that many would endorse, and apply to other circumstances. Scholars are reckoned to share with technical writers, whether modern or ancient, a wish for verbal precision which, if successfully realized, can compensate readers and users of their work for shortcomings in the area of style and general literary elegance. Sometimes, though, precision is not attained by such writers – and sometimes they leave the reader in doubt as to whether precision, of this kind, has even truly been at the forefront of their aims.

Is Ph. a case in point? Here are the views on this matter taken by two of my predecessors, Graux and Lawrence.

Graux, in 1879, declared that

> Philon emploie plusieurs mots qui ne sont pas jusqu'ici expliqués comme il faut dans les lexiques, et plusieurs autres dans des sens qui ne sont consignés ni au *Thesaurus*, ni ailleurs. Nous avons donc été obligés d'avancer pas à pas, en rédigeant nous-mêmes notre lexique au bas de chaque page. Ces notices lexicographiques aideront à interpréter sainement des centaines de passages ordinairement mal compris chez les écrivains grecs dans leurs récits de siège. Signalons seulement, pour donner ici même une idée des résultats auxquels on arrive, le double sens de mots comme: Βέλη, qui veut dire, tantôt *projectiles*, tantôt *machines de tir*; Πετροβόλοι, Καταπάλται, etc., qui se prennent également bien pour les machines dites *balistes*, *catapultes*, etc., et pour les *projectiles* que ces machines envoient.

This realization that some terms in Ph. bear a dual (or multiple) sense is an important one, plainly, when technical terminology is in play. But of equal importance is the same issue in reverse: when different words are used, do they consistently convey different meanings?

A. W. Lawrence first formulated some views about Ph.'s vocabulary for a paper delivered to the Cambridge Philological Society in February 1945, a summary of which was published in the Society's *Proceedings* the following year;[46] however, it was half a lifetime before this saw print again, in fuller form and as applied to the actual translation of those sections of Ph. that Lawrence included in *Aims*. His approach to, and stance on, this matter can be judged from the following extracts from his 'Rules followed in translating':[47]

> Contemporaries with the requisite training thought, no doubt, that Philo had generally succeeded in his aim of writing clear, terse statements, but his extreme brevity on technical matters caused difficulties even to Byzantine readers and now invites diverse interpretations […]

45 R. L. Scranton, *Greek Walls* (Cambridge MA 1941) 45.

46 A. W. Lawrence, 'Terms expressive of direction in Philo Mechanicus (summary)', *PCPhS* 178 (1941–1945) [1946] 25.

47 Lawrence (*Aims*) 72.

> The 'Wall', τεῖχος, of a city is distinguished by the initial capital from any lesser wall, τοῖχος. Although Philo's two words for a stone-projector, πετροβόλος and λιθοβόλος, are on occasion used interchangeably (e.g. III [= C] 67–68 [*95.49–96.8*]), he appears generally to reserve the former for heavier types; it, too, is differentiated in the translation by 'Stone-projector' with initial capital, while λιθοβόλος is rendered 'stone-projector' with a small initial letter.
> It would be misleading to give literal equivalents for words that Philo habitually uses in a technical sense. So καταπέλτης is translated as 'bolt-projector', βέλος (when <not> applied to a missile)[48] as 'catapult', μηχάνημα as 'mobile-tower'. […] Circumlocution cannot be avoided for ὄρθιος and πλάγιος, terms which as a rule describe respectively a direction at right angles to the general frontage and a direction parallel to it.

My own position, overall, on translating what Ph. writes about (i) fortification(s) and (ii) machinery may be summed up as follows.

## (i) Fortification(s)

*Abstract nouns*. Either two or three are used – πυργοποιία, τειχοποιία, τοιχοποιία – and almost always (whether in singular or plural) used in the sense of a specific mode or scheme of fortification, not the generic topic of fortification-building. (The point is worth making because the only one of these terms attested earlier than Ph. does denote the generic topic: τειχοποιίαν ἢ σκηνοποιίαν ἢ ἄλλην τινὰ πρᾶξιν in Aen.Tact. 8.3.) For πυργοποιία see A39.1 [*82.43*], A85.2 [*86.12*] (pl.), A87.2 [*86.19*] (pl.) and B23.1–2 [*87.47–48*] (pl.). For τειχοποιία see A45.1 [*83.15*], A53.2 [*83.43*] (pl.), A55.2 [*83.48*], A59.2 [*84.6*] (pl.), A69.1 [*84.43*] (pl.) and A84.1 [*86.3*] (pl.). (D88.3–4 [*103.21–22*] uses the term τειχοποιία in a looser way, meaning little more than τείχη.) The solitary passage where editors since Schoene have all concurred in printing τοιχοποιία is A25.1 [*81.34*], Τοιαύτης δ' οὔσης τῆς τοιχοποιίας κτλ, but I am not convinced that this *hapax legomenon* can stand.[49]

Is any substantive distinction being made between πυργοποιία, τειχοποιία, and (for those who accept it) τοιχοποιία? That question, perforce, is closely related to – though not necessarily provided with a simple answer by – another one: what, in Ph., is denoted by τεῖχος, τοῖχος, and πύργος?

*Walls*. The very opening sentence of the work refers to both τοῖχοι (masculine) and τείχη (neuter), and thereby invites the reader to believe that they refer to different things: foundations must be securely set in mortar 'in order that the τοῖχοι be not shattered inside the foundations and the τείχη be not undermined' (A1.5–7 [*79.5–7*]). Languages like Latin, French and German, with a plurality of words for 'wall', can conveniently deploy it in a context like this: thus *murus* and *paries* (Vitruvius), *die Wände* and *die Mauern* (Diels-Schramm), *les murs* and *les murailles* (Garlan). Lacking such a solution in English, Lawrence, as quoted above, adopted a typographical mode of differentiation. However it be presented in translation, the normal differentiation is, clearly enough, between the macrocosmic enceinte as a

48 I have supplied the negative which, surely, this parenthesis needs.
49 See further in the Comm. to A25 **Τοιαύτης**.

whole[50] – singular τεῖχος or plural τείχη used indiscriminately, it seems[51] – and (usually plural) τοῖχοι which (usually) refer to the faces or sides of their constituent elements such as towers or "curtains" but also to the walls of other, non-fortification structures like granaries (B10.2 [*87.3*], B12.2 [*87.14*], B14.2 [*87.21*], B15.2 [*87.22*]) and houses (C23.4 [*92.43*]).[52] (For a triangular, subsidiary counter-wall termed a τεῖχος see C18.1–2 [*92.22–23*].) I translate τοῖχος/τοῖχοι as 'side/sides' whenever it is appropriate to do so; just a few places require alternative translations or explanatory parentheses.

*Towers*. Since Ph. seems never to refer to a movable siege-tower (on which see below, under Machinery) by the noun πύργος,[53] we can be sure that the πύργοι to which he does, frequently, refer are stationary architectural structures. In almost every instance 'tower' (*tour*, *Turm*) is the natural and unproblematic translation, and I adopt it.

An exception has been claimed in the very first sentence, where the phrase τοὺς οἰκοδομοῦντας πύργους (A1.2 [*79.2*]) is rendered 'die, welche Befestigungen bauen wollen' by Diels-Schramm and 'les constructeurs des fortifications' by Garlan. In my opinion such a broad sense of πύργος, appearing this once but never again, is unsatisfactory, and if one agrees (as not all do) that something more than 'towers' is called for in this context there is a good case for a textual supplement.[54]

On the basis of this assessment of what 'walls' and 'towers' mean in Ph., we can return to the issue of how best to translate the related abstract nouns on the dozen occasions they occur. Though the almost complete separation between the sense(s) of τείχη and the denotation of πύργοι is noteworthy, little or no differentiation in context is discernible, despite it, between a τειχοποιία[55] and a πυργοποιία. I can see nothing to be gained by allocating them to different English words, therefore, and instead use 'fortification-system' for both.[56]

50 Maier 2.81 observes that in inscriptions κύκλος is not attested, with this meaning, outside Athens; note, nevertheless, ἄτ τοῖ τείχεος κύκλου [= Attic κύκλῳ] μὲς πὸτ τὸν Μιρούνδαν in line II.61 of SEG 43.311, the wall-survey from Hellenistic Skotoussa (**Appendix 4**), referring to part of the enceinte. (Ph. himself does use the noun but in other, more general senses.)

51 In A37.2 [*82.33*] and C40.2 [*94.7*] the variant τείχισμα occurs, for no obvious reason; I do not differentiate it in translation.

52 Cf. Garlan 331.

53 For possible exceptions see the Comm. to C8 **<εἰς> σῶληνα** and C57 **Ἐὰν δέ**.

54 See the Comm. to A1 **τοὺς οἰκοδομοῦντας**.

55 With which can be associated the rare cognate verb τειχοποιῶ in A58 [*84.3–5*], on encampments: Τὸν αὐτὸν δὲ τρόπον καὶ ἐν τοῖς στρατοπέδοις τειχοποιητέον ἐστίν, ἐὰν προσδέχηται πολιορκίαν τινά.

56 I have not seen H. Tréziny, 'Le prix des murailles', in J.-P. Brun and P. Jockey (ed.), *Τέχναι. Techniques et sociétés en Méditerranée: hommage à Marie-Claire Amouretti* (Paris 2001) 367–380, but, as reported in SEG 51.1410, the classical-period evidence he studies there includes (at 367–372) the 17 tablets which record loans made for πυργοποιία and ὀχύρωσις ('strengthening') in the archive of the Olympieion at Lokroi Epizephyrioi, dating from the second half of the fourth century or the first half of the third. On the basis of literary and epigraphical evidence for the costs of πύργοι elsewhere, Tréziny argues that the amount of money earmarked for πυργοποιία in tablet 12 is too high for it to have been used for tower-building alone; rather, for an entire fortification.

Other fortification vocabulary in Ph. can be more briefly surveyed.

The inter-tower sections of a city's wall – conventionally its curtains/*courtines*/*Kurtine* – are referred to by two very similar neuter nouns: μεταπύργια (fifteen instances, all but three of them plural) and μεσοπύργια (five instances, all plural). As a general point LSJ s. v. reckons them simple equivalents. A writer like Ph. who employs both words – most strikingly in the same sentence (in A7 [*79.26–80.5*]) – is either doing so for simple variety's sake or in order to convey some kind of objective difference, but no such difference seems detectable here.[57] I translate both as 'curtains'.

The terms ἐπάλξεις (plural in all but one instance) and προμαχῶνες (always plural) appear to be used interchangeably. I give them the English equivalents of 'parapet(s)' and 'battlements', respectively, but if any substantive distinction was intended it is impossible to fathom. Alongside these are several instances – some of them, admittedly, with textual problems – of the noun βαρίς (or βᾶρις) familiar from the Septuagint and Josephus, and rendered here as 'bastion'. These terms and others are discussed in the Commentary to the passage where they first appear.

Ph.'s vocabulary for the various extra-mural constructions and other elements that he recommends is largely unproblematic, though again, where that is not so the problems are aired in the Commentary. Singular or plural *proteichismata* I translate in the traditional way by 'outworks', but occasionally I have departed from the standard equivalents. In particular, throughout this book, a *taphros* is a 'trench' (not the more orthodox 'ditch').

## (ii) Machinery

The terminology applied to military machinery in Ph. is unsystematic. Considerable headway can be made in fathoming it, but it resists complete rationalization, and in point of fact one should not, in my opinion, seek to impose in every translated instance 'a spurious definiteness absent from the Greek'.[58]

(*a*) *Artillery*.[59] First, as already noted (via Graux and Lawrence), no clear differentiation is made between the weapons themselves and the ammunition they fire. With regard to βέλη, the commonest term throughout, contexts which are certainly referring to projectiles – the default sense since Homer: see LSJ s. v. – call for just that translation: so e. g. A6.3 [*79.23*] (falling ones), B53.9 [*90.22*] (poisoned ones) and C72.2 [*96.16*] (ones removed from wounds). Conversely, in passages like A6.6 [*79.26*], A20.9 [*81.14*], C1.3 [*90.48*], C18.5 [*92.26*], C70.2–3 [*96.11–12*], D9.2 [*97.10*], D12.5–6 [*97.38–39*] and D25.1 [*98.42*] my translation is the macrocosmic

57 Lawrence 73 claims to detect one in A7.4–5 [*80.3–4*] and C21.1–2 [*92.33–34*], where 'the translation [of μεσοπύργιον] assumes that he used it in a slightly different sense, to designate a curtain interrupted by an entrance at some distance from either tower'; Lawrence is content, though, to attribute μεσο- elsewhere either to Ph.'s inconsistency (cf. Maier 2.80 n.51) or to copyists' errors.

58 I borrow this splendid phrase from another context: Walbank in HCP 2.76 (referring to W. R. Paton's translation of the phrase διά τινος σχαστηρίας in Plb. 8.6.10).

59 On artillery in Ph. see generally Marsden, *Development* 113–115; Rihll, *Catapult* 161–163.

'artillery'. In many places, though, the difference is of scant significance and I use 'projectiles' wherever there is no positive reason not to do so.

Other Greek words, more precise in themselves, seem to do the same double service, e. g. πυροφόροι (used as a plural substantive: LSJ s. v. 1); contrast e. g. C12.2 [*91.41*] with C58.3–4 [*95.19–20*].

As to type/function, abstract theory[60] starts from the noun καταπάλτης and sees it qualified by one of two adjectives (which can also function as independent substantives, with καταπάλτης implicit or forgotten): ὀξυβελής for machines designed to fire sharp-pointed bolts or darts, and λιθοβόλος or πετροβόλος for those – developed later – which propelled spherical stones or rocks. All four of these terms appear in Ph., and he is even obliging enough, once (B49.4–5 [*89.49–50*]), to use the "textbook" phrase ὀξυβελεῖς καταπάλτας, but aside from that his most noteworthy habit in this area is always to use unqualified *katapaltai* in the sense of *oxybeleis*: A20.9 [*81.14*], A21.2 [*81.16*], C26.2 [*93.2*], C30.5 [*93.15*], D31.4–5 [*99.16–17*].[61] Simply in order to reflect the Greek I translate as 'catapults' in those five instances (and B49.4–5 [*89.49–50*]), with 'bolt-firer(s)' used elsewhere.

When it comes to Ph.'s *petroboloi* (27 occurrences) and *lithoboloi* (20 occurrences), we have seen that Lawrence, while conceding a degree of interchangeability between the two words, sought to suggest that a *petrobolos* was typically the heavier-calibre weapon of the two – and rendered by him with a capital letter accordingly: *petrobolos* = 'Stone-projector', *lithobolos* = 'stone-projector'. This fails to convince, in my view. Not only are there passages like the one noted already, C67–68 [*95.49–96.8*], where both terms are used of the self-same equipment, but in D31.5–6 [*99.17–18*] a very small machine of this type is referred to as a *petrobolos*.[62] In keeping the two terms distinct in translation – *lithobolos* as 'stone-projector, *petrobolos* as 'rock-projector' – I am therefore, here again, merely reflecting the stylistic variation of the Greek.[63] In one instance the context seems to require *lithoboloi* to be men, not machines.[64]

Mention should also be made of the neuter noun ὄργανον. Ph. had already used it much in the *Belopoiika*, where it refers, expressly or by implication, to artillery. In the present, more wide-ranging and less specialized work its scope extends at one point to mean medical instruments: C72.3 [*96.17*]. The other four instances all appear to concern artillery (explicitly in C6.4–5 [*91.18–19*] and C67.3 [*95.51*]; unspecified military equipment in B49.6 [*89.51*] and D8.6 [*97.6*]), but I retain the broadness of the Greek by translating 'engine(s)'.

60 Latterly adumbrated by W. M. Murray, *Age of Titans* 145.

61 The definition is established in contradistinction to *lithoboloi/petroboloi* in A20.9–10 [*81.14–15*], A21.2–3 [*81.16–17*] and C30.5 [*93.15*], and by mention of the bolt-length in C26.2–3 [*93.2–3*] and D31.4–5 [*99.16–17*]; for the latter criterion see also D17.9–10 [*98.12–13*] (noun implicit).

62 Cf. W. M. Murray, *Age of Titans* 290 n.22.

63 Ph. is not, to be sure, unique in this respect: see Rihll, *Catapult* 85–86 on Diodorus Siculus's usage.

64 D66.1–3 [*101.31–33*], where I follow Garlan on this point: see the Comm. thereto.

(*b*) *Other machinery*. A miscellany of other poliorcetic equipment, used by the attacking side or the defenders or in some instances both, makes its appearance in Ph.'s recommendations. Some of this is described in terms unproblematic *per se*: so e. g. κριός ('ram') and its counterpart τρύπανον ('drill'), and the various kinds of χελώνη ('tortoise'), for filling, ram-carrying, and – as γερροχελώνη, 'wicker-tortoise' – troop-protection. Other items are either more obscure in themselves, such as the ἐνετήρ (C13.3 [*91.45*], D48.2 [*100.18*]), or referred to in terms which either might or must bear multiple meanings; στοά and τρίβολος, for instance, which I leave as transliterated forms. Whatever the case, this terminology is left for discussion in the Commentary to the relevant passages.

That leaves the issue of the word which, in this area, occurs more than any other: μηχάνημα.

As noted above, Lawrence regarded this as Ph.'s word for a mobile siege-tower, and translated it accordingly – thereby, as is obvious, converting a broad Greek noun into a much more specific English phrase. (This position was in fact anticipated by Rochas d'Aiglun: 'une *tour* de charpente élevée pour les opérations du siège, soit par la défense, soit par l'attaque'; my emphasis.) Other translators have adopted the opposite course, with a non-committal vagueness which outdoes even Ph.'s own: 'ouvrage de charpente' (Garlan), 'timber construction' (W. M. Murray).

Finding fault with these solutions is easier than improving on them oneself. By a process of elimination as much as anything else, Ph.'s μηχανήματα – always plural, indeed, except in C8.2 [*91.26*], C15.6 [*92.13*], C64.1 [*95.36*] and C68.5–6 [*96.6–7*] – are likely to be πύργοι of some kind in nearly all instances. (For a probable exception see D12.3 [*97.36*].) That Ph. does not designate them as such,[65] when the word in this sense was long-established,[66] might be deemed eccentric. (It can scarcely be supposed that the summarizer(s) made a point of systematically expunging the term.) In any event Ph.'s apparent liking for something looser ought to be respected in translation, though preferably without the pedantry of some of the ones that have been suggested.[67] Diels-Schramm opt for 'Maschinen' (occasionally elaborated as 'Belagerungsmaschinen'). In English equivalent, I cannot better it.

### (iii) *plagios* and *orthios*

Lawrence's realization, quoted above, about what these adjectives (and their cognates) frequently mean in Ph.[68] can in most instances be dealt with by resort to some degree of circumlocution, as he recommended. Where this is intended to be self-

65 Two possible exceptions are noted above, under Fortification(s)

66 See e. g. Xen. *Cyrop*. 6.1.53–55 (previously referred to as μηχαναί), 6.2.18.

67 W. M. Murray, *Age of Titans* 290 claims merit in the fact that his and Garlan's periphrases draw attention to construction from, largely, wood rather than metal; but that point would hold good for all such equipment, not only towers.

68 Frequently rather than invariably: sometimes *orthios* and *orthos* describe things standing vertically upright (A37.3 [*82.34*], A76.3 [*85.24*], B14.2 [*87.21*]).

explanatory I have provided no expansion in the Commentary, but see the discussions at A11 **τιθέντας**, A17 **ὧν οἱ τοῖχοι**, A41 **Ἁπάντων** and C23 **ἐκ τῶν πλαγίων**.

## (D) THE BESIEGED COMMUNITY IN AENEAS TACTICUS AND PHILO

In a seminal article of 1973 (serving, in part, as prolegomena to his edition, with translation and commentary, which appeared the following year) Yvon Garlan drew attention to many of the insights that Ph. can give into the Greek city of his day.[69] A generation on, it seems appropriate to assess the data again – if somewhat differently – and at the same time to essay something that Garlan did only sparingly: a comparison of the evidence furnished by Ph. with that of his predecessor Aeneas.

To be sure, juxtaposing Aeneas and Ph. is no simple matter of comparing like with like. In respect of *time*, a gap of more than a century separates them. Aeneas's treatise is datable (by every evidential test, positive and negative, one can apply) to the mid-point of the fourth century.[70] He is a writer of the high classical period, displaying no Hellenistic pre-echoes except (arguably) in the area of language, which is not central to my concerns here. Ph. belongs to the latter part of the third century, and that is a fact of significance not merely in the passage of time but the advent of monarchic superstructures and other changed background circumstances. As regards *place*: irrespective of Casaubon's famous suggestion that Aeneas is the Arcadian general, from Stymphalos, who has a walk-on part in Xenophon's *Hellenica* (7.3.1), Aeneas's world was the "old" world of Balkan Greece and the Aegean.[71] Ph.'s is that of the eastern Mediterranean, with its cultural epicentre in Ptolemaic Alexandria. (Even in the era in question, therefore, the extent to which Ph.'s city can be understood as 'Greek' is not the same as Aeneas's had been.) And a third relevant issue is *extent of survival*: much material that would have been pertinent to the comparison is missing, on both sides.[72]

69 Garlan, 'Cités'.

70 See e. g. Whitehead, *Aineias* 4–13; Bettalli, *Enea* 3–6.

71 Whitehead, Aineias 10–13; Bettalli, *Enea* 5–6; and most recently R. Lane Fox, 'Aineias the author: who, where and when?', in Pretzler and Barley chap. 2 (tracking him across a wider span of that 'world' than previous investigators).

72 For Aeneas's *Procurement* (Πορισ τικὴ βίβλος: 14.2) and, especially, *Preparation* (Παρασκευαστικὴ βίβλος: 7.4, 8.5, 21.1, 40.8) see Whitehead, *Aineias* 13–17; Bettalli, *Enea* 10–12. From Ph.'s side, the lost *Harbour-construction* (Λιμενοποικά) is not comparable with anything in Aeneas, whose own treatment of naval matters, touched on only briefly and sporadically in what survives, was set to begin in earnest just where the transmitted text breaks off (40.8); see P. de Souza, 'Raiders from the sea: the maritime context of the *Poliorketika*', in Pretzler and Barley chap. 10. In the category of topics treated in Aeneas and Ph. alike but only extant at length in the former, there belongs, accordingly, a single item: secret messaging. In Aeneas the long and celebrated ch.31 is devoted to this; see D77 under **Γράφονται**. Ph. intended to go one better: after giving some examples, he declares that he will describe others 'in the (?)section about messages being sent secretly' (D82.3–4 [*102.49–50*]); but just as with Aeneas's mention of an *Encampment* (Στρατοπεδευτικὴ βίβλος: 21.2) as something not yet written, it is unclear from this solitary allusion whether Ph.'s intention was carried though.

All these provisos need to be kept in mind – as does the more subjective point that Aeneas's first-hand, practical experience of his subject[73] is not matched by anything discernible in Ph. Nevertheless, Ph. demonstrates that it was possible to follow in his predecessor's literary and didactic footsteps without conveying much sense of real-life conflict; and on a conceptual level it will now be seen that a collation of their evidence is illuminating.[74]

## (i) The Polis

First and foremost, it needs to be – and it can be – established that the 'siege' warfare addressed by Aeneas and Ph. alike had at its heart something which, as a rule, was no mere fortress or purely military stronghold but a fully-rounded civilian community which happens to be under attack; in short, a polis.

Aeneas has occasion to mention, *exempli gratia*, eighteen specific places to which he applies, directly or indirectly, the term πόλις.[75] This roster can be rounded up to twenty by adding 18.8, where the name of a polis in or near Achaia seems to have fallen out of the text, and 40.2, where Aeneas himself chooses to withhold a toponym. What is more important to note, though, is that a generic polis context is established at the very outset of the treatise, in the first sentence of its Preface (survivors of unsuccessful foreign expeditions can still return to their own 'chôra and polis and patris'); and this is endlessly reiterated thereafter, from 1.1 (troop dispositions should be made in the light of 'the size of the polis and the topography of the asty') onwards. Inevitably, given the nature of Aeneas's subject-matter, a topographical sense of the term πόλις predominates.[76] As a rule there are no great diffi-

73 So e. g. Oldfather et al., *Aeneas* 4; Whitehead, *Aineias* 34 (with other references there).

74 As a general background point for the facts and figures that now follow, note that Ph.'s treatise as transmitted is approximately two-thirds the length of Aeneas's. I defer detailed comment on passages in Ph. to the Comm.

75 Abdera (15.8–10), Apollonia Pontica (20.4), Argos (11.7–10, 17.2–4), Barke (16.14), Chalkedon (12.2–4), Chalkis (4.1–4), Chios (11.3–6), Herakleia Pontica (12.5), Himera (10.22), Ilion (24.4–14), Klazomenai (28.5), Kyrene (16.14), Megara (4.8–11), Naxos (22.20), Plataiai (2.3–6), Poteidaia (31.25–27), Syracuse (10.20–21), Teos (18.13). M. H. Hansen, 'Aeneas Tacticus', in M. H. Hansen (ed.), *The Return of the Polis*. (Papers of the Copenhagen Polis Centre, 8) *Historia* Einzelschriften 198 (Stuttgart 2007) 243–245 has a shorter 'list of poleis' (with brief comments appended on the sense(s) of the term polis in each case) than this; however, under 'Appendix: attestations of polis used in the political sense' he adds Barke, Herakleia and Kyrene, and he might have added Syracuse, which Aeneas proffers in 10.21 as an instance of the advice (10.10) to remove leading malcontents 'in the polis'). Beyond that I would suppose that, for Aeneas, any place he cites by way of illustration (e. g. Corcyra in 11.13) is one he regarded as a polis, and is presenting as one. In any event Hansen and I are in full accord on the point central to my purposes here: that Aeneas's approach is polis-driven from start to finish. (Hansen notes 148 attestations of the word itself.)

76 In the case just cited, 1.1, a differentiation between asty (the sole instance of the term in the treatise, though see sub-section v below for *astoi*) and polis might require the latter to be construed in a territorial sense, i. e. the agricultural land as opposed to the urban centre. (So, without argument, Hansen, 'Aeneas' 243.) For the opposite of this, 'polis' as a synomym for asty,

culties in separating out, from the larger group of passages where a polis is something physical and tangible,[77] the smaller group where the term has its intangible "political community" sense.[78]

Ph., as transmitted, has no scene-setting Preface, but launches straight into the first of his chosen themes, on systems of fortification. Nor does his *modus scribendi*, as preserved, follow Aeneas's lead of illustrating (and in the process enlivening) the didactic material with concrete examples, whether positive/approbatory or negative/cautionary. Thus, in the entirety of the work as we have it, very few particular places are mentioned by name – and none of those mentioned is characterized as a polis.[79] Nevertheless, in Ph. just as in Aeneas, a general polis context is all-pervasive. For the first occurrence of the word itself one has to wait until A16.3 [*80.43*] (a casual allusion to enemies being (un)able 'to break into the polis', εἰς τὴν πόλιν παραπεσεῖν), but there are forty more instances thereafter – plus one of *polisma*, used in a sense indistinguishable from polis (A84.6–7 [*86.8–9*], τὸ πόλισμα ὅπου δεῖ κτισθῆναι; compare οὕτως ἡ πόλις ᾖ ἐκτισμένη in D6.1 [*96.42*]).

The context of A16.3 [*80.43*] makes it clear that 'the polis' there means the urban centre, inside its circuit-wall.[80] Like Aeneas, above, Ph. uses the less ambiguous word asty only once. In D3 [*96.31–33*] he asserts that 'it is by intercepting most people outside the polis that you might most easily capture the asty' (πλείστους γὰρ ἔξω τῆς πόλεως ἀπολαβὼν ἀνθρώπους ῥᾳδιέστατ' ἂν λάβοις τὸ ἄστυ); there the two words are evidently synonyms, so that again, clearly, 'the polis' means 'the town'. A polis vs. chôra dichotomy is explicit in A78.3–4 [*85.34–35*] ('to convey into the polis whatever is requisite out of the chôra', κομίζειν εἰς τὴν πόλιν ὅσα προσῆκον ἐκ τῆς χώρας; cf. D87.2 [*103.17*] for the enemies' chôra seen from the attackers' perspective), but even without such a pointer it is plain that Ph.'s 'polis' is, overwhelmingly, a physical entity: a walled and (C30.1–2 [*93.11–12*]) gated town or city. Even so, here too the abstract/political sense is occasionally what he has in mind. For this see B30.1–2 [*88.20–21*] ('the polis' should lay down at least a year's

see e. g. 8.2 ('the harbours in the chôra and in the polis'), 15.9 (the Triballians lay waste the chôra of Abdera 'not far from the polis') and 17.2 (an Argive festival held 'outside the polis of the Argives'). On the other hand Aeneas's regular term for the community's land is indeed its chôra (32 instances, beginning in the very first sentence), so for that and other reasons it may be preferable to understand the phrase 'the size of the polis', τὸ μέγεθος τῆς πόλεως, in 1.1 as 'grandezza della città, sopratutto in realizione al numero dei suoi abitanti' (Bettalli, *Enea* 213; cf. Whitehead, *Aineias* 99). Either way, the passage is unusually opaque.

77 To these may be added the three instances of the diminutive *polisma* (2.2 *bis*, of Sparta; 24.8, of Ilion), a word associated with asty (see IACP 47–48) though not, or not necessarily, a simple synonym for it.

78 Generic examples of the latter include 3.1 (an *asyntaktos polis*), 10.11 (embassies coming 'from poleis or tyrants or armies'), 10.12 (importing foodstuffs that 'the polis' lacks), 10.23 (a polis gives hostages), and 12.4 (a polis employs mercenaries). For non-generic ones see already above, n.75.

79 For (?)Ake and Babylon see B53.3–5 [*90.16–18*]; for Rhodes, A17.1–2 [*80.45–46*] and A59.4 [*84.8*].

80 On walls see below, under sub-section iii.

stockpile of grain), C72–73 [*96.15–26*] ('the polis' should furnish doctors with what they need to treat wounded combatants), and arguably D15.3–4 [*97.51–98.1*] (stasis 'in the polis').

### (ii) Natural Features

Aeneas and Ph. both make provision for poleis with ready access to the sea, without necessarily assuming that each and every community in question will be a maritime one.

In Aeneas, as noted above, a direct approach to naval matters is about to begin just where the surviving text breaks off, in the enigmatic 40.8 (Ναυτικοῦ δὲ στρατεύματος δύο εἰσὶ στόλοι …), but, already before that, the topic has arisen in passing. Conditional terms are used in 16.13 ('if boats are available', keep your troops fresh by pursuing the enemy by sea) and 16.21–22 (what to do 'if you have a fleet'). By contrast, 8.3 seemingly takes it for granted that both the chôra and the polis (*qua* town) will have harbours as well as sandy and rocky shores; 10.12 recommends rewarding importers and shipowners (*nauklêroi*); 17.1 refers to the need for watchfulness during a community's *neôlkiai* (ship-beachings or -dockings); and 29.12 appears to envisage, as a matter of course, vessels arriving and anchoring, and advises that 'the' harbour-guardians and despatch-officers should inspect their cargos – Sikyon's failure to do so on one occasion[81] being cited as the cautionary example.

In Ph.it is much the same, albeit (and despite the separate *Limenpoiika*) at greater length. Garlan declared that Ph.'s polis 'est supposée se situer au bord de la mer et posséder un port "fermé", c'est-à-dire inclus dans le périmètre fortifié, et dont l'entrée, simple ou double, peut être aisément barrée par les chaînes de fer'.[82] The material Garlan cites in support of this scenario does satisfactorily support it (C52–57 [*94.40–95.17*], D21–23 [*98.24–34*], D101 [*104.1–6*]), and one could augment it with, most notably, B52.5–7 [*90.12–14*], where poleis are advised to keep stocks of shipbuilding timber and oars. Furthermore, in secondary corroboration of a maritime/coastal environment there are contexts in Ph. which casually take as read the availability of seaweed (A76.3–4 [*85.24–25*], B52.4 [*90.11*], C4.2 [*91.10*]), sea-water (C13.1–2 [*91.43–44*]) or – as used by the attackers – sponges (D34.5 [*99.25*], D77.5 [*102.35*]). Nevertheless, due weight should also be given to D5.2 [*96.38*], where, just as in the two Aeneas passages noted above, a conditional element comes in: 'if the polis is by the sea, etc.'.

As regards other natural facets of landscape and topography, neither writer presupposes anything out of the ordinary. Inside the town, both Aeneas's polis and Ph.'s has an akropolis.[83] Outside it, Aeneas assumes (e. g.) that there will be rivers

81 In 369: see Whitehead, *Aineias* 182–183; Bettalli, *Enea* 299.

82 Garlan, 'Cités' 20.

83 Aen.Tact.: 1.6 (used figuratively), 22.19 (associated with a tyrant) and 29.1. Ph.: B48.2 [*89.39*] and D71.2 [*102.4*].

(1.2, 8.1), Ph. that there might be (D8.7 [*97.7*], ἐὰν ᾖ ποταμὸς πλησίον); and fresh water in other forms gets a mention.[84] Though there is no equivalent in Ph. of Aeneas's list of 'danger-spots, strongholds, defiles, plains, commanding heights, ambush-points, etc.' (1.2), which for the most part make one visualize variably high ground, Ph. too is well aware – particularly in A30 [*82.2–5*], A84 [*86.3–11*], and the rest of the material on fortification-systems – that flat terrain cannot be taken for granted.

### (iii) Man-Made Features

Of all the built structures in the communities catered for by Aeneas and Ph., obvious primacy must be assigned to their circuits of defensive walls, the main physical obstacle to entry by hostile forces.[85] Only Ph., however, devotes space and effort to the matter of how such walls should best be designed and constructed.

For Aeneas, the presence of circuit-walls is simply taken for granted, from 1.2–3 onwards. Sporadic allusions throughout the bulk of the treatise give way, in 32–40, to a scenario of siege/blockade proper in which they are actually under attack, but even there he feels no need to recommend anything about them as physical constructs. (A brief exception occurs in 40.1: in circumstances where the city is large but the number of men defending it small, he advocates raising the wall-height at vulnerable points.) By sharp contrast, Ph.'s very first topic, addressed at length (A1–87 [*79.1–86.21*]), is *teichopoiia*. Under that head he discusses several basic models of fortification-design, and has a lot to say not only about the walls themselves but also the towers and other architectural elements associated with them.

Concerning what is inside the walls, both writers give glimpses of the mix of public buildings and private housing that their poleis typically display; and they also (and more importantly) reveal something of the intrastructure underpinning them.

Aside from the casual background of temples, shrines and other religious focal-points (and the activities associated with them) which is in play throughout each treatise,[86] Aeneas alludes to specific public buildings more often than Ph. does. A generals' office (*stratêgion*) features in both writers,[87] but only Aeneas mentions its civilian counterpart(s), *archeia* (22.2 & 4, and 29.10 on the *archeia* in a specific but

84 See e. g. Aen.Tact. 8.4 on 'standing waters' (στάσιμα ὕδατα), which probably include the natural as well as the man-made; Ph. A36.1–2 [*82.28–29*] and D10.9 [*97.27*] allow for a situation in which ground is 'subject to inundation' (ὕπομβρος).

85 Hansen and Nielsen, *Inventory* 135–137 assess 'City Walls as Evidence for Polis Identity' in the archaic and classical periods. Their main finding is that by the fourth century 'not to be protected by walls was both exceptional [known exceptions include Elis and Sparta] and regarded as old-fashioned … a defence circuit had become an indispensable part of the town'.

86 Aen.Tact.: Preface 2, 10.15; cf. 31.15–16 (extra-mural), and material on named poleis (2.2 Sparta; 17.3 Argos, again extra-mural; 17.5 Chios). Ph.: A86 [*86.13–18*], B48.3 [*89.40*], and (both extra- and intra-mural) D2–4 [*96.28–37*]. On religion see further below, subsection ix.

87 Aen.Tact.: 22.3. Ph.: D71.2–3 [*102.4–5*].

unnamed city); and only in Aeneas's polis can one be certain of the presence of a theatre – viewed from his special perspective as a rallying-point with associated open ground (1.9, 3.5, 22.4). Indeed, in Aeneas and Ph. alike, public areas of the town are significant as much for their empty space, free of buildings, as for the buildings themselves. Thus they both have precautionary points to make about an agora – Aeneas the more copiously[88] – and generically they both write of 'broad/wide places', in Greek either feminine *eurychôriai* or the rarer neuter *eurychôra*. Aeneas in 1.9–2.1 urges that these be watched over by those members of the citizen militia not selected for sentry-duty on the walls, or else, to forestall their exploitation by would-be revolutionaries, be made inaccessible with trenches. 2.1 then gives an instance of the Spartans adopting the latter course of action, successfully, against a Theban invading force,[89] and 2.7–8 counters in general terms the possible objections to such a strategy (regarded again as primarily directed against internal strife).

Ph., for his part, may have mentioned *eurychôriai* in A30.3 [*82.4*], but only the late manuscripts have it, in what is a lacuna (αἱ <…>ρίαι) in the earlier ones; Garlan prints his own conjecture αἱ <εὐθυω>ρίαι, which I accept. In any case the context there is a technical one, concerning an aspect of circuit-walls. A similar point applies to A32.5 [*82.10*], where singular *eurychôria* is used in an abstract sense (in connection with artillery-emplacements); however, at C24.2 [*92.47*] he not only switches to neuter plural *eurychôra* but means by it the same thing that Aeneas had meant. Ph.'s recommendation there is that houses adjoining or near the *eurychôra* should have holes pierced in their walls, for the thrusting of javelins etc. into enemy troops as they pass by.

Of the internal shape and organisational structure of the town in these two treatises, glimpses (as stated above) do appear.

In Aeneas the prime material on this topic takes up the two parts of his ch.3. First, in a scenario where a military emergency arises in a community which is not already on a war footing, the sub-divisions of relevance are declared to be the 'tribes' (*phylai*); each of them must guard a section of the circuit-wall and also supply able-bodied men for duty in the agora and on patrols and wherever else they may be needed (3.1–3). Oldfather and his colleagues in the Loeb edition translated phylai here as 'wards' but in 11.7–11 (episodes from the history of Argos and Pontic Herakleia) as 'tribes'.[90] It is not clear that such a distinction is warranted, i. e. that in 3.1–3 a φυλή is something to be envisaged as a territorial (or territorially-based) entity.[91] Rather, three indications to the contrary could be cited: that the wall-guarding duty is assigned at random (κλήρῳ: 3.1), not by proximity to a territorial tribe's notional area; that guarding a fort by allied troops is offered as an analogy (3.3); and

88 Aen.Tact.: 1.9, 3.2 & 5, 10.15, 22.2 & 4, 26.1, 30.1–2, and cf. 2.4 (Plataiai), 4.3 (Chalkis), 11.14 (Corcyra), 17.5 (Chios), 29.6 (unnamed). Ph.: D71.2 [*102.4*]. (Garlan, 'Cités' 20 adds D61.2 [*101.12*], which stretches a point: that passage merely uses the verb *exagorazein*.)

89 In 362: see Whitehead, *Aineias* 102; Bettalli, *Enea* 218–219.

90 Oldfather et al., *Aeneas* 37 and 67, respectively.

91 So already Whitehead, *Aineias* 104.

that 3.4–6 then proceeds, in a contrast with what has gone before, to recommend that a territorial (or topographical) system of peace-time civil defence be already in place.[92] This is based on the ῥύμη (rhymê). The term has already made a casual appearance in 2.5, in the description of the Theban attack on Plataiai (in spring 431): wagons are used to block 'the diodoi and the rhymai'. But it is now brought centre-stage as a tactical unit – or what can become such – with its own commander (3.4–6):

> (3.4) First, appoint the most competent and judicious men in each rhymê to be rhymarch, around whom everyone can rally if anything untoward happens during the night. (3.5) The rhymarchs of the rhymai nearest to the agora should lead their men into it, those of the rhymai nearest the theatre into it; and all the other rhymarchs should assemble at the open spaces nearest to them, with the men who have reported to them under arms; (3.6) in this way the members of each unit can arrive at their proper locations while remaining very close to their own homes, etc.[93]

What, then, is a rhymê? LSJ s. v., II, has 'street' – an understanding of the word which would allow Aeneas 2.5 (above) to be rendered 'the alleyways and the streets' of Plataiai.[94] Elsewhere, such rhymai are referred to so sparingly by classical-period writers as to make their precise nature opaque, but the situation becomes somewhat clearer if Hellenistic comparanda are brought in. Polybius, for instance, uses the word (and on one occasion the compound abstract noun rhymotomia, 'division by rhymai'), throughout his celebrated description of the internal organization of the Roman military camp (Plb. 6.24–42). Walbank was right to insist that the term itself applies there to the thoroughfare itself, not the block of tents pitched between one 'street' and another,[95] yet even so, both there in Polybius and also, more importantly, here in Aeneas, it seems legitimate to conceptualize a rhymê as 'una realtà urbanistica ormai scomparsa, propria, ancora in età moderna, delle città orientali: una via, o anche une serie die vie che formino un quartiere, il cui accesso sia controllato per mezzo di porte che durante la notte rimangono chiuse'.[96] Aeneas, to be sure, says nothing about any such gates – but Ph. does, in a passage which, as Garlan realised, furnishes the necessary parallel with the present one. Rather than rhymê, Ph. uses the term amphodon (and the cognate amphodarch), but otherwise it

92 N. F Jones, *Public Organisation in Ancient Greece: a documentary study* (Philadelphia 1987) 309 conflates 3.1–3 and 3.4–6 when he states that '[e]ach phyle was to be responsible for its section [*sc*. of the wall] and was to be under the leadership of a ῥυμάρχης ("street-commander")'. Aeneas makes no connection between the phylai and the rhymai, and none should be assumed. On the rhymai and their commanders see further below.

93 Aen.Tact. 3.4–6: (4) Πρῶτον μὲν ῥύμης ἑκάστης ἀποδεῖξαι ῥύμαρχην ἄνδρα τὸν ἐπιεικέστατόν τε καὶ φρονιμώτατον, πρὸς ὅν, ἐάν τι ἀπροσδοκήτως νυκτὸς γένηται, συναθροισθήσονται. (5) Χρὴ δὲ τὰς ἐγγυτάτας ῥύμας τῆς ἀγορᾶς εἰς τὴν ἀγορὰν ἄγειν τοὺς ῥυμάρχας, τοῦ δὲ θεάτρου τὰς ἐγγυτάτω ῥύμας εἰς τὸ θέατρον, εἵς τε τὰς ἄλλας ἕκαστον ἐγγύτατα εὐρωχωρίας ἀθροίζεσθαι τοὺς ῥυμάρχας μετὰ τῶν ἐξενεγκαμένων παρ᾽ αὐτοὺς τὰ ὅπλα· (6) οὕτω γὰρ ἂν τάχιστα ἔς τε τοὺς προσήκοντας ἕκαστοι τόπους ἀφίκοιντο καὶ ἐγγυτάτω τῶν σφετέρων οἴκων εἶεν, κτλ.

94 So already Whitehead, *Aineias* 47, and cf. Bettalli, *Enea* 69 ('i passaggi e le strade'). Contrast 'the streets and alleys' in Oldfather et al., *Aeneas* 33, i. e. seemingly envisaging the diodoi as bigger. The point is not central to my purposes here.

95 HCP 1.713.

96 Bettalli, *Enea* 221; compare 'precincts' (Oldfather et al., *Aeneas* 37).

is clear enough that the subject is still essentially the same (C23–30 [*92.40–93.23*], here abridged):

> (C23) Also, battlements should be placed on appropriate houses near the wall, and gates should be provided for each end of the amphoda, and holes should be made (coming) out of the flanking (house-)sides, through which it will be possible to strike with javelins and lances and ox-piercing spits into the flanks of those forcing their way into the amphoda; (24) and the houses which stand next to the open spaces and are close to the amphoda are to be provided for likewise. […] (26) At public expense a ten-mina stone-projector and two three-span catapults are to be issued to each amphodon. […] (28) Suitable (arrangements for) night-watches and sentry-rounds are to be made […]. (29) To these (sentries) and to the amphodarchs it is necessary that passwords and password-supplements be given from the generals […]. (30) It is also necessary that the gates be kept closed, those of the city and those of the amphoda alike, in order that if any of the enemy who have broken into the city at night or by day should rush down and capture certain places, they would first suffer badly when struck by catapults and stone-projectors, as well as by arrows and by stones from all directions, and after that the citizens and troops would issue forth from the night-watches and the amphoda and bring help; in formation and under command they would fall upon the enemy when they saw an opportunity, and were they to fail in something, they would be in a position to withdraw to a safe place because (our forces) are holding the gates of the amphoda.[97]

A reasonable judgement on all this, I believe, is to to say that what Aeneas describes is a rudimentary (or prototype) version of what Ph. describes. The similarities are plain to see, but so are some differences; Garlan's 'identique' overstates the case.[98]

One difference lies in the fact that Aeneas's rhymarchs are to be appointed for the job he intends them to do, whereas Ph.'s casual mention of 'the' amphodon-commanders seems to presuppose that they exist already. But beyond that, as regards this urban infrastructure itself, the rhymai do not demonstrably have all the formality of the amphoda. In particular, given Aeneas's keen interest in gates and matters pertaining thereto (chs. 5, 18–20, 28, and *passim*), he would surely have mentioned the gates of rhymai if indeed a town's quarters, in his day, had routinely had them. From Ph.'s advice on amphoda the opposite inference, for his time and place, is there to be drawn.

97 Ph. C23–30 [*92.40–93.23*], abridged: (23) Ἐπιθετέον δέ ἐστι καὶ ταῖς καθηκούσαις πρὸς τὸ τεῖχος οἰκίαις προμαχῶνας καὶ τοῖς ἀμφόδοις ἑκατέρωθεν πύλας κατασκευαστέον καὶ ἐκ τῶν πλαγίων τοίχων ὀπὰς ποιητέον, δι᾽ ὧν τοῖς τε ἀκοντίοις καὶ ταῖς ζιβύναις καὶ τοῖς βουπόροις ὀβελίσκοις ἔσται τύπτειν εἰς τὰ πλάγια τοὺς εἰς τὰ ἄμφοδα βιαζομένους· (24) καὶ τὰς ἑσταμένας οἰκίας πρὸς τοῖς εὐρυχώροις καὶ τοῖς ἀμφόδοις ἐγγιζούσας ὁμοίως κατασκευαστέον ἐστίν. […] (26) Δημοσίᾳ τε εἰς ἕκαστον ἄμφοδον δοτέον ἐστὶν λιθοβόλον δέκα μνῶν καὶ καταπάλτας δύο τρισπιθάμους. […] (28) ᾽Εκκοιτίας τε καὶ ἐφοδείας τὰς προσηκούσας ποιητέον […]. (29) Τούτοις δὲ καὶ τοῖς ἀμφοδάρχαις συνθήματα καὶ ὑποσυνθήματα παρὰ τῶν στρατηγῶν δίδοσθαι δεῖ […]. (30) Δεῖ δὲ κεκλεῖσθαι τὰς πύλας καθάπερ καὶ τὰς τῆς πόλεως καὶ τὰς τῶν ἀμφόδων, ἵν᾽ ἐάν τινες τῶν πολεμίων νυκτὸς ἢ ἡμέρας ἐμβαλόντες εἰς τὴν πόλιν παρεμπέσωσιν καὶ καταλάβωνταί τινας τόπους, πρῶτον μὲν τοῖς καταπάλταις καὶ τοῖς λιθοβόλοις, ἔτι δὲ <τοῖς> τοξεύμασι καὶ τοῖς λίθοις πάντοθεν τυπτόμενοι κακὰ πάθωσιν, μετὰ δὲ ταῦτα ἐκφοιτῶσι καὶ βοηθῶσιν οἱ πολῖται καὶ στρατιῶται ἐκ τῶν ἐκκοιτιῶν καὶ τῶν ἀμφόδων συντεταγμένοι καὶ ἡγεμόνας ἔχοντες ἐπιτιθῶνταί <τε> τοῖς πολεμίοις ὅταν ὑπολαμβάνωσι καιρὸν εἶναι, καὶ ἐάν τι διασφάλλωνται, ἔχωσιν εἰς ἀσφαλὲς ἀποχωρεῖν ἐχόντων τῶν ἀμφόδων πύλας.

98 Garlan, 'Cités' 22.

### (iv) Women, Children and Families

Unsurprisingly for most ancient writers, let alone writers on military topics, the default central characters in both Aeneas and Ph. are adult males. A family setting does, however, show through from time to time.

In Aeneas this happens almost from the outset, in the second sub-section of his Preface. Appeal is made there to defence of 'the fundamentals' (τὰ μέγιστα), immediately glossed as 'shrines and fatherland and parents and children and so on' (ἱερῶν καὶ πατρίδος καὶ γονέων καὶ τέκνων καὶ τῶν ἄλλων). To modern eyes this list is perhaps striking as much for the element it leaves out – wives – as for the ones specified,[99] and it might be tempting to conjure a picture of a disagreeably male-chauvinist Aeneas out of this passage and the much-cited 40.5, which wraps up a mini-narrative from the (?)370s:

> (40.4) When the people of Sinope found themselves dangerously short of men duruing their war against Datamas, they disguised and equipped the most physically suitable of their women to make them look as much as possible like men, giving them jugs and similar bronze utensils in place of shields and helmets, and promenading them on the side of the wall where they were in fullest view of the enemy. (40.5) They were not allowed to throw, however: a woman throwing is recognizable a long way off.[100]

It would be anachronistic, though, to complain too much of condescension in that closing remark, which for him (if not necessarily for us) was a simple matter of fact.[101] From the perspective he is taking, Aeneas himself will have seen the cardinal point as being the availability of women who could be mistaken at long distance for men; and consequently the episode invites comparison with the one recounted in 4.8–11 (from sixth-century Athens), where Peisistratus's counter-attack against Megara involves choosing, from 'the Athenians' women' who had been celebrating the Thesmophoria at Eleusis, 'those of the women best suited to accompanying a naval expedition' (τῶν γυναικῶν τὰς ἐπιτηδειοτάτας συμπλεῦσαι). Here again their role is passive, concerned with creating a false impression (4.11). Another story involving women (and children) in a piece of deception, in Ilion, occurs in 24.7. For Aeneas, then, the default vulnerability of women, just as of children (and the elderly), is what comes through, both in the anecdotal/illustrative material – in 2.6 they take refuge, with slaves, on the Plataian rooftops – and in his general advice and recommendations. Women exposed to especial danger are fleetingly brought to mind in 31.7, where it is suggested that secret messages can be hidden in (or as) their earrings, but otherwise Aeneas's assumption is that a man's womenfolk and children will be, and indeed should be, under his protection. This, for instance, is

99 For instances (from Homer onwards) of this theme which do mention wives see Whitehead, *Aineias* 98.

100 Aen.Tact. 40.4–5: (4) Σινωπεῖς δὲ πρὸς Δαταμᾶν πολεμοῦντες ἐπεὶ ἐν κινδύνῳ ἦσαν καὶ σπάνει ἀνδρῶν, τῶν γυναικῶν τὰ ἐπιεκέστατα σώματα μορφώσαντες καὶ ὁπλίσαντες ὡς ἐς ἄνδρας μάλιστα, ἀντὶ ὅπλων καὶ περικεφαλαίων τούς τε κάδους καὶ τὰ ὁμότροπα τούτοις δόντες χαλκώματα, περιῆγον τοῦ τείχους ᾗ μάλιστα οἱ πολέμιοι ὄψεσθαι ἔμελλον. (5) Βάλλειν <δὲ> οὐκ εἴων αὐτάς· πόρρωθεν γὰρ κατάδηλος βάλλουσα γυνή.

101 See the commentary in Whitehead, *Aineias* 206.

the declared aim (or outcome) of his idea, already discussed in sub-section iii, that the rhymarchs and their men should muster as close to their homes as possible – 'close enough to maintain domestic control of those who have remained there, their children and wives' (3.6). It is also reflected in his belief that gatekeepers 'ought to be well-to-do individuals, with something at stake in the community – children and a wife, I mean' (5.1). And children, if not wives, feature as objects of pathos in 10.23–25; there Aeneas's advice is that if a city under siege has given hostages to its attackers, their parents and close relatives should be either sent elsewhere or at least kept *hors de combat* and under surveillance, in case their distress leads to subversion or collusion.

Pickings in this area are significantly leaner from Ph. Why?

Part of the answer must be the absence, in Ph., of the anecdotal/illustrative element. Beyond that, he simply has so much less to say about non-male matters. Two passages in part C may be noted nevertheless. In C31 [*93.23–25*], with enemy forces inside the town, Ph. writes that everyone involved should play a part in attacking them, including, from the roof-tops, 'the children and the slave-women and the (free) women and the girls' (οἵ τε παῖδες καὶ αἱ δοῦλαι καὶ αἱ γυναῖκες καὶ αἱ παρθένοι). This recalls Aeneas 2.6 on the Peloponnesian-War siege of Plataiai, mentioned above, where in fact Aeneas's source, Thucydides (2.4.2), makes an aggressive intent – well-attested elsewhere too – explicit. C47 [*94.26–29*] addresses a different scenario, the death in combat of 'foreigners' (ξένοι), by which is meant mercenaries.[102] Besides lavish burial at public expense, any children or wives they leave behind, and who have evidently accompanied them, are to be solicitously cared for (πολυωρεῖν μὴ παρέργως). No precedent or parallel here in Aeneas, whose attitude to the mercenaries of his time and place is largely stick and no carrot (see further below, sub-section viii). Ph. lived in a much-changed world in this regard, and a mercenary's family as well as the soldier himself could reap the benefit.[103]

### (v) Animals

Military writers like Aeneas and Ph. see animals from a wholly utilitarian standpoint: their uses, direct and indirect, and any hazards that they might or will represent.

102 So Garlan, 'Cités' 24, reiterated Garlan 386.

103 On mercenaries in this era see generally e. g. G. T. Griffith, *The Mercenaries of the Hellenistic World* (Cambridge 1935); J.-C. Couvenhes, 'Les cités grecques d'Asie Mineure et le mercenariat à l'époque hellénistique', in J.-C. Couvenhes and H.-L. Fernoux (ed.), *Les cités grecques et la guerre en Asie Mineure à l'époque hellénistique* (Paris 2004) 77–113; A. Chaniotis, *War in the Hellenistic World: a social and cultural history* (Malden MA & Oxford) 78–93 and passim; N. V. Sekunda, '[Hellenistic] military forces', in P. Sabin et al. (ed.), *The Cambridge History of Greek and Roman Warfare, I: Greece, the Hellenistic World and the Rise of Rome* (Cambridge 2007) 325–356, at 343–344.

By 'direct' uses I mean use(s) in siege-related warfare itself, and Aeneas – who has much more to say than Ph. about animals generally – deals with four categories of animal under that head: equine above all, but also canine, bovine, and (briefly) apian/vespine.[104]

Concerning horses,[105] 6.6 allows for their presence conditionally: 'where the terrain is suitable for horses – and there are horses available – the best way of sending messages more quickly [*sc.* than on foot] is by relays or horsemen'. In a later context, 15.5, similar language is used when Aeneas is advocating deployment of 'the available cavalry and light-armed troops' (τοὺς ὑπάρχοντας ἱππέας καὶ κούφους) for reconnaissance and other duties. Since horse-friendly locations can also benefit an enemy's cavalry, he has already by then counseled, in 8.4, that they be rendered *anippa* (horse-free because horse-unsuitable); however no conflict between these two scenarios is acknowledged. 26.4, like 6.6, refers conditionally to a situation where a polis contains both horses and ground appropriate for their use, and the use proposed is mounted patrolling, but in a domain which has by now become restricted to the town itself.

Ph., in sharp contrast, never once mentions cavalry, or horses of any kind; nor does he offer any parallels at all for Aeneas's suggestions about ways in which other animals might be pressed into military service.

Dogs, Aeneas urges, should be tethered outside the walls on dark winter nights, so that they will bark at anyone who has no business to be either approaching or leaving the town, besides keeping the guards awake (22.14, with an example at 22.20; and see also 24.18); and this sort of thing is sufficiently well-attested elsewhere to guarantee its place in actual practice.[106] The potentialities of dogs as message-carriers is noted, again with examples, at 31.31–32. Aeneas is also alive, however, to situations in which dogs can cause trouble, and he is ready with ideas about how to prevent this. In 38.2–3 – by which time in his schema an enemy is already attacking the circuit-wall – the solution is simply to keep dogs (or perhaps only bitches: τὰς κύνας) tied up, but 23.2 counsels something more drastic: 'stop the dogs barking and the cockerels crowing: render them temporarily mute by cauterizing some part of their (?)mouth. This is because their cries, ringing out before daybreak, will reveal the plan [*sc.* of making an early sortie]'.[107] The propensity of either dogs or other creatures to make a noise, therefore, is only to be welcomed when it can be put to use – as when, analogously, his suggestion is that 'intoxicated heif-

104 This last refers to 37.1, an implicit rather than an explicit suggestion (couched in the form ἤδη δέ τινες καί with aorist, i. e. unspecified actual instances) about releasing wasps and bees into the enemy's tunnels.

105 Other than in the anecdotal material; for that, see 16.14–15 (chariots), 27.11, 31.8–9.

106 See Whitehead, *Aineias* 156–157; Bettalli, *Enea* 282; and add (e. g.) SEG 24.154, 41.76. Compare, in the same vein, Veget. 4.26.

107 Aen.Tact. 23.2: Τοὺς δὲ τῶν κυνῶν ὑλαγμοὺς καὶ τῶν ἀλεκτρυόνων τὰς φωνὰς ἀφανίζειν ἄφωνα ποιοῦντα τόνδε τὸν καιρόν, ἐπικαύσαντά τι τοῦ σώματος· καὶ γὰρ αἱ τούτων φωναὶ <πρὸ> ὄρθρου φθεγγόμεναι ἐκφαίνουσι τὸ μέλλον. Whitehead, *Aineias* 163 makes a case for emending the transmitted σώματος to στόματος. The phase 'their cries', αἱ τούτων φωναί, might refer only to the cockerels, but it would be uphill work, in this context, to prove so.

ers … and other draught-animals' be driven into the enemy camp to create alarm with their bells (27.14).

The mention of draught-animals (ὑποζύγια) there takes us from warfare proper into the more general realm of a community's use of livestock in wartime conditions. In Aeneas this topic is addressed most directly in 10.1: 'something which should already have been done is the issuing of an order, to those citizens who own draught-animals (ζεύγη) or slaves (ἀνδράποδα), to remove them for safe-keeping with the neighbours – given that they cannot be brought into the polis' (*qua* town). As has been noted,[108] Thucydides' description of the evacuation of Attica in preparation for the Peloponnesian War provides a perfect example of the first part, at any rate, of this: 'the flocks and the ὑποζύγια they sent across into Euboia and the adjacent islands' (Thuc. 2.14.1). In any event, Aeneas truly does seem to be contemplating (and advocating) the complete absence of draught-animals inside a town that is bracing itself for a siege or actually undergoing one – because, when he revisits the topic in later chapters, that is still the governing assumption. In 16.15 communities with 'a plentiful supply of ζεύγη' are advised to use them as troop-transporters; and in 28.1–3 the exhortation is to keep city gates closed and to admit ὑποζύγια and wagons – if their cargos are vital – only under escort. (28.5–7 and 29.7 tell cautionary tales of the fate of communities which have acted differently and regretted it.)

Ph. shares with Aeneas the realization that animals can sometimes be a nuisance. In his case the culprits are 'birds and … [unspecified] animals', which can find ways into a city's granaries and eat the grain, if not prevented from doing so by netting etc. (B10 [*87.2–8*]). But a more noteworthy passage, and in fact the only other context in which Ph. discusses animals directly, is D61–64 [*101.11–27*]. To grasp its import, what needs to be remembered is that in part D he is adopting the standpoint of the besiegers:

> (D61) Try, too, to remove the livestock that is inside (the city) <and> any draught-animals there may be. Either buy them up as cheaply as you possibly can or, seizing some plausible pretext in the truces which occur, let (the enemy) no longer (have to) drive in (the beasts) – by not guarding the places where they drive them out to pasture; rather, allow them outside grazing and then rush in or lay an ambush to cut them and take control of them. (62) For (the livestock) consumes nothing of what in useful in the siege, apart from chaff or hay, which serves no other purpose than fodder; (63) and it makes great contributions to health and nourishment because of both the milk and, when it is cut up and sold, the meat; (64) what is more, the skins are useful for the machines and the rams and suchlike.[109]

108 By Bettalli, *Enea* 235.

109 Ph. D61–64 [*101.11–27*]: (61) Πειρῶ δὲ καὶ τὴν ἔνδον οὖσαν λείαν <καὶ> ἐὰν ὑποζύγιά τινα ᾖ, παρελέσθαι, ἢ ἐξαγοράσαι ὡς ἐλαχίστου μάλιστα δύνῃ, ἢ ἐν ταῖς γινομέναις ἀνοχαῖς πρόφασίν τινα λαβὼν πιθανὴν μηκέτι εἰσελάσαι ἄφες μὴ φυλάσσων τοὺς τόπους τούτων ᾗ ἐξελαύνοντες βοσκήσουσιν, ἀλλ' ἔασον αὐτοὺς ἔξω νέμειν καὶ ἔπει<τ' ἐπιδραμὼν> [τὴν ἐνέδραν] ἢ ἐνέδραν κατασκευάσας ἀποτεμόμενος κυρίευσον αὐτῶν. (62) Οὐθὲν γὰρ ἀναλίσκει τῶν ἐν τῇ πολιορκίᾳ χρησίμων ὄντων, ἀλλ' ἢ ἄχυρον ἢ χόρτον, οἷς εἰς οὐθὲν ἄλλο, εἰς δὲ τὰ βοσκήματα χρῶνται· (63) πρὸς ὑγίειαν δὲ καὶ τροφὴν μεγάλα συμβάλλεται διά τε τοῦ γάλακτος καὶ κατακοπέντων καὶ πωλουμένων τῶν κρεῶν· (64) ἔτι δὲ τὰ δέρματα αὐτῶν πρὸς τὰ μηχανήματα καὶ τοὺς κριοὺς καὶ ὅσα ἐστὶ τοιαῦτα χρήσιμα γίνεται.

This all sounds excellent advice, and advice that could profitably be taken by the besiegers of any community which had not followed Aeneas's recommendations (in 10.1: above) to remove its livestock for safe-keeping elsewhere. Some of what Ph. recommends in part D is the counterpart of ideas offered to the besiegers earlier in the treatise, but not (in what survives) this.

### (vi) Slave, Foreigner, Citizen

In Aeneas and in Ph. alike, the space devoted to these three prime constituents of a polis's population reflects their positions in the status hierarchy, with non-citizens in general and slaves especially very much at the margins.

Anecdotes apart (2.6, 24.4, 31.28–29, 40.3), slaves feature in Aeneas only in ch.10.[110] First, in 10.1, comes the recommendation already mentioned in the preceding sub-section: that amongst the preliminary preparations against enemy invasion should be an instruction to the citizenry to lodge any 'draught-animals or slaves' they possess for 'safe-keeping with the neighbours – given that they cannot be bought into the city'. The word used there is the stark neuter plural *andrapoda*, and plainly Aeneas means by it slaves who both live and work in the countyside. Contrast 10.5, one of the martial-law proclamations that are to be issued later: if exiles are in the vicinity, an announcement must specify what is to be done with any of the '*astoi* or *xenoi* or *douloi*' who absconds to them; so there the assumption seems to be that slaves already based in the urban centre have stayed in it.

Ph., for his part, says nothing about evacuating an agricultural slave labour-force but he does, likewise, presuppose that there will be slaves inside the beleaguered city. Female slaves (*doulai*) join free woman and children as people who can harry invaders from the roof-tops (C31 [*93.23–25*], noted in iv above); and besiegers themselves are advised to announce that any deserving *doulos* will be freed (D13.1–2 [*97.41–42*]), to forestall the enemy arming 'the *metoikoi* and the *oiketai*' (D14.3–4 [*97.47–48*]). This obviously suggests that from the standpoint of the besieged he might have advocated precisely that,[111] but in what survives he actually does not. Rather, to reiterate, he holds out incentives to individuals for services rendered, whether they are slaves or metics; concerning the latter, D13.3–4 [*97.43–44*] advises besiegers to offer a crown to any 'metic hoplite' in the besieged city (τὸν δὲ ὁπλίτην μέτοικον στεφανώσειν) who has done something to deserve it. Thus, I would suggest, the *prima facie* conflict between D13 and D14 on this point is more apparent than real. The besieged will, very probably, arm their slaves and metics, or at least seriously consider doing so; the besiegers will try to thwart this, with or without success.[112]

110 D. Whitehead, 'L'image de l'étranger dans la *Poliorcétique* d'Énée le Tacticien', in R. Lonis (ed.), *L'Étranger dans le monde grec II: actes du colloque organisé par l'Institut d'Études Anciennes Nancy, septembre 1991* (Nancy 1992) 315–331, at 323–325.

111 Cf. K.-W. Welwei, *Unfreie im antiken Kriegsdienst, ii: die kleineren und mittleren griechischen Staaten und die hellenistische Reiche* (Wiesbaden 1977) 57–58; Whitehead, 'L'image' 327–328.

112 See further in the Comm. to those two chapters, and to C31.

Be that as it may, Ph. has no more to say about the free non-citizen denizens of this polis. (Foreign mercenaries are of course a different matter altogether.) Aeneas had done so, but – strikingly – in terms which reveal that they too, just like the slaves, are to be assigned no active role to play in his anti-siege strategy. Instead, insofar as he considers them at all, he does so as sources of potential hazard and insecurity, who must be subject to close control. 10.5 has already been noted in this connection: the martial-law proclamation designed to prevent contact between dissident exiles and any '*astoi* or *xenoi* or *douloi*'. There the broad term ξένοι can be assumed to embrace all those who are neither citizens nor slaves, i. e. all "civilian" foreigners of free status who are in the town at any given moment. Elsewhere, though, the terminology shows some differentiation, on practical grounds, between aliens *qua* visitors and those who are (or can be treated as) residents. The first of these scenarios is explicitly addressed at 10.9–10, on disarming and otherwise monitoring foreign visitors. The second occurs most clearly at 10.8, a stipulation that neither *astoi* nor *metoikoi* (Aeneas's sole use of the word) should leave by sea without identity-tokens, but it also colours 10.13–14: there, although the periphrasis ξένοι οἱ ἔνδημοι 'is not a synonym for metics, but all [free] non-citizens "in town" when the calls to arms are given',[113] the immediately-following reference to 'their' markets and shops necessarily picks out the resident component of the group.[114]

Beyond that, it is inevitably the citizens of these besieged poleis upon whom both Aeneas and Ph. focus the bulk of their attention. Aeneas calls them astoi, as we have seen, in 10.5 and 10.8, but politai elsewhere. Ph.'s citizen vocabulary is confined to politai.

In Aeneas, alongside their appearances in the anecdotal illustrative material (2.4, 17.3, 23.7–11, 28.5, 29.4), 'citizens' feature principally as the main category of people in the polis to whom his recommendations, directly or indirectly, apply. 'Guarding the politai' is the task of the military forces in Aeneas's city. The concept is expressed by a verb in 1.3 (τὰ δὲ τειχήρη καὶ πολιτοφυλακήσοντα *sc.* σώματα) and by its cognate abstract noun in 22.7 (τὰ περὶ τὴν πολιτοφυλακίαν); and one is bound to see, in the notion of 'guarding' there, the double sense of protecting the citizens from harm and also preventing any harm some of them might do themselves.[115] With the odd exception of 9.1, which appears to envisage 'soldiers' (στρατιῶται) and 'citizens' as simple alternatives to each other (for occupying extra-mural positions),[116] Aeneas's politai need to be understood, in point of fact, as filling multiple roles along a spectrum between the pure passivity implied by 1.3

113 Whitehead, *Ideology* 44, quoted with approval by Bettalli, *Enea* 243.

114 The Greek here is τούτοις τὰ ἐμπόρια καὶ πρατήρια κλείεσθαι, and in the Budé edition this is rendered by A.-M. Bon as 'les entrepôts et les marchés leur seront fermés'; but other translations, including my own, construe the dative as possessive.

115 Whitehead, *Aineias* 100; Bettalli, *Enea* 243.

116 Aeneas's phrase is 'having called an assembly of your own soldiers or citizens' (ἐκκλησιάσαντα τοὺς αὑτοῦ στρατιώτας ἢ πολίτας). Whitehead, *Aineias* 116 was wrong to deny that the στρατιῶται there could be mercenaries (as Parke, *Mercenaries* 95 n.1 had suggested); see rather Bettalli, *Enea* 234; and compare anyway 10.7.

and 22.7 (above)[117] and the active military participation, albeit of a "civil defence" kind, outlined in ch.3.[118] Significant here is ch.12, where Aeneas stresses, with examples, the paramount importance of a polis's having more politai than any allies and/or mercenaries it involves in its defence. The reason for this is that in his opinion such aliens are by definition unreliable. Unfortunately (for him), he cannot count on all the citizens being any better in that regard; hence the sequence of positive and negative admonitions, which include identifying the most trustworthy citizens for talks with visiting embassies (10.11) and appointment as company-commanders of mercenary units (13.1), billetting the mercenaries with 'the wealthiest' citizens but only in tiny sub-sets (13.2–4), monitoring those citizens who are disaffected (11.1), and generally fostering unanimity (*homonoia*: 10.20, 14.1).

Ph.'s explicit references to citizens are sparser and, for the most part, more colourless.

In his long part A, on fortification, the subject-matter is so technical that one would not expect much politês-terminology, and only A76.1–2 [*85.22–23*] has it: pots are to be collected 'both from the citizens and at public expense' (παρά τε τῶν πολιτῶν καὶ δημοσίᾳ) for constructing, in front of the outermost ring of trenching, ground so weak that advancing enemy machines will be immobilized by it. But in part B, devoted mainly to foodstuffs, we get a glimpse of the extent to which 'those citizens who are affluent (*euporoi*)' will enjoy preserved meats in their diet (B2 [*86.27–32*]), and – in Ph.'s solitary instance of language of this kind – a suggestion for ensuring that 'our citizens' (ἡμῶν … οἱ πολῖται) do not go hungry during a siege (B31 [*88.25–31*]). Part C, on resisting siege, then introduces an Aeneas-like distinction between citizens and 'soldiers', with the former as well as the latter assumed to be taking an active military role (and citizens too poor to arm themselves armed at public expense: C27 [*93.3–4*]). For this bipartition see C2.1–2 [*90.49–50*], C18.5–6 [*92.26–27*], C30.7–8 [*93.17–18*], and especially C34 [*93.32–36*], where, just as in Aeneas, it is posited that some individuals in each category might be untrustworthy: οἷς ἂν ἀπιστῇς τῶν στρατιωτῶν ἢ τῶν πολιτῶν. Ph. has nothing to say (beyond B31, just cited) about how discontent in the citizen-body is to be avoided. He is, though, interested in how best to ensure the goodwill (*eunoia*) of the soldiers 'toward the generals and the citizens', and one of his suggestions to that end is that wounded soldiers be cared for by the citizens in their own homes (C45–48 [*94.20–31*]). Finally part D, contemplating siege-warfare from the aggressors' side, differentiates between stratiôtai and politai in a context which makes it clear that only the latter are on the receiving end of the blockade (D7 [*96.49–97.1*]); and the same is true of D70 [*101.42–102.2*], a scenario where the town is actually being captured and the behaviour of one's soldiers must not be allowed to alienate a citizen-body from whom services and levies (λειτουργίαι and εἰσφοραί) will soon be required.

117 In this vein see also 10.1 (announcements to politai) and the martial-law provisions of 10.5 and 10.8, which temporarily switch to astos terminology.

118 See already above, sub-section iii.

## (vii) Constitution and Government

Given that Aeneas and Ph. alike are catering for a polis (above, sub-section i), the context of their recommendations necessarily envisages a community with some form of civic constitution in place and, as its practical expression, one or more sets of executive agencies. In both writers, nevertheless, these elements remain in the background.

As regards Aeneas, indeed, this is no accident. It is deliberate, hard-nosed policy, predicated on the idea that that, in the sort of emergency scenarios envisaged, restrictions will need to be placed on the normal functioning of civilian government.

This tone is struck as early as 1.4: 'so first one must pick out from them [*sc.* the soldiery] the men who are most judicious and have the greatest military experience, to be attached to the authorities'.[119] Just as, in 1.3, the notion of guarding the citizens carries the implication that they may have to be prevented from doing harm as well as from suffering it (see under the preceding sub-section), so too here, with the 'authorities' (ἄρχοντες), we see 'the dual notion of safeguarding and surveillance'.[120] And the anecdotal material subsequently underscores the range of hazards these office-holders can pose, from naive helplessness all the way to outright treachery: see in particular 2.4 (Plataiai), 4.11 (Megara), 11.3–5 (Chios), 18 *passim* (generic comment with illustrative episodes), 23.7–11 (unidentifiable). The point should not be overstated, for sometimes Aeneas's suggestions entail official actions or responsibilities with no implication that they will not be carried out efficiently and loyally (10.2, 10.4, 10.5, 10.7, 10.9–10, 13.3, 17.6). Yet even so it is hard to read the treatise as a whole, and the martial-law provisions of ch.10 in particular, without concluding that he feels at his most confident when the main lines of policy and procedure are determined by military command of some kind or kinds (see the next sub-section), with "peace-time" governmental practices – which even 10.4 sanctions: meetings 'in the prytaneion or in the council(-chamber) or in another public place' – limited to essential tasks.

By comparison with all this, Ph. evinces no overt distrust in the normal constitutional organs and agencies of his polis. He simply has little to say about them, directly. Here and there, even so, indirect glimpses are to be seen, and when they do occur they reveal nothing of Aeneas's jaundiced attitudes. An especially revealing passage in this regard is A86 [*86.13–18*]: 'it is also necessary to provide the tombs of brave men and multiple burial-places (in the form of) towers, in order both that the city may become more secure and also that those <who achieved distinction> in valour and those who died for their fatherland may end honourably buried in the fatherland itself'.[121]

119 Aen.Tact. 1.4: Πρῶτον μὲν οὖν αὐτῶν ἀπονεῖμαι δεῖ τοὺς φρονιμώτατους τε καὶ ἐμπείρους μάλιστα πολέμου, οἳ περὶ τοὺς ἄρχοντας ἔσονται.

120 Whitehead, *Aineias* 100.

121 Ph. A86 [*86.13–18*]: Δεῖ δὲ καὶ τῶν ἀγαθῶν ἀνδρῶν τοὺς τάφους καὶ πολυάνδρια πύργους κατασκευάζειν, ἵνα ἥ τε πόλις ἀσφαλεστέρα γίνηται καὶ οἱ μὲν δι᾽ ἀρετὴν <ἀριστεύσαντες>, οἱ δ᾽ ὑπὲρ τῆς πατρίδος τελευτήσαντες ἐν αὐτῇ τῇ πατρίδι καλῶς ὦσι τεθαμμένοι.

Besides the light this sheds on the continued strength of old-style civic patriotism and its corollaries in Ph.'s day, his recommendation also presupposes, on a functional level, constitutional authorities and mechanisms to agree on and implement such a policy. A decision-making citizen community, in short, is there in the background. This same community, by means of similar decisions, is to issue pots paid for out of public funds (A76.1–3 [*85.22–24*]), store non-perishable foodstuffs (B1.1–3 [*86.21–23*]), stockpile a year's worth of grain (B30.1–2 [*88.20–21*]), build and deploy intra-mural artillery (C26 [*93.1–3*]), acquire and distribute arms and armour to those who do not have their own (C27 [*93.3–4*]), show its realisation that war-heroes do not necessarily come only from its own ranks by giving mercenary casualties a lavish burial at public expense (C47 [*94.26–29*]; see already above, sub-section iv), and ensure the availability of doctors and the medical supplies their work requires (C72–73 [*96.15–26*]).

### (viii) The Military

Military matters have impinged upon most of the topics already surveyed here, and inevitably so, given the very nature of the treatises themselves. Both of them are didactic in form and approach, and this shows itself from the outset in the grammar and syntax chosen. Aeneas, after his Preface, begins with how troop-dispositions 'should be made', χρηστέον (1.1), and the several ways that Greek has of saying that something should or must be done reappear copiously thereafter. It is just the same with Ph., starting with δεῖ in A1: see above, section C. But to whom do these injunctions apply? On occasion the phraseology makes this explicit. In Aeneas see, for instance, 3.5 (rhymarchs), 15.2 (generals), 22.29 (lochagoi); in Ph., A1.1–2 [*79.1–2*] (fortification-builders) and C29 [*93.8–11*] (generals). But more often such explicitness is lacking; and this, one can only suppose, is because the point is considered self-evident. The matter of the intended readership of both Aeneas and Ph. has literary and cultural dimensions which blur the identity of those who are likely, in reality, to be carrying out the writers' advice;[122] nevertheless, if we restrict the issue to that latter question – who will actually be doing what in the writer's opinion 'must' or 'should' be done? – the answer seems plain enough in broad terms.

As regards Aeneas, I am on record elsewhere as seeking to refine the orthodox perception of his treatise as one exclusively addressed to military commanders:

> When [Aeneas] allows himself the use of the second person, singular or plural, the 'you' in question is, admittedly, always a military 'you': the commander, with or without his troops [see 9 *passim*, 16 *passim*, 22.19, 33.4, 37.2]; and, more broadly, even when the recommendations lack a personal focus of this kind (as for most of the treatise they do) the *bulk* of them are such as would naturally be intended for, and implemented by, 'the general in overall command' (22.2), 'the city-commander' (26.2). However, could such a military official appoint ambassadors (10.20) or intervene between debtors and creditors (14.1)? Perhaps the answer is that, under the kind of martial law imposed in chapter 10, he could. But the fact remains

122 On Aeneas in this regard see Whitehead, *Aineias* 34–42; on Ph., more briefly, Garlan, 'Cités' 19 (expanded in Garlan 284–285), and see above, section B.