

INTRODUCTION

(A) BASICS

(i) Text(s)

Editio princeps: Melchisédec Thévenot (1620–1692) and others, *Veterum mathematicorum Athenaei, Apollodori, Philonis, Bitonis, Heronis et aliorum opera Graece et Latine pleraque nunc primum edita* (Paris 1693) – a *corpus* published under the auspices of Louis XIV – at pp. 13–42.

Re-edited, on the basis of significant new manuscript discoveries, by Carl(e) Wescher (1832–1904), *Poliorcétique des Grecs: traités théoriques, récits historiques* (Paris 1867), at pp. 137–193. Plain text, with *apparatus criticus*, and thirty-four intertextual illustrations (cf. pp. 372–374 of the *elenchus figurarum*) transcribed from the eleventh-century ms.M (= Codex Parisinus inter supplementa Graeca 607); geographical and historical index (to all the treatises covered); *adenda* and *corrigenda*.

Re-edited by Rudolf Schneider (1851–1911), *Griechische Poliorketiker mit den handschriftlichen Bildern herausgegeben und übersetzt, I: Apollodoros, Belagerungskunst (Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen, philologisch-historische Klasse, neue Folge 10, no. 1: Berlin, 1908)*. Short introduction; text, with *apparatus* and facing German translation; occasional substantive notes, in brief; Greek index; photographs of the manuscript illustrations.

(See under ii below for an Italian production which, like the present work, does not properly qualify as a further re-edition – because it takes over Schneider’s text – but which does nevertheless represent a substantive contribution to scholarship on this treatise.)

Schneider’s edition, the one cited in the *OCD*, took over Wescher’s page- and line-numbers, and they remain the standard mode of reference to the treatise (as also to several others in the genre). The availability of these publications is very limited, however. In Britain I know of copies of Wescher in only two university libraries: Glasgow (borrowable) and Oxford (not borrowable, though photocopying permitted). With Schneider the case is better but not much: one ideally needs access to a library which holds the relevant run of this journal, and very few do.

To be sure, Schneider’s text can now reach a worldwide audience through its inclusion on the CD-ROM periodically issued from the University of California at Irvine by the *Thesaurus Linguae Graecae* project. This is a tremendous boon – as far as it goes: a plain text of distinctly rebarbative appearance, which lacks an *apparatus* (to say nothing of a translation or notes) and which makes allusion to manuscript illustrations not reproduced on-screen.

(ii) Translations

There is no existing English translation, but there are three in other modern European languages:

French: Ernest Lacoste, ‘Les Poliorcétiques d’Apollodore de Damas’, *REG* 3 (1890) 230–281. Following a Preface (230–233) by Eugène August Albert de Rochas d’Aiglun, the military historian and polymath who had himself published a translation of another of the *mechanici*, Athenaeus,¹ Lacoste translated Wescher’s text complete with manuscript illustrations at their points of occurrence. (Wescher’s page- and line-numbering are not, however, reproduced; instead Lacoste divides the treatise into nine chapters, with subdivisions, of his own devising.)²

German: Schneider (see under the preceding section).

Italian: Adriano La Regina and others, *L’Arte dell’Assedio di Apollodoro di Damasco* (Electa: Milan 1999); hereinafter *L’Arte*. La Regina and his five colleagues – Giovanna Commare, Leila Nista, Giangiacomo Martines, Anna Maria Liberati and Maria Antonietta Tomei – supply specialized support for a translation of Ap., the work of Commare, based on Schneider’s text (which is reproduced here complete with the apparatus in Italian translation). There are sumptuous colour prints of the manuscript illustrations, and much else besides.

Besides these translations of the treatise as a whole, Otto Lendle, who until his death in 1999 was the doyen of “kitchen-table” experts on siege-engines,³ included in his two monographs on the subject long stretches of Apollodorus’ text with accompanying German translation: 153.8–158.10 in *Schildkröten*; 141.5–143.5, 161.9–164.4, 164.5–174.7, 175.2–188.9, and 189.4–193.5 in *Texte*.

(iii) Commentaries

There has never been a comprehensive commentary on the treatise. One must look for enlightenment, instead, to the sparse notes in Lacoste and in Schneider, to the detailed but discontinuous explications in Lendle (and in Sackur, *Vitruv*), and to occasional comments elsewhere. (See also the next section for a modern commentary on a Byzantine writer who drew extensively on Ap.)

1 In *Mélanges Graux: recueil de travaux d’érudition classique dédié à la mémoire de Charles Graux* (Paris 1884) 780–801.

2 See further below, under B.i.

3 For this characterization (by which no offence is intended) see already Whitehead & Blyth, *Athenaeus* 14 n. 1.

(iv) Influence

Together with others of its kind, Ap.'s treatise was explicitly quarried by "Heron of Byzantium" – actually an anonymous Byzantine author of the tenth century A.D. This work too was edited by Schneider, under the title *Parangelmata Poliorcetica* (*Siege-Warfare Instructions*);⁴ and it has been re-edited, with English translation and commentary, by the American Byzantinist Denis F. Sullivan.⁵

Ap. is first-named among the μηχανικοί who are the writer's sources there (197.9–198.1 Wescher = 1.10–11 Sullivan); his table of contents, at 199.11–200.13 (= 2.1–23), is a recognisable descendant of Ap.'s (138.18–139.8); and over and above incidental echoes *passim*, see chiefly: 204.19–205.7 (= 5.1–10), *re* Ap. 139.9–12; 205.17–207.11 (= 7.1–35), *re* 140.3–141.3; 208.1–209.2 (= 10.1–23), *re* 141.5–143.5; 214.5–216.6 (= 13.1–39), *re* 143.6–144.11; 216.7–217.4 (= 14.1–19), *re* 145.1–146.3; 217.5–218.12 (= 15.1–22), *re* 146.4–147.6; 219.1–220.6 (= 16.1–18), *re* 152.7–153.7; 220.7–222.3 (= 17.1–34), *re* 148.2–150.3; 222.4–11 (= 18.1–8), *re* 150.4–5; 222.12–224.4 (= 19.1–30), *re* 150.6–152.4; 225.8–228.8 (= 22.1–65), *re* 153.8–156.2; 229.1–20 (= 24.1–22), *re* 156.3–158.1; 232.13–237.4 (= 27.1–92), *re* 161.9–164.4; 239.13–248.3 (= 31.1–39.36), *re* 164.6–167.9 and 173.9–174.7; 248.5–249.13 (= 40.1–19), *re* 185.6–16; 250.1–6 (= 41.1–7), *re* 185.16–186.3; 250.7–251.6 (= 42.1–18), *re* 186.4–187.6; 251.7–252.3 (= 43.1–8), *re* 187.7–11; 252.4–254.7 (= 44.1–45), *re* 187.11–188.9; 271.10–276.8 (= 55.1–57.11), *re* 189.4–193.5.

For the criticism of 189.1–193.5 (the assault-raft for crossing rivers) in another Byzantine treatise, see below at nn. 7 and 51 and in the Commentary (intro. to ch. 9).

(B) THE (PUTATIVE) AUTHOR⁶

In the sixth century Joannes Laurentius Lydus included, as sixth in a list of Greek military writers (*On the officials of the Roman people* 1.47.1), one Apollodorus who wrote a Πολιορκητικά, *Siege-matters*. Both author and title there fit the corresponding elements in the manuscripts of the present work, which proffer, variously, ἐκ

4 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])*.

5 D.F. Sullivan, *Siegecraft: Two Tenth-century Instructional Manuals by "Heron of Byzantium"* (Dumbarton Oaks Studies 36: Washington D.C. 2000). Sullivan divides the *Par.Pol.* into 58 short chapters, each with their own line-numbers, and adds Wescher/Schneider page numbers in the margin. (**I cite by both systems.**) Sullivan's boldness in proffering something more helpful than Wescher/Schneider is admirable, and his innovation deserves to succeed in the long run; nevertheless I have (reluctantly) eschewed anything similar with Ap., an author more widely used and cited (LSJ, TLG, etc.) in the traditional way.

6 An earlier version of this section (and that of the Endnote on Trajan's Column) is Whitehead, 'Apollodorus'.

τῶν Ἀπολλοδώρου πολιορκητικά ('From the (writings) of Apollodorus: *Siege-matters*') and the more straightforward Ἀπολλοδώρου πολιορκητικά ('Apollodorus' *Siege-matters*'). Wescher printed the former (and I have followed suit), Schneider the latter. The possible significance of this discrepancy will be examined later; here it will suffice to note the certainty that Apollodorus is the name preserved. Likewise, 'Apollodorus' is the name of the predecessor mentioned (and heavily criticised, for recommending transporting troops across rivers on an enormous raft – precisely as the final section of the present treatise does: 189.1–193.5) in the Byzantine military treatise *On strategy*.⁷

Though it was a name commonplace enough in the Graeco-Roman world, the identity of its holder in this instance has never, to my knowledge, been seriously questioned.⁸ He is taken to be *PIRA*² A.922: the Syrian-Greek architect and engineer Apollodorus of Damascus, attested during the reigns of the emperors Trajan (98–117) and his successor Hadrian (117–138) by a small dossier of later evidence, as follows:⁹

Procopius, *On Buildings (de aedificiis)* 4.6.13: ὅπως μὲν οὖν τὴν γέφυραν ἐπήξατο ταύτην, ἔμοι μὲν οὐκ ἂν ἐν σπουδῇ γένοιτο, Ἀπολλόδωρος δὲ ὁ Δαμασκηνός, ὁ καὶ παντὸς γεροντῶς ἀρχιτέκτων τοῦ ἔργου, φραζέτω ('so how (Trajan) built this bridge (across the Danube) would hardly be for me (to describe), but let Apollodorus of Damascus tell it, he who was the *architekton* of the whole operation'). What follows, in 14–17, begins with retrospective disparage-

- 7 G.T. Dennis (ed.), *Three Byzantine Military Treatises* (Dumbarton Oaks: Washington DC, 1985); see 19.22–39 of the *περὶ στρατηγικῆς*, quoted and translated below, Comm. intro. to ch. 9. Dennis endorses the (then) orthodox date for this work, the sixth century, but a later dating was urged by B. Baldwin, 'On the Dating of the Anonymous *Περὶ στρατηγικῆς*', *BZ* 81 (1988) 290–293, and the argument has gained an extra dimension from the claim that this work is in fact part of the Military Compendium of Syrianus Magister: see to this effect C. Zuckerman, 'The Military Compendium of Syrianus Magister', *JÖBG* 40 (1990) 209–224. A date as late as the tenth century is contemplated by D. Lee & J. Shepard, 'A Double Life: Placing the *Peri presbeôn*', *Byzantinoslavica* 52 (1991) 14–38; in the ninth century by S. Cosentino, 'The Syrianus's *Stratêgikon*', *Bizantistica* 2 (2000) 243–280, and by Ph. Rance, 'The date of the military compendium of Syrianus Magister', *BZ* 100 (2007) 701–737. Dennis's suggestion (69 n. 1) that the Ἀπολλόδωρος mentioned there 'may' be our Ap. could (and should) have shed its caution if the relevant section of the present treatise had been cited. Given not only the name but the many correspondences of substance and vocabulary, no possible doubt on the point arises, even though our text does not have the tower, at the upstream end of the raft, mentioned there; Lendle, *Texte* 178 n. 204; Blyth 142 n. 34. (The absence of the tower from the transmitted version is, nevertheless, of note for other reasons: see below, Comm. to 189.1–193.5.)
- 8 Lepper & Frere, *Column* 190–191 toy briefly with a degree of scepticism which would distinguish between no fewer than four relevant men of this name active under Trajan and Hadrian, but the likelihood of a single one is accepted. See further below.
- 9 Besides this literary evidence (discussed from standpoints other than the present one by e. g. Millar, *Dio* 65–66; Cuomo, *Technology* 132–133), note also the twin but unconnected possibilities that physical likenesses of Apollodorus have been preserved: if, as Cichorius suggested, he is the bearded figure just behind the emperor in the scene (XCIX/cast 261) on Trajan's Column which includes his Danube bridge (see Lepper & Frere, *Column* 148, 277); and if the 'Apollodorus' of a surviving bust in Munich is, as several scholars have suggested, the Damascene (see L. Nista in *L'Arte* 87–89 with bibliography).

ment of the utility of the project from the standpoint of Roman imperialism but then does, perhaps, draw something from Apollodorus' description of it. See in any event, and at greater length, Dio 68.13.

Scriptores Historiae Augustae 'Aelius Spartianus', *Hadrian* 19.13: *cum hoc simulacrum post Neronis vultum, cui antea dicatum fuerat, Soli consecrasset, aliud tale Apollodoro architecto auctore facere Lunae molitus est* ('when (Hadrian) had consecrated this statue to the Sun, after removing the face of Nero to whom it had previously been dedicated, he undertook to make one of a similar kind for the Moon, with Apollodorus the *architectus* as its creator').

Dio 69.4.1–5: τὸν δ' Ἀπολλόδορον τὸν ἀρχιτέκτονα τὸν τὴν ἀγορὰν καὶ τὸ ὠδεῖον τό τε γυμνάσιον, τὰ τοῦ Τραιανοῦ ποιήματα, ἐν τῇ Ῥώμῃ κατασκευάσαντα, τὸ μὲν πρῶτον ἐφυγάδευσεν, ἔπειτα δὲ καὶ ἀπέκτεινε, (2) λόγῳ μὲν ὡς πλημμελήσαντά τι, τὸ δ' ἀληθὲς ὅτι τοῦ Τραιανοῦ κοινωμένου τι αὐτῷ περὶ τῶν ἔργων εἶπε τῷ Ἀδριανῷ παραλαλήσαντί τι ὅτι “ἄπελθε καὶ τὰς κολοκύντας γράφε· τοῦτων γὰρ οὐδὲν ἐπίστασαι”. ἐτύγχανε δὲ ἄρα τότε ἐκεῖνος τοιοῦτω τινὶ γράμματι σεμνυνόμενος. (3) αὐτοκρατορεύσας οὖν τότε ἐμνησικακήσῃ καὶ τὴν παρρησίαν αὐτοῦ οὐκ ἤνεγκεν. αὐτὸς μὲν γὰρ τοῦ τῆς Ἀφροδίτης τῆς τε Ῥώμης ναοῦ τὸ διάγραμμα αὐτῷ πέμψας, δι' ἔνδειξιν ὅτι καὶ ἄνευ ἐκείνου μέγα ἔργον γίνεσθαι δύναται, ἦρετο εἰ εὐ ἔχοι τὸ κατασκευάσμα. (4) ὁ δ' ἀντεπέστειλε περὶ τοῦ ναοῦ ὅτι καὶ μετέωρον αὐτὸν καὶ ὑπεκεκνωμένον γενέσθαι ἐχρῆν, ἵν' ἔς τε τὴν ἱερὰν ὁδὸν ἐκφανέστερος ἐξ ὑψηλοτέρου εἴη καὶ ἐς τὸ κοῖλον τὰ μηχανήματα ἐσδέχοιτο, ὥστε καὶ ἀφανῶς συμπήγνυσθαι καὶ ἐξ οὐ προειδότης ἐς τὸ θέατρον ἐσάγεσθαι, καὶ περὶ τῶν ἀγαλμάτων ὅτι μείζονα ἢ κατὰ τὸν τοῦ ὕψους τοῦ μεγάρου λόγον ἐποιήθη. (5) “ἂν γὰρ αἱ θεαί” ἔφη “ἔξαναστήσεσθαι τε καὶ ἐξελθεῖν ἐθελήσωσιν, οὐ δύνηθῆσονται”. ταῦτα γὰρ ἀντικρυς αὐτοῦ γράψαντος καὶ ἠγανάκτησε καὶ ὑπερήλγησεν ὅτι καὶ ἐς ἀδιόρθωτον ἀμαρτίαν ἐπεπτώκει, καὶ οὔτε τὴν ὀργὴν οὔτε τὴν λύπην κατέσχεν, ἀλλ' ἐφόνευσεν αὐτόν ('Hadrian spared others) but Apollodorus the *architektôn* – the man who had built in Rome the Forum and the Odeum and the Gymnasium, the creations of Trajan – he first banished and then went so far as to kill. [2] The pretext was that (Apollodorus) had made a mistake, but in truth it was because, when Trajan was consulting him about some aspect of the works, he said to Hadrian, who had made a casual remark, “go away and draw your pumpkins; for you understand nothing of these matters”. (Hadrian) had happened at that time to be pleased with himself over some such drawing. [3] So once he had become emperor he bore a grudge against (Apollodorus) and found his frankness unendurable. For when he sent (Apollodorus) the plan for the temple of Venus and Roma, by way of a demonstration that even without him it was possible for a great work to be undertaken, he asked whether the structure was well-designed. [4] (Apollodorus) wrote in response: concerning the temple, that it ought to have been both built on high ground and excavated out below, so that it would be more conspicuous in the direction of the Via Sacra from a more elevated position and also so that it could accommodate the machines into the cavity, enabling them to be assembled unobtrusively and brought into the theatre before any could realise it; and concerning the statues, that they had been made larger than was consistent with the height of the *cella*. [5] “For if the goddesses”, he said, “should wish to get up and leave, they will not be able to”. Once Apollodorus had written so bluntly, Hadrian was both vexed and pained, because he had committed an irremediable error, and he could hold in check neither his anger nor his sorrow, but murdered him'). Cf. Joannes Tzetzes, *Historiarum variarum chiliades* 2.82: αὐτὸς καὶ Ἀπολλόδορον γεφυρεργάτην κτείνει (('Hadrian) also killed Apollodorus the bridge-builder').

The claim that Hadrian was even indirectly responsible for Apollodorus' death is nowadays dismissed by most scholars as an extreme manifestation of anecdotal material, here and elsewhere, designed to illustrate the emperor's vanity.¹⁰ Otherwise, though, this information has been accepted as essentially reliable, and it has

10 See e. g. Schneider 5, and (at length) Ridley, 'Fate'.

served to underpin the standard portrayal of Apollodorus ‘of Damascus’ (Procopius) as both builder and writer. Under the first head the principal items are the massive Danube bridge built c.104¹¹ from Pontes (present-day Kostol) to Drobeta (present-day Turnu Severin) and, in Rome, the *forum Traiani* (perhaps including its celebrated adjunct the Column); while the category of his writings comprises (or includes?) the lost treatise on the bridge and the surviving one on siegecraft.

The siegecraft treatise is addressed to an unnamed ruler, addressed as ‘master’ (137.1, 138.1 & 14), who has solicited it from the writer in advance of a campaign (in territory unfamiliar to the writer) which will involve assaults on fortified positions. In the *Par.Pol.* the addressee is named as the emperor Hadrian: τὰ Ἀπολλοδώρου πρὸς Ἀδριανὸν αὐτοκράτορα συνταχθέντα Πολιορκητικά (197.9–198.1 Wescher = 1.10–11 Sullivan). Wescher, in declining to comment on this, must be presumed to have endorsed it. Schneider’s approval, albeit implicit, is plainer:¹² see Schneider 6 n. 1 and especially 10, an observation on Apollodorus’ reminder to the addressee that the two of them had seen active service together (μετὰ σου ἐν ταῖς παρατάξεσι γένόμενος: 138.9): ‘Hadrian hat an beiden Feldzügen Trajans gegen Decebalus teilgenommen, Apollodor für den zweiten die Donaubrücke gebaut’.

In fact, however, the issues here are controversial, ever since the short but powerful case made by Théodore Reinach in 1895 for identifying the addressee as Hadrian’s immediate predecessor Trajan.¹³ Five years earlier, Johannes Plew’s dissertation on the sources for Hadrian had placed the treatise in c.133, as a work written for that emperor’s campaign in Judaea; and the upshot of such a dating was to cast doubt on Dio’s picture of hostility between Hadrian and Apollodorus – suspect, arguably, in any case (see above) – except as something occurring in the old age of both men.¹⁴ But Reinach, as indicated, took a more radical step. For him the *Par.Pol.*’s naming of Hadrian as Apollodorus’ correspondent was inadequate by itself to outweigh the probability, stemming alike from evidence internal (the character and content of the treatise, especially its preface) and external (the otherwise-attested dealings between Apollodorus and these two emperors), that the work was written and sent to Trajan; specifically, indeed, during his Parthian campaign of 113–116.

Subsequent scholarship has sustained these two competing scenarios unresolved. For Hadrian, besides Schneider (above), see e.g. Sander, Lammert, Henderson, Millar, Lendle, Birley, and a brace of Campbells.¹⁵ For Trajan see e.g. Ridley, Blyth, Sullivan.¹⁶ (Blyth fleetingly raises but does not pursue a third candidate, Septimius Severus.) As to a specific context, Hadrianists continue to link the treatise

11 For this date see Lepper & Frere, *Column* 52, elaborated 148–151.

12 And cf. already Lacoste 234, and Fabricius in *RE* 1 (1894) 2896.

13 Reinach, ‘Apollodore’. (In calling him *Solomon* Reinach, Ridley, ‘Fate’ 560 attributes the piece to the wrong Reinach brother.)

14 Plew, *Quellenuntersuchungen* 89–97.

15 Sander, ‘Verfall’ 457; Lammert, ‘Poliorketik’ 393; B.W. Henderson, *The Life and Principate of the Emperor Hadrian* (London 1923) 248; Millar, *Dio* 66; Lendle, *Schildkröten* 103; Lendle, ‘Kriegsmaschinen’ 334; Lendle *Texte* xx, 71, 77; A.R. Birley, *Hadrian, the Restless Emperor* (London 1997) 4, 273; D.B. Campbell, *Machinery* 36 (and again *Besieged* 180, 181); (J.) B. Campbell, *Greek and Roman Military Writers* (London 2004) 204.

16 Ridley, ‘Fate’ 560; Blyth 149–153; Sullivan 155.

tise with the Jewish War¹⁷ – as indeed they must, since there is little to recommend (in this regard) the only theoretical alternative, Hadrian’s dealings with the Roxolani in 118.¹⁸ (The builder of the Pontes-to-Drobeta bridge, it is routinely observed, could not have declared the terrain of this prospective campaign unfamiliar to him (ἀγνοῶ τοὺς τόπους: 137.7). I venture to wonder whether this does not unduly telescope the distance between the two theatres of operation; but it is still the case that the events of 118 represented a rapid response to an *ad hoc* emergency, not a carefully-planned offensive.) Trajanists, for their part, have two options: the Armenian and Parthian campaigning (Reinach, above) and the prelude to the Dacian Wars themselves (Blyth, discussed below).

In all this, it remains the case that the sole item of apparently hard evidence linking the treatise with either of these emperors is the *Par.Pol.*’s πρὸς ᾿Αδριανὸν αὐτοκράτορα, the reading of all manuscripts; yet (as Sullivan has pointed out) αὐτόκρατορ Καίσαρ υἱὲ ᾿Αδριανὲ σεβαστέ is the equally unanimous reading of all the manuscripts of pref. 1 of Aelian’s *Taktike theoria*, even though it is plain from the reference to the emperor’s ‘deified father Nerva’ in pref. 3 there that the name must be emended – from ᾿Αδριανέ to Τραιανέ!¹⁹ The present work, vaguer in its preface, furnishes no basis for arguing that the *Par.Pol.*’s ᾿Αδριανόν (in relation to it) *must* be a mistake, but clearly it *might* be, whether a purely palaeographic one or the reflection of a source-tradition which, where Apollodorus was concerned, brought Hadrian more readily to mind than Trajan.

The nature of the evidence overall warrants caution. Lepper & Frere issue a salutary reminder of this (before going on to a sound positive stance):²⁰

It will be appreciated that we have thus got ancient evidence for at least one man, perhaps as many as four, flourishing as an architect or as a military engineer during the reigns of Trajan and Hadrian. They are, in brief:

- A. The master-builder of Trajan’s Danube bridge, who came from Damascus in Syria and who wrote a monograph describing the bridge (Procopius);
- B. The architect of some of Trajan’s buildings in Rome, in particular of ‘the Forum, the Concert-Hall and the Gymnasium’ (Dio);
- C. The propounder or designer of a colossal statue of the Moon for Hadrian (‘Spartianus’); and, possibly,
- D. The author of a treatise on siege-engines addressed to Hadrian.

[...]It is perhaps as well to bear in mind that ‘Apollodorus of Damascus’ [...] is a conflation of A, B, C and (sometimes) D. However, there is something to be said in favour of all of these equations. For example, Vitruvius clearly regarded military engineering as one of the regular provinces of architecture and so covered it in the tenth Book of his *De Architectura*. Again, in all ages architects and engineers with a taste for describing their works in words (let alone the ability to do so lucidly and with elegance) are fairly rare. Thirdly, though we must allow for the

17 So e.g. Millar loc.cit., Birley loc.cit.

18 So e.g. Plew, *Quellenuntersuchungen* 94; Reinach, ‘Apollodore’ 201 (specifically against the advocacy of this position by Fabricius in *RE* 1 (1894) 2896); Ridley, ‘Fate’ 560; Commare in *L’Arte* 83.

19 Sullivan 155, following A. Dain, *Histoire du texte d’Élien le tacticien* (Paris 1946) 19 with n. 1. See also A.M. Devine, ‘Aelian’s Manual of Hellenistic Military Tactics: a New Translation from the Greek with an Introduction’, *Ancient World* 19 (1989) 31–64, at 31.

20 Lepper & Frere, *Column* 190–191 (here abbreviated).

paucity of our relevant information, it would be odd if the coincidence of Trajan's employing two men of the same name for major building works were unremarked. So, in what follows, it will be assumed that we are dealing with one rather remarkable artist, i. e. 'ABC(D)' [...].

This 'ABC(D)' formula does particularly well to signpost the least robust element in the conflation. Nevertheless, I shall make the same assumption in what follows here too. I further believe:

(1) that Trajan, as Reinach insisted, is the more plausible recipient of the present treatise. If accepting everything in Dio 69.4.1–5 would be naive, dismissing it all cannot be justified. With strained relations between Apollodorus and Hadrian both before and after the latter's accession, the tone of the treatise's epistolary preface, 'à la fois dévoué et familier',²¹ makes a better fit with Trajan.

(2) that the campaign in question was the first invasion of Dacia, in 101–102. Whereas there might seem an attraction *prima facie* in positing²² that the campaigns (*parataxeis*) on which Apollodorus says he has already served with the addressee are themselves the two Dacian Wars, so that the venture to which the treatise itself pertains could only be the one in Armenia and Parthia, two objections arise. One is that service 'with' the addressee (μετά σου) ought not, strictly, to mean service under his command.²³ And the other – the decisive point – is that (in Blyth's words) 'no one who had experienced the small-scale sieges depicted on Trajan's Column would have needed the admonition [in 138.1–5: to anticipate a new, more fluid, type of "siege" warfare] or indeed a new set of devices for attacking hill-forts'.²⁴ Thus, even if Armenia and Parthia were regions which Apollodorus could claim he did not know personally, that Asian expedition cannot (*pace* Reinach) be the one he was writing for. Instead the choice boils down to the First Dacian War (101–102) or the Second (105–106), the latter being the one in which Apollodorus himself participated as designer and builder of the Danube bridge. Blyth, on the basis of a comparison between the treatise's recommendations and the scenes on Trajan's Column, favours the Second War, but his reasoning is opaque,²⁵ and to my mind the phenomena are best saved²⁶ by a date of c.100, a time when both Trajan and Apollodorus were only sketchily informed about the challenges Dacia would present (and Apollodorus was unaware that within a few years he would be asked to experience some of them in person).²⁷

On this scenario (and indeed Blyth's also), the previous campaigns which had seen Apollodorus serving 'with' Trajan must be sought in Trajan's pre-accession career. Can the chronology be made to fit? If Trajan (born in either 53 or, more

21 Reinach, 'Apollodore' 200.

22 As Reinach, 'Apollodore' 201 does.

23 cf. Blyth 148 (though he risks spoiling the point by taking a step too far: 'not under his command – and so at a time before the emperor's accession').

24 Blyth 149–150.

25 Blyth 150–153.

26 Such as the fact (noted by Blyth) that Dacian catapults are part of the Column's depiction of the First War, but the treatise does not anticipate this.

27 On possible correspondences between the treatise and the Column see Endnote 1.

probably, 56)²⁸ and Apollodorus were more or less of an age, one would say that it can. Certainly a first meeting between the two of them in Damascus in the mid 70s, when Trajan's father and namesake was governor of Syria and his son one of his *tribuni militum*, is easy enough to envisage. Thereafter the notoriously vague and meagre evidence for Trajan's developing career (largely Pliny, *Panegyricus* 14–15) reveals little of his whereabouts both before and even after the important year 89, when as *legatus legionis* of *legio VII Gemina* in Hispania Tarraconensis his rush to Moguntiacum (present-day Mainz) to participate in the suppression of L. Antonius Saturninus' revolt against Domitian confirmed his loyalty to that emperor. But even so, besides the immediate post-revolt *expeditiones* (unspecified) of *Paneg.* 14.5, it seems necessary to fill the first half of the 90s with the sort of activities without which Trajan's reputation as a *vir militaris* by the time of his adoption by Nerva in 97 is difficult to explain.²⁹

For Blyth, however, a problem arises here; not with these (or any similar) suggestions for where Trajan and Apollodorus could have seen military service together, a matter on which he does not comment; rather, because in his view Apollodorus was some dozen years younger than Trajan. Had they been contemporaries, the argument runs, Apollodorus would have been a very old man at the time of his alleged murder by Hadrian, and 'our sources would have found the added pathos too good to miss'.³⁰

The point is shrewd enough as it stands, and as such can carry as much weight as arguments from silence should be allowed to carry; nevertheless, (a) it is then overstated and (b) used in support of an hypothesis which introduces a novel and unnecessary element into the equation.

Concerning *a*, Blyth conjures up (for the purposes of rejecting) an Apollodorus who at the time of his death in the mid or late 120s was 'a venerable but still highly productive *octogenarian* [my emphasis], like Sophocles or Michaelangelo'. But this implicit calculation of Apollodorus' birth-date involves as a postulate something which can only be a (faint) possibility: that 'he had held a position of responsibility in 67', i. e. during Vespasian's operations in Judaea. If instead he was more or less Trajan's own age, he will have been in his 60s or early 70s at the time of his demise, and not especially noteworthy on that account.

Concerning *b*, Blyth is in fact willing to accept a birth-date of c.55 for Apollodorus, but this brings with it the alarming consequence that *Apollodorus was not in fact the author of the treatise*. Rather, for Blyth, its (unknown) author was a man between twenty and forty years Apollodorus' senior, whose advice to Trajan in c.100 was preserved amongst the papers of a younger associate and successor (per-

28 See Bennett, *Trajan* 12–13 on the conflicting ancient evidence for Trajan's birth-year, between 50 and 56. He favours 56 (calculable from Dio's statement that Trajan became emperor at 41) over the 53 more usually derived from Eutropius.

29 Bennett, *Trajan* 42–46 places here periods on both the Rhine (as governor of one of the Germanies) and the Upper Danube (as governor of Pannonia). Even on the more orthodox (and cautious) modern view, Trajan was governor of Germania Superior at the time of the adoption.

30 Blyth 154.

haps even the *hypourgos* of 137.5) who went on to greater renown.³¹ But this complication is unnecessary and cannot be allowed to survive the cut of Occam's razor (*pluralitas non est ponenda sine necessitate*). It would be tolerable only if the chronology could not, by any stretch, be made to work without it; but that is not the case here.

Nor are Blyth's two supporting arguments persuasive. One is that

'[t]he author gives no hint that he would be prepared to join the emperor on his campaign, and he has in fact a quite different plan. He is sending a talented assistant, equipped with his own team of workmen. The party is carefully camouflaged, the leader being presented as a demonstrator and the rest as a gift to the emperor, introduced at a different point in the letter; but the author's intention is clear. The assistant is not to be sidelined: if he lives up to expectation, he should get a position on the emperor's staff fairly quickly, especially as the emperor's other engineers seem to be out of favor; if he fails, it is most unlikely that the emperor will call for his master. The author has done all that could be expected of him and got out of a difficult situation.³²

Insofar as this glosses what the opening letter actually says, I have no quarrel with it (see the Commentary), but as an attempt to draw out a 'subtext' (Blyth) it begs the question at issue. The writer does indeed give 'no hint that he would be prepared to join the emperor on his campaign', but why assume that, in a context of c.100, he had been asked to do so? Better to suppose that his involvement in the Dacian venture grew incrementally.

Blyth also contends that

'[a] further hint that the work was not written by the historical Apollodorus but had in some way belonged to him as a possession may be implied by the title in our mss, since ἐκ τῶν Ἀπολλοδώρου ought to mean something different from the simple Ἀπολλοδώρου.³³

Here one must first repeat that the manuscripts actually offer *both* this formula (PV) and the simple Ἀπολλοδώρου (M, *in fine*), a point arguably which makes it less than imperative to find a *substantively* different meaning for ἐκ τῶν Ἀπολλοδώρου. But if one is wanted nevertheless, a simpler one than Blyth's will see it as a recognition by the scribe or scholar responsible that this work, the Πολιορκητικά, was one item drawn from the totality of Apollodorus' writings (τὰ Ἀπολλοδώρου).³⁴

31 Blyth 154–155. (In Draft 1 Blyth had written of 'a core which is by either Apollodorus himself or another engineer of the same period good enough to be worth studying'; Draft 2 had then suppressed even the second of these possibilities; so it is a pity that the eventually published version took the path, on this point, that it did.)

32 Blyth 155.

33 Blyth 154–155.

34 For τὰ Ἀπολλοδώρου cf. e. g. Diog.Laert. 5.86 (the young Heraclides Ponticus admired τὰ Πλάτωνος) and 9.45 (Thrasylos arranged τὰ Πλάτωνος into tetralogies); Suda v 518 Adler (Numenius wrote *hypotheseis* τῶν Θεουκιδίδου καὶ Δημοσθένους). The formula ἐκ τῶν τοῦ δεῖνος is harder to parallel but cf. Diog.Laert. 5.22, of portions of a single work (Aristotle's *oeuvre* includes τὰ ἐκ τῶν Νόμων Πλάτωνος in three volumes), and Suda o 835 Adler: Vestinus wrote a digest (ἐκλογή) ἐκ τῶν Θεουκιδίδου, Ἰσαίου, Ἰσοκράτους κτλ.

(C) THE WORK

(i) Internal arrangement

The treatise occupies fifty-seven pages in Wescher; this becomes (disregarding the translation) twenty-two in Schneider, who printed the illustrations separately. The *TLG Canon* gives a word-count of 5,981.

A clearly-identifiable, and quite polished, epistolary Preface (137.1–138.17) introduces the work, followed by a (very) rough “List of Contents” (138.18–139.8); but how is its substance arranged thereafter?

By and large, one topic leads on to, or flows into, the next without explicit sub-division. Where headings do occur, therefore, they have been supplied by scribes and copyists, who (*a*) do not always do this competently and (*b*) do not in any case always agree with one another.

For an instance of *a* see 140.1, Περὶ φυλακῆς τῶν ἀπὸ τοῦ τείχους βαλλομένων, which would be better placed before 139.9.³⁵ As to *b*, the fact that ms.M has less of this kind of thing, overall, than do the later P and V will not much concern the user of modern editions – until s/he realises that the editors themselves differ in their treatment of the phenomenon. Schneider, for instance, moves directly from 147.6 to 148.2. This is baffling enough for users of his printed edition, let alone anyone using it in its impenetrable CD-ROM medium; one needs to consult Wescher to discover that the missing 148.1 is a heading, Περὶ πλιθίνων τείχων (the counterpart to Περὶ λιθίνων τείχων in 152.6), which Wescher conjured out of 152.5.

In grasping (and labelling) the internal arrangement of the work, then, modern readers are likely to do at least as good a job as ancient ones. Wescher and Schneider undertook a modest amount of this, by means of layout and paragraphing, but the most useful contribution is made in Lacoste’s translation (see above, under A.ii). I am indebted to it, in part, in proffering the following scheme (for 139.9 onwards):

Chapter 1: Protecting the attackers (139.9–143.5)

§ 1 The problem: avoiding objects propelled from elevated positions (139.9–13)

§ 2 Ditches and palisades (140.3–9)

§ 3 The beaked tortoise (140.9–141.4)

§ 4 The “grapevine”-tortoise (141.4–143.5)

Chapter 2: Excavation (143.6–147.6)

§ 1 The digger tortoise (143.6–144.3)

§ 2 The digging process (144.3–145.6)

§ 3 Supporting and firing the wall (145.6–146.3)

§ 4 Coating the tortoise (146.4–147.6)

Chapter 3: Brick walls (148.2–152.5)

§ 1 The drill (148.2–149.2)

§ 2 Drilling, filling and firing (149.2–152.5)

35 So Lacoste 236 n. 1.

Chapter 4: (Firing) stone walls (152.6–153.7)

Chapter 5: Rams (153.8–161.8)

§ 1 The ram tortoise (153.8–155.13)

§ 2 Support tortoises (155.13–156.2)

§ 3 Coating the tortoises and wedging the (ram) tortoise's wheels (156.3–157.6)

§ 4 Rams and their effects (157.7–158.10)

§ 5 Jointed ram-shafts (159.2–9)

§ 6 Variations and refinements (159.10–161.8)

Chapter 6: A device for reconnaissance (161.9–164.4)

Chapter 7: Towers (164.6–174.7)

§ 1 Building the tower (164.6–167.10)

§ 2 Tower with boarding-bridge (168.1–170.2)

§ 3 Tower with rams (170.3–9)

§ 4 Tower with rams as boarding-bridge (170.10–172.5)

§ 5 Tower with balance-beam (172.6–173.8)

§ 6 Tower-base for uneven ground (173.9–12)

§ 7 Precautions against fire (173.13–174.7)

Chapter 8: Ladders (175.2–188.9)

§ 1 General considerations (175.2–176.4)

§ 2 Constructing and assembling ladders (176.4–179.3)

§ 3 Ladder-borne balance-beam (179.4–182.4)

§ 4 Ladder-borne channel for heated fluids (182.5–185.2)

§ 5 Ladder-borne rams and boarding-bridges (185.3–188.9)

Chapter 9: An assault-raft for crossing rivers (189.1–193.5)

§ 1 Building the raft (189.1–190.8)

§ 2 Operating the raft (190.8–193.5)

(ii) Illustrations³⁶

(a) In his Preface Ap. twice (137.3 and 6) mentions something called *hypodeigmata* which, accompanied by verbal descriptions, he is sending to the emperor. Both the phrase *ὑποδείγματα ... διαγράψας* at 137.3–4 and its variant *σχήματα πολλὰ καὶ ποικίλα διέγραψα* in the following sentence, at 137.7–8, show that these are drawings or illustrations (rather than e. g. models); and the phrase *ἵνα πρὸς τὰ ὑποδείγματα ... ἐργάσηται* (137.6) indicates further, and crucially, that they are no mere back-of-an-envelope sketches but serious technical drawings – I translate ‘specimen-designs’ – from which actual construction can proceed. It is therefore clear that the mainly jejune illustrations which are embedded in the eleventh-century and

36 For an earlier version of this subsection see Whitehead, ‘Fact and Fantasy’ 149–150.

later manuscripts are not Ap.'s original designs, and do not even bear any useful resemblance to them. Rather, they are stylised scribal elaborations of his words.³⁷

(b) A related but separate (and more complex) issue concerns the *allusions to drawings* which occur throughout the transmitted text: usually called σχήματα (see already above, under *a*), which I generally translate as 'figures';³⁸ alternatively καταγραφαί, which I render 'depictions'; occasionally ὄψεις ('views'); and in one instance a διάγραμμα. Are they original – that is, indicative of places where an Apollodoran design had once stood (or come into play) – or merely places where a medieval copyist is calling attention to his own illustrative artwork?

A few of the medieval illustrations, in ms.M and/or P, simply appear at a suitable point in the text without any textual mention of them: after 147.6, 161.8, 170.2, 172.5, 174.7, 179.3 and 180.12. But the great majority of them are flagged up by something – and almost always something very detachable-looking, at the end of a descriptive section – in the text: see 143.3–5, 144.11 (apparently referred to again in 145.5–6), 146.2–3, 150.2–3, 150.5, 151.5, 153.6, 156.1–2, 158.3–4, 158.9–10, 159.8–9, 160.1–2, 163.2–3, 167.9–10, 169.1–2, 172.16–173.1, 182.3–4, 185.2, 186.2–3, 191.4–5 and 192.10–193.2. A strong link between such passages and the illustrations is thus clear to see, and is not much weakened by a couple of instances where the text makes allusion (in the same terms) to illustrations which have not survived, if indeed they ever existed: see 170.9 (bracketed by Schneider) and 181.15–16.

A remaining complication must be acknowledged. The language used in these passages, notably the verbs παρακεῖσθαι and ὑποκεῖσθαι and the adverb ἐξῆς, is poorly suited to the procedure apparently described in the Preface, where the designs are paramount and the words are added to them (137.3–4),³⁹ but well suited to the opposite procedure, where it is the illustrations that are the inserts. On the other hand Ap.'s treatise itself, the core material of what has been transmitted under his name, is not merely a series of comments appended to his 'specimen-designs' (*a*, above) but an exposition in continuous Greek prose. As such, it cannot in its surviving form represent what 137.3–4 describes (as part of a process, covered in 137.1–138.12 as a whole, which is *already in the past*). Rather, it is an edited and recast version of that – into which later readers and users inserted graphic embellishments (and textual pointers to them) of their own.

37 This point – fundamental not only for Ap. but for other writers in the genre, such as Athenaeus Mechanicus – was established by Sackur, *Vitruv* 12–22, and emerged unscathed from the challenge to it by Lammert, 'Apollodoros'. Subsequent discussion, notably by Lendle, has followed and corroborated Sackur. For a recent statement see Sullivan 207.

38 A more precise sense has been claimed for 156.1–2, but see Comm. there.

39 See Comm. to πᾶσιν ὑπελάλησα.

(D) INTERPOLATIONS⁴⁰

Many ancient authors in many genres are of course transmitted in manuscripts that have undergone interpolation, often in the form of marginal glosses which by accident or design have crept into the text. Whitehead & Blyth, *Athenaeus* noted in that author a small amount of this, but nothing outside the normal range of tolerance. With Apollodorus the phenomenon occurs at a wholly different order of magnitude.

On occasion this can show itself in a conventional way, i. e. as material detectable, theoretically at least, by any reader who is following the argument and becomes aware of something wrong with it. In Apollodorus the best example of this occurs in the section on scaling-ladders (175.2ff). He begins by praising them – as easy to handle, easy to make, efficient, serviceable, effective – but before he can go on to the specifics of design a contrary, argumentative voice intrudes: No! (μᾶλλον), ladders are dangerous, completely subject to the power of the defenders, and so on. The outburst lasts for thirteen lines in all (175.4–176.1).

Interpolations as blatant as that, I reiterate, ought to be noticed by any reader who is paying proper attention; and editors, *a fortiori*, should flag them up as such (though that has not happened in this particular instance). With Ap., however, the problems are deep-seated; systemic, it could fairly be said. One manifestation of this, the matter of the manuscript illustrations and (I have argued) the textual allusions to them, has been dealt with in section C.ii.b, immediately above. But more significant, frankly, is the extent of substantive accretions to, and (again) throughout, the main body of the text.

(i) The “list of contents”

That something is amiss emerges as early as 138.18–139.4, the (rough) “list of contents” which, with brief comment appended (139.4–8), intervenes between the Preface (137.1–138.17) and the start of the exposition proper at 139.9. Opening with the phrase Χρεία ἐστὶ μηχανημάτων εἰς πολιορκίαν τούτων (‘There is a need of these devices for a siege’), Schneider printed it thus: Χρεία ἐστὶ μηχανημάτων εἰς πολιορκίαν τούτων· χελωνῶν κριοφόρων, χελωνῶν διορυκτριδων, χελωνῶν πρὸς τὰ κυλιόμενα βάρη, κριῶν εἴδη εὐπορίστων, †ἐπίβαθρα, κριώματα, φυλακὴ πρὸς τὰ ἐπαιρόμενα, σκόπος εἰς καταθεώρησιν τῶν ἔνδον, κλιμάκων εὐπορίστων, διορυγαὶ τειχῶν διαφόρων διάφοροι, διαβάσεις ἐπὶ τειχῶν ἀθρόαι ὑπὸ πολλῶν ὄχλων†; and his *apparatus criticus* claimed that comparison with *Par.Pol.* 199.11ff shows the obelized section to be incomplete and defective (‘unvollständig und fehlerhaft’).

40 What follows here, needless to say, is hugely and systematically indebted to Blyth’s original (1992) insights. Nevertheless I have presented my own preliminary assessment of them in Whitehead, ‘Fact and Fantasy’ 150–152 – advancing on some fronts and retreating on others – and that process is continued in greater detail here. See further in Comm. to the passages in question.

What *Par.Pol.* 199.11–200.5 Wescher (= 2.1–14 Sullivan) actually shows, besides expansion of the Apollodoran version, is comparable anacoluthon, i. e. interrupting with items in the nominative case what is otherwise a string of genitives all dependent on the opening *Χρεία ἐστί*. As Blyth notes, the Byzantine writer decided to mitigate the harshness and disruptiveness of this multiple anacoluthon by re-grouping all the genitives and all the nominatives separately, a point which in itself underlines the syntactical problem (in his eyes) of the version he had inherited.⁴¹ Thus Schneider's blanket obelization ought to have excluded *κλιμάκων εὐπορίστων* ('(there is a need) of ladders easily-procured'),⁴² which on any view relates to authentic Apollodoran material (beginning at 175.2–3, *κλίμακες ... εὐπόριστοι*). And conversely, given the general mess that this list has become, it is also reasonable to think that one other genitive element may have been squeezed out in the process: <*πύργων*> ('(there is a need) of towers'), in respect of the section beginning at 164.6.

Why do I (following Blyth) place such emphasis upon a grammatically clumsy menu? Because, quite simply, it creates the likelihood that the treatise as transmitted covers more topics than Ap. himself had. 138.18–139.4 constitute an invitation, in effect, to separate out his own proposals from later additions to them. And once one is attuned to the idea of discrete *additions to Ap.*'s original bill of fare, an associated but separate issue arises also: *elaborations of* his core ideas. Consequently, there is a need (as he himself might have put it) of independent criteria to put all this to the test.

(ii) Feasibilities

Fortunately, these criteria are established at the outset by Ap. himself, who could hardly have been clearer or more emphatic about what was required for a campaign like Trajan's in Dacia. See 137.8–10 ('having in each case adjusted for support and protection and safety, and intending as far as possible that everything is easily-procured, light, well-made, quickly assembled by the available manpower'; *ἐκάστω βοήθειαν καὶ φυλακὴν καὶ ἀσφάλειαν προσαρμόσας, καὶ ὡς ἐπὶ τὸ πλεῖστον εὐπόριστα, ἐλαφρά, εὐεργή, ταχέως ὑπὸ τῶν τυχόντων συντελούμενα*), 139.4–7 ('These to be prepared with easily-procured materials, various in their forms, as small as possible in their dimensions, light in their weights, capable of being quickly built by whatever craftsmen are available'; *Ταῦτα παρασκευάζεσθαι εὐπόριστα τῇ*

41 Blyth 134, expanded 157–158.

42 And included *κρίων εἶδη εὐπορίστων*? One would say so if *κρίων εὐπορίστων* depends on *εἶδη* ('types of easily-procured rams'), and Wescher 139 certainly believed that the anacoluthon began with this phrase. Yet neither Schneider nor Blyth agree with him, evidently, and (more important?) *Par.Pol.* 199.15–16 Wescher = 2.6 Sullivan glossed the phrase as *κρίων συνθέτων τε καὶ μονοξύλων* and included it among the genitives. I therefore construe '(there is a need ...) of rams in types easily-procured'. Likewise *Par.Pol.* 199.16–17 Wescher = 2.7–8 Sullivan, *κλιμάκων συνθέτων τε καὶ ἐλαφροτάτων εἶδη διάφορα*, should in my view mean '(there is a need ...) of ladders both composite and very light, in different types'.

ὑψηλῆ, ποικίλα τοῖς σχήμασιν, ἐλάχιστα τοῖς μέτροις, ἐλαφρῶ τοῖς βάρεσιν, ὑπὸ τυχόντων τεχνιτῶν ταχέως γίνεσθαι δυνάμενα), and the reiteration of such vocabulary throughout.

Blyth was therefore absolutely right to insist, as nobody before him had, that much of what is proffered by the treatise in its ultimately transmitted state ignores these requirements. Some of it is in any case redolent of abstract theorizing; it is unworkable *per se* (i.e. in terms of the laws of physics and engineering and the practicalities of military logistics). Blyth was unsparing in his scorn for such flights of fantasy wherever he encountered them. Personally I incline to a more charitable view. With particular reference to some of the designs attributed to Diades and others by Athenaeus Mechanicus and Vitruvius, Lendle insisted that different levels of practicability were an accepted feature of the *genus poliorceticum*;⁴³ and that is a valid approach to bring to an “armchair” writer like Athenaeus.⁴⁴ In the case of the present specimen of the genre, too, the cultural and intellectual insights provided by the more Heath Robinsonian offerings have a value of their own. Yet conceding this must never, I agree, obscure the vital fact that Ap.’s work was intended for real-life participants – whose ‘life’, indeed, would depend on many of them – in an actual campaign. Sander had taken the view that this fact damned the treatise as a whole, as evidence of a sad decline in Roman *Belagerungskunst* by this period,⁴⁵ but that is to throw out the baby – Ap.’s own material – with the bathwater.

Let us return at this point to the “list of contents” (subsection i, above) and consider the six nominative-case elements there: (1) ἐπίβαθρα (‘a boarding-bridge’), (2) κριώματα (‘mini-rams’), (3) φυλακὴ πρὸς τὰ ἐπαίρομενα (‘protection against things being raised up’), (4) σκοπὸς εἰς καταθεώρησιν τῶν ἔνδον (‘a lookout post for observing what is inside’), (5) διορυγαὶ τειχῶν διαφόρων διάφοροι (‘different diggings-through of different walls’), and (6) διαβάσεις ἐπὶ ποταμῶν⁴⁶ ἄθροαι ὑπὸ πολλῶν ὄχλων (‘concerted crossings at rivers by massed troops’). Two of them, nos. 4 and 6, plainly refer to longish, self-contained, discrete sections of the treatise: 161.9–164.4 and 189.1–193.5 respectively. No. 5 probably relates to 148.2–153.7, on brick and stone walls (even though digging through them has been rather lost sight of since 143.6–145.6). Nos. 1 and 2 are terms which never reappear in the treatise but which would seem nevertheless to pertain to two of the elaborations (168.1–170.2 and 170.10–172.5 respectively) of Ap.’s siege-tower. The awkwardly-phrased no. 3 therefore probably refers to another of them (φυλακὴ ... πρὸς τὸ μὴ καίεσθαι, 173.13–174.7).

What all six have in common, at any rate, is that by varying degrees of severity they all fail the feasibility test. They were not topics treated by Ap. himself.

Other topics were, assuredly, treated by him but later elaborated by others. The fine(r) detail of this is a matter of judgement on which not everyone will concur. I myself, while accepting wholeheartedly the general tenor of Blyth’s assessment of the phenomenon, have found myself unable to follow him in each and every par-

43 Lendle, *Schildkröten* 123.

44 See Whitehead & Blyth, *Athenaeus passim*.

45 Sander, ‘Verfall’.

46 For this reading, rather than τειχῶν, see Comm. ad loc.

ticular. Sometimes I go less far than he did in labelling text as interpolated; in one or two instances I suggest doing so where he did not. Issues of this kind are best discussed in the Commentary. Here it can suffice to say, summarily, that the main concentrations of this extra material come in elaborations to the rams (159.11–161.8), to the towers (168.1–174.7) and to the ladders (177.4–188.9), preceded by a miscellany of ideas which usually, again, complicate and (literally) weigh down Ap.’s creations but which also include other self-standing (and bizarre) creations: a hand-held drill or borer for piercing brick walls (148.1–150.5) and a flame-thrower to assist in the destruction of stone ones (152.6–153.7).

By the time the author of the *Par.Pol.* was reading what purported to be the Ἀπολλοδώρου Πολιορκητικά, therefore, it combined the features of (in Blyth’s distinction) ‘a coherent but unglamorous text written for a definite situation (which would be of little general interest, especially when the plans it accompanied had been lost)’ with those of ‘an agglomeration of imaginative but impractical contributions attached to the core in groups to provide an illustrated compendium of much wider interest’.⁴⁷ For the internal arrangement of the enlarged version see already above, under C.i. For Ap.’s original version, it is (setting aside 137.1–139.8) as follows:

Chapter 1: Protecting the attackers (139.9–142.4)

§ 1 The problem: avoiding objects propelled from elevated positions (139.9–13)

§ 2 Ditches and palisades (140.3–9)

§ 3 The wedge tortoise (140.9–141.4)

§ 4 The “grapevine”-tortoise (141.4–142.4)

Chapter 2: Excavation (143.6–146.2)

§ 1 The digger tortoise (143.6–144.3)

§ 2 The digging process (144.3–145.6)

§ 3 Supporting and firing the wall (145.6–146.2)

Chapter 3: Rams (153.8–159.8)

§ 1 The ram-tortoise (153.8–155.13)

§ 2 Support tortoises (155.13–156.1)

§ 3 Rams and their effects (157.7–158.9)

§ 4 Jointed ram-shafts (159.2–8)

Chapter 4: Towers (164.6–167.9)

Chapter 5: Ladders (175.2–177.3)

(iii) Language, style and tone

Ap. himself was no stylist – as he admits to the emperor at the end of the Preface (138.13–16): ‘If there is anything unclear in what I say in the descriptions applying to each apparatus, excuse me, master: the vocabulary of the science will be unfamil-

47 Blyth 142.

iar to everyday speech, the task involves complex theory, and I myself am perhaps rather weak with words'. A *captatio benevolentiae*, assuredly, but in this instance its modesty was nothing less than the truth.

Blyth believed that language and style was another important and objective differentiator between Ap.'s original material and that of the accretions. As I have already noted (Preface), there was much more on this topic in one of the early drafts of his *GRBS* 1992 article than the then editors of that journal found palatable, and the published version ultimately contained only the following précis:⁴⁸

The core text, in both the preface and the descriptions, is notable for its vigor, careful organization, and tact. The longer descriptions are divided into stages, each covered by a short paragraph that begins by picking up from its predecessor and is rounded off with a conclusion that marks the completion of the stage. Most of each description, whatever its length, is written in the indicative, shifting to the third-person imperative to draw attention to important points. The additions, on the other hand, are never articulated into stages, and with the exception of two passages whose spuriousness can be demonstrated on other grounds [161.9–164.4 and 187.10–188.2], never have the same mood pattern. [A note adds: 'Exceptions are the description of the scout-ladder (161.9–164.4), which attempts to imitate the style of the original without the articulation, and a short and rather sensible passage adding cross-braces to the pairs of ladders (187.11–188.2), which uses ὄτων with the future indicative and is probably later than the rest of the text'.] Nearly all are written in the third-person imperative, with indicatives, either present or future, towards the end of a description to describe the operation of the device. Indicatives can also be used for comments, or for variation. One, describing the flame-thrower (152.6–153.7), is written in the indicative throughout and in a tone different from any of the others.

An incidental aim of Blyth's in formulating this approach to the language and style of the treatise was to challenge Lendle's suggestion 'that it was produced by Apollodorus in his old age, reworking earlier notes'.⁴⁹ In my view the changed content alone is quite enough to falsify Lendle's scenario, one which would see Ap. abandoning all grip on pragmatic feasibility in favour of the abstract realms of the genre. So, with that point understood and set aside, I find that close reading of the expanded treatise, in the light not only of the above but also of Blyth's unpublished drafts which it subsumes, justifies this contrast in the qualified terms in which, very properly, it is couched. To be sure, the issue raised both in the footnote and in the final sentence quoted really concerns differences not between Ap. and his elaborators but between *more than one of the latter* – something I address in subsection iv below. Nevertheless it is, as Blyth asserts, demonstrable that Ap. himself *tended* to write in a particular way and that *on the whole* the later material does not mirror it (except, to a degree, in choice of vocabulary, which is another matter).

The matter of indicatives and (third-person) imperatives, picked out for emphasis by Blyth, is of course something which goes beyond grammar and syntax into tone of voice; what Blyth (above) called 'tact'. Even after the Preface is over and done with, Ap.'s own exposition needed to keep in mind the identity and status of his (notional) reader-in-chief. Instructions addressed to any superior, let alone the emperor himself, were obliged as far as possible to use the language and conven-

48 Blyth 143.

49 Blyth 143, paraphrasing Lendle, *Texte* xx.

tions of explanation – deferential didacticism – rather than those of command. Thus for instance Ap. employs not only δεῖ with an infinitive (139.10, 139.12–13, 141.3–4, 141.7, 143.6, 164.12–13) but an infinitive alone, with the δεῖ politely suppressed (140.3); and Blyth was perfectly right to point out that his predominant syntactical mode is the (present or future) indicative. It is also true, and important, to say that Ap.’s material never *begins* with third-person imperatives, and the impression of jussive peremptoriness that they might create. On the other hand, more of them come in *once an exposition is under way* than Blyth’s statement about them (above) would lead one to believe, and his contention that their purpose is (*sc.* always) to flag up a point of particular importance is, I fear, special pleading.⁵⁰

The point need not be abandoned but needs some reformulating. By and large the language and tone, as well as the content, of Ap.’s original treatise keeps in mind its imperial addressee and the expectation that he will be reading it (or at least having it read to him) before it is turned over to subordinates and engineers to implement. By contrast the later accretions ignore this original, “political” context. They treat the inherited text more as sets of instructions to builders, which could be extended and elaborated, often in third-person imperatives from the outset, in a brisker manner.

(iv) An ongoing debate

When did the enlarged version of the treatise take shape? That is a question very difficult to answer, even in the broad-brush currency of *termini ante quem* and *termini post quem*. It had, self-evidently, taken shape before the tenth century, when the author of the Byzantine *Par.Pol.* treated it as a single entity (and was utterly oblivious to the possibility of its being anything else). And apparently before him – at some indeterminable time between the reign of Justinian and the tenth century⁵¹ – another Byzantine military writer, possibly to be identified as Syrianus Magister, in any event the author of a Περὶ στρατηγίας, addressed (and heavily criticized) the scheme of ‘Apollodorus’ for transporting massed troops across narrow rivers on a large, elaborate raft which moves in a sort of zig-zag fashion and becomes an assault-bridge when it reaches the enemy bank. (The relevant passage of the Περὶ στρατηγίας is quoted in the Commentary, intro. to ch. 9.)

What this writer – whoever he was and whenever he wrote – was objecting to is without doubt 189.1–193.5 of the present treatise, the last of its post-Ap. accretions. But a complication arises, because his description of the raft includes one structural feature of it, a tower (πύργος), absent from the version that has come down to us. From 189.1–193.5 alone, therefore, it seems necessary to infer that the accretions joined the core text over a period of time, with some contributors *responding to each other* as well as to Ap. himself.

50 Blyth’s claim can arguably hold water with e. g. 144.8–11, 145.6–9, and 154.1–2; but see also 143.14–144.3, 145.10–12, 155.3–9, 159.3–7, 165.5–6.

51 See above at n. 7.

This phenomenon obviously sets limits on what can legitimately be deduced in respect of *termini ante* and *termini post* alike. Their scope cannot extend beyond the immediate contexts in which they are found. With that understood, the following meagre haul may be noted:

(1) The section on the raft, as indicated, existed in (at least) two versions, one before the *Περὶ στρατηγικῆς* – whenever that was – and one after it.

(2) Whoever was responsible for the last of the additions to the tower (173.13–174.7; or perhaps merely its end, 174.4–7?) betrayed, at 174.4–5, his unfamiliarity with the *siphon* type of fire-hose, widely used throughout the Roman Empire in Ap.’s day but (seemingly) confined to the Greek East by the time of Isidore of Seville in the seventh century. See *Comm. ad loc.*

(3) As noted in the subsection iii above (quotation from Blyth), whoever was responsible for the (worthwhile) suggestion that the ladders in Λ-shaped pairs be supported by “lockable” cross-ties (187.11–188.2) used ὄταν with the future indicative, a post-classical construction.

Beyond that, attempting to distinguish between different strata of the accretions becomes more subjective. Blyth’s comment on 152.6–153.7 has been quoted already (subsection iii above), and I endorse it. For my own suggestions in this area, proffered with varying degrees of confidence, see the *Comm.* to 149.2–3 (with 149.4), 150.6–152.5 intro., 153.6–7, 159.10–161.8 intro. (with 161.6–8), 163.3–164.4, 166.11–16, 172.6–7, 181.12–13 (with 181.16–182.3), 183.5–6, 192.7–8, and 193.2–5.

Precision in a matter of this kind is unattainable; the overall picture, nevertheless, is clear enough. Whoever initiated the process of elaborating Ap. initiated precisely that: a process. Those (modern) readers exclusively or primarily interested in its catalyst, the proposals of Apollodorus of Damascus to help Trajan in Dacia, will wish to have a treatment of them from which all later matter has been, if not expurgated, at least differentiated; and if what follows here is approached and used in that light I will (of course) have no complaints.

Yet the enlarged treatise, too, has important things to offer as a intellectual and cultural artefact, an illustration of the ancient notion – one of great longevity in an era when slow technological change meant that the military theory and practice of times past was slow to lose its relevance – of warfare as a stimulus to invention and ingenuity. It is in that context that we meet (and must on one level accept) fantastical contrivances like Hegetor’s ram-tortoise alongside the almost equally impressive but at least partly practical ones devised by Archimedes for the defence of his native Syracuse.⁵² It is in that context that Athenaeus *Mechanicus* would probably have been baffled by our wish to make a clearcut differentiation between his ideas and those of Diades. And it is in that context that the unknown individuals who annotated and elaborated Ap. were surely not, in their own eyes, forgers, hoaxers or mischief-makers but contributors to an ongoing debate.

52 For Hegetor see Whitehead & Blyth, *Athenaeus* 120–134 with Endnote 5. Archimedes at Syracuse: Polyb. 8.3–7; Plut. *Marcell.* 14–19.