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Too many Metrodoruses? The compiler of the ἀριθμητικά from AP XIV*

In book fourteen of the *Palatine Anthology* we find a number of arithmetic problems (1-4, 6f., 11-13, 48-51, 116-147), the vast majority provided with mathematical *scholia*¹. Most of the poems are attributed to a certain Metrodorus (116-146; cf. *lemma* to 116 Μητροδώρου ἐπιγράμματα ἀριθμητικά)², a shadowy figure whose original collection comprised also problems 2f., 6f. and possibly 11-13³. The identity of Metrodorus has received some attention, especially in late eighteenth- and nineteenth-century scholarship, but some crucial evidence has been repeatedly overlooked or misconstrued. Moreover, despite recent discussions, the question still remains unsettled, and it is unclear whether Metrodorus limited himself to compiling his collection or whether he also authored some poems⁴. Either way, a broad *terminus post quem* (or, less probably, *ad quem*) for his activity is provided by the epigram about the life-span of Diophantus (AP XIV 126), whose date is uncertain, but who is traditionally supposed to have lived in the mid- to late third century AD⁵. The

* I wish to thank my PhD supervisor, Isabel Ruffell, for reading and discussing an embryonic version of this article. I also gratefully acknowledge the anonymous referees, whose comments improved the clarity and cogency of the text. Any remaining errors and inconsistencies are, of course, entirely my own.

¹ The *scholia* are included among the ancient *testimonia* on Diophantus in the second volume of Tannery's edition of his *opera omnia* (Tannery 1895, 43-72). *Scholl.* 2f. have been re-edited by Kalbfleisch (1940, 28f.).

² Most, but not all (*pace* Berra 2008, 633 n. 7), of the poems that follow have the *lemma* ἄλλο (117-119, 121, 123-129, 131-134, 137f., 141-146). Geffcken (1932) and Page (1981, 71) took the *lemma* to AP XIV 116 to refer to the series 116-147. However, probl. 147, a variant of the λογιστικὸν πρόβλημα propounded by Homer in the *Certamen* (vv. 90-93, cf. Avezzù 1982, 44), does not appear to have been included in the collection, for, in addition to having its own *lemma* (Ὅμηρος Ἡσιόδῳ ἐρωτήσαντι, πόσον τὸ τῶν Ἑλλήνων πλῆθος τὸ κατὰ τῆς Ἰλίου στρατεῦσαν), it is accompanied by a non-Metrodorean, probably corrupt *scholium* (on which, see Auerbach 1929). AP XIV 7 is equipped with eight distinct *scholia*, of which seven are non-Metrodorean (pp. 47,5-50,25; cf. Tannery 1894a) and one Metrodorean (pp. 50,26-51,6). For Metrodorus as author of the *scholia*, see *infra*.

³ These problems were also included in the so-called collection of Socrates (AP XIV 1-64; cf. *lemma* to 1 Σωκράτους), whom Tannery (1895, XI), in the wake of Jacobs (1801, 335), identified with the ἐπιγραμμάτων ποιητής quoted by Diog. Laert. II 47. This identification has gained almost unanimous acceptance among scholars (for a more agnostic stance, cf. Buffière 1970, 36), although some have been overly pessimistic about the possibility of reconstructing the socio-historical profile of the poet (see Pontani 1981, 150; Grandolini 2006, 343; the chronological conjecture of Carcopino 1926, 254f. requires correction). On the origin of AP XIV, see Maltomini (2008, 190-195), with a helpful summary of earlier views. The original arrangement of Metrodorus' collection (which survives incomplete) has been reconstructed by Tannery (1894b, 60f.); summarised and partly corrected by Grandolini (2006, 341f.). Tannery based his reconstruction upon (1) the presence or absence of an independent numbering of the poems, (2) the thematic and/or arithmetic similarity between the problems, and (3) the investigation of the *scholia* (the absence of *scholl.* 144-146 suggested to him that the original core of the collection did not go beyond probl. 143). For a correspondence table between the Metrodorean sequencing of the epigrams and the consecutive numbering from the beginning of the book, see Buffière (1970, 35), albeit not without inaccuracies.

⁴ The former view, which has dominated modern scholarship, was first put forward by Tannery (1894b, 61). Earlier studies regarded Metrodorus as author of the collection (see Bachet de Méziriac 1621, 349; Jacobs 1801, 335; Zirkel 1853, 27), a view which has been revived by Buffière (1970, 37), Waltz, in Waltz-Soury (1974, 288 s.v. *Métrodoros*), and, more recently, by Guichard (2007, 104). So also Paton (1918, 25), who extends the attribution to all the ἀριθμητικά on stylistic grounds. Beckby (1968, 172), by contrast, regards the whole arithmetic *corpus* as anonymous. For the suggestion that Metrodorus may have authored some poems, see Loria (1914, 921f.), Monda (2012, 15 n. 9; 2016, 143) and Taub (2017, 39).

⁵ As is well known, the date of Diophantus is a complex and still unresolved question, which cannot be addressed here. Suffice it to remind that he cannot have lived before Hypsicles (ca. 190-120 BC), whom he quotes (*De polyg. num.* 470,27 and 472,20 Tannery), and after Theon of Alexandria (ca. 335-405 AD), by whom

sympathetic tone of the poem (cf. esp. vv. 7 and 9-10), as well as the precision of the information given by the epigrammatist (to wit, the duration of the different phases of Diophantus' life and some further details regarding the length of his son's life), led Hultsch (1905, 1052) to argue that the epigram must have been written by a close friend of Diophantus' soon after his death, and the idea has been taken up by Heath (1910, 3) and Beckby (1968, 538 n. 126). This seems rather naïve, especially when we consider that the demands of the metre may have played a role in the choice of the (fractional) numerals used.⁶ In other words, the validity of the argument depends on the trustworthiness of the poem as a historical source, and nothing prevents us from thinking that the epigram might have been based, at least in part, on fiction. Regardless of whether we take the poem as historically reliable⁷, and regardless of who wrote it, the *terminus post quem* it gives us tends to be confirmed by the references made to the mathematician in the *scholia* (cf. *infra* n. 24), which, although unattributed, are likely to have been composed by the same person who compiled the arithmetic collection⁸. This is so not only and not so much because, as argued by Tannery (1895, XII), Metrodorus qua compiler would have made his collection more accessible and more useful to readers, but, more importantly, because the scholiast, in referring or cross-referring to arithmetically similar problems⁹, shows awareness of the structure of the collection¹⁰. The present article, therefore, proceeds from the presupposition that Metrodorus

he is quoted (*Comm. Alm.* I 453,4 Rome). The traditional mid- to late third-century date is based on a disputed, corrupt passage of Michael Psellus (cf. Tannery 1895, 38,22-39,1). Knorr (1993) has attributed Hero of Alexandria's *Definitions* to Diophantus and thus suggested that he lived either in the early third century AD or in the first half of the first century AD (on the Psellus passage, cf. p. 184 with nn. *ad l.*). His attribution rests on two main grounds: (1) that both the *Definitions* and Diophantus' *Arithmetic* are dedicated to a Dionysius and (2) that the prefaces to these treatises show similarities in style and content. Both these grounds do not go far to justify the attribution because, as rightly observed by Neugebauer (1969, 178f.), (1) Dionysius was a very common name (in either case he is addressed with a different title) and (2) both authors represent to a certain extent a common 'Oriental' Hellenistic tradition. Furthermore, Knorr (1993, 186) is clearly wrong in his assertion that none of the other Heronian prefaces addresses didactic concerns (cf. *Aut.* 20,1 and 5 [pp. 404,12-14 and 408,22-410,6 Schmidt], *Bel.* 73,9-11 Marsden; Vitrac 2008, 543 n. 90, 549). For the suggestion that the preface to the *Definitions* is a later, Neoplatonic addition, see now Acerbi-Vitrac (2014, 511). More generally, on the attribution of the work, see Giardina (2003, 83-85).

⁶ On the fractional language of the poems, see Høyrup (1990, 297-299).

⁷ Tannery (1895, XII-XIII) essentially denies the historical value of the epigram, but his starting point is his identification of Metrodorus as an author of the fifth/sixth century AD. See *infra*.

⁸ The identification of Metrodorus as the author of the *scholia* was first suggested, somewhat tentatively, by Tannery (1894b, 61), and was then more vigorously re-asserted by the same scholar in Tannery (1895, XII). Since then, it has been unquestionably accepted by most scholars (see Heath 1921, II 442; Beckby 1968, 172; Pontani 1981, 150; Albani 2006, 839).

⁹ Although these references do not consistently follow the same lexico-syntactic pattern, they almost invariably point to one or more preceding problems (occasionally referred to by their original Metrodorean number). For the former type, see *scholl.* 6 (p. 46,14), 116 (p. 53,19f.), 129 (p. 62,23), 131 (p. 64,3), 138 (p. 68,21f.), 142 (p. 70,13); for the latter, see *scholl.* 3 (p. 45,16f.), 7 (p. 50,26f.), 117 (p. 54,12f.), 119 (p. 55,14f.), 122 (p. 58,6f.), 123 (p. 59,5f.), 124 (p. 59,25f.), 125 (p. 60,14f.), 126 (p. 61,4f.), 127 (p. 61,15f.), 140 (p. 69,19f.). The only exception is *schol.* 137 (= nr. 25 Metrodorus): τοῦτο ὁμοίον ἐστὶ τῷ α^ο [= probl. 2] καὶ τῷ β^ο [= probl. 116] καὶ τοῖς παραπλησίσις καὶ ὡσαύτως ἐκείνοις ἐφοδεύεται (p. 68,10f.).

¹⁰ I have undertaken a preliminary study of the original arrangement of Metrodorus' collection as part of my Master's thesis (Grillo 2013, 47-50), written under the supervision of Camillo Neri and Valentina Garulli at the University of Bologna and defended in November 2013. The results of this study, which was prompted by the growing interest in the arrangement of Hellenistic poetry books stimulated by the discovery of the Milan papyrus (cf. esp. Gutzwiller 1998), showed that poems tend to be grouped according to similar themes and solution methods (thematically unrelated poems tend to be appended, but the incompleteness of the collection discourages definitive conclusions). Such an arrangement, which is reminiscent of the organisation of prose treatises (cf. in this connection Krevans 2005, esp. 93-6; 2007, 144f.), finds correspondences in Diophantus'

both compiled and commented on his collection. Its primary aim is to remove certain misconceptions and misunderstandings that have arisen over the years about Metrodorus. The first part of the article provides a short overview of the *status quaestionis* on Metrodorus' identity, whereas the second part turns to scrutinise the evidence itself. For the sake of clarity and unambiguity, homonymous candidates will be assigned sequential numbers starting with 1 (highlighted in bold and given in square brackets before the name and/or descriptive phrase).

The debate over the identity of Metrodorus dates back to 1776, when Brunck (1776, 229) proposed that most ἀριθμητικά should be attributed to [1] the philosopher, statesman and rhetorician Metrodorus of Scepsis (ca. 145-70 BC)¹¹ and a few others to other (not better-specified) homonymous authors¹². A few years later, in 1799, the mathematician N.T. Reimer rightly rejected Brunck's chronologically impossible identification (albeit, as we shall see, upon erroneous grounds), thus identifying Metrodorus with [2] a grammarian and philosopher of the fourth century AD (cf. Anon. 1799, 898). This identification was later accepted, though in a distorted manner, by Gow (1884, 98), Paton (1918, 25) and Waltz (in Waltz-Soury 1974, 288 *s.v.* *Métrodoros*)¹³. It was not until 1895 that Tannery (1895, XII), followed by Heath (1921, II 442), Beckby (1968, 172) and Monda (2012, 15 n. 9; 2016, 143), opted for a different Metrodorus, [3] a Byzantine grammarian of the fifth/sixth century AD¹⁴. In sharp contrast to previous identification efforts, Buffière (1970, 37) took a sceptical stance: he wondered whether the name 'Metrodorus' was nothing more than a pseudonym, noting that it would be appropriate for an author of problems in verse¹⁵. Buffière's position, which seems to betray an overly pessimistic view of the possibility of identifying Metrodorus¹⁶, has gained very limited favour (cf. Grandolini 2006, 343), and more recent scholars, most notably Keyser–Irby–Massie (2008) and Taub (2017, 33), have tacitly identified our compiler with [4] the grammarian Metrodorus of Tralles (mid-sixth century AD), the second oldest brother of the famous mathematician and architect Anthemius¹⁷. Nevertheless, as far as can be seen, they have not provided any evidence to support this identification¹⁸.

Arithmetic, where problems are usually arranged according to arithmetic similarity and in ascending order of difficulty (cf. *Arithm. I praef.* [p. 16,2-6 Tannery]). Future work will examine the original arrangement of the collection and its connections with Diophantus' *Arithmetic* in more detail.

¹¹ Brunck did not substantiate his identification. On [1] Metrodorus of Scepsis, see, more recently, Marastoni (2007).

¹² The existence of other (later) authors was inferred from the fact that in *AP* XIV 129,1 the Ionian sea is referred to as πόρος Ἀδριακοῖο (cf. Brunck 1776, 230), which, in the scholar's opinion, indicates that the author of the epigram lived either slightly before or at the same time as Strabo. Note, however, that the adjective Ἀδριακός is not attested elsewhere before Antiphilus of Byzantium (ca. mid-first century AD; *AP* VI 257,2), and that such an extended appellation of the Ionian sea occurs in later writers too; see Strauch (2005, 915). On the interchangeable use of the terms Ἀδρία and Ἰόνιος, see Beaumont (1936, 203f.).

¹³ See *infra*. So also, apparently, Dübner (1872, 206 *ad AP* IX 360) and, with more hesitation, Calderón Dorda (1992, 16).

¹⁴ See also, more tentatively, Pontani (1981, 150). Singmaster (1984/1985, 11) wavers between the fourth and fifth centuries AD; but see Singmaster (2004 *s.v.* *Metrodorus*), where he gives a date of ca. 510 AD.

¹⁵ A more appropriate pseudonym would have been *Μετρόδορος. I am grateful to my PhD co-supervisor, Costas Panayotakis, for drawing my attention to this point.

¹⁶ Compare the scholar's attitude towards the epigrammist Socrates (*supra* n. 3).

¹⁷ [4] Metrodorus has been commonly called a grammarian clearly because Agath. V 6,4 (p. 171,9-12 Keydell) says: γέγονε [*scil.* Ἀνθέμιος] δὲ ἄριστος ἐν αὐτοῖς [*scil.* τοῖς τῶν μηχανοποιῶν] ἐς τὰ μάλιστα καὶ ἐς ἄκρον ἤκων τῆς μαθηματικῆς ἐπιστήμης, καθά που καὶ ἐν τοῖς καλουμένοις γραμματικοῖς ὁ ἀδελφὸς ὁ τούτου Μητρόδορος (που is probably used ironically; for instances of this usage, see Denniston, *GP*² 491f.). He may, however, have mastered several disciplines. For Metrodorus as a mathematician, see Baldwin (1982, 15), who

Apart from the ἀριθμητικά, two other epigrams, epideictic in nature, are preserved under the name ‘Metrodorus’: AP IX 360, a refutation of Posidippus 133 A.-B. (HE 3180-3189)¹⁹, and IX 712, a celebratory distich on a jurist named Joannes. The latter has been ascribed to [3] Metrodorus the Byzantine grammarian (cf. *lemma ad l. Μητροδώρου γραμματικοῦ ἐν Βυζαντίῳ*)²⁰, whereas the former still awaits definitive attribution²¹.

Scholars have disagreed as to how many Metrodoruses are represented in the *Anthology*. For instance, whereas Geffcken (1932) and Waltz (in Waltz-Soury 1974, 288 s.v. *Métrodoros*) have attributed all the epigrams to one and the same Metrodorus²², Page (1981, 71) and Albiani (2006) have been inclined to argue that the *lemmata* refer to three different authors. If this is the case, as seems probable, then perhaps we should rule out Tannery’s identification of Metrodorus with [3] the author of AP IX 712. The nature of the *scholia*, after all, suggests that Metrodorus was most likely not – or at least not only – a grammarian but a mathematician²³. Certainly, it is an unfortunate circumstance that the information we possess about [3] Metrodorus is as scant as it is. For all we know, he may as well have been a competent mathematician. But what about [2] Metrodorus the grammarian and philosopher?

Let us start our investigation into the identity of [2] Metrodorus by considering Reimer’s rejection of Brunck’s identification. Reimer argued that since the ἀριθμητικά require the same analytical treatment as Diophantus’ problems²⁴, Metrodorus (whom he

probably takes Μητρόδωρος as the subject of γέγονε (but the preceding context leaves no doubt that the understood subject is in fact Ἀνθέμιος).

¹⁸ These scholars cite Albiani (2006), who, however, does not discuss the identity of Metrodorus. They appear to have confused [3] Metrodorus the Byzantine grammarian (on whom, see *infra*) with [4] Metrodorus of Tralles. I, too, once made the same mistake.

¹⁹ See Guichard (2007) on the Posidippean epigram and its reception (for the Metrodorean refutation, cf. pp. 104-106).

²⁰ See Fabricius (1795, 482 s.v. *Metrodorus*). This identification rests on a comparison with three epitaphs dedicated to a Joannes (but not, as claimed by Fabricius, the same Joannes): AP VII 590 (Julian the Egyptian) for the grandson (cf. Martindale 1992, 665 s.v. *Ioannes* 63) of Hypatius, nephew of the emperor Anastasius I (491-518 AD), and VII 697f. (Christodorus of Coptus) for Joannes of Epidamnus (cf. Martindale 1980, 600f. s.v. *Ioannes* 29), prefect of Illiria since 479 AD. Waltz’s suggested identification of the jurist Joannes (cf. Martindale 1980, 616 s.v. *Ioannes* 78) with Joannes of Epidamnus (Waltz, in Waltz-Soury 1974, 146 n. 2) is tempting, given that both are celebrated for their just conduct. At any rate, it is very likely that [3] Metrodorus knew Christodorus’ poems; compare AP IX 712,1 αὐτὸν Ἰωάννην with VII 698,1 αὐτὸς Ἰωάννης.

²¹ The epigram has been variously attributed to [3] Metrodorus the Byzantine grammarian (cf. Fabricius 1795, 482 s.v. *Metrodorus*; more hesitantly, Martindale 1980, 762 s.v. *Metrodorus*), [1] Metrodorus of Scepsis (cf. Brunck 1776, 229) and the Epicurean philosopher Metrodorus of Lampsacus (cf. Gerhard 1904, 104). See also *infra*. According to Page (1981, 72), while the epigram cannot be dated, the occurrence of two proparoxytone hexameter-ends (vv. 6 ἐλαφρότερον, 7 νεότητες) provides a *terminus ante quem* for Metrodorus’ activity (i.e. before Agathias). Guichard (2007, 104f.), on metrical grounds, cautiously suggests a wide-ranging date between the first and fourth centuries AD.

²² Geffcken seems to think of [3] Metrodorus the Byzantine grammarian, for he refers to the *scholia* to the epigrams as edited by Tannery (1895). Against Waltz’s view, Laurens, in Waltz-Soury (1974, 184), who appears to vacillate between attributing AP IX 360 to Metrodorus of Lampsacus and attributing it to [1] Metrodorus of Scepsis (*supra* n. 21). Dübner (1872, 206, 242 *ad* AP IX 360 and 712, respectively) seems rather to think of two Metrodoruses, although he does not explicitly mention the ἀριθμητικά. The same omission occurs in Fabricius (1795, 482 s.v. *Metrodorus*).

²³ In addition to providing numerical results, the Metrodorean *scholia* illustrate in a quasi-algebraic fashion the steps involved in solving the problems. The remaining *scholia*, except the non-Metrodorean *scholl.* 7, give only numerical results (*scholl.* 1, 51, 147).

²⁴ The similarity between AP XIV 6, 128f., 139 and Dioph. *Arithm.* I 2 (pp. 16,24-18.6 Tannery) is explicitly noted in the *scholia* to the respective epigrams, 6 (p. 46,14f.), 128 (p. 62,2-4), 129 (p. 62,24f.) and 139 (p. 69,8f.). Other affinities have been traced by Heath (1921, II 442f.), who also compares probl. 49 and 51 with the so-called ἐπάνθημα of Thymaridas (*ap.* Iambl. *in Nic.* 62,18-68,26), possibly a Pythagorean of the first half

apparently regarded as author) ought to have lived after the third century AD (cf. Anon. 1799, 898). The starting point of Reimer's argument is obviously incorrect both because we still do not know how many poems, if any, are ascribable to Metrodorus and because similar Greek examples of mathematical poetry predate Diophantus by centuries: I am thinking in particular of Archimedes' *Cattle Problem*²⁵ and Eratosthenes' dedicatory epigram on the doubling of the cube (Eutoc. *in Arch. Sph. Cyl.* III 96,10-27 Heiberg-Stamatis = fr. 35 Pow.)²⁶. Indeed, some ἀριθμητικά recall the instructional games attributed to the Egyptians by Plat. *Leg.* 819a-c²⁷, and Heath (1921, II 442) has taken this passage as evidence that the origin of the genre dates back to at least the fifth century BC²⁸. What matters for our purposes here, however, is not the wider implications of Reimer's argument but its conclusions. Reimer proposed to identify Metrodorus with the «Grammatiker [*sic*] und Philosoph» (Anon. 1799, 898) who lived under Constantine the Great and of whom he found mention in such sources as Ammianus Marcellinus, Jerome, Socrates Scholasticus and Marianus Scotus²⁹. He clearly intended to refer to the philosopher of Persian origin (henceforth labelled [2a]) whose journey to and from India is (anecdotally) said to have occasioned the outbreak of the war between Rome and Persia (cf. Sym. Logoth. *Chron.* 88,4 [pp. 107,22-108,32 Wahlgren] and, slightly varied, Cedr. I 516,16-517,4 Bekker)³⁰. This, however, is not all. Reimer went on to

of the fourth century BC (for discussion and references, see Zhmud 2012, 130f.); see also Christianidis (1994, 239f.). On the ἀριθμητικά as requiring analytical treatment, see Gow (1884, 100).

²⁵ In line with much recent scholarship, I accept Archimedes' authorship of the *Cattle Problem*. The Archimedean attribution finds support in the structural analysis of Benson (2014, 173-178). Fraser (1972, I 407f.) neatly sums up the question of authenticity.

²⁶ Another pertinent example is the arithmetic αἶνος attributed to Euclid (*Anth. Gr. App.* III 7,2[2]) concerning the loads of grain carried by the mule and the donkey. Fraser (1972, II 588f. n. 247) argues against the poem's authenticity on the questionable ground that it has no justificatory *lemma*. Although undecided about the matter, Gow (1884, 99) takes the reference to geometry at v. 7 (ἄριστε γεωμετρίας ἐπίστορ) as an indication of antiquity. For further (Hellenistic) examples of mathematical poetry, see Fraser (1972, I 403f., 408) and Netz (2009, 196f.).

²⁷ See especially the problems dealing with apples (3, 48, 117-119) and bowls (12, 50). It is difficult to agree with Taub (2017, 41) that such poems deliberately allude to Plato. The relationship which the epigrams entertain with the Platonic passage is probably indirect, mediated through Proclus (*in Euc.* 40,5) and the anonymous scholiast to Plato's *Charmides* (*schol.* Plat. *Charm.* 165e = [Hero], *Def.* 135.5), who, drawing on Geminus, refer to the so-called 'apple-numbers' (μηλίται) and 'bowl-numbers' (φιαλίται). The scholiast, however, erroneously derives the term μηλίτης from μῆλον ('sheep', LSJ⁹ 1127 s.v. A), clearly because of homographic confusion with μήλον ('apple', LSJ⁹ 1127 s.v. B); see Heath (1921, I 14) and Klein (1968, 227 n. 7); *contra* Morrow (1960, 345), who prefers the scholiast's derivation (ἐπι ποίμνης) and takes Plato's words μήλων τέ τινων διανομαί (*Leg.* 819b) as referring to toy-sheep. Taub (2017, 45-6), who seems to prefer the latter interpretation (p. 45 n. 53), recognises the ambiguity (note that she adopts Bury's [1926, 105] translation of Plat. *Leg.* 819a-c, which features 'apples': p. 40) and argues that, since both terms are used with reference to calculational problems, there is an intertextual relationship between the Homeric and Hesiodic poems (?), Plato's *Laws*, the above-cited Neoplatonic authorities on logistic, the ἀριθμητικά, and the *Cattle Problem*. The Archimedean problem contains no reference to μῆλα (whether 'sheep' or 'apples'), and the only ἀριθμητικόν dealing with animals, *AP* XIV 4, concerns cattle (cf. v. 2 πληθὺν βουκολίων). For the ancient confusion between the two homographs, see the account of the mythographic variants of Heracles' twelfth labour (the retrieval of the golden apples of the Hesperides) by Diod. Sic. IV 26,2 and 27,1 (with Silver 1992, 63).

²⁸ Heath's view has been accepted by Benson (2014, 187); for a more radical stance, see Taub (2017, 40). The chronology of arithmetic epigram cannot be discussed here, but formal and stylistic considerations suggest that the genre fully developed in the Hellenistic period; see Grillo (forthcoming).

²⁹ Ammian. XXV 4,23, Hier. *Chron. s.a.* 330 (p. 232,36 Helm), Socr. Schol. *Hist.* I 19,3, Mar. Scot. *Chron. s.a.* 330 (drawing on Jerome). Socrates' direct source is Rufin. *Hist.* X 9.

³⁰ On the episode, see Warmington (1981), who, however, like most other scholars, ignores Symeon's earlier account (the anecdotal element has been put into a more balanced perspective by Matthews 1989, 498 n. 12). To the best of my knowledge, [2a] Metrodorus is nowhere referred to as a grammarian.

conflate the identity of [2a] Metrodorus with that of another philosopher of the same name (henceforth labelled [2b]), credited by Servius (*Georg.* I 229) with having written a five-book treatise on the zones in which he defended Vergil's knowledge of astronomy against earlier detractors (*sequentem rationem zonarum [= Verg. Georg. I 231-258] Metrodorus philosophus vix quinque expresserit libris, insertis tam astronomiae quam geometriae, sine cuius lineis haud facile zonarum deprehenditur ratio. idem etiam Metrodorus asserit, frustra culpari a plerisque Vergilium quasi ignarum astrologiae, cum eum constet operis lege compulsus, ut quaedam exciperet, quae obscura videntur ideo, quia a naturali ordine sunt remota*). The identification of the two figures, which had already been tentatively suggested by Jonsius (1659, 111), is implausible for several reasons. First, [2a] the better known of the two Metrodoruses is not credited with any astronomical and/or geometrical work, or, for that matter, with any other particular work. Although this could possibly be explained by the vagaries of textual transmission (Ammianus' account of the story of [2a] Metrodorus is now lost), the silence of our extant sources is suspicious enough to raise doubts. Second, the Byzantine accounts of the episode of [2a] Metrodorus' journey³¹ undermine his status as a philosopher by presenting him (Sym. Logoth. *Chron.* 88,4 [p. 107,23 Wahlgren], Cedr. I 516,17 Bekker) as προσποιησάμενος φιλοσοφεῖν³². Whether or not this is historically accurate, the coincidence of the labels is not enough to warrant identification. While it is true that [2a] Metrodorus the Persian 'philosopher' was sufficiently renowned in late antiquity³³, Servius may simply have used the term *philosophus* to categorise [2b] the lesser-known Metrodorus³⁴. Finally, and perhaps most importantly, if the latter Metrodorus is to be identified with his namesake (henceforth labelled [5]) mentioned in [Prob.] *Georg.* II 224f. (on the origin of the name of the river *Clanius*) and in *schol. Veron. Verg. Aen.* II 299 (on the location of Anchises' house), as first assumed by Mai (1818, XIX) and later cautiously suggested by Kroll (1940, 449)³⁵, he most probably belonged to the earliest *stratum* of

³¹ Warmington (1981, 467) has suggested that the ultimate source for the episode must have been Eunapius, but this conjecture raises difficulties which have not yet been completely solved (see Goulet 2005a). Symeon's and Cedrenus' accounts, with their *verbatim* coincidences, presuppose a common source. The heavily revised version of Symeon's work known as Ps.-Symeon's *Chronicon* (late tenth century AD; *Par. gr.* 1712, ff. 18^v-272^r), which was extensively used by Cedrenus for the period up to 813 AD, does not seem to have been the latter's source for the episode (the section of the manuscript devoted to the reign of Constantine the Great does not include the Metrodorus story; for the text, cf. Halkin 1959/1960, 11-27), although we know that Cedrenus may at times have had at his disposal a fuller text than ours (see Treadgold 2013, 218). For the suggestion that Cedrenus derived the episode either from the historian Gelasius of Caesarea (late fourth century AD) or from a Greek version of Rufinus, see now Scott (2017, 28).

³² For προσποιεῖσθαι with inf. meaning 'pretend to', 'profess to', cf. e.g. LSJ⁹ 1524 s.v. II.4.

³³ See Mosshammer (2008, 199), where he confutes the identification of [2a] Metrodorus with a homonymous calendrical calculator (cf. Pagi 1689, VI; but see already de Valois 1681, 428 n. d), to whom Photius (*Bibl.* 115, 91a 25-33) attributes a 532-year Easter table based on a 19-year lunar cycle. On the latter Metrodorus (of unknown date), see also Tzamalikos (2012, 623).

³⁴ Servius' use of the term may be compared with the rather casual usage found in Pliny and, to a much greater extent, in Apuleius and Aulus Gellius (on which, see Hine 2016, 21-23, 26-28; see also the remark in Kroll 1940, 449). In addition to *Georg.* I 229, Servius uses *philosophus* in appositive position only two other times, once of the pre-Socratic philosopher Pherecydes of Syros (*Aen.* III 76), and once of Plotinus (*Aen.* IX 182). At *Aen.* VI 668 Plato is implicitly recognised as the philosopher *par excellence*, whereas another passage (*Aen.* VI 733) mentions Varro on a par with philosophers (*Varro et omnes philosophi*). Other Servian references include *Aen.* I 741 (Heracles), *Ecl.* 3,40 (presumably Eudoxus) and *Georg.* I 67 (Cicero). For the widespread (academic) use of professional labels, see Servius' comment on *Ecl.* 3,16 *plerumque etiam per officia designantur, ut si dicas 'philosophus', nomen ipsum ponis, si autem velis dicere 'sapientiae operam dans', personam exprimes per officium*.

³⁵ This identification has been silently accepted by most subsequent scholars, although at least one of them (Thibodeau 2011, 236) evidently ignores *schol. Veron. Verg. Aen.* II 299 (Goulet 2005b does not address

Vergilian exegesis³⁶, namely that of the first and second centuries AD, and which comprised bilingual scholars familiar with the Hellenistic exegetical tradition³⁷. Needless to say, such an identification (which is not impossible, but doubtful) would make [2a-2b + 5] the two Metrodoruses chronologically incompatible³⁸.

When, in 1814, Jacobs (1814, 917f.) wrote his entry on Metrodorus, he cited both Brunck's and Reimer's identifications³⁹. It appears, however, that Jacobs filtered out (or ignored) what he probably deemed irrelevant information, for he labelled [2] Reimer's Metrodorus as «quendam Grammaticum [...] qui plura de Astronomia et Geometria scripsit» (pp. 917f.). In this way, [2] Metrodorus ceased to be a philosopher (Jacobs' Metrodorus is henceforth labelled [2bis]). When Tannery edited the *scholia*, he discussed again, and more fully, the identity of Metrodorus (Tannery 1895, XII). The scholar was well aware of the onomastic confusion between various Metrodoruses («miram confusionem haud tacere possum»). So, after mentioning [2bis] Jacobs' Metrodorus, he listed three other Metrodoruses, the last of whom he selected as his preferred choice⁴⁰. What strikes one as quite surprising is that the other two individuals cited by Tannery are the «philosophus e Persis oriundus, cuius mendacia Constantinum et Saporem in bellum implicuerunt (de quo Valesium ad Amm. Marcell. consulas)» and the «mathematicus a Servio Plinio Ptolemaeoque (in libello de Apparitionibus) memoratus»⁴¹. It becomes immediately clear that Tannery did not read his source carefully. Jacobs (1814, 918) had already cited Adrien de Valois'

the issue). Heyne (1832, 747), followed by Suringar (1834, 237) and Teuber (1843, 50), adds Serv. auct. *Georg.* II 336 (cf. also Baschera 1999, 102 app. *ad schol.* 299), where [2b?] Metrodorus, as well as Plato and Varro, is credited with the opinion that the world has neither origin nor end (the identification of the latter Metrodorus with [2b] the cosmographer is viewed sceptically by Goulet 2005b).

³⁶ A position held by Mai (1818, XIX). Suringar's (1834, 237) claim that all the (commentarial) passages that mention [2b + 5] Metrodorus, with the exception of *schol. Veron. Verg. Aen.* II 299, provide no evidence in favour of Mai's identification of [2b + 5] Metrodorus as a Vergilian commentator seems excessive. Quite the contrary, the derivation of the term *Clanius* from the name of a giant in Ps.-Probus supports the conjecture, as does, at least to a limited extent, [2b] Metrodorus' explicit defense of Vergil (Suringar erroneously cites Serv. *Georg.* I 229 as I 236).

³⁷ See Cameron (2004, 84f.), with further bibliography.

³⁸ Likewise, it would conclusively disprove the identification of [2b] Servius' Metrodorus with the homonymous parapegmatist mentioned several times in Ptolemy's *Phaseis* and in Joannes Lydus' *De Mensibus* (and only once in *Ost.* 158,2 Wachsmuth): see Thibodeau (2011, 236, 288 n. 79), citing Keyser (2008a), where such identification is misattributed to Goulet (2005b); but see also *infra* n. 41. I am strongly inclined to reject this identification not because, as Kroll (1940, 449) argued, [2b] Servius' Metrodorus will have written in Latin (indeed, we do not know what language his treatise was written in), but because the parapegmatist probably lived before the Augustan period (so Kroll 1940, 449; Keyser 2008b tentatively suggests a date of approximately 150-50 BC). [2b] Metrodorus the cosmographer must have lived not before the time of Vergil, and certainly after the publication of the *Georgics* (pace Keyser 2008a, who gives a *terminus post quem* of 10 AD), probably in 29 BC (on the date of publication, see Harrison 2007, 137).

³⁹ Jacobs does not appear to have preferred Reimer's identification, as implied by Gow (1884, 98) and stated by Buffière (1970, 36).

⁴⁰ Tannery did not explain his preference. He was most likely persuaded by the fact that, according to Fabricius (1795, 482 s.v. *Metrodorus*), [3] Metrodorus the Byzantine grammarian had authored both *AP* IX 360 and IX 712 (cf. *supra* nn. 20f.): «alius [*scil.* Metrodorus] grammaticus noster, quem Fabricius, haud spernendo argumento nixus, Anastasio et Iustino imperatoribus supparem fuisse statuit».

⁴¹ Tannery obviously believed that [2b] Metrodorus the cosmographer and Metrodorus the parapegmatist were the same person (cf. *supra* n. 38). It is not entirely clear which passage of the *Naturalis Historia* Tannery is referring to. The most likely candidate is *Plin. Nat.* XXXV 135, where we find mention of a Metrodorus *pictor idemque philosophus* (second half of the second century BC). Croisille (1985, 242) takes him to be the same person as the Metrodorus *qui de architectonice scripsit*, one of Pliny's sources for the same book (*Nat.* I 35 *ind. auct.*); but see Irby-Massie (2008), who suggests a date of 20 BC-77 AD for the latter Metrodorus.

commentary on Ammianus, and had done so with reference to [2] Reimer’s Metrodorus, who was not a grammarian but rather a philosopher (indeed, twice a philosopher, although in the case of [2a] the Persian Metrodorus doubts arise owing to our Byzantine testimonies). Moreover, Tannery, who evidently did not have first-hand knowledge of Reimer’s speculations, could not possibly know that the figures of [2a] Metrodorus the Persian ‘philosopher’ and [2b] Metrodorus the cosmographer served as the basis for the ‘creation’ of [2bis] the fourth-century grammarian. Thus, Jacobs’ omission of salient details sanctioned the existence of [2bis] Metrodorus, the fourth-century grammarian who actually never existed. Tannery (and Jacobs before him) failed to notice Reimer’s conflation⁴², and so included in his list both [2a] Metrodorus the philosopher and [2b] Metrodorus the mathematician (causing further overlaps in the latter case; cf. *supra* n. 41). Now more than ever, Tannery’s remark seems (ironically) appropriate. Very great confusion indeed!

Subsequent scholars relied either on Tannery’s edition of the *scholia* or on Jacobs’ *Animadversiones*, and so [2bis] the pseudo-historical figure of the fourth-century grammarian has been kept alive until today⁴³. Who, then, is Metrodorus? This question cannot be easily answered. It is complicated by at least three considerations. First, problems of authorship concerning the arithmetic *corpus* have not yet been comprehensively investigated. Second, apart from *AP* XIV 116-146, only two epigrams survive under the name ‘Metrodorus’, and, most regrettably, we know nothing or almost nothing about their authors. Third, despite recent scholarship to the contrary⁴⁴, the identification of [2b] Servius’ Metrodorus with [5] his more obscure namesake is far from certain, and we cannot exclude the possibility that we may be dealing with two different historical figures (the lack of sufficient information about [5] the Vergilian commentator, if indeed Metrodorus was one, prevents us from giving his candidacy full and serious consideration). Tannery (1895, XII) believed that the *scholia* were composed long before Constantine Cephalas. If we are to trust him, then [2b] Metrodorus the cosmographer and [4] Metrodorus of Tralles are both plausible candidates for their authorship. The former, if not [2b + 5] a polymathic Vergilian commentator, was a mathematician and astronomer who also dabbled in poetry – the statement that Vergil’s selective treatment of astronomical matters was motivated by “the principles of his work” (*operis lege*) clearly betokens Metrodorus’ awareness of poetic conventions (cf. Thibodeau 2011, 237). On the other hand, we learn from Agathias (*Hist.* V 6,5f. [p. 171,18-25 Keydell]) that the latter was invited, together with his brother Anthemius, to Byzantium, where he “gave proof of his excellency [...] by instructing many offspring of noble birth and bestowing knowledge in such a delightful way that he also instilled in them all some portion of yearning for eloquence” (τῆς ἰδίας ἀρετῆς γνωρίσματα παρεστήσατο ... νέους πολλοὺς τῶν εὐπατριδῶν ἐκπαιδεύσας καὶ τῆς παγκάλῃς ἐκείνης μεταδοὺς διδασκαλίας, ὡς καὶ πόθον ἅπασι τὸ μέρος ἐμβαλεῖν τῆς ἀμφὶ τοὺς λόγους ἐπιμελείας, 22-25). If we admit, with Tannery (1881, 286) and Grandolini (2006, 352), that the ἀριθμητικά were used in ancient schools⁴⁵, then we can envisage [4] Metrodorus compiling and annotating his collection with didactic

⁴² As also did Zirkel (1853, 27).

⁴³ [2bis] Jacobs’ Metrodorus has been further conflated with Metrodorus of Byzantium (see Loria 1914, 921 with n. 4, citing Susemihl 1891, 851), an ichthyologist of the second/first century BC (Ael. *NA epil.*), and with [3] the author of *AP* IX 712 (see Buffière 1970, 36).

⁴⁴ See Keyser (2008a) and Thibodeau (2011, 236).

⁴⁵ Grandolini’s argument rests on inconclusive evidence (the Cephalan preface to *AP* XIV). The poems were probably received by, and often intended for, multiple audiences, including advanced students. In some cases, we seem to deal with rhetorical exercises; for discussion, see Grillo (forthcoming).

purposes in mind. In undertaking such an enterprise, he might have benefited from the assistance of Anthemius, whose mathematical expertise was recognised during his lifetime⁴⁶.

The identity of Metrodorus, the compiler of the more substantial collection of ἀριθμητικά from *AP* XIV, is not nearly as certain as recent studies lead us to believe. The present article has reviewed previous scholarship on the question and devoted particular attention to the earliest attempts at identification and contextualisation. Its main contribution has been to show that one of the most commonly accepted identifications ultimately depends on an unwarranted conflation between two different Metrodoruses. The erroneous identification by Reimer, too long overlooked by modern scholars, has been distorted through omission of significant information (Jacobs). This distortion led to a multiplication of homonyms and to a number of further overlaps and/or conflations (phenomena most visible in Tannery's edition of the *scholia*). The unpacking of Reimer's conflation has also, rather incidentally, opened up new possibilities of identification. While our question remains unanswered, we now, at least, have a clearer picture of who Metrodorus could be.

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⁴⁶ See Agathias' testimony (*supra* n. 17) and Eutocius' affectionate dedication to Anthemius of his commentaries on Apollonius' *Conica* (II 168,5, 290,2f., 314,2, 354,2 Heiberg), with Cameron (1990, 121) and Kourelis-Bernard (2008, 90). Cameron (1990, 122) remarks that «there is no evidence that he took pupils or edited texts».

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