

The Anonymus Arithmologicus and its philosophical background

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1. Early studies in the Anonymus

An anonymous Neopythagorean treatise devoted to the marvellous properties of the first ten numbers (further Anonymus) undoubtedly belongs to the most influential but understudied pseudo-Pythagorean works. Not only was it the originator of the genre of arithmological writings which were compiled till the end of Antiquity, it also has left numerous traces in philosophical, theological and encyclopaedic literature in Greek and Latin. Being once a subject of intensive research, since the early 1930s the remains of the Anonymus have not attracted special attention, therefore a concise overview of earlier studies seems quite fitting.

As this is often the case, at the beginning this issue has been dealt with only tangentially. When Alfred Schmekel discussed in his influential book on Middle Stoicism a division of Neopythagoreanism that combined Platonism with Stoicism, he leaned towards seeing its origin in what he considered Posidonius' (*ca* 135 – *ca* 50 BC) commentary on Plato's *Timaeus* preserved in Sextus Empiricus.¹ To reconstruct the relevant part of the commentary he compared four texts on the wonderful properties of numbers, namely, Varro (in Censorinus and Aulus Gellius), Macrobius, Theon of Smyrna and Philo of Alexandria. Printed in parallel columns, they clearly showed traces of common origin, and because two of them, Macrobius and Theon, mentioned Plato's *Timaeus*, Schmekel identified this source with Posidonius' commentary on this dialogue to which Sextus Empiricus allegedly referred.²

Schmekel has not yet used the word 'arithmology' that first appeared in its normative meaning in Arman Delatte's 1915 book on the Pythagorean literature.³ According to Delatte, arithmology has been created by the ancient Pythagoreans, whereas the direct source of the later arithmological lore was "un grand Recueil d'époque alexandrine, qui fut utilisé par une foule d'auteurs de la decadence", among them Philo, Aetius, Sextus Empiricus, Theon, Hippolytus, Macrobius. Having dated this Recueil in the third–second centuries BC,⁴ Delatte refrained from analysing it, being more interested in the preserved arithmological texts, some of which he first published, while others thoroughly studied.

I would like to thank Constantinos Macris, Joel Kalvesmaki and Federico Petrucci for their helpful suggestions on an earlier version of this article and Tobin Auber for improving my English.

¹ Schmekel A. *Die Philosophie der mittleren Stoa*. Berlin, 1892, 403ff. Schmekel relied on Sext. Emp. *Adv. phys.* 2.281f., *Adv. math.* 4.2–9 and especially *Adv. math.* 7.92f.

² φησὶν ὁ Ποσειδώνιος τὸν Πλάτωνος Τίμαιον ἐξηγούμενος (*Adv. math.* 7.93 = F 85 E-K); cf. Theon. 103.16–104.1 = F 291 E-K. Schmekel. *Op. cit.*, 424f.

³ Delatte A. *Études sur la littérature pythagoricienne*. Paris, 1915, 139. He mentioned Schmekel only once, in a footnote denying the identification of Posidonius with the source of Pythagorean arithmology.

⁴ *Ibid.*, 139, 140 and n. 1, 232f., 253 and n. 2.

The next and decisive step was taken by Frank Robbins,⁵ who employed the same method of parallel columns as Schmekel did but in a more general and efficient way. To begin with, he analysed more systematically a wide range of sources on which Delatte drew, namely, Varro, Philo, Moderatus, Nicomachus, Theon, Sextus Empiricus, Anatolius, Ps.-Iamblichus' *Theology of Arithmetic*, Chalcidius, Macrobius, Hierocles of Alexandria, Martianus Capella, Favonius Eulogius, and John Lydus. Further, he persuasively showed that Posidonius was not the original source of arithmology. The Stoic, so Robbins, only quoted this source, which is to be identified with Delatte's Hellenistic arithmological collection and dated shortly before Posidonius, in the last part of the second century BC.⁶ This Pythagorean arithmology consisted of an introduction and ten chapters dealing with the numbers of the decade; such structure is fully preserved in Anatolius' short work *On Decade* and Ps.-Iamblichus' *Theology of Arithmetic* and is presupposed in most other arithmological works.⁷ The original Pythagorean treatise, though widely read and quoted in all later arithmologies, has been lost; neither its title, nor the name of its author are known. At the end of his second paper on the topic Robbins published a diagram showing dependence of the arithmological writings studied by him from the *Urquelle* S. He divided all such sources into two families, Philonian and Theonian, the privileged witnesses of the first being Philo and Lydus (the latter very close to but not directly dependent on Philo), because they preserved the richest textual material from the original treatise, as well as Anatolius and Martianus Capella. The second, Theonian family, included Varro, Theon, Nicomachus and Ps.-Iamblichus and was regarded by Robbins as dependent on Posidonius as an intermediary source.

Simultaneously with Robbins Karl Reinhardt published his famous book on Posidonius, where he scorned Schmekel's idea that the Stoic wrote a special commentary on *Timaeus* and suggested another solution: the Pythagorean part of Sextus Empiricus' exposé of theories of criterion (*Adv. math.* 7.92–108) comes from Posidonius' work *On the Criterion* and presents not so much Pythagorean as his own views.⁸ The two theories of the origin of Sextus' accounts of Pythagorean number philosophy were debated most of the previous century;⁹ both still have

⁵ Robbins F. E. Posidonius and the Sources of Pythagorean Arithmology, *CPhil* 15 (1920) 309–322. Robbins F. E. The Tradition of Greek Arithmology, *CPhil* 16 (1921) 97–123. See also Robbins F. E. Arithmetic in Philo Judaeus, *CPhil* 26 (1931) 345–361.

⁶ Robbins. Tradition, 97f.

⁷ Robbins. Posidonius, 320.

⁸ Reinhardt K. *Poseidonius*. Berlin, 1921, 414ff., 416 n. 4, 419f.

⁹ See below, 55 n. 12. The last serious but unsuccessful attempts to revive Schmekel's thesis were made by Burkert W. *Lore and Science in Ancient Pythagoreanism*. Cambridge (Mass.), 1972, 54ff. (German original 1962) and Mansfeld J. *The Pseudo-Hippocratic Tract ΠΕΡΙ 'ΕΒΔΟΜΑΔΩΝ* Ch. 1–11 and *Greek Philosophy*. Assen, 1971, ch. 6. Cf. below, n. 30, 33.

followers, though Schmekel's theory is now more widely rejected as outdated than Reinhardt's one.¹⁰

The last significant contribution to the study of the common ancestor of arithmology as a genre has been made by Karl Staehle in his doctoral dissertation that aimed to give the most precise picture of Philo's lost treatise *Περὶ ἀριθμῶν*.¹¹ Because Philo several times refers to *Περὶ ἀριθμῶν* as his most detailed exposition of arithmological subjects, Staehle related to this treatise all arithmological passages to be found in Philo's oeuvre, in the first hand in *De opificio mundi*, and published them. Inside of chapters devoted to the first ten numbers Staehle organized material by individual topics, such as that the Monad is the beginning of number (5a), equal by its nature to God and *nous* (4a-c, h), that it generates all the other numbers but is not generated in itself (5e), that the Dyad 'flows' from the Monad (8) and is the first even number (9), and so on. Each numbered topic was accompanied by an extensive collection of parallels from the authors considered by Delatte and Robbins, among them the Aristotelian commentators Alexander, Asclepius, and Syrianus. In his introduction Staehle pointed out to the Early Academy – and not the Pythagorean school, as it was usual before and after him – as to the real birth place of arithmology and to Plato, Speusippus and Xenocrates as its creators.¹² The arithmological compilation on which Philo relied belonged to the Platonic tradition and has been written at the turn of the second and first centuries BC, the time, when interest in Pythagoreanism aroused again and many Neopythagorean apocrypha appeared.¹³ Depending much on Robbins, Staehle disagreed with him on several important issues. Thus, he believed that Robbins overestimated Posidonius' role in transmission of the arithmological tradition, for, though the Stoic did use in *On the Criterion* the original arithmological source, his presence in Sextus Empiricus is limited only to *Adv. math.* 7.92–93.¹⁴ Staehle also disputed Robbins' division of the sources into two separate groups and his idea that the Anonymus circulated in different versions and abridgements.¹⁵

Some Staehle's particular conclusions, for example, Lydus' reliance on Philo, were rightly challenged¹⁶ yet on the whole his study in Philo's arithmology and its source was accepted and

¹⁰ Though Sedley follows Reinhardt's thesis, he does not even mention arithmology: Sedley D. Sextus Empiricus and the Atomist Criteria of Truth, *Elenchos* 13 (1992) 21-56, at 30ff.

¹¹ Staehle K. *Die Zahlenmystik bei Philon von Alexandria*. Leipzig; Berlin, 1931.

¹² *Ibid.*, 4-7.

¹³ *Ibid.* 15-16.

¹⁴ *Ibid.*, 13-15. Stoic influence on this source predates Posidonius.

¹⁵ *Ibid.* 17-18. Cf., however: Mansfeld. *The Pseudo-Hippocratic Tract*, 172ff.

¹⁶ Boyancé P. *Études Philoniennes*, REG 76 (1963) 64–110, at 91f.; Burkert. *Op. cit.*, 249 n. 51; Huffman C. A. *Philolaus of Croton. Pythagorean and Presocratic*. Cambridge, 1993, 334-339; see already 44 B 20 DK. Runia D. *Philo of Alexandria. On the Creation of the Cosmos according to Moses*. Leiden, 2001, 298f., 303 returns to Staehle's position concerning Lydus, without sufficient ground, in my view.

endorsed by the subsequent scholarship.¹⁷ But since Philonian scholars focused on the usage of arithmology as Philo's exegetical tool, the study of its principal source has not been further advanced. The Anonymus ceased to attract scholars' attention and no special studies of this text appeared. In Holger Thesleff's collection of the pseudo-Pythagorean writings 'arithmology' though presented in the subject index¹⁸ refers to the arithmological passages or fragments from the other works ascribed to Pythagoras and the Pythagoreans; the Anonymus itself is not even mentioned. David Runia in his commentary on Philo's *De opificio mundi* offered the most judicious and helpful analysis of arithmological parallels to Philo, starting from late Hellenism. He, however, questioned Staehle's method of reconstruction of Περὶ ἀριθμῶν as being "totally flawed" (though Staehle did *not* attempt to reconstruct this work) and hypothesized that Philo took over his material from several already existing arithmological collections.¹⁹ In his recent book on number symbolism in Platonism and early Christianity Joel Kalvesmaki examines several important Neopythagorean texts of the first century BC yet passes the Anonymus over in silence, returning in fact to the view of Schmekel: "The tradition of handbooks of number symbolism began possibly with Posidonius".²⁰ This is an obvious step backward, because by the end of the previous century at the latest it became clear that no evidence of Posidonius' commentary on *Timaeus* exists and that vicinity of his citation with Neopythagorean number doctrines in Sextus Empiricus cannot prove the Stoic's role as the transmitter let alone the originator of arithmology.²¹

2. The remains of the Anonymus

The revival of the interest in the Pythagorean pseudepigrapha provides an opportunity to go beyond Thesleff's collection and highlight the crucial role of the Anonymus in formation of the arithmological genre. But beforehand we have to delineate the limits of our knowledge. The

¹⁷ Boyancé. Op. cit., 83f.; Collins A. Y. Numerical Symbolism in Jewish and Early Christian Apocalyptic Literature, *ANRW* II.21 (1984) 1256f.; Moering H. Arithmology as an Exegetical Tool in the Writings of Philo of Alexandria, J. P. Kenney (ed.) *The School of Moses: Studies in Philo and Hellenistic Religion*. Atlanta, 1995, 141-176; Kraft R. A. *Exploring the Scripturesque. Jewish Texts and their Christian Contexts* Leiden, 2009. Ch. 13; Wyss B. Philon und die Pentas. Arithmologie als exegetische Methode, Feldmeier R. et al. (eds.). *Alexandria*. Tübingen, 2013, 361-379.

¹⁸ Thesleff H. *The Pythagorean Texts of the Hellenistic Period*. Åbo, 1965, Index IX, 1: Mathematics in general, arithmology.

¹⁹ He criticized Robbins (and thus Staehle) for "excessive use of the method of the *Einquellenhypothese*": Runia. *Philo*, 27-28, cf. 264. "Arithmological handbooks" (191). On this, see below, 5.

²⁰ Kalvesmaki J. *The Theology of Arithmetic. Number Symbolism in Platonism and Early Christianity*. Cambridge (Mass.), 2013, 9 n. 4. This view is wrongly ascribed to Robbins.

²¹ *Adv. Math.* 7.93 = F 85 E-K. See e.g. Edelstein L., Kidd I. G., eds. *Posidonius. Fragments*. Vol. 1. Cambridge, 1972, 337ff. Long A. The eclectic Pythagoreanism of Alexander Polyhistor, in Schofield, ed. *Aristotle*, 139-159, at 145: "I. G. Kidd (in his commentary on Posidonius) has convincingly shown that there is no reason to extend Posidonius' presence in Sextus' text beyond that single statement". Cf. above, n. 9 and below, n. 55.

popularity of the treatise allowed it to produce copious offspring, yet none of those who directly or indirectly made use of this nameless and untitled work felt obliged to explicitly refer to it or to quote literally. Consequently, whereas most of the Anonymous' topics are reconstructable, there is very little that can be legitimately presented as a fragment of this work. The longest paraphrases – surely, with an additional material due to Philo's verbosity – are preserved in his lost work *On Numbers*, many fragments of which are contained in his other writings. The seven occupies most space, the four is treated much shorter, the six still shorter, while eight and nine are just touched upon. In cases when there are textual parallels between Philo and Lydus we can come closer to the original text, but since Lydus' catalogue-like treatment, on the one hand, is much denser than Philo's, and on the other, covers many topics which Philo omits, the possibilities to reconstruct the text, and not just thoughts, are very limited. Varro's fragments deal with several chosen numbers, mostly with seven. Anatolius presents a complete but very short arithmology, his longest chapter, on the number seven, takes only three pages against forty paragraphs in Philo's *De opificio mundi*. Extracts from Nicomachus' lost *Theology of Arithmetic*, preserved in Ps.-Iamblichus' homonymous treatise, textually are farther from the Anonymus and contain many late layers. To a large extent this also applies to Theon's text. Given all this, it is reasonable to focus on the content and principal concepts of the Anonymus, as well as on its intellectual provenance and immediate influence.

The first question to ask is whether originally there was only one such treatise or several. Indeed, the existence of Neopythagorean apocrypha with similar or identical doctrines is well attested, yet the writings themselves were different. To postulate two anonymous arithmological 'handbooks' one would need to show differences between them, which has not been done. As any ancient author could and did use the Anonymus for his own use without acknowledging his debt to it, what would be the reasons to produce another Anonymus? Theophrastus' doxographical compendium once went through the stage of an anonymous handbook, the so-called *Vetusta placita*, but all the subsequent versions had real (Aetius) or made-up (Plutarch) authors. All other pseudo-Pythagorean arithmological writings have their 'authors' too.²² Against a purely theoretical possibility that the Anonymus was not alone speaks the uniqueness of this writing which, besides its doctrines, is visible in a peculiar sequence of its chapters and sections and exact textual parallels to be found in various texts dependent on it. To adduce just one example, let us compare two early borrowings from the Anonymus: Varro's *Hebdomades* as quoted by Aulus Gellius (book 3.10) and Philo's *De opificio*:

Varro

Philo

²² Archytas (21.1f.), Lysis (114.13f.), Megillos (115.15f.), Opsimos (140.27f.), Philolaus (see below, 28), Proros (154.19f.), Pythagoras (164.1f.), Telauges (189.10f.). The pseudo-Pythagorean texts are quoted, if not otherwise indicated, by page and line of Thesleff's edition (see above, n. 18).

	Moon's cycle is 4 weeks $\times$ 7 days = 28, which is equal to the sum of its parts (101)
Seven stars of the Great Bear (10.2)	Seven heavenly circles (112)
Seven stars of Pleiades (10.2)	Seven planets (113)
Seven planets (10.2)	Seven stars of the Great Bear (114)
Seven heavenly circles (10.3)	Seven stars of Pleiades (115)
Equinoxes occur in the seventh month (10.4)	Equinoxes occur in the seventh month (116)
Moon's cycle is 4 weeks $\times$ 7 days = 28, which is equal to the sum of its parts (10.6)	
The formation of flesh in woman's womb occurs in 7 days (10.7)	The formation of flesh in woman's womb occurs in 7 days (124)

A block of five identical astronomical items (Aul. Gell. 3.10.2–4) has a slightly different arrangement in Philo (*De opif.* 112–116); as follows from his other work, where the sequence is planets – Great Bear – Pleiades – phases of the moon (*De spec. leg.* 2, 58), the moon also belonged to this block, but has been removed to another place (101).²³ In Gellius' condensed exposition of Varro an embryological item immediately follows astronomical ones, in Philo it comes a bit later (124).

In view of this considerations we can safely assume that the *Einquellenhypothese* as successfully explains the origin of the arithmological genre from the Anonymus as the origin of doxography from Theophrastus' Φυσικῶν δόξαι.²⁴

3. Arithmology as a genre

Some theoretical explication is needed regarding the notion of the arithmological genre which is an abstraction based on a natural grouping of similar writings.²⁵ What are the acceptable limits of similarity which would allow us to establish boundaries of arithmology that are neither too blurred nor too rigid? We can define arithmology as a literary genre of popular philosophy, originated in the framework of Neopythagoreanism, that systematized various speculations on the generation, properties and extra-mathematical significance of the first ten numbers in their relations to each other.²⁶ This definition is exclusive, not inclusive. Not every speculation on any individual significant number up to ten, say, three, four or seven can be taken as arithmology but only such where a complete system of the first ten numbers is observable or detectable. In such a system every number from one to ten acquires its meaning as a

²³ Cf. *De leg.* 1, 8: planets – Great Bear – phases of the Moon.

²⁴ See Zhmud L. Die doxographische Tradition, H. Flashar, D. Bremer, G. Rechenauer (eds.). *Grundriss der Geschichte der Philosophie. Die Philosophie der Antike*. Vol. 1. Basel, 2012, 150–174.

²⁵ For more detail on the origin of arithmology as a genre, see Zhmud L. Greek Arithmology: Pythagoras or Plato? A.-B. Renger, A. Stavru (eds.). *Pythagorean Knowledge from the Ancient to the Modern World*. Wiesbaden, 2016, 311–336, at 312–315.

²⁶ Cf. the original definition of arithmology: Delatte. Op. cit., 139.

member of the arithmetical progression: two is the first female number, three is the first male number, five (or six) is the number of marriage, seven is the maiden-number and so on. In any arithmological text, either short or long, we find close mutual relationship between numbers of the decade; the same pattern is presupposed in arithmological fragments and extracts, even if they deal with individual numbers.²⁷

What remains beyond the boundaries of arithmology is a vast and diffuse field of *number symbolism* that deals with individual significant numbers – three, seven or nine – which are conceived neither as generated nor as mutually related.²⁸ Number symbolism is a universal phenomenon going back to preliterate times, in Greek culture it is amply documented already in Homer and Hesiod, in religion, especially Apollo’s cult, and later in the early Greek philosophy and medicine. Not only the ancient Pythagoreans with their reputation as chief proponents of number symbolism but also such perfectly rational philosophers as Aristotle and Theophrastus revealed predilection for some traditionally significant numbers such as three and seven.²⁹ Therefore, we cannot relate to arithmology passages or works where such individual numbers are highlighted, praised or extolled, but are not arranged in a system of mutually related numbers of the decade, be it Solon’s elegy on the seven-year ages of man’s life (fr. 24 West), Hippo’s embryological calendar based on numbers seven and three (38 A 16), or the Hellenistic pseudo-Hippocratic treatise *On the Sevens*.³⁰

Building on these considerations it is possible to narrow the dating of the Anonymus as the first specimen of arithmology down to half a century. The first secure traces of this work are to be found in the *Vetusta placita* (Aët. 1.3.8) dated in the mid-first century BC (it comes probably from the school of Posidonius, the last philosopher mentioned in it) and in two writings of Varro (116–28 BC), *Tubero*, or *De origine humana* (published ca 40 BC) and *Hebdomades*, or *De imaginibus* (published 39 BC);³¹ Varro also used the *Vetusta placita*. Thus, the middle of the

²⁷ As e.g. Proros’ Περὶ τῆς ἑβδομάδος (154.19f.), on which see Macris C. Proros de Cyrène, *DPhA* 7 (2018) 1698f. Mansfeld suggested a common source of Philo and Proros (*The Pseudo-Hippocratic Tract*, 169 n. 59) that we can identify with the Anonymus.

²⁸ For relationship between number symbolism and arithmology, see Zhmud L. From number symbolism to arithmology, in: L. Schimmelpfennig, R. Kratz (eds.). *Zahlen- und Buchstabensysteme im Dienste religiöser Bildung*. Tübingen, 2019, 25–45.

²⁹ Roscher W. F. Die Hebdomadenlehre der griechischen Philosophen und Ärzte, *Abhandlungen der Königlich Sächsischen Gesellschaft der Wissenschaften* 24.6 (1906) 97f.; Zhmud. From number symbolism, 26, 28, 31f.

³⁰ Roscher W. F. *Die hippokratische Schrift von der Siebenzahl in ihrer vierfachen Überlieferung*. Paderborn, 1913. Mansfeld. *The Pseudo-Hippocratic Tract*, ch. 6 dated *On the Sevens*, ch. 1–11 after Posidonius (cf. below, n. 33) and referred it to the arithmological genre. The reverse chronological order seems more plausible (Zhmud. Arithmology, 314 and n. 13), so that the tract should be dated in the late second century BC at the latest.

³¹ Dahlmann H. M. Terentius Varro, *RE* Suppl. 6 (1935) 1178. See Aul. Gell. 1.20 (the cube of three equals to the moon’s circle, i.e. 27), 3.10 (on the hebdomad, see above, 5), 14.3–7 (quotations from Solon and Ps.-Hippocrates); Cens. *DN* 9.1 (“opinio Pythagorica” on gestation in seven or ten months); Serv. *Ad Verg. Ecl.* 8,75 (number three is perfect, it comprises the beginning, middle and end, cf. Stachle. *Op.*

first century BC may be regarded as *terminus ante quem*. On the other hand, Varro's older contemporary Posidonius and the tract *On the Sevens* quoted by the Anonymus, do not reveal influence of arithmology in the defined above sense; their discussions of the number seven belong to the traditional framework of number symbolism. Therefore, time around 100–90 BC can be taken as a convenient *terminus post quem* for the Anonymus. To be sure, Posidonius was acquainted with new developments in pseudo-Pythagorean literature, for he was willing to infer about Pythagoras' doctrine on the soul from the writings of his students and followers.³² But our arithmological treatise, as it seems, has not reached him yet or left no traces in his oeuvre.³³ Nor there is any secure evidence of its earlier existence.

4. Platonic number philosophy and the perfect ten

Theoretical foundation of arithmology was laid down in the Early Academy. As Aristotle noted, while criticizing the Platonists: “Mathematics has come to be identical with philosophy for modern thinkers, though they say that it should be studied for the sake of other things” (*Met.* 992a33, tr. W. D. Ross). This philosophy is presented only to a certain extent in Plato's dialogues, especially in his *Timaeus*.³⁴ More often than not scholars reconstruct it from Aristotle's reports and criticisms of the unwritten doctrines of Plato and from a few fragments of Speusippus and Xenocrates on this account.

Plato was the first to separate incorporeal things such as numbers and geometric principles (points, lines, planes, solids) from the sensible world and to attach an ontological status to them. This transformed τὰ μαθηματικά into independent entities which, similar to physical objects, can be generated. According to the Academic doctrine, ontological priority resides with that which can exist without another. Solids are less substance than planes, planes than lines, lines than points, and points than units,³⁵ since “a unit is substance without position, while a point is substance with position”, which is to say that the latter contains an additional property.³⁶ Thus, units, i.e. numbers, are by nature first.³⁷ Respectively, the line is derived from the point (or

cit., № 17, 18a-b). More on Varro's arithmology, see Mansfeld. *The Pseudo-Hippocratic Tract*, ch. 6; Palmer R. *The Archaic Community of the Romans*. Cambridge, 1970, 19ff.

³² Posid. F 151, 165 E-K; Zhmud L. The papyrological tradition on Pythagoras and the Pythagoreans, in: C. Vassallo, ed. *Presocratics and Papyrological Tradition: A Philosophical Reappraisal of the Sources*. Berlin; Boston, 2019, 111–146, at 136ff.

³³ Cf. Mansfeld. *The Pseudo-Hippocratic Tract*, ch. 6: Posidonius in his *Comments* on the *Timaeus* developed the Early Academic arithmology; *On the Sevens* depends on Posidonius; the Anonymus revised and completed Posidonius' arithmology and used *On the Sevens*; Varro first (in *Imagines*) used Posidonius but later (in *Atticus*) adduced the Anonymus.

³⁴ For evidence of Plato's dialogues on his number philosophy, see Tarán L. *Speusippus of Athens*. Leiden, 1981, 13ff.

³⁵ Arist. *Met.* 1002a4–12, 1017b6–21, 1018b37–1019a4; *De bono*, fr. 2 Ross.

³⁶ Arist. *APo* 87a34f., cf. *Met.* 982a26–28. A point as a monad having position is an Academic formula.

³⁷ Alex. *In Met.* 55.20–27 = Arist. *De bono*, test. and fr. 2 Ross.

produced by a moving point, Arist. *De an.* 409a3–7), the plane from the line, and the solid from the plane, and this derivation sequence is closely connected to the first four numbers. Speusippus, for example, associated the point with one, the line with two, the plane with three, and the pyramid with four (see below, 10). Aristotle attributed to Plato the derivation of line, plane, and solid “after numbers” or even from numbers; different schemes of generation of magnitudes are attested also for Speusippus and Xenocrates.³⁸ Yet numbers, according to Plato, were not the ultimate level of reality, they themselves derive from the pair of the highest principles, the Monad and the Indefinite Dyad.³⁹ From these two principles ten ideal numbers, or Forms-Numbers, are derived, such as Twoness, Threeness, etc.; their generation serves as a model for the generation of all other numbers. When Aristotle refers to the theory of the ten archetypal numbers, he obviously has Plato in mind,⁴⁰ and at *Phys.* 206b27–33 he directly names Plato (μέχρι γὰρ δεκάδος ποιεῖ τὸν ἀριθμόν). This is why the decad was counted in the Academy as the perfect, or complete number.⁴¹

The doctrine on the decad as τέλειος ἀριθμός was fully formulated in Speusippus’ lost treatise *On Pythagorean Numbers*. The first part of the book dealt with different kinds of the so-called figurate numbers (linear, plane, solid, etc.), continuous and discontinuous proportions, and the five regular solids.⁴² The second part, better known to us thanks to a two-page quotation from it (fr. 28 Tarán), was devoted to the marvellous properties of the decad:

Ten is a perfect number, and it is both right and according to Nature that we Greeks and all men arrive at this number in all kinds of ways when we count, though we make no effort to do so; for it has many special properties which a number thus perfect ought to have, while there are many characteristics which, while not special to it, are necessary to its perfection (tr. I. Bulmer-Thomas).

The most conspicuous feature of Speusippus’ exposition is that he focuses not on the correspondences between numbers and things but on numbers and geometric magnitudes and the interconnections between them. Such an emphasis is perfectly understandable insofar as numbers constitute the first layer of beings for Speusippus, with geometric magnitudes coming after

³⁸ Plato: Arist. *De an.* 404b19–24; Speusippus: F 28 *ad fin.*, 51–52, 65 Tarán; Xenocrates: F 99–100, 117, 195 I. P. See also Theophr. *Met.* 6a23–b16 = Speus. fr. 59 Tarán = Xenocr. fr. 100 I. P.

³⁹ The evidence, mostly from Aristotle, is conveniently collected in Gaiser K. *Platons Ungeschriebene Lehre*. Stuttgart, 1963: 474ff. (nn. 22–34). See also Burkert. *Op. cit.*, 21f.; Dillon J. *The Heirs of Plato*. Oxford, 2003, 18f.

⁴⁰ 1073a17–22; 1084a12–b2: πειρῶνται δ’ ὡς τοῦ μέχρι τῆς δεκάδος τελείου ὄντος ἀριθμοῦ (a31); 1088b10–11. On Plato’s teaching on the decad, see e.g.: Dillon J. *The Middle Platonists*. Ithaca, NY, 1996, 19ff.; Erler M. *Grundriss der Geschichte der Philosophie. Die Philosophie der Antike*. Bd. 2/2. Basel, 2007, 427f.

⁴¹ To be sure, in Plato’s dialogues τέλειος ἀριθμός refers either to the so-called nuptial number or to the great year (*Res.* 546b–d; *Tim.* 39d3–4). In mathematics, a perfect number is equal to the sum of all its divisors, e.g. $6 = 1 + 2 + 3$, but this meaning is not attested before Euclid (*El.* 7, def. 22; 9, 36).

⁴² Most of these things go back to Pythagorean mathematics. If the title of the work is Speusippian, which is not certain, it most probably referred to mathematical material used in this work (Tarán. *Op. cit.*, 263).

them.⁴³ He does not seem to be primarily motivated by traditional number symbolism: the numbers three, seven, or nine do not interest him as such, and the other numbers insofar as they add up to ten. Thus, playing with the sides, angles, and edges of different plane and solid figures, he several times adds six to four in order to get ten. The decad is perfect not because it corresponds to a natural phenomenon, but because it comprises all the other numbers:

Furthermore all the ratios are in 10... and so are the linear and plane and solid numbers. For 1 is a point, 2 is a line, 3 is a triangle and 4 is a pyramid; all these are elements and principles of the magnitudes like to them. In these numbers (1, 2, 3, 4) is seen the first of progressions... and they have 10 for their sum. The primary elements in plane and solid figures are point, line, triangle, pyramid, they contain the number ten and are limited by it (tr. I. Bulmer-Thomas).

Speusippus' second most important number is four; he tirelessly connects it with the ten, being very enthusiastic about the transformation of the tetrad into the decad: $1 + 2 + 3 + 4 = 10$. In the late Hellenistic filiations of Platonic number philosophy the fact that the sum of the first four numbers makes up ten acquires special significance (see below, 16).

We know from Aristotle that the Academics (Plato, Speusippus or Xenocrates?) matched various types of cognitive activity with the first four numbers: νοῦς is one, ἐπιστήμη is two, δόξα is three (the number of the plane), and αἴσθησις is four (the number of the solid).⁴⁴ Xenocrates identified νοῦς with τὸ ἕν and with god, Speusippus also maintained νοῦς to be god.⁴⁵ The doctrine that the dyad is the first female number and the triad the first male number seems to originate with Xenocrates, who assigned such predicates as ἄρρεν-θῆλυ and περιττὸν-ἄρτιον to his first principles Μονάς and Δυάς.⁴⁶

All these ideas have been absorbed and creatively reworked by the author of the Anonymus, who put them in a framework of the treatise of ten chapters devoted to each number of the decad. But Speusippus' deliberate focus on relations between the first ten numbers and geometric magnitudes was too radical and refined to be directly followed in a popular philosophical genre. The originator of arithmology took a considerable step backwards by incorporating number symbolism into the conceptual scheme created in the Early Academy. What we observe in

⁴³ He rejected the theory of Forms and replaced the ideal numbers with mathematical ones (Arist. *Met.* 1083a23 = Speus. fr. 34 Tarán; 1075b37f. = fr. 30; 1080b11f. = fr. 33).

⁴⁴ Arist. *De an.* 404b18–24 = *On Philosophy*, fr. 11 Ross. Cf. Hicks R. D. (ed.). *Aristotle. De Anima*. Cambridge, 1907, 222 (Plato); Isnardi Parente M. Per l'interpretazione di Aristotele, *De An.* 404B18 sgg., in: Palmer R.B., Hammerton-Kelly R., eds. *Philomathes. Studies and Essays in the Humanities in Memory of Philip Merlan*. The Hague, 1971, 146–170 (Speusippus); Tarán. *Speusippus*, 459f. (Xenocrates). The latter seems the most plausible candidate.

⁴⁵ Xenocr. fr. 213 I–P, cf. Pl. *Tim.* 47e; Speus. fr. 58 Tarán. Dörrie–Baltes. Op. cit., 192ff. Dillon. *Middle Platonists*, 99ff.

⁴⁶ Aët. 1.7.30 = fr. 213 I–P; Dillon. *Middle Platonists*, 102ff. – In the 'Pythagorean' table of opposites (Arist. *Met.* 986a24–26) that has a clear Academic origin (Zhmod. *Pythagoras*, 434f., 449f.) we also find περιττὸν-ἄρτιον and ἄρρεν-θῆλυ.

arithmological texts is, as it were, Speusippus ‘lite’: they are not so heavily, metaphysically loaded and contain much entertaining material (see above, 5). In the *Anonymus* each chapter was organized according to the Platonic division of the world into νοητά and αἰσθητά.⁴⁷ In the realm of νοητά that always comes first, the arithmologist treated specific features of each number and all its possible connections with the others numbers of the decad (sometimes also out-sides of the decad), with plane and solid figures and harmonic intervals. As for realm of αἰσθητά, Speusippus’ treatise had very little to offer: though he called the decad the divine model of the cosmos,⁴⁸ no other references to the extra-mathematical world are to be found in the only preserved fragment. Therefore, the arithmologist had to turn here to the much older and richer tradition of number symbolism with its favourite numbers three and seven.

5. The Anonymus and kindred Neopythagorean writings

The most obvious shortcoming of the earlier study of the Anonymus is that it was considered isolated from the main body of the Neopythagorean apocrypha which began to spread in the first century BC, most probably from Alexandria.⁴⁹ The bulk of this literature is constituted by Doricized treatises having titles and bearing names of various known, unknown and fictional Pythagoreans. There is a group of non-Doric texts that constitute an exemption from this pattern and is akin to the Anonymus in several important respects.⁵⁰ In terms of form, these anonymous and mostly titleless works are doxographical or, in a wider sense, historiographical. In content, they expound specific doctrines similar or identical to the Anonymus, which are either derived from their common source, as for example, on the Monad and Indefinite Dyad, or directly borrowed from the Anonymus, as for example, on the tetractys.

The earliest of these writings, the *Pythagorean Notes* (D. L. 8.25–33), a titles and anonymous doxography transmitted by Alexander Polyhistor (ca 100 – ca 35 BC), seems to be prior to the Anonymus or at least not dependent on it. Πυθαγορικά ὑπομνήματα is not a proper title; though referring several times to the authority of unnamed Pythagoras (δογματίζει, φησί, but καλοῦσι 8.7), these notes lack a proper author.⁵¹ The *Anonymus Photii* is a Neopythagorean bio-doxography summarized by Photius from an anonymous βίος Πυθαγόρου, probably, of the

⁴⁷ Staehle. Op. cit., 10f. See, e.g. ἐν μὲν οὖν τοῖς νοητοῖς τὸ ἀκίνητον καὶ ἀπαθὲς ἐπιδείκνυται ἑβδομάς, ἐν δὲ τοῖς αἰσθητοῖς μεγάλην καὶ συνεκτικωτάτην δύναμιν (Phil. *De opif. mundi*, 101).

⁴⁸ παράδειγμα παντελέστατον τῷ τοῦ παντὸς ποιητῇ θεῷ προεκκειμένην (fr. 28 Tarán).

⁴⁹ Zeller E. *Die Philosophie der Griechen in ihrer geschichtlichen Entwicklung*. 3 Vols. 6th edn. Leipzig 1919. Vol. III.2, 113f.; Zhmud L. What is Pythagorean in the pseudo-Pythagorean Literature?, *Philologus* 163 (2019) 85 with n. 71.

⁵⁰ Cf. Burkert. Op. cit., 53ff., 57ff.

⁵¹ Long. Op. cit.; Laks A. The Pythagorean Hypomnemata reported by Alexander Polyhistor in Diogenes Laertius (8.25–33), in: G. Cornelli, R. McKirahan, C. Macris, eds. *On Pythagoreanism*. Berlin, 2013, 371–384.

late first century BC – early first century AD.⁵² Pythagoras' biography takes here only two out of 23 paragraphs, whereas doxography presents the teaching of the Pythagorean school as similar to that of Plato and Aristotle, who figure as the ninth and tenth diadochos of Pythagoras (235.5–7). Besides direct borrowings from the Anonymus, this text reveals a marked interest in number symbolism.⁵³ Finally, this group includes four anonymous accounts of 'Pythagorean' number philosophy in Sextus Empiricus, belonging to two kindred but different versions.⁵⁴ They derive from the first-century BC sources,⁵⁵ based, in turn, on the Neopythagorean pseud-epigrapha. Sextus regularly refers to the Pythagoreans⁵⁶ and only once to Pythagoras himself (10.261, cf. also 9.366). Our earliest witness for the Anonymus, Varro, also speaks of the Pythagoreans.⁵⁷ This common tendency to avoid Pythagoras as an author is understandable if we recall that by the first century BC it was widely believed that he did not leave anything in writing,⁵⁸ so that the Neopythagorean pseud-epigrapha were attributed either to his students, or to further unspecified "Pythagoreans", in which case they remained anonymous.

Another important salient feature of the Anonymus and the group of the pseudo-Pythagorean texts akin to it is Stoicized Platonism, in which the originally Platonic and Early Academic theories and ideas are modified under influence of Stoicism. A crucial link between these two schools and emerging Neopythagoreanism was Antiochus of Ascalon (*ca* 135/130 – *ca* 68 BC), who taught for some time in Alexandria.⁵⁹ Antiochus definitively turned from the skeptical New Academy to the Old Academy that included, in his view, not only Speusippus, Xenocrates and other Platonists but also Aristotle and his students (Cic. *De fin.* 5.7), fusing this kind of

⁵² Phot. 438b–441b = 237.4–242.9 Thesleff. Bibliography: Macris C. Pythagore de Samos, *DPhA* 7 (2018) 752f. On dating, see Zhmud. *Pythagoras*, 72 n. 48. Theiler W. Philo von Alexandria und der Beginn des kaiserzeitlichen Platonismus, in: K. Flasch, ed. *Parusia: Festschrift für J. Hirschberger*. Frankfurt a.M., 1965, 199–218, at 207ff. has demonstrated many important parallels between the *Anonymus Photii*, Philo, and Sextus Empiricus' sources on Pythagoreanism, yet his attribution of this work to Eudorus is not shared any more.

⁵³ Borrowings: e.g. tetractys (237.23–238.1), see below, 18. Numbers: 3 ways to improve a man, 12 colours, 7 tastes, 5 senses, 12 zones in the heaven, 4 causes, 4 seasons, the sun is 100 or 30 times bigger than the earth, 4 elements, 8 cognitive faculties, 3 elements of learning, 3 meanings of the word 'heaven'.

⁵⁴ 1) *Adv. math.* 4.2–10 treats more briefly and with some variations the same subject as *Adv. Math.* 7.94–109; 2) *PH* 3.152–157 is a short variant of *Adv. math.* 10.249–284. See below, 15.

⁵⁵ Isnardi Parente M. Sesto, Platone, l'Accademia antica e i Pitagorici, *Elenchos* 13 (1992) 119–168, at 146, 150–152, 157 and n. 49. Tarrant H. Agreement and the self-evident in Philo of Larissa, *Dionysius* 5 (1981) 66–97 derived the account in *Adv. math.* 7 from Antiochus of Ascalon via Aenesidemus, Sedley. Op. cit. from Posidonius via Aenesidemus, while Theiler. Philo, 208f. related *Adv. math.* 10.248–283 to Eudorus (cf. above, n. 52).

⁵⁶ Πυθαγορικοί, Πυθαγορικών παῖδες, οἱ περὶ Πυθαγόραν, οἱ ἀπὸ τοῦ Πυθαγόρου, ἡ τοιαύτη τῶν Πυθαγορικών στάσις.

⁵⁷ See above, 7 n. 31. See also Staehle. Op. cit., 11f.

⁵⁸ D. L. 8.6 (Sosicrates of Rhodes); Posid. fr. 151 E-K; Philod. *De piet.* B 24, p. 66 Gomperz (from Stoic doxography of the second century BC); see Zhmud. The papyrological tradition, 134f.

⁵⁹ Görler W. Antiochos aus Ascalon und seine Schule, in: Flashar H., ed. *Grundriss der Geschichte der Philosophie. Die Philosophie der Antike*. Vol. 4.2. Basel, 1994, 942f.

Platonism with contemporary Stoicism.⁶⁰ The next move, decisive for Neopythagoreanism, was to conceive ‘Pythagoras’ as one of Plato’s principal teachers (thus returning to the view of Aristotle and the Peripatetics),⁶¹ for Socrates could not account for the dogmatic part of Platonism. Among the (admittedly, scanty) evidence for this is Antiochus’ opinion that Pythagoras originated Plato’s bipartite (originally tripartite) division of the soul into rational and irrational, the latter including the affections (πάθη).⁶² Antiochus’ coeval Posidonius also shared this opinion,⁶³ but since he inferred Pythagoras’ view on πάθη in the soul from the writings of the Pythagoreans (F 151 E.-K.), which is to say, from the Neopythagorean apocrypha, he obviously reacted to them rather than influenced them. (The tripartition of the soul has been ascribed to Pythagoras in the *Pythagorean Notes*⁶⁴ and in many other pseudo-Pythagorean writings.⁶⁵)

What is lacking in Posidonius is Antiochus’ new biographical perspective called to reinforce the doctrinal link between Plato and Pythagoreanism: Plato came to Italy and Sicily in order to meet the Pythagoreans and to appropriate their dogmata, of which Socrates had not even wanted to hear; he became acquainted with Archytas, Echecrates, and Timaeus of Locri, got access to Philolaus’ book, learned all the Pythagorean teaching, first of all their *mathēmata* and the doctrine of the soul, and made it more argumentative; out of love for Socrates, however, he ascribed this Pythagorean *sapientia* to his teacher.⁶⁶ In such a framework it was easier to interpret – not necessarily by Antiochus himself – a Platonic pair of principles, the Monad and the Indefinite Dyad, as a Pythagorean teaching, the more so as the precedent for this could be found in Aristotle and Theophrastus.⁶⁷

Stoic elements are most visible in the *Pythagorean Notes* that combines a Platonic system of principles, the Monad and the Indefinite Dyad (D. L. 8.25), with a largely Stoic body of cosmological and physical doctrines (see above, n. 51). The doctrine of the Monad and the

⁶⁰ See Sedley D., ed. *The Philosophy of Antiochus*. Cambridge, 2012.

⁶¹ Zhmud L. *Pythagoras and the Early Pythagoreans*. Oxford, 2012, 436ff., 452ff.

⁶² Cic. *Tusc.* 4.10. For its Antiochean provenance, see Bonazzi M. Eudorus’ Psychology and Stoic Ethics, in: M. Bonazzi, C. Helmig, eds. *Platonic Stoicism-Stoic Platonism. The Dialogue between Platonism and Stoicism in Antiquity*. Leuven, 2007, 133–148, at 121f.; cf. Tarrant H. *Scepticism or Platonism? The Philosophy of the Fourth Academy*. Cambridge, 1985, 129 n. 9.

⁶³ Galen. *De plac. Hipp. et Plat.* 4.7.40 = F 165, l. 166f E.-K. Under the view common to Pythagoras and Plato obviously the tripartition of the soul is meant (F 142-143, 146 E.-K.).

⁶⁴ D. L. 8.29. Here it looks rather peculiar, see Long A. Op. cit., 155f.; Laks. Op. cit., 375.

⁶⁵ Examples: Burkert. Op. cit., 74; Vander Waerdt P. A. Peripatetic soul-division, Posidonius, and Middle Platonic moral psychology, *GRBS* 26 (1985), 373–394, at 392. See also: ἄρχει μὲν γὰρ τὸ λόγον ἔχον τὰς ψυχᾶς, ἄρχεται δὲ τὸ ἄλογον, κρατοῦντι δὲ τῶν παθῶν ἀμφοτέρω (Ps.-Archyt., 33.15-16); Stob. 1.49.34.

⁶⁶ Cic. *Resp.* 1.15–16; *Tusc.* 1.39: *Platonem ferunt... didicisse Pythagorea omnia*; *De fin.* 5.86–87 (= Baltes M., Dörrie H. *Der Platonismus in der Antike*. Vol. 2. Stuttgart, 1996, 250–256, 526–536). See Tsouni G. *Antiochus on Contemplation and the Happy Life*, in: Sedley. *The Philosophy of Antiochus*, 133–150, at 136f. Cf. Ὅτι τὴν μὲν θεωρητικὴν καὶ φυσικὴν Πλάτωνά φασι παρὰ τῶν ἐν Ἰταλίᾳ Πυθαγορείων ἐκμαθεῖν, τὴν δὲ ἠθικὴν μάλιστα παρὰ Σωκράτους (Anon. Phot. 238.17–19).

⁶⁷ Alex. *In Met.* 55.20 = Arist. *De bono*, fr. 2 Ross; Theophr. *Met.* 11a27ff. See above, 13 n. 61.

Indefinite Dyad is attested also in the *Anonymus Photii* and Sextus Empiricus; its formulation leaves no doubt that it derives from the common Stoically coloured source.⁶⁸ What is further peculiar to this group is that Plato's dualistic theory of the opposite principles is subjected to the monistic interpretation that conceives the Monad as the principal *arche* (active cause) producing the Indefinite Dyad.⁶⁹ The *Pythagorean Notes* puts it as follows:

The principle of all things is the Monad. Arising from the Monad the Indefinite Dyad serves as matter for the Monad, which is its cause (αἰτία). From the Monad and the Indefinite Dyad arise numbers, from numbers points, from points lines, from lines planes figures, from plane figures, solids, from solids, sensible bodies, the elements of which are fire, air, earth, and water (D. L. 8.25).

The basis of this theory is the Platonic derivation of νοητά (lines–planes–solids) and αἰσθητά from the Monad and the Indefinite Dyad (the four elements at the end are Stoic). There were different ways to explain this, one of them, according to Aristotle, was that the point is a unit with position, a line is generated by the moving point and a plane by the moving line.⁷⁰ Under influence of Stoic metaphysics that identified two principles, τὸ ποιοῦν and τὸ πάσχον, with God (or divine *logos*) and matter⁷¹ – note that this was Antiochus' doctrine as well⁷² – Platonic derivation was transformed into a doctrine of the active and divine Monad generating the passive material Dyad, which in differing versions became a cornerstone of Middle Platonism. The arithmologist expounds this doctrine as follows: the Monad is likened to god and *nous* (4a-c, h); the Dyad is generated by 'flow' (ρύσις) of the Monad (8); the Dyad is associated with matter (11). The same theory of the Monad as ἀρχὴ πάντων from which points, lines, planes and solids arise is stated in the *Anonymus Photii* (238.8–11); the Dyad, though not directly generated from the Monad, is pushed into the background. In Sextus' source the Monad, active cause, added to itself produces the Indefinite Dyad, passive matter.⁷³ A corollary of this

⁶⁸ Anon. Phot. 237.17–23, 238.8–11; Sext. Emp. *PH* 3.153–154; *Adv. math.* 10.261–262, 270–278. ὅτι ἡ μὲν μονὰς κατὰ τὴν ἰσότητα καὶ τὸ μέτρον λαμβάνεται, ἡ δὲ δυὰς καθ' ὑπερβολὴν καὶ ἔλλειψιν (Anon. Phot. 237.19–23). οὐκοῦν ἡ μὲν ἰσότης τῷ ἐνὶ ὑπάγεται..., ἡ δὲ ἀνισότης ἐν ὑπεροχῇ τε καὶ ἐλλείψει βλέπεται... ἀλλὰ καὶ ἡ ὑπεροχὴ καὶ ἡ ἔλλειψις κατὰ τὸν τῆς ἀορίστου δυάδος λόγον τέτακται (*Adv. Math.* 10.275–276). For Stoicism in the *Anonymus Photii* and Sextus' source, see Reinhardt K. Posidonius, *RE* 22 (1953) 763–768; Theiler. Philo von Alexandria, 207ff.

⁶⁹ On this monistic tendency see Isnardi Parente. Sesto, 150f.; Zhmud. Arithmology, 320 with n. 33.

⁷⁰ *De an.* 409a3–7. It remains unsettled whom this dynamic theory belongs to. Cf. Speus. fr. 52 Taran with comm.; Xenocr. fr. 195 I. P with comm. Cf. Pl. *Leg.* 894a2–4.

⁷¹ Cf. Stoic doxography in Diogenes Laertius: Δοκεῖ δ' αὐτοῖς ἀρχὰς εἶναι τῶν ὅλων δύο, τὸ ποιοῦν καὶ τὸ πάσχον. τὸ μὲν οὖν πάσχον εἶναι τὴν ἄποιον οὐσίαν τὴν ὕλην, τὸ δὲ ποιοῦν τὸν ἐν αὐτῇ λόγον τὸν θεόν (7.134 = *SVF* 2.300).

⁷² Cic. *Acad.* 1.24; Görler. Op. cit., 950.

⁷³ *PH* 3.153; *Adv. math.* 10.261. 277. Cf. Πυθαγόρας τοῖνυν ἀρχὴν τῶν ὅλων ἀγέννητον ἀπεφάνητο τὴν μονάδα, γεννητὴν δὲ τὴν δυάδα καὶ πάντας τοὺς ἄλλους ἀριθμούς (Hippol. *Philos.* 6.23.1, cf. 1.2.6. 9, 4.43.5, 4.51.4). See Theiler W. Einheit und unbegrenzte Zweiheit von Platon bis Plotin, in: J. Mau, ed. *Isonomia: Studien zur Gleichheitsvorstellung im griechischen Denken*. Berlin, 1971, 103f.; Isnardi Parente. Sesto, 147ff., 150.

theory is the statement that the Monad differs from the numerical one, which is to be found in the Anonymus, the *Anonymus Photii* and in Sextus' exposé.⁷⁴

All evidence suggests that in the first quarter of the first century BC this system must have been already formed,⁷⁵ for it precedes the Anonymus and is attested in one of the earliest Neopythagorean pseudepigrapha, the *Pythagorean Notes*, which is not dependent on the Anonymus. Another Middle Platonic/Neopythagorean doctrine of principles, known from Eudorus of Alexandria (fl. ca 25 BC), posited a third, supreme principle, above the One and the Indefinite Dyad and therefore was a refinement of this system.⁷⁶ If these considerations are correct, then the Anonymus can be seen as an early offshoot of the newly developed Middle Platonic and Neopythagorean number metaphysics, with a more narrow focus on speculations about the first ten numbers. In view of kinship of these two currents of thought, one more general and one more specific, they have to be carefully distinguished. The second always implies the first, but not vice versa.⁷⁷

6. The Anonymus and the *Vetusta placita*

The importance of the Anonymus for Neopythagorean doxography is confirmed by the fact that the section on Pythagoras' principles in the *Vetusta placita* (Aët. 1.3.8, cf. 1.7.18 on what is god) is consistently arithmological and seems to be almost entirely taken from this work. Pythagoras understandably lacked in Theophrastus' Φυσικῶν δόξαι, for he was not viewed as a *physikos*. As nothing certain was known about his physical teaching, sporadic attempts were made to invent it for him. The third-century BC apocryph known as *tripartitum* included Παιδευτικόν, Πολιτικόν, Φυσικόν;⁷⁸ to be sure, no physical views are preserved from this text. The second-century BC compiler of the Stoic theological doxography attributed to Pythagoras an idea that our soul is a part of the divine world-soul,⁷⁹ which is echoed in the *Pythagorean Notes* and in Sextus Empiricus.⁸⁰ It is only in the first century BC, when a role of Plato's teacher was

⁷⁴ Lydus. *De mens.* 2.6 (= Staehle № 2); Anon. Phot. 237.17–19; Sext. Emp. *Adv. Math.* 10.262.

⁷⁵ Cf. Zeller. *Op. cit.* I, 464ff.; III.2, 108.

⁷⁶ Eudorus ap. Simplicius. *In Phys.*, 181.10–30. For a similar system, see Ps.-Archytas' *On Principles* (19.5–20.17) and Ps.-Timaeus (206.5–17). Merlan Ph. The Pythagoreans, in: A. H. Armstrong, ed. *The Cambridge History of Later Greek and Early Medieval Philosophy*. Cambridge, 1967, 84ff.; Mansfeld J. Compatible Alternatives: Middle Platonist Theology and the Xenophanes Reception, in: R. van der Broek, T. Baarda, J. Mansfeld, eds. *Knowledge of God in the Graeco-Roman world*. Leiden, 1988, 92–117, at 96–100; Bonazzi M. Eudorus of Alexandria and the 'Pythagorean' Pseudepigrapha, in: *On Pythagoreanism*, 385–404; Centrone B. The Pseudo-Pythagorean writings, in: C. Huffman, ed. *The History of Pythagoreanism*. Cambridge, 2014, 315–340, at 321ff.

⁷⁷ Cf. Centrone B. Medioplatonismo e neopitagorismo: un confronto difficile, *Rivista di storia della filosofia* 2 (2015) 399–423

⁷⁸ D. L. 8.6. 9. 15 = 170.17–172.7 Thesleff; Zhmud. What is Pythagorean, 79f.

⁷⁹ Cic. *ND* 1.27–28. See Zhmud. The papyrological tradition, 135f.

⁸⁰ Soul is "a detachment (ἀπόσπασμα) of aether, both the hot and the cold (...) it is immortal since that from which it is detached is immortal" (D. L. 8.28, cf. 7.143). Sext. Emp. *Adv. math.* 9.127.

assigned to Pythagoras, and the Pythagoreans started to be seriously regarded as physical philosophers (this is what one of Sextus Empiricus' sources repeatedly stresses)⁸¹ that a recently created system, Neopythagoreanism, has been successfully and inextricably linked to his name. The decision of the compiler of the *Vetusta placita* to use the Anonymus as an authoritative source of Pythagoras' principles does not look self-evident, for our text did not aim to expose *Pythagoras' philosophy*. Yet no other authoritative source seemed to be available at this time, which would have better corresponded to the compiler's idea of what Pythagoras' philosophy should look like; other arithmological texts were either ascribed to his followers⁸² or too concise, as the section on principles in the *Pythagorean Notes* (D. L. 8.25). On the contrary, Pythagoras' section in the chapter Περὶ ἀρχῶν is much longer than any other and contains, besides two sets of principles, much more arithmology than one would expect.

Indeed, one set of principles that goes back ultimately to Aristotle comprises numbers and proportions, which Pythagoras also calls 'harmonies'. The elements, called 'geometricals', are composed out of both of them.⁸³ Another set consists of the Monad and the Indefinite Dyad, which tend, respectively, to τὸ ποιητικὸν αἴτιον καὶ εἰδικόν, ὅπερ ἐστὶ νοῦς ὁ θεός, and to τὸ παθητικόν τε καὶ ὑλικόν, ὅπερ ἐστὶν ὁ ὁρατὸς κόσμος.⁸⁴ This kind of Stoicized Platonism is familiar to us from other Neopythagorean sources. But unlike them, no attempt is made here to relate numbers to the Monad and the Indefinite Dyad or to derive numbers from them. This is because in the chapter Περὶ ἀρχῶν the compiler did not feel obliged to go beyond the principles, so he omitted both the generation of the Indefinite Dyad from the Monad and further derivation point–line–plane–solid, characteristic for the texts under discussion.⁸⁵ What follows and comprises the bulk of the section is arithmology, every element of which is attested in the writings dependent on the Anonymus:

The nature of number is the decad.⁸⁶ For all the Greeks, all barbarians count up to ten and when they have reached that they revert to the monad.⁸⁷ And the power of ten in turn, he says, resides in the four and in the tetrad <...> For example, if one posits one and adds two and three and four to these, then one will complete the number ten. So that the number is in

⁸¹ *Adv. Math.* 1.303, 9.64, 10.45. 248. 250. 255.

⁸² See above, 5 n. 22. The *Hieros Logos* in Doric prose (p. 164–166 Thesleff) bearing Pythagoras' name appeared much later and depends on the Anonymus. See Delatte. *Op. cit.*, 191ff.; Hadot I. *Studies in the Neoplatonist Hierocles*. Philadelphia, 2004, 69ff.

⁸³ *Dox.* 281a2–6, cf. *Aët.* 1.10.2. See Burkert. *Op. cit.*, 58 n. 28.

⁸⁴ *Dox.*, 281a6–12. Cf. *Cic. Acad.* 2.118: *Pythagorei ex numeris et mathematicorum initiis proficisci volunt omnia*.

⁸⁵ Cf. Philo. *De opif. mundi* 49; Lydus. *De mens.* 4.64.

⁸⁶ Cf. ἡ μέντοι δεκάς πάντα περαίνει τὸν ἀριθμὸν, ἐμπεριέχουσα πᾶσαν φύσιν ἐντὸς αὐτῆς (Theon. 106.8–9); καλεῖται <δε> ἡ δεκάς κράτος καὶ παντέλεια, ἐπεὶ πάντα περαίνει τὸν ἀριθμὸν περιέχουσα πᾶσαν φύσιν ἐντὸς ἑαυτῆς... (Anat. 15.13–14).

⁸⁷ See Staehle № 86–87; πάντα μὲν γὰρ τὸν ἀριθμὸν εἰς δεκάδα ἤγαγον, ἐπειδὴ ὑπὲρ δεκάδα οὐδεὶς ἐστὶν ἀριθμός, ἐν τῇ αὐξήσει πάλιν ἡμῶν ὑποστρεφόντων ἐπὶ μονάδα καὶ δυάδα καὶ τοὺς ἐξῆς (Theon. 99.17f.).

ten by the monad [i.e. the unit], but in four by its power.⁸⁸ And that is why the Pythagoreans proclaimed, thinking that the tetrad is the greatest oath,

No, by the man who bequeathed the tetractys to our soul
which has the fount and root of everlasting nature.

And our soul, he says, is composed out of tetrad.⁸⁹ For it is from intellect, knowledge, opinion, perception, that every art and every science comes and that we ourselves are rational.⁹⁰

The rest (*Dox.* 282a16–283a9) explains, in which way the first four number are related to our cognitive faculties that make up the soul: νοῦς is one, ἐπιστήμη (knowledge) is two, δόξα is three, and αἴσθησις is four (this part has fallen out). This Early Academic idea is known to us from Aristotle's *On the Soul*; it was also discussed in his *On Philosophy* (see above, 10 n. 44). As the parallels show, this likening was also employed in the Anonymus,⁹¹ but the following explanations of how our critical faculties correspond to the first four numbers do not come from the same source. They are too academic for a popular genre and not similar to the usual arithmological explanations.

7. The pseudo-Pythagorean oath and tetractys

The Pythagorean oath containing the tetractys, this kernel of Neopythagorean wisdom,⁹² was probably the most popular and thus influential piece of the Anonymus, which left traces in dozens of writings of the Imperial period:⁹³

Οὔ, μὰ τὸν ἀμετέρα ψυχᾷ παραδόντα τετρακτὺν
παγὰν ἀενάου φύσεως ρίζωμά τ' ἔχουσιν.

No, by the him who bequeathed the tetractys to our soul,
which has the fount and root of everlasting nature.⁹⁴

The Pythagoreans swear by Pythagoras because he forbade them to swear by the gods (D. L. 8.22; Iamb. *VP* 150). This motif comes from the earlier pseudo-Pythagorean literature: at the beginning of his treatise *Φυσικόν* (cf. above, n. 78) Pythagoras swears not by the gods but by

⁸⁸ See Delatte. *Op. cit.*, 256f.; Staehle № 23, e.g. ὁ γὰρ ἐντελεχεία δεκάς, τοῦτο τετράς, ὡς ἔοικε, δυνάμει εἰ γοῦν οἱ ἀπὸ μονάδος ἄχρι τετράδος ἐξῆς συντεθεῖεν ἀριθμοί, δεκάδα γεννήσουσιν (Philo. *De opif. mundi* 47); Theon. 99.20f.; Hierocl. *In aur. Carm.* 20.14; Lyd. *De mens.* 2.9 *ad fin.*

⁸⁹ οὐ μόνον δὲ τὸν τοῦ σώματος ἐπέχει λόγον ἐν ἀριθμοῖς τετράς, ἀλλὰ καὶ τὸν τῆς ψυχῆς (Anat. 8.15, cf. Sext. Emp. *Adv. math.* 4.3. 5. 8); ψυχὰ ἀνθρώπου, ὡς Πυθαγόρας ἔφη, ἐστὶ τετράγωνον εὐθυγώνιον (Lyd. *De mens.* 2.9).

⁹⁰ *Dox.* 281a12–282a16, tr. Laks-Most, slightly modified.

⁹¹ νοῦς ἐπιστήμη δόξα αἴσθησις. νοῦς μὲν ὡς μονὰς ἐν οὐσίᾳ, κτλ. (Theon. 98.4f.); Lyd. *De mens.* 2.9; Hierocl. *In aur. carm.* 20.18. Cf. Ps.-Archyt. *De intell.* 38.19–24.

⁹² On the Neopythagorean origin of the tetractys, see Zhmud. *Pythagoras*, 301ff. Cf. Burkert. *Op. cit.*, 72.

⁹³ The most important evidence is collected in Nauck A. *Iamblichi De vita Pythagorica liber*. Petropoli, Lipsiae, 1884, 216f., 229f.; Delatte. *Op. cit.*, 249ff. They discuss also variations of the text.

⁹⁴ Ps.-Plut. 877A = Aët. 1.3.8a. This was the original form of the oath (Nauck. *Op. cit.*, 216, 229; Delatte. *Op. cit.*, 249f.).

air and water and incidentally in the same negative form as in this oath.⁹⁵ Pythagoras' name also does not appear in the oath, because the Pythagoreans were not allowed to call him by name and referred to him 'that man' (ἐκεῖνος ἀνὴρ), a motif known from Apollonius of Tyana (first century AD), the first Neopythagorean biographer of Pythagoras (Iamb. *VP* 88, 150, 255). The proverbial Αὐτὸς ἔφα (D. L. 8.46), first attested in Cicero (*ND* 1.10), belongs to the same Neopythagorean milieu as the oath and reflects a widespread since the first century BC belief that the ancient Pythagoreans spoke and wrote Doric.⁹⁶ Though it is possible that the arithmologist borrowed the oath from a Doricized apocryph, it would be difficult to say what kind of source it was and why has not it left any other traces. Doric arithmological treatises we know of, such as Megillos' Περὶ ἀριθμῶν (115.15f.) or Pythagoras' Λόγος περὶ θεῶν (164.1ff.), are much later than the Anonymus and dependent on it. More plausible, therefore, is that the oath appeared first in the Anonymus as a 'quotation', which dialect had to underline its authenticity. Delatte hypothesized Timaeus of Tauromenium as the earliest source of the oath,⁹⁷ but this is related to his tendency to consider many apocrypha as authentic Pythagorean texts. In justice to his acumen it should be said that the next source he indicated was our arithmological treatise. Indeed, the content of the oath is clearly arithmological and its vocabulary belongs to the first century BC.⁹⁸ Long after its first appearance the oath occurred predominantly if not exclusively in the arithmological writings or passages directly or indirectly related to the Anonymus, so that the latter can be justifiably regarded as its ultimate source. Robbins suggested that the oath with its doctrinal environment formed an introduction to the Anonymus.⁹⁹ It is much more likely, however, that it belonged to the chapter on the number four, for this was its usual place in the arithmological writings, for example, in Philo, Nicomachus, Anatolius, Lydus, etc.

The idea that the first four numbers make up ten was inspired by Speusippus (see above, 9), yet the doctrine of the tetractys has been formed in the early first century BC. After the *Vetusta placita*, it occurs in a condensed and slightly confused form in the *Anonymus Photii*: καὶ τὰ ὄντα πάντα ἀριθμοὺς προσηγόρευον (sc. the Pythagoreans), ὁ δὲ ἀριθμὸς συμπληροῦται τοῖς δέκα, ὁ δὲ δέκα σύνθεσις τῶν τεσσάρων κατὰ τὸ ἐξῆς ἀριθμούντων ἡμῶν, καὶ διὰ τοῦτο

⁹⁵ οὐ μὰ τὸν ἄερα τὸν ἀναπνέω, οὐ μὰ τὸ ὕδωρ τὸ πίνω, οὐ κοτ' οἴσω ψόγον περὶ τοῦ λόγου τοῦδε (D. L. 8.6). Cf. Diod. Sic. 10.9.1, also from *tripartitum*, see Schorn S. Die Pythagoreer im zehnten Buch der Bibliothek Diodors, in: M. Berti, V. Costa, eds. *Ritorno ad Alessandria. Storiografia greca e cultura bibliotecaria*. Tivoli, 179–259, at 228f.

⁹⁶ See Zhmud. What is Pythagorean, 83f.

⁹⁷ Delatte. Op. cit., 253.

⁹⁸ τετρακτὺς occurs first in the oath, further at Anon. Phot. 238.1 and Sext. Emp. *Adv. Math.* 4.2–3, 7.94. 98. 100; φύσις ἀενάος is first attested in Posidonius, in a context different from that of the oath (fr. 239 E-K.); πηγή καὶ ῥίζα figure once in plural in the Hippocratic corpus (*De flat.* 7 ad fin.: ὅπου αἱ πηγαὶ καὶ αἱ ῥίζαι τοῦ αἵματος εἰσι), but all the subsequent occurrences begin with Philo (*De congr. erud.* 120; *Heres* 116). See e.g. Ps.-Plut. *De lib. educ.* 4A; Theon. 18.2; Julian the Methodist (ca 150 AD) *ap. Galen. Adv. Julian.* 18, 273.1 K.

⁹⁹ Robbins. Posidonius, 314.

τὸν ἀριθμὸν πάντα τετρακτὸν ἔλεγον (237.25–238.1). The original sense of the last words was not that any number was called ‘tetractys’, but that the tetrad was called the number of ‘all’, as the parallel in Philo shows: καλεῖται δ’ ἡ τετράς καὶ ‘πᾶς’, ὅτι τοὺς ἄχρι δεκάδος καὶ αὐτὴν δεκάδα περιέχει δυνάμει (*De plant.* 123).¹⁰⁰ Further Philo specifies that the decad is actually ‘all’, whereas the tetrad is potentially (*ibid.*, 125). At *De opif. mundi*, 47–52 he sets forth in detail the doctrine of the τέλειος τετράς, beginning as follows:

But the heaven in its turn was ordered with a perfect number, the four. You would not go astray in affirming that it is the principle and source (ἀφορμὴν καὶ πηγὴν) of the all-perfect number ten; for what the ten is in actuality, the four, it would seem, is potentially. If the numbers from the unit to the four are added up, they will produce the ten. It forms the boundary for the infinitude of numbers, which wind around it like a turning post and turn back.¹⁰¹

Philo does not use the word τετρακτὺς, preferring to it τετράς, which creates confusion, because τετράς denotes the number four, and τετρακτὺς a set of four numbers or items.¹⁰² Other authors also do not distinguish between τετράς and τετρακτὺς or use them interchangeably.¹⁰³ Since this feature is already observed in the *Vetusta placita* passage,¹⁰⁴ one can suppose that the arithmologist himself used these words interchangeably.

Interpretation of the first line of the oath does not cause much difficulty: it is Pythagoras who is meant here, and the variant ψυχᾷ is clearly preferable to κεφαλᾷ (first in *Sext. Emp. Adv. math.* 7.94, though ψυχᾷ in 4.2) and γενεᾷ (first in *Nicom. ap. Theol. arith.* 22.21), for it is our soul that is related to the tetrad in the arithmological texts (see above, n. 89). φύσις ἀενάος in the second line has to be understood as the decad, for the latter was considered to be the ‘nature of number’ or to comprise the whole nature of numbers, as was thought already in the Academy.¹⁰⁵ “For under the ‘everlasting nature’”, reports Nicomachus, “they meant the decad, since it is, as it were, the eternal and ageless nature of all things and kinds of thing”.¹⁰⁶ According to Theon, the ratios of all the concords are in “tetractys of the decad” and the decad

¹⁰⁰ See Delatte. *Op. cit.*, 254.

¹⁰¹ *De opif. mundi*, 47, tr. D. Runia. See also *ibid.* 97–98; *De plant.* 123–125; *De vita Mosi* II, 115; *In gen.* III, 12; Staehle № 23.

¹⁰² τετρακτὸν δὲ (λέγοντες) ἀριθμὸν τινα, ὃς ἐκ τεσσάρων τῶν πρώτων ἀριθμῶν συγκεῖμενος τὸν τελειότατον ἀπὴρτιζεν, ὥσπερ τὸν δέκα (*Sext. Emp. Adv. math.* 7.94). ἡ μὲν οὖν προειρημένη τετρακτὺς <αὕτη>, κατ’ ἐπισύνθεσιν τῶν πρώτων ἀποτελουμένη ἀριθμῶν (*Theon.* 94.10–11).

¹⁰³ As Delatte. *Op. cit.*, 256 noted: “Chose curieuse, le mot τετράς, qui devrait être réservé au nombre 4..., est fréquemment employé pour représenter l’ensemble des 4 premiers nombres”. See also Hadot. *Op. cit.*, 64f.; Schibli H. *Hierocles of Alexandria*. Oxford, 2002, 277 n. 18.

¹⁰⁴ *Dox.* 282.6f.: ὡς μεγίστου ὄρκου ὄντος τῆς τετράδος, but τετρακτὺς in the oath itself.

¹⁰⁵ εἶναι δὲ τὴν φύσιν τοῦ ἀριθμοῦ δεκάδα (*Dox.* 281a12–13), see also above, n. 86. ἐπειδὴ τέλειον ἡ δεκάς εἶναι δοκεῖ καὶ πᾶσαν περιεληφέναι τὴν τῶν ἀριθμῶν φύσιν (*Arist. Met.* 986a8–9). Speusippus called the decad φυσικωτάτην (*fr.* 28.10 Tarán).

¹⁰⁶ ἀέναον γὰρ φύσιν τὴν δεκάδα ἡνίττοντο τὴν οἶον αἰδῖον καὶ αἰώνιον τῶν ὅλων φύσιν καὶ εἰδὼν ὑπάρχουσιν (*Theol. arith.* 23.1–2). Cf. καλεῖται <δὲ> ἡ δεκάς κράτος καὶ παντέλεια, ἐπεὶ πάντα περαίνει τὸν ἀριθμὸν περιέχουσα πᾶσαν φύσιν ἐντὸς ἑαυτῆς (*Anat.* 15.13–14).

constitutes the tetractys (τὴν μὲν γὰρ τετρακτὸν συνέστησεν ἡ δεκάς, 93.17–19) that was venerated by the Pythagoreans, for it seems to embrace the nature of all things (καὶ δοκεῖ τὴν τῶν ὅλων φύσιν συνέχειν, 94.4). Thus, the decad as φύσις ἀενάος belongs to the realm of numbers and is the eternal numerical pattern of the universe.

A variation in the second line of the oath, ῥιζώματ' instead of ῥιζωμά τ', changed its meaning to “fount containing the roots of everlasting nature”, which prompted more ‘physical’ interpretation of φύσις ἀενάος: ῥιζώματα were understood not only as the four numbers, but also as the four physical elements. The link between the tetractys and the four elements (στοιχεῖα, not ῥιζώματα!) was presented already in the Anonymus, as follows, for example, from Philo: “The four elements, out of which this universe was constructed, flowed forth, as from a source, from the four in the realm of numbers”.¹⁰⁷ The oath, however, was not yet directly involved here, as it becomes in Hippolytus’ *Refutatio*, who viewed Pythagoras, i.e. Neopythagoreanism, as a source of many heretical doctrines he fought against and thus preserved a lot of arithmological material.¹⁰⁸ Hippolytus’ source in the 6th book identifies the oath with the “harmony of the four elements”, for the tetractys is the principle of physical and solid bodies, just as the monad of intelligible ones.¹⁰⁹ Mansfeld suggested that Hippolytus “interprets the ῥιζώματα of the Pythagorean oath as pertaining to the four elements of (Empedocles’) physics”.¹¹⁰ Indeed, in the next book Hippolytus quotes Empedocles’ verse τέσσαρα τῶν πάντων ῥιζώματα πρῶτον ἄκουε (*Ref.* 7.29.4 = 31 B 6), but three lines earlier he says that, according to Empedocles, there were six elements, not four, so that this parallel does not seem convincing.¹¹¹ To be sure, in the excerpt from Nicomachus in *Theology of Arithmetic* the oath itself is seemingly attributed to Empedocles:

τοιαύτης δὲ οὔσης ἐπώμνιον δι’ αὐτῆς τὸν Πυθαγόραν οἱ ἄνδρες, θαυμάζοντες δηλονότι καὶ ἀνευφημοῦντες ἐπὶ τῇ εὐρέσει, καθά που καὶ Ἐμπεδοκλῆς· ‘οὔ, μὰ τὸν ἀμετέρα γενεᾶ παραδόντα τετρακτύν,/ παγὰν ἀενάου φύσεως ῥιζώματ’ ἔχουσιν.’ ἀέναον γὰρ φύσιν τὴν δεκάδα ἡνίττοντο τὴν οἶον αἰδῶν καὶ αἰώνιον τῶν ὅλων φύσιν καὶ εἰδῶν ὑπάρχουσιν (*Theol. arith.* 22.18–23.2).

As Delatte correctly explained, however, καθά που καὶ Ἐμπεδοκλῆς refers not to the following oath – for it is written in Doric and attributed to the Pythagoreans (ἐπώμνιον, ἡνίττοντο)

¹⁰⁷ *De opif. mundi* 52, tr. D. Runia, cf. Lyd. *De mens.* 4.64. For further parallels, see Staehle № 27.

¹⁰⁸ Mansfeld J. *Heresiography in Context: Hippolytus’ Elenchos as a Source for Greek Philosophy*. Leiden, 1992.

¹⁰⁹ *Ref.* 6.23.4. Elsewhere Hippolytus, quoting the oath, does not adduce this interpretation (1.2.9–10, 4.51.7–8, 6.34.1), but in the account of ‘Egyptian’ number philosophy he derives the four elements from the number four (4.43.8). Cf. τετρακτὺς· Πυθαγορικὸς ὅρκος, ἡγουν τῶν τεσσάρων στοιχείων σημαίνων (Hesych.).

¹¹⁰ Mansfeld. *Heresiography*, 180.

¹¹¹ There is even less ground for assuming that ῥιζώματα belongs to the original version of the oath, which alludes thereby to Empedoclean physics, as in Primavesi O. Empedocles’ Cosmic Cycle and the Pythagorean Tetractys, *Rhizomata* 4 (2016) 5–29, at 13f.

– but to the preceding θαυμάζοντες καὶ ἀνευφημοῦντες: similarly to the Pythagoreans, Empedocles admired Pythagoras in his famous verses ἦν δέ τις ἐν κείνοισιν ἀνὴρ περιώσια εἰδώς... (31 B 129), to which Nicomachus alludes.¹¹² ῥιζώματα twice occurring in Nicomachus' text (*Theol. arith.* 21.2–3, 23.4–6) refers to the first four numbers, not to the elements.

8. The most generative six

The Anonymus attached to the number six an important role in the period of human gestation. The six is “the most generative number” (γεννητικώτατος),¹¹³ because, explains Philo in the remaining fragments of the *Questions on Genesis*, it is the first number that is both male and female, being a product of even (2) and odd (3). This is why among the ancients some called it ‘marriage’ and others ‘harmony’.¹¹⁴ The Armenian translation of the *Questions* preserved a fuller picture of Philo's arithmological speculations. At 3.38 he presents two other important numbers, 35 and 45, the first consisting of the proportion 6, 8, 9, 12 (in sum they make 35), the second of the proportions 6, 9, 12, 18 (in sum they make 45). Relation of 35 and 45 to gestation is partly clarified later in the same work: 45 is a productive number, for it contains all three basic proportions, the arithmetic, the geometric, and the harmonic, and in the same number of days the embryo of the nine-month babies is formed in the womb, whereas in case of the seven-month babies it takes, as they say, 35 days.¹¹⁵ Indeed, if we multiply 35 by 6 we make 210, the number of days in seven months, and multiplying 45 by 6 we make 270, the number of days in nine months. This should explain, why the six is γεννητικώτατος.

A passage from Varro in Censorinus helps to complete the picture of this generative arithmetic.¹¹⁶ Varro describes two types of pregnancy “according to Pythagoras”: the seven-month, or 210 days, and the ten-month, or 274 days. The first is based on the number six, the second on the number seven. During the seven-month pregnancy the foetus proceeds through four stages (milky humor, blood, flesh, formed body), which correspond to 6, 8, 9 and 12 days and to the three basic concords, the octave (12:6), the fifth (9:6), and the fourth (8:6). (These four numbers form the Pythagorean ‘musical proportion’, 6:8=9:12, which combines the arithmetic and harmonic means).¹¹⁷ When added, 6, 8, 9 and 12 produce 35 days, which multiplied by 6

¹¹² Delatte. *Op. cit.*, 252.

¹¹³ Phil. *De opif. mundi*, 13; Lyd. *De mens.* 2.11.

¹¹⁴ *In Gen.* 3.38a; Lyd. *De mens.* 2.11. Cf. ἐξ ἀρτίου καὶ περιττοῦ τῶν πρώτων, ἄρρενος καὶ θήλεος..., διὸ καὶ ἀρρενόθηλος καὶ γάμος καὶ ἀρτιοπέρισσος καλεῖται (*Anat.* 10.13–16). For further parallels, see Staehle № 36a.

¹¹⁵ *In Gen.* 4.27, p. 301–302, tr. R. Marcus.

¹¹⁶ *Cens. DN* 9 and 11, cf. Aul. Gell. 3.10.7–8. See Parker H. N. Greek Embryological Calendars and a Fragment from the Lost Work of Damastes, *CQ* 49 (1999) 515–534.

¹¹⁷ The numbers 6, 8, 9, 12 first occur in ps.-Platonic *Epinomis* (990d–991b), see Barker A. Pythagoreans and Medical Writers on Periods of Human Gestation, in *Pythagorean Knowledge*, 263–276, at 271, but the corresponding ratios were known already to Hippasus (*Aristox.* fr. 90 = 18 A 12).

makes 210. “And so not undeservedly six is the basis of conception” (11.4, tr. H. Parker). In the second pregnancy the body is fully formed in circa 40 days, which multiplied by 7 makes 280 days, i.e. nine months and ten days, but since the baby is born on the first day of the last week, the exact number of days is 274. The second scheme, unlike the first, is based on the number seven and does not match with that described by Philo. It is unclear, why Varro changed the usual pattern of two pregnancies in $35 \times 6 = 210$ and $45 \times 6 = 270$ days, which is preserved in the *Theology of Arithmetic* (51.4.–25, most probably, from Nicomachus),¹¹⁸ Aristides Quintilianus, Proclus and other sources.¹¹⁹ The *Pythagorean Notes*, which are not dependent on the Anonymus, briefly refer to a similar theory, where the fetus is formed in 40 days, an arithmetic mean between 35 and 45: “Solidifying first in forty days, the foetus has form, then according to the ratios of harmony, it is completed in seven, nine, or ten months at most, and is born”.¹²⁰

The whole topic obviously is too special and too developed to be invented by the arithmologist. Basic ideas of generative arithmetic were attested already in the fifth-century BC philosophy, harmonics, and medicine, partly going back to still earlier number symbolism of the number seven.¹²¹ Indeed, the early embryological calendars, i.e. calculations of the development of the foetus, were based on the number seven, not six, as for example that of Empedocles. The embryo begins the articulation of the limbs from the 36th day (after the fifth hebdomad) and completes it by the 49th day (at the end of the seventh hebdomad); a woman can give birth to a viable child on the 7th or the 10th month (i.e. at the end of a full nine month),¹²² which complies with the traditional medical lore. Similar calculations are to be found in the Pythagorean Hippo: “The foetus, he said, was already mature in the seventh month, since the number seven has the greatest power over everything”.¹²³ The Hippocratic treatise *On Fleashes* (late fifth – early fourth century BCE) offers a more developed scheme: children born at seven months and at nine months and ten days are both viable and have “a precise numerical relationship to seven-day periods”, the first counts exactly thirty seven-day periods ($3 \times 10 \times 7 = 210$) and the second

¹¹⁸ Robbins F. E. Works of Nicomachus, in: *Nicomachus of Gerasa. Introduction to Arithmetic*. Tr. M. L. D’Ooge. London, 1926, 85, 87. Cf. Bucking S. On Measuring the Range of Anatolius’ Text in the [Iamblichean] *Theologoumena Arithmeticae*, *Grazer Beiträge* 18 (1992) 127–148, at 132ff., who ascribes this passage to Anatoly.

¹¹⁹ *Theol. arith.* 51.4.–25, cf. 63.7–18; Aristid. Quint. 3.18; Procl. *In Plat. Rem Publ.* II, 34.2–36.2 (Proclus appends his calculations to Empedocles 31 B 69). Plut. *De an. in Tim.* 1018A gives only the first formula; Macrobius. *In somn. Scip.* I.6.14–17 gives the first formula and alludes to the second. See Delatte A. *La Vie de Pythagore de Diogène Laërce*. Brussels, 1922, 216f.; idem. Les harmonies dans l’embryologie hippocratique, in: *Mélanges Paul Thomas*. Bruges, 1930, 160–171, at 166f.; Waterfield R. A. H. Emendations of [Iamblichus], *Theologoumena Arithmeticae* (De Falco), *CQ* 38 (1988) 215–227, at 222f., Parker. Op. cit.

¹²⁰ D. L. 8.29, tr. H. Parker; Long. Op. cit., 152f.

¹²¹ Roscher. Die Hebdomadenlehre.

¹²² 31 A 75, 83, B 153a; Hanson A. E. The Eight Months’ Child and the Etiquette of Birth: “Obsit Omen”!, *Bulletin of the History of Medicine* 61 (1987) 589–602; Parker. Op. cit., 522f.

¹²³ Cens. DN 7.2 = 38 A 16, tr. H. Parker.

forty seven-day periods ($4 \times 10 \times 7 = 280$). A child born at eight months never survives (19, tr. P. Porter). The Hippocratic *Regimen* relates the life and growth of the foetus to finding the correct attunement, which has concordant intervals the fourth, the fifth, and the octave.¹²⁴ Thus, both the combination of harmonics and embryology and the formulas for the seven-month and nine-months babies, though based on the hebdomad, are presented in the Hippocratic corpus. Still, they do not fully match with two exact formulas of 35 and 45 days multiplied by generative 6, which are given by the Anonymus.¹²⁵

Luckily for us, not so long ago Holt Parker published a Hellenistic embryological calendar of a certain Damastes, a medical writer on pediatrics, who can be dated in the second century BC.¹²⁶ It is in Damastes that we find for the first time the exact match to both formulas, and their best explanation, which makes him the most probable source of the Anonymus. Here is a passage on the seven-month babies:

The seven-month child becomes foam in 6 days, becomes blood in <another> 8, becomes flesh in another 9, takes shape in another 12. Women who are brought to this point complete the number 35. It moves in twice the number, 70, and when this number of days is done, it is born in three times the number, 210 (tr. H. Parker).

Thus, the numbers of the ‘musical proportion’, 6, 8, 9 and 12, correspond to four basic periods of foetus formation, then the sum of these numbers is multiplied by two and by three to make 210. The second scheme is 6, 9, 12 and 18, which sum, 45, is multiplied by two and by three to make 270. The only thing that the author of the Anonymus had to do was to replace two and three by six and present this subject in chapter on the most generative number. But this was a decisive step that transformed embryological calculations, partly empirically based but mostly fanciful, into a discourse on the power of the perfect number six.

9. The number five and Aristotle’s *Against the Pythagoreans* fr. 13 Ross

Six was not the only number of marriage, the arithmological tradition also attributed this function to five. If two is the first female number and three the first male number, then five is

¹²⁴ *De victu* 1.8. Delatte. Les harmonies, 171 wrongly projects the late theories onto ancient Pythagoreanism; Burkert. Op. cit., 262f.; Huffman. *Philolaus*, 152.

¹²⁵ According to an extract from Nicomachus in the *Theology of Arithmetic*, Diocles of Carystus, the famous doctor of the late fourth century BC, said that the period of 210 days, i.e. seven months of thirty days, equals to 35×6 (*Theol. ar.* 64.4–15 = Diocles fr. 46 van der Eijk). There is good ground to believe that Diocles, who counted stages of fetus formation in seven-day weeks (fr. 45a-b, from Nicomachus and Macrobius), mentioned both the fifth week (35 days) and the period of 210 days, as the author *On Fleshes*, quoted next, did (*Theol. ar.* 64.13–15), but hardly attached any importance to the number six. See Van der Eijk Ph. *Diocles of Carystus*. 2 vols. Leiden, 2001, fr. 45–46 with comm., and Mansfeld. *The Pseudo-Hippocratic Tract*, 163ff.

¹²⁶ Parker. Op. cit.

the nuptial number by addition (κατὰ σύνθεσιν), whereas six is by multiplication (κατὰ πολλαπλασιασμόν). Usually ancient writers stuck to one of two versions,¹²⁷ but in the Anonymus they seemed to coexist, as they did, for example, in Plutarch,¹²⁸ Nicomachus,¹²⁹ Anatolius,¹³⁰ the *Theology of Arithmetic*,¹³¹ Martianus Capella,¹³² etc. Plutarch, the first to present the version with the number five, clearly preferred it to the version with the number six that occurs in his writing only once. To be sure, a Pythagorean number of marriage was mentioned already in Aristotle's *Metaphysics*,¹³³ though he nowhere specified what number this was. In a passage from Alexander's commentary on the *Metaphysics*, however, which has been identified by Paul Wilpert as the Aristotelian fragment and included by W. D. Ross into his *Aristotelis fragmenta selecta*,¹³⁴ this number appears as five:

γάμον δὲ ἔλεγον τὸν πέντε, ὅτι ὁ μὲν γάμος σύνδοδος ἄρρενός ἐστι καὶ θήλεος, ἔστι δὲ κατ' αὐτοὺς ἄρρεν μὲν τὸ περιττὸν θήλυ δὲ τὸ ἄρτιον, πρῶτος δὲ οὗτος ἐξ ἀρτίου τοῦ δύο πρώτου καὶ πρώτου τοῦ τρία περιττοῦ τὴν γένεσιν ἔχει (*In Met.*, 39.8–12).

Accepting that this passage really derives from Aristotle's work *Against the Pythagoreans*, we do not just give preference to the five as the ancient Pythagorean number of marriage,¹³⁵ though the identification of even numbers with the female principle, and of odd with male, is first attested in Xenocrates.¹³⁶ What is more important, we also need to radically change our entire historical perspective of arithmology. Indeed, what we have in the lines quoted above and on the whole in Alexander's treatment of the first ten numbers (38.10–39.17), is arithmology, and if this arithmology is the ancient Pythagorean one, then its theoretical foundations were not laid down in the Early Academy and it did not originate as a literary genre in the first century BC. In my previous paper on Greek arithmology I have expressed serious doubts in regard of the authenticity of this fragment of Aristotle,¹³⁷ here I can adduce further arguments for my view. Πρὸς τοὺς Πυθαγορείους α' figures in the Hellenistic catalogue of Aristotle (D. L. 5.25), and had it contained fully fledged arithmology, it would have been the most important

¹²⁷ Five: Alex. Aphrod. *In Met.*, 39.8–13; Asclep. *In Met.* 36.16–20. Six: Philo. *In Gen.* 3.38a; Clem. *Strom.* 5.14.93.5, 6.16.139.4; Arist. Quint. 3.6; Theon. 102.4–6; Lydus. *De mens.* 2.11; Syrian. *In Met.*, 104.25–27; Philop. *In phys. comm.* 389.1f.

¹²⁸ Five: *Aet. Rom.* 264A, 288c–d; *De def. orac.* 429A; *De Is. et Osir.* 374A; six: *De an. procr.* 1018A.

¹²⁹ Five: Ἀφροδίτη καὶ Γαμηλία καὶ Ἀνδρογονία (Phot. *Bibl.* 144a36); six: καὶ κυρίως αὕτη μᾶλλον Ἀφροδίτη ζυγία τε καὶ γαμηλία καὶ Ἀνδρογονία θεολογεῖται (ibid. 144b6).

¹³⁰ Five: 9.22–23; six: 10.13–18.

¹³¹ Three: 19.20; five: 30.19; six: 43.5.

¹³² Five: 7.735, six: 7.736.

¹³³ οἱ δὲ Πυθαγόρειοι πρότερον περὶ τινῶν ὀλίγων, ὧν τοὺς λόγους εἰς τοὺς ἀριθμοὺς ἀνήπτων, οἶον τί ἐστι καιρὸς ἢ τὸ δίκαιον ἢ γάμος (*Met.* 1078b22–23).

¹³⁴ Wilpert P. Reste Verloreener Aristotelesschriften bei Alexander von Aphrodisias, *Hermes* 75 (1940) 369–396, at 369–376; fr. 203 Rose³ = fr. 13 Ross = fr. 162 Gigon. It should be noted that while fr. 203 Rose³ takes 8 lines (40.26–41.2), fr. 13 Ross takes 3,5 pages (38.8–41.15).

¹³⁵ Thus e.g. Burkert. *Op. cit.*, 467 and n. 8.

¹³⁶ See above, 10.

¹³⁷ Zhmud. *Greek Arithmology*, 343f.

source for the author of the Anonymus and other writers. As a matter of fact, we see that practically every arithmological item in Alexander's passage, including that on the number five, has strong parallels with the writings dependent on the Anonymus,¹³⁸ whereas nothing in the Anonymus' remains suggests that its author, or for that matter anybody else in his times, was familiar with Aristotle's description of ancient Pythagorean arithmology.

Wilpert treated very cursorily, if at all, the content of the suggested Aristotelian fragment, especially its arithmological part, and what he said on this account does not always fits the facts.¹³⁹ Thus, in Aristotle's entire criticism of the Pythagoreans he never mentions the generation of numbers or magnitudes, for the obvious reason that this is typically Platonic idea.¹⁴⁰ Aristotle regularly uses language of generative arithmetic and geometry in respect to the Platonists, especially in the *Metaphysics* M and N.¹⁴¹ In the alleged Aristotelian fragment though the term γεννᾶν is as manifest as in later arithmology: five τὴν γένεσιν ἔχει from two and three, two generates four, six and nine are generated by three, eight by four, ten by five. According to Wilpert, this term is originally Pythagorean, but the only example from Aristotle he adduces, concerns not the Pythagoreans, but number speculations of Plato.¹⁴² The parallel passage from Theon, adduced by Wilpert, is no less revealing: whereas in Theon Aristotle reports that the Pythagoreans considered the one both even and odd (ἀρτιοπέριττον), in Alexander the same idea is expressed through language of generation.¹⁴³ Further, Wilpert did not mention that Asclepius' commentary on the *Metaphysics* contains a passage almost identical to that of Alexander, only with several better readings used by M. Hayduck to improve Alexander's text.¹⁴⁴ Nor was Wilpert aware that Delatte had published from two Byzantine manuscripts a short anonymous arithmological extract, for the most part coinciding with the relevant commentaries of

¹³⁸ See e.g.: ὡς οὖν ἄρρενός τε τοῦ πρώτου καὶ θήλεος ὁμιλία τὰ πέντε γινόμενα γάμον οἱ Πυθαγόρειοι προσεῖπον (Plut. *De E ap. Delph.* 387f–388c); τοῦ δὲ περιττοῦ μάλιστα γαμήλιος ἢ πεντάς ἐστι· τὰ γὰρ τρία πρῶτος περιττός καὶ τὰ δύο πρῶτος ἄρτιος· ἐκ δὲ τούτων ὥσπερ ἄρρενος καὶ θήλεος ἢ πεντάς μέμικται (Plut. *Aet. Rom.* 264A).

¹³⁹ For reactions to various arguments of Wilpert, see also the useful notes in: Dooley W. E., tr. *Alexander of Aphrodisias, On Aristotle Metaphysics I*. Ithaca (NY), 1989, 63ff.

¹⁴⁰ The only place where Aristotle speaks of generation of the αἰδίων ὄντων in relation to the Pythagoreans clearly shows that he had in mind a physical process: ὡς τοῦ ἐνὸς συσταθέντος, εἴτ' ἐξ ἐπιπέδων εἴτ' ἐκ χροιάς εἴτ' ἐκ σπέρματος εἴτ' ἐξ ὧν ἀποροῦσιν εἰπεῖν, εὐθὺς τὸ ἔγγιστα τοῦ ἀπείρου ὅτι εἴλκετο καὶ ἐπεραίνετο ὑπὸ τοῦ πέρατος (*Met.* 1091a13–18), as he himself concedes (1091a18–20). See Philip J. The "Pythagorean" Theory of the Derivation of Magnitudes, *Phoenix* 20 (1966) 32–50.

¹⁴¹ E.g. *Met.* 1077a23–31, 1081a22–27, 1081b10–26, 1082b28–33, 1083a32–35, b4–11, 1084a2–7, 1085a7–b33, 1090b5–8, 1091a12, 1092a23–24, etc. See Annas J. *Aristotle's Metaphysics: Books M and N*. Oxford, 1976.

¹⁴² Wilpert. *Op. cit.*, 375. τὸ δὲ δυάδα ποιῆσαι τὴν ἑτέραν φύσιν διὰ τὸ τοὺς ἀριθμοὺς ἕξω τῶν πρώτων εὐφρῶς ἐξ αὐτῆς γεννᾶσθαι ὥσπερ ἕκ τινος ἐκμαγείου (*Met.* 997b33–988a1).

¹⁴³ εἶναι γὰρ τὴν μονάδα ἅμα ἀρτιοπέριττον, ὃ ἐδείκνυε διὰ τοῦ γεννητικῆς αὐτὴν εἶναι καὶ τοῦ περιττοῦ καὶ τοῦ ἀρτίου ἀριθμοῦ· ἀρτίῳ μὲν γὰρ προστιθεμένη περιττὸν γεννᾷ, περιττῷ δὲ ἄρτιον (*In Met.*, 40.18–20). Cf. Theo, 22.5–9 = fr. 9 Ross.

¹⁴⁴ Wilpert notes (*Op. cit.*, 375) that according to Asclepius (34.16f.) justice is five, not four, but this is the only difference between two passages; from 34.21ff. Asclepius follows the same source as Alexander.

Alexander and Asclepius, and argued that these three texts derive from an unknown arithmological archetype, perhaps an earlier commentary on Aristotle.¹⁴⁵ Interestingly, right after the pertinent passage Alexander quotes the Peripatetic Aspasia (c. 100–150 AD), who discussed the Pythagorean number philosophy in his commentary on the *Metaphysics* (*In Met.* 41.26–28). Could arithmology also come from Aspasia? Authenticity of fr. 13 Ross, the astronomical part of which is no less problematic than arithmological,¹⁴⁶ deserves a special treatment, in the framework of the present paper it suffices to conclude that arithmology presented in Alexander cannot belong to the pre-Aristotelian Pythagoreans. What Alexander says on the number seven only confirms this view.

10. The ungenerated seven

By far the longest chapter in the Anonymus is assigned to the number seven: in Philo's *De opificio mundi* it takes forty paragraphs (89–128), fifteen of which dealing with mathematics (91–100, 106–110) and the rest with the corporeal world. Nature takes delight in the number seven, says Philo, listing seven phases of the moon, seven heavenly circles, seven ages of man, seven external and seven internal parts of the body, etc.¹⁴⁷ Symbolism of the number seven has a very rich tradition,¹⁴⁸ that was actively used by our arithmologist. Since from the purely arithmetical point of view the number seven was not a very rewarding topic, the arithmologist divided it into the one and the six, the two and the five and the four and the three and plaid with these pairs of numbers.

One specific feature of the seven noted by Speusippus, namely, that it is neither a factor nor a product (fr. 28, l. 30 Tarán), becomes very prominent in arithmological literature. For this reason, says Philo, the Pythagoreans liken seven to the motherless and ever-virgin Maiden (*Leg. alleg.* 1.15), i.e. Athena, who neither begets nor is begotten. Elsewhere Philo mistakenly ascribes this identification to the other philosophers, saying that the Pythagoreans liken the seven to the ruler of all (*De opif. mundi*, 100). The entire arithmological literature, however, including Philo's 'cousin' Lydus,¹⁴⁹ contradicts this and relates the connection of the seven with Athena to the Pythagoreans.¹⁵⁰ The passages of Lydus and Philo on the seven as Athena are very close textually and both are full of confusions.¹⁵¹ Thus, while Lydus ascribes this idea to Philolaus: "Rightly, therefore, did Philolaus call the number seven 'motherless'; for by nature it alone

¹⁴⁵ Delatte. *Op. cit.*, 167–171, at 170.

¹⁴⁶ Zhmud. *Pythagoras*, 343f.

¹⁴⁷ *Leg. alleg.* I, 8–15; *De opif. mundi*, 101–126. For more details, see Moehring. *Op. cit.*, 200–205; Runia. *Op. cit.*, 301f.

¹⁴⁸ See above, 22 and Zhmud. *From number symbolism*, 26ff.

¹⁴⁹ ὅθεν καὶ οἱ Πυθαγόρειοι Ἀθηνᾶ τὴν ἐπτάδα ἀνατίθενται (*De mens.* 3.9).

¹⁵⁰ Staehle № 43a–43k. Philo's mistake is best explained by Huffman. *Philolaus*, 337f.

¹⁵¹ Boyancé. *Op. cit.*, 91ff.; Hooker M., tr. *Lydus. On the Months*. 2017². Introduction, xxxix ff.

neither begets nor is begotten”,¹⁵² Philo gives a different quote from Philolaus: “There is a ruler and leader of all, god, one, eternal, abiding, without motion, himself like to himself, different from all others”, which Lydus in the next sentence cites under the name of Onetor of Tarentum.¹⁵³ This Onetor has been identified by Thesleff with Onetas (Onatas) of Croton, the pseudo-Pythagorean author of *Περὶ θεοῦ καὶ θείου*, where he discussed and refuted monotheistic ideas.¹⁵⁴ Huffman prefers another Onetor, also suggested by Thesleff, the author of *Περὶ ἀριθμητικῆς ἀναλογίας* mentioned in a scholium to Proclus, the fifth book of which considered seven-, eight- and nine-month babies.¹⁵⁵ Existence of such a treatise before the Anonymus is highly unlikely, so that Onetas remains better option, for other attested Onetors also do not suit.¹⁵⁶

Lydus’ quotation from Philolaus that number seven is motherless, placed by Diels-Kranz among spurious fragments (44 B 20), Burkert and Huffman considered as genuine for it has a very close parallel in Aristotle fr. 13 Ross on Pythagorean arithmology: “Since seven neither generates any of the numbers in the decad nor is generated by any of them, they [the Pythagoreans] called it Athena... who is motherless and always virgin”.¹⁵⁷ Does this Lydus’ quote from Philolaus come from the Anonymus, and does Aristotle’s fragment adds to its authenticity? First, we have to bear in mind that Philolaus’ genuine fragments contain no word of any number being generated or assigned to god. On the other hand, there is ample evidence that under his name a pseudo-Pythagorean arithmological treatise circulated, in which angles of the triangle and the square were dedicated to different gods and various numbers were associated with gods. As a matter of fact, Lydus adduces two other such references to Philolaus: the dyad is “a consort of Kronos”,¹⁵⁸ secondly, that the decad is “a receptive of the unlimited”.¹⁵⁹ It seems then reasonable to assume that the quote on the hebdomad in Lydus also comes from the pseudo-Philolaic treatise and not from the Anonymus, for such treatise could not have been written before the Anonymus and cited by the latter. A study of the arithmological work under Philolaus’

¹⁵² ὁρθῶς οὖν ἀμήτορα τὸν ἐπτὰ ἀριθμὸν ὁ Φιλόλαος προσηγόρευσε, μόνος γὰρ οὔτε γεννᾶν οὔτε γεννᾶσθαι πέφυκε (2.12, cf. 3.19, tr. M. Hooker).

¹⁵³ ἔστι γὰρ ἡγεμὼν καὶ ἄρχων πάντων εἰς αἰὲν ὢν θεός, μόνιμος, ἀκίνητος, αὐτὸς ἑαυτῷ ὅμοιος, ἕτερος τῶν ἄλλων (Philo. *De opif. mundi*, 100 = Lydus. *De mens.* 2.12, tr. C. Huffman). One of Lydus’ manuscripts reads ὀνήτωρ instead of ὁ ῥήτωρ accepted by his editor Wünsch.

¹⁵⁴ Thesleff. *Op. cit.*, 138–140.

¹⁵⁵ Procl. *In Rem publ.* II, 378.23 = Onetor (*FGrHist* 1113 F 4).

¹⁵⁶ See *FGrHist* 1113 F 1–3; Lakmann M.-L. *Platonici minores: I. Jh.v.Chr. – 2. Jh.n.Chr.* Leiden, 2017, 212f.

¹⁵⁷ Alex. *In Met comm.* 39.3ff. = Arist. fr. 13 Ross, tr. C. Huffman; Burkert. *Op. cit.*, 249 n. 52; Huffman. *Philolaus*, 337f.

¹⁵⁸ ὁρθῶς οὖν ὁ Φιλόλαος τὴν δυάδα Κρόνου σύνευνον εἶναι λέγει, ὃν κατὰ τὸ προφανές χρόνον ἄν τις εἴποι (4.64).

¹⁵⁹ ὁρθῶς οὖν αὐτὴν ὁ Φιλόλαος δεκάδα προσηγόρευσεν, ὡς δεκτικὴν τοῦ ἀπείρου, Ὅρφευς δὲ κλαδοῦχον, ἐξ ἧς ὡσεὶ κλάδοι τινὲς πάντες οἱ ἀριθμοὶ φύονται (1.15);

name is a desideratum. Thesleff wrongly decided that Philolaus' doxography derives from the early Academic and Peripatetic sources, while his fragments even if they are inauthentic can be dated at least to the mid-fourth century BC.¹⁶⁰ Due to this he did not distinguish a specific arithmological treatise of Philolaus, although there is plenty of reason to assign to it such fragments as B 8, 11, 20a-c and 23, and testimonia A 10, 11, 12, 13 ad fin., 14, as well as other material.

Therefore, there is sufficient ground to believe that the idea of the seven that οὔτε γεννᾷ οὔτε γεννᾶται has been ascribed to the Pythagoreans only after Speusippus and Aristotle and thus, that Aristotle's fr. 13 Ross is not genuine.

¹⁶⁰ Thesleff. *Op. cit.*, 149. To be sure, he considered as spurious Lyd. *De mens.* 2.12 (on the seven) and Lucian. *Pro laps. in salut.* 5 (on the tetractys).