

The Mathematician Zenodorus

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ZENODORUS the mathematician is best known for his treatise *Περὶ ἰσοπεριμέτρων¹ σχημάτων*, *On Figures of Equal Boundary*. This, like all his works, is lost, but part of its contents has been preserved in three secondary sources. Only one of these, Theon's commentary on Book I of the *Almagest*, specifically mentions Zenodorus,² but the other two, Pappus, *Synagoge* 5.4–19,³ and the so-called "Introduction to the *Almagest*"⁴ are so similar to Theon's version that there is no doubt that they are derived from the same work (in fact all three versions may well be derived from an intermediary source, Pappus' lost commentary on *Almagest* I). The contents of Zenodorus' treatise, in so far as it is available to us from these sources, have been adequately described in modern works,⁵ and are therefore omitted here. Only two other ancient authors mention mathematical works by

¹ The two earlier editions of Theon's commentary on the *Almagest* (in the *ed. princ.* of the *Almagest* [Ioannes Walderus, Basel 1538] 11, and by N. Halma, *Commentaire de Théon d'Alexandrie sur le premier livre de la composition mathématique de Ptolémée* [Paris 1821] 33) read *ἰσομέτρων*, and this was defended against Nokk's obvious conjecture (*Zenodorus' Abhandlung über die isoperimetrischen Figuren von Dr Nokk* [Freiburger Lyceums-Programm, 1860] 26), *ἰσοπεριμέτρων*, by Fr. Hultsch (*Pappi Alexandrini Collectionis quae supersunt* III [Berlin 1875–78] 1190 n.2), and adopted by T. L. Heath (*History of Greek Mathematics* II [Oxford 1921] 207) and others. But A. Rome, in his edition of Theon's commentary (*Commentaires de Pappus et de Théon d'Alexandrie sur l'Almageste* II [Città del Vaticano 1936] 355), shows that *ἰσομέτρων* is merely a variant reading of some mss. The correctness of *ἰσοπεριμέτρων* is shown by the context in Theon and also by the remark of Simplicius (*Comm. in Aristotelis de Caelo*, ed. Heiberg [Berlin 1894] 412): *δέδεικται . . . παρὰ Ἀρχιμήδους καὶ παρὰ Ζηνοδώρου πλατύτερον, ὅτι τῶν ἰσοπεριμέτρων σχημάτων πολυχωρητότερός ἐστιν ἐν μὲν τοῖς ἐπιπέδοις ὁ κύκλος, ἐν δὲ τοῖς στερεοῖς ἡ σφαῖρα.*

² ed. Rome (*supra* n.1) pp.355–79.

³ ed. Hultsch (*supra* n.1) I.308–34.

⁴ The section of this on isoperimetric figures was printed by Hultsch in his edition of Pappus, III.1138–64. On the work in general see J. Mogenet, "L'introduction à l'Almageste," *MémAcBelg* 51.2 (1956).

⁵ Nokk (see n.1), with reconstruction, in German translation, from Theon and Pappus; Heath, *HGM* (*supra* n.1) II.207–13; W. Müller, "Das isoperimetrische Problem im Altertum," *Sudhoffs Archiv* 37 (1953) 39–71, with German translation of Theon's version.

Zenodorus; one of these references is certainly to the *Περὶ ἰσοπεριμέτρων σχημάτων*, the other probably so.⁶

The date of Zenodorus has been the subject of some discussion. Older works on the history of mathematics⁷ made him a disciple or contemporary of Oinopides, *i.e.* mid-fifth century B.C., apparently by confusion with one Zenodotus who is said by Proclus⁸ to belong to “the tradition of Oinopides.” Nokk rightly protested against this, and concluded from the several references to Archimedes in the Theon and Pappus versions of the *Περὶ ἰσοπεριμέτρων σχημάτων* that Zenodorus was probably subsequent to Archimedes.⁹ The inference was plausible, though not quite certain, given the secondhand nature of our information,¹⁰ and has been universally accepted. However the attempts of Hultsch and Cantor¹¹ to establish a lower limit for the date of Zenodorus on stylistic grounds or supposed knowledge of his work by Quintilian are worthless. The first solid evidence for Zeno-

⁶ The first is the reference by Simplicius quoted in n.1. The second is Proclus, *Comm. on Euclid I* (ed. G. Friedlein [Leipzig 1873] 165), where it is stated that Zenodorus gave the name *κοιλογωνία* to the quadrilateral with one angle greater than two right angles. For the latter cf. “Introduction to the *Almagest*” in Pappus, ed. Hultsch, III p.1154 lines 11–16. See also A. Rome, *Comm. de Théon* p.371 n.(1).

⁷ *e.g.* J. F. Montucla, *Histoire des mathématiques*² I (Paris, An VII [= 1798]) 151. The error persists as late as 1883 in the large and inept work of M. Marie, *Histoire des sciences mathématiques et physiques* I (Paris 1883) 26, where Zenodorus is put at 450 B.C.; the author (p.261) pays his tribute to more recent scholarship by creating another Zenodorus who was born about A.D. 290.

⁸ Procl. *In Euclid. I Comm.*, ed. G. Friedlein (BT, Leipzig 1873) p.80.

⁹ Nokk, *op.cit.* (*supra* n.1) 27–29.

¹⁰ An exactly similar inference, which is now known to be incorrect, has been made for Diocles. His work *On Burning Mirrors* was for long known only from two extracts in Eutocius’ commentary on Archimedes’ *Sphere and Cylinder*. Because there are references to Apollonius’ *Conics* in one of these (*e.g.* Archimedes, ed. Heiberg² III [Leipzig 1915] p.142 lines 8–9), it is commonly assumed that Diocles is subsequent to Apollonius (see *e.g.* Heath, *HGM* [*supra* n.1] I.264; II.200, where Diocles is described as “writing a century or more later than Apollonius,” on no grounds whatever). However, the recently discovered Arabic translation of Diocles’ treatise (see below) shows that Eutocius has recast the original in the ‘classical’ form of analysis and synthesis, and added the references to Apollonius. From other indications in the work it appears that Diocles was in fact a contemporary of Apollonius. The suspicion of P. Tannery (*Mémoires scientifiques* II [Toulouse and Paris 1912] 46) has been justified: “Les citations des coniques d’Apollonius qui se trouvent dans la solution de Dioclès doivent être des interpolations d’Eutocius et ne peuvent servir pour déterminer la limite supérieure de l’époque où vivait Dioclès.”

¹¹ Hultsch, in Pappus, III pp.1189–90; M. Cantor, *Vorlesungen über Geschichte der Mathematik*² I (Leipzig 1894) 341. Rome, *Comm. de Théon* pp.355–56, points out how the latter’s argument falls to the ground. An even more confused attempt to date Zenodorus in the second century was made by Cantor, *CRAcSc* 51 (1860) 630–33.

dorus' date was turned up by Crönert, who published in 1900 a fragmentary biography of the Epicurean philosopher Philonides from the Herculaneum papyrus roll no.1044.¹² Philonides is dated by his dealings, as a mature man, with the Seleucid kings Antiochus IV Epiphanes (reigned 175–164? B.C.) and Demetrius I (162–150 B.C.).¹³ Philonides was, at least in his youth, very interested in mathematics and came into contact with several notable mathematicians, including Apollonius of Perge,¹⁴ Eudemus and Dionysodorus.¹⁵

The Herculaneum biography provides the only secure evidence for dating these men. It also mentions, at least once and possibly twice, a Zenodorus whom Philonides appears to have known. Crönert (p.956) identified this man with the author of the treatise on isoperimetric figures. The identification dates Zenodorus to the first half of the second century B.C. It has been generally accepted.¹⁶

I believe that the identification proposed by Crönert is correct, but I also believe that it requires argumentation, which neither Crönert nor anyone else has offered. The fact that Philonides is known to have associated with mathematicians is an argument for identifying the Zenodorus whom he knew with Zenodorus the mathematician, but is not in itself sufficient. If the name in question had been not Zenodorus but its synonym Diodorus, the identification would have been highly dubious, since Diodorus is an extremely common name at all times and in all parts of the Greek-speaking world. In order to judge the probability of Crönert's identification, then, it is necessary to examine the evidence for the occurrence of the name *Ζηνόδωρος*.¹⁷

¹² W. Crönert, "Der Epikureer Philonides," *SBBerlin* 1900.2, 942–59.

¹³ Crönert, *op.cit.* (*supra* n.12) 956–57.

¹⁴ Apollon.Perg. *Conic.* II Praef., ed. J. L. Heiberg [*BT*, Leipzig 1891] I p.192).

¹⁵ Crönert, *op.cit.* (*supra* n.12) 956. Eudemus was the recipient of the first three books of Apollonius' *Conics*. Dionysodorus is known as an able mathematician from several secondary sources. See I. Bulmer-Thomas, s.v. DIONYSODORUS, in *Dictionary of Scientific Biography* IV (New York 1971) 108–10.

¹⁶ e.g. by W. Schmidt, "Zur Geschichte der Isoperimetrie im Altertum," *Bibliotheca Mathematica* 3 F. 2 (1901) 5–8; G. Loria, *Le Scienze esatte nell'antica Grecia*² (Milan 1914) 419. Heath, however, writing in 1921, appears to be ignorant of the evidence adduced by Crönert (*HGM* [*supra* n.1] II.207). This is one of many instances in which Heath's "standard" work is inferior to Loria's excellent book, which was published earlier than Heath's and is therefore, apparently, seldom referred to now. That the evidence is also unknown to the author of an even more recent "standard" work (Ch. Mugler, *Dictionnaire historique de la terminologie géométrique des Grecs* [Paris 1958] 254) and to the ed.³ of Cantor's *Vorlesungen I* (Leipzig 1907) 356–57, will surprise no one acquainted with those compilations.

¹⁷ The importance of the study of the chronological and geographical distributions of

As in all such investigations, the evidence is largely inscriptional. For *Zηνόδωρος* one can supplement the inscriptions with a few literary references and, for Egypt and Dura-Europos, occurrences in papyri. I have not attempted to make a complete collection of all occurrences of the name, but have tried to establish the pattern of its appearance.

In only one area of the Greek-speaking world can the name *Zηνόδωρος* be considered common: in Palestine and Syria and adjacent areas, from the second century B.C.¹⁸ with increasing frequency up to at least the late third century there are numerous examples.¹⁹ In

personal names for ancient history has been repeatedly stressed by L. Robert (e.g. "Eulaios, histoire et onomastique," *Epist.Epeteris Philos.Schol.Panep.Ath.* 1962–63, pp.528–29, repr. *Opera Minora Selecta II* [Amsterdam 1969] 986–87: "il faut mettre les noms dans leur cadre historique et géographique, naturellement avec leur chronologie. Il se révèle que beaucoup des noms sont plus ou moins locaux, employés seulement dans une ville ou une région plus ou moins vaste. Ils nous instruisent sur les cultes, les sentiments et les modes; ils soulignent ou révèlent des rapports de colonisation et de parenté ethnique, des relations économiques ou politiques. Nous devons faire non point des catalogues de noms, mais l'histoire de noms, et même l'histoire par les noms"). Though the illuminating results that can be achieved by such study have been demonstrated by Robert himself (see for instance the masterly article "De Delphes à l'Oxus," *CRAI* 1968, 416–57) and by others (e.g. the article by O. Masson quoted in n.23), this aspect of onomastics is still generally neglected. Moreover, such general works on Greek names as do exist (e.g. W. Pape, *Wörterbuch der griechischen Eigennamen*³, bearb. G. E. Benseler [Braunschweig 1911]; Fr. Bechtel, *Die historische Personennamen des Griechischen bis zur Kaiserzeit* [Halle 1917]), besides being antiquated, were not compiled with a view to illuminating the topics outlined by Robert above, but rather for narrowly philological or prosopographical ends. I have therefore relied mainly on primary sources in this onomastic investigation.

¹⁸ For second-century B.C. examples see the inscriptions from Delphi and Delos cited in n.19. *Sammelbuch [SB] I* 681, the stele from Memphis (*ibid.*), is also assigned to the second century B.C. on the basis of the lettering (photograph in E. Breccia, *Iscrizioni greche e latine, Cat.Gén.Mus.Alexandrie nos.1–568* [Cairo 1911] tav. xxv, 62). If we could trust the reading in *P.Cair.Zen.* 59009, *παρὰ Ζηνόδωρον | πατρός Ἀββαίου*, then the name of the son must surely be considered Semitic (cf. *Gerasa, City of the Decapolis*, "Inscriptions," ed. C. B. Welles [New Haven 1938] p.439, no.186 line 5, *[Διον]υκίου Ἀββαίου*; *Ἀββαίου* is tentatively restored in a list of Jewish names in *P.Tebt.* 882 line 1 by Tcherikover and Fuks, *C.P.J.* I p.173), and hence the father would be a very early (ca. 250 B.C.) example of a Semite adopting the name *Zηνόδωρος*. However, the papyrus is extremely fragmentary. Is it possible that Edgar misread *Ἀδδαίω* as *Ἀββαίω*? If so, then this Zenodorus is of Macedonian descent (cf. n.35), for A(d)daios is a characteristically Macedonian name (O. Hoffmann, *Die Makedonen* [Göttingen 1906] 189–90; L. Robert, *Gnomon* 35 [1963] 60–61, adds many more examples). This suggestion is palaeographically implausible, however, and the papyrus is concerned with dealings in Palestine (see Edgar *ad loc.*), so *Ἀββαίου* is probably correct. But I suspect that the connection of *Ἀββαίου* to Zenodorus via *πατρός* rests either on a misreading or a misunderstanding due to the incompleteness of the papyrus.

¹⁹ A sampling: *IGLSyr II* 577 (Bānaqfūr, about 20 miles west of Aleppo; for the site see R. Dussaud, *Topographie historique de la Syrie antique et médiévale* [Paris 1927] 217 and map x),

many of these examples it is certain that the bearers of the name were Semites or, more precisely, speakers of Aramaic, who had a veneer of Hellenization. In most cases it is probable that they had a Semitic name as well. The adoption of a Greek name in addition to, or rather as an alternative to, one's native name is a well-known phenomenon in Aramaic-speaking areas.²⁰ The best discussion of this and of the

Μά<λ>χος(?) Ζηνοδώρου; *ibid.* II 664 (Darkush, on the Orontes about 10 miles north of Jisr-ash-Shughūr [Dussaud p.163 and map x], 4th century?); *ibid.* III.2 1213j (Seleucia Pieria, A.D. 149/50), *Ζηνοδώρου τοῦ Διονυσίου ἀγορανόμου*; *cf. ibid.* III.2 1152b (Seleucia Pieria), *Ἡνόδωρος Σερεπίωνος*, and IV 1256 (Laodicea πρὸς θαλάσση), *Ζηνοδώρα*; *ibid.* VI 2851 (Ba'albek) . . . *Ζηνοδώρῳ Λυ[αίου τ]ετράρχου | καὶ Λυ[ανία] . . . καὶ τ]οῖς υἱοῖς*. The latter Zenodorus is the man known from Joseph. *AJ* 15.345–59, and other literary sources (Cass. Dio 54.9.3, Strabo 16.20) and coins (Head, *Hist.Num.*³ p.784, *BMC Galatia* p.281) as tetrarch of Ituraea and an enemy of Herod the Great early in the reign of Augustus (he died 20 B.C.). *IG* II² 2810 (mid-second century), *ἡ πόλις ἡ Ἀσκαλωνειτῶν καὶ Λούκιοι Αἰμίλιοι Κᾶρος καὶ οἱ τοῦτου υἱοὶ Ἀπολλωνίδης καὶ Οὐειβιανὸς Ζηνοδώρος τὴν πόλιν τὴν Ἀθηναίων κτλ.* Another man of Ascalon, *IG* XI.4 817 and 818, by combining which we can extract *Ἀφροδίσιος Ζηνοδώρου Ἀσκαλωνίτης*. *OGIS* 614.7 (Der^a, ancient Adraa, Syria, A.D. 263/4). *SEG* 16.814 (Der^a, A.D. 274/5, an inscription of a type similar to the preceding). *IGRR* III 1287.10 (Der^a, A.D. 262/3). *IGRR* III 1193 (Shaqqā, ancient Saccaea, later Maximianopolis [Dussaud pp.367–68, 516 and map II], a Roman legionary). *SEG* 7.250 (al-Quneitra, Syria). *SEG* 7.252 (Ezra^c, ancient Zorava, imperial period). *IGRR* III 1157 (Ezra^c, a Roman legionary). *SEG* 8.86 (Qābla, Palestine). *CIG* 4611 (Atil, ancient Athela, just north of Suweida, Syria [Dussaud p.349 and map II], imperial period). *Σέλευκος τοῦ Ζηνοδώρου* from Hieropolis (Bambyke in Syria) was priest of the Syrian gods at Delos in the second century B.C. (*Inscr. Délos* 2247). A *Ζηνοδώρος* of Iamneia in Palestine is among those making a dedication to the gods of Iamneia at Delos (*ibid.* 2308). *Διονύσιος Ζηνοδώρου* appears in inscriptions of the Poseidoniasts of Berytus at Delos (*ibid.* 1790). Examination of the geographical distribution of these names shows that *Ζηνοδώρος* is found in nearly all parts of Syria and Palestine, but that it is particularly common in the Hauran and Trachonitis. In Egypt the name occurs several times on two stelai, from Memphis (second century B.C.) and Hermopolis Magna (80–69 B.C.), containing names of soldiers (*SB* I 681 and 4206, *cf.* Fr. Zucker, “Doppelschrift spätptolemäischer Zeit aus der Garnison von Hermopolis Magna,” *AbhBerl* 1937.6, 34–49). Many of the names are obviously Semitic, and Zucker has shown (pp.15–16) that a significant number are specifically Idumaeans. Clearly *Ἀλέξανδρος Ζηνοδώρου*, *Ἀπολλώνιος Ζηνοδώρου* (*SB* I 4206 lines 181, 193), [*Ζηνό*]δωρος *Κοσμαλάχου*, *Πρ[όμα]χος Ζηνοδώρου* and *Θώραξ Ζηνοδώρου* (*SB* I 681 lines 43, 84, 118) should also be considered Idumaeans. The name *Ζηνοδώρος* is also borne by Jews, despite its pagan associations: besides the Cyrenaean Jew mentioned in n.29, there is an inscription in the Jewish catacomb on the Via Nomentana in Rome (*Corpus Inscriptionum Iudaicarum*, ed. J. B. Frey, I 43), *Μαρκία Τρυφέρα | Μαρκειε Ζηνοδώρε (= Μαρκίη Ζηνοδώρη according to Frey) τῇ ἰδίᾳ ἀδελφῇ κτλ.* It is likely that *Ἀπολλοφάνης καὶ Ἰλιάδης ἄρξαντες καὶ Ζηνοδώρος*, who erected the inscription *OGIS* 192 (found at Cos but not necessarily originating there) to Ptolemy XII (80–51 B.C.) *ὑπὲρ τοῦ πολιτεύματος*, were members of a Jewish community: see W. Ruppel, “Politeuma,” *Philologus* 82 (1926–27) 437–38.

²⁰ Several cases of men bearing two names, one Semitic, one Greek, are known from Hellenistic Babylonia, but in no case is there any obvious relationship between the pair. (The same lack of correspondence is occasionally found elsewhere: for Palmyra see F.

different types of correspondence between the original Semitic name and the adopted Greek name has been given by Rosenthal with reference to the Palmyrene inscriptions.²¹ He shows that some of the Greek names are translations of the Semitic name,²² but that in many cases the main factor in choosing the Greek equivalent seems to have been that it sounded similar to the Semitic original.²³ An example of this is Zenobia herself, whose Semitic name was Batzabbai, 'daughter of Zabbai'.²⁴ I believe that the use of *Ζηνόδωρος* in Aramaic-speaking areas²⁵ is a mixture of both these motives. It must correspond to a Semitic theophoric name such as Zabdibōl, 'gift of Bōl',²⁶ or Zabdilāh,

Rosenthal, *Die Sprache der palmyrenischen Inschriften* [MVAG 41.1, Leipzig 1936] 94; for a Phoenician example see O. Masson, *BCH* 93 [1969] 699). On the general topic of Greek names in Babylonia see A. Aymard, "Une ville de la Babylonie seleucide," in his *Études d'histoire ancienne* (Paris 1967) 200–02, where references to the literature will be found; on double names *ibid.* p.197 n.6 and 201 n.3.

²¹ Rosenthal, *op.cit.* (*supra* n.20) 93–94. The phenomenon was recognized long ago, and the essential was enunciated by C. S. Clermont-Ganneau, *Recueil d'archéologie orientale* I (Paris 1888) 186: "Quand un Sémite adoptait un nom grec, il pouvait procéder de trois façons dont nous avons de nombreux exemples: ou bien il transcrivait purement et simplement son nom; ou bien il le traduisait; ou bien il choisissait un véritable nom hellénique présentant avec son nom sémitique une assonance souvent très superficielle."

²² Thus Vaballathus, the son of Zenobia, was also known as Athenodorus (examples in Rosenthal p.93). *WHB* means 'gift' in Palmyrene Aramaic (*cf.* Arabic وهب 'give'), and the goddess Allat was equated with Athena.

²³ Both motives are adduced by O. Masson in an interesting article on names of Phoenicians in Greek inscriptions, "Recherches sur les Phéniciens dans le monde hellénistique," *BCH* 93 (1969) 679–700. *E.g.*, for the first, he conjectures (p.691) that *Βασιλείδης*=*MLK* or *MLKY* ('king'), or *MLKB^cL* ('Ba^cal is king'); for the second he conjectures (p.692) that *Φιλόκρατος*=*BD^cSTRT* ('slave of Astarte'), and shows from a bilingual inscription (p.698) that *Ἱερώνυμος*=*BD^cLNM* ('slave of the gods').

²⁴ Inscriptionally attested *CIS* II.3 3947, 3971. There are several examples of *Ζηνόβιος* as the equivalent of the names Zabdilāh or Zabidā (Zabbai is a *hypocoristicum* derived from the same root *ZBD* 'give'): *CIS* II.3 3932, *Ἰούλιον Αὐρήλιον Ζηνόβιον τὸν καὶ Ζαβδίλαν* (A.D. 242/3), *cf. ibid.* 4031 (A.D. 233), 4168 (A.D. 149), 4201 (A.D. 212).

²⁵ It is not attested at Palmyra itself, but this is probably accidental, since it occurs several times in the files of the *Cohors Vicesima Palmyrenorum* stationed at Dura-Europos in the third century. See *Dura-Europos, Final Report V.i: The Parchments and Papyri*, ed. C. B. Welles, R. O. Fink, J. F. Gilliam (New Haven 1959) 380, no.107 (*ca.* A.D. 240) ii 16: *Aurel Zenodorus*; *ibid.* 98 iv 24 (A.D. 210): *Zenodorus Artemidori*. *Cf. ibid.* p.312, 100 viii 1; p.345, 101 xiii 13. An *optio Zenόδωρος* appears in a dedication to Zeus Dolichenus at Dura of A.D. 251 (*SEG* 17.770). Note (Welles, *op.cit.* p.59) that *Ζηνόδωρος* is not among the Greek names found at Dura before the establishment of the Roman camp there in the early third century.

²⁶ On the onomastic element *Ζην-* as the equivalent of Ba^cal in the names of Phoenicians see Clermont-Ganneau, "Stèles peintes de Sidon," *GazArch* 3 (1877) 110–13. Zabdibōl is very common at Palmyra (lists in J. K. Stark, *Personal Names in Palmyrene Inscriptions* [Oxford 1971] 16–17; on Zabdibōl/Zabdibēl at Palmyra see J. Starcky in H. Seyrig, *Antiquités Sy-*

'gift of god'.²⁷ Thus it is a translation. But the reason for selecting *Ζηνόδωρος*, rather than *e.g.* *Διόδωρος*, was the greater similarity in sound to the Semitic original. I have found no explicit evidence for the equivalence, but it is the most plausible hypothesis to explain the frequency of the name Zenodorus in this area alone.

Elsewhere the name is surprisingly rare, when one considers that both its elements are extremely common in other combinations.²⁸ In most parts of the Greek-speaking world it is not attested at all. It occurs occasionally in the Cyrenaica,²⁹ where it may be an example of the survival of Theran nomenclature.³⁰ There are several examples of

riennes IV [Paris 1953] 39–40). Note also *οἱ ἐγ γένους Ζαβδιβωλείων*, Lebas-Waddington III 2595, Palmyra, A.D. 179. (On this tribe, the Benī Zabdiböl, at Palmyra see *e.g.* Clermont-Ganneau, *Recueil d'archéologie orientale* VII [Paris 1906] 13; two tesserae inscribed *BNY ZBDBWL*, *Recueil des tessères de Palmyre*, ed. H. Ingholt, H. Seyrig, J. Starcky [Paris 1955] nos. 138, 141; on the tribes at Palmyra in general see du Mesnil du Buisson, *Les tessères et les monnaies de Palmyre* [Paris 1962] 453–63.) The name is found also in the files of the *Cohors Vicesima Palmyrenorum*, *e.g.* *Dura, Papyri* (*supra* n.25) no.122 (p.394), [A]υρε! [Za]βδib[o]![us (a contemporary of the Aurelius Zenodorus of no.107, mentioned in n.25, but there is no reason to identify the two). Note too the *Ζαβδίβηλος*, leader of a contingent of "Arabs" (Palmyrenes?: see J. Starcky *ap.* Seyrig, cited above) serving under Antiochus III at the battle of Raphia (Polyb. 5.79.8). See Zucker's remarks, *op.cit.* (*supra* n.19) 60, on names beginning *Ζαβδ-* in the Hermopolis stele, and (on the element *ZBD* in Palmyrene names) A. Caquot, "Sur l'onomastique religieuse de Palmyre," *Syria* 39 (1962) 244.

²⁷ Stark, *op.cit.* (*supra* n.26) 17–18.

²⁸ The frequency of the onomastic element *-δωρος* requires no documentation (though it does not become ubiquitous until the fourth century B.C., as was remarked by Letronne, "Mémoire sur l'utilité qu'on peut retirer de l'étude des noms propres grecs," *Oeuvres Choiesies*, 3^e sér. II [Paris 1885] 76–77). As for *Ζην-*, *Ζήνων* is common in many areas from the Hellenistic period onwards, and there are numerous and widespread examples of *Ζηνόδοτος*.

²⁹ SEG 20.735a II 13 (Cyrene, fourth century B.C.), *Ζηνόδωρος Βάκαλ[ος]*. SEG 9.533 (Taurichiris-Arsinoe). Cf. CIG III 5202 (Ptolemais, imperial period) *Ζηνοδώρα*. SEG 17.823.19 (Berenice, A.D. 56; republished by B. Lifshitz, *Donateurs et fondateurs dans les synagogues juives* [Paris 1967] no.100). But this man, *Ζηνόδωρος Θεοφίλου*, is a Jew (one of a list of contributors to the building of a synagogue), so his name may reflect Palestinian influence rather than Cyrenaean (*cf.* n.19). The *λοχαγός Ζηνόδωρος* of *P.Sorb.* 14a.8 (266 B.C.; same person, *ibid.* 15.3) was a Cyrenaean according to the plausible supplement of the editor, Hélène Cadelle. *Ἀλεεινός Ζηνοδώρου Κυρηναῖος* appears on a tombstone of the first century B.C. in the museum at Eleusis (*IG* II² 9125).

³⁰ On the frequent onomastic relationship between metropolis and colonies see *e.g.* Robert, "Noms de personnes et civilisation grecque, I," *JSav* 1968, pp.209–10, with the literature cited p.210 n.78. The only example of *Ζηνόδωρος* from Thera itself known to me is SEG 16.473. It is perhaps worth noting that Thera is one of the few places where *Ζηνός* occurs as the genitive of *Ζεύς* in ordinary speech; see C. D. Buck, *The Greek Dialects* (Chicago 1955) 93, and *e.g.* *SGDI* 3.2. 4734, *Ζένό(ς)*; but names with the element *Ζην-* are common throughout the Greek world, *cf.* n.28.

the name amongst the voluminous onomastic material from Ptolemaic and Roman Egypt.³¹ Unfortunately it is rarely possible to determine the ethnic background of individuals mentioned in papyri. It seems certain that most, if not all, of the *Ζηνόδωροι* occurring in papyri of the earlier Ptolemaic period (to which most of the published examples belong) are of Greek or Macedonian origin,³² but in only one case (the probably Cyrenaean *λοχαγός* mentioned in n.29) do we know the place of origin of the man or his ancestors.³³ Nevertheless, the fact that we find men called Zenodorus holding responsible administrative positions in the mid-third century,³⁴ combined with indications of Macedonian connections for some *Ζηνόδωροι*,³⁵ suggests

³¹ Some fifteen occurrences can be derived from Fr. Preisigke, *Namenbuch* (Heidelberg 1922) col.117, and some 25 more from D. Foraboschi, *Onomasticon alterum papyrologicum* (Milan 1967) fasc.2, s.v. Many of these consist of double or multiple references to the same person (see n.32), and the total of different *Ζηνόδωροι* is not large.

³² The name occurs several times in the Zenon papyri of the mid-third century B.C. There are at least two individuals involved: (1) a man in the employment of Apollonius: *P.Col.Zen.* 2 line 4, *P.Col.Zen.* 90 line 1, *P.S.I.* 485 line 21 (more fully edited *P.S.I.* 854 lines 12, 21), *P.S.I.* 505 lines 8, *P.Cair.Zen.* 59009(a) (but see n.18), *P.Cair.Zen.* 59035 line 1, *P.Cair.Zen.* 59090 line 1, *P.Cair.Zen.* 59434 line 1. These do not necessarily all refer to the same man. (2) The official in the Ptolemaic administration at Alexandria in the early years of Ptolemy III Euergetes, plausibly conjectured by M. I. Rostovtzeff (*A Large Estate in Egypt in the Third Century B.C.* [Madison 1922]) to have been *hypodioiketes*: *P.S.I.* 524 line 3, *P.Cair.Zen.* 59359 lines 20–21, *P.Cair.Zen.* 59367 lines 4, 12, *P.Cair.Zen.* 59368 lines 8, 21 (should we identify the writer of the letter *P.S.I.* 364, addressed to Zenon, with this man? Note in line 21 of *P.Cair.Zen.* 59368 *Διονυσίω τῷ παρὰ Ζη[ν]οδώρου*; the Zenodorus of *P.S.I.* 364 mentions an athletic victory of his brother Dionysius). Perhaps also *P.Tebt.* III.1 703 line 1 (reading insecure). The Zenodorus who was *οἰκονόμος* of the lower and Thmoisepho toparchies of the Oxyrhynchite nome between 251 and 244 B.C. (*P.Hamb.* 183 lines 4, 16; *P.Hib.* 59 line 1, *P.Hib.* 60 line 1, *P.Hib.* 107 line 5, *P.Hib.* 124–27, *P.Hib.* 210 lines 4–5; *P.Jen.* inv. 900=SB 8.9841) may conceivably be the same man at an earlier stage of his career: note that the latest dated document mentioning the *οἰκονόμος* (*P.Hib.* 107) belongs to the third year of Euergetes (244 B.C.), while the earliest mentioning the *hypodioiketes* (?) (*P.Cair.Zen.* 59359) belongs to the fifth year.

³³ The *Διό[σκο]ρος Ζηνοδ[ώρου Πέρ]σαι τῆς ἐπιγονῆς* (*P.Oxy.* 269 line 1; the names are guaranteed by line 15) is no exception, for at this late date (A.D. 57) the *Πέρσαι τῆς ἐπιγονῆς*, whatever the historical origin of the term, include men of a variety of ethnic backgrounds.

³⁴ See n.32 for examples. Another (?) Zenodorus appears, apparently as a minor police official, in *P.Tebt.* III.1 748 line 12 (mid-third century).

³⁵ The clearest example is the Zenodorus of *P.Tebt.* I 64a line 82 (and several other places in *P.Tebt.* I, see index), a *κάτοικος* at Cerceosiris of the mid-second century B.C. (*Prosopographia Ptolemaica* no.2644, II p.92). This man's father and son were both called *Βρομερός*, a name occurring otherwise, to my knowledge, only in *P.Tebt.* III.2 890 (see below) and as the father of a chieftain in Lyncestis, Thuc. 4.83.1 (see Hoffmann, *op.cit.* [supra n.18] 166). Cf. also *Ζηνόδωρος Ἀντιπάτρου Μυσός*, *P.Tebt.* III.2 890 lines 7, 9 (second century B.C.). The appellation 'Mysian' probably refers not to his ethnic origin but to his membership in a section of the army called the 'Mysians' (see M. Launey, *Recherches sur les armées hellénistiques* I [Paris

that the comparative frequency of the name in Ptolemaic Egypt may possibly reflect the settlement of Macedonians there. On the other hand, I know of no example of the name in Macedon itself, nor any Zenodorus who is explicitly called a Macedonian.

Otherwise, apart from Attica (for which see below) the name is of extreme rarity. In Asia Minor, for example, I have found only two occurrences: the dubious [Ζ]ηνόδωρος Ἀρνάκκιος (Halicarnassus, late fifth century B.C.?)³⁶ and the magistrate Ζηνόδωρος Ἀναξαγόρου on bronze coins of Erythrai from the first half of the third century B.C.³⁷ The occurrence of the name at Erythrai is one of many links between this city and Chios, where I have found two examples of the name: a magistrate on a bronze coin of the second or first century B.C.³⁸ and Λαμπύρης Ζηνοδώρου on an inscription in the city of Chios of unknown date.³⁹ In the islands otherwise only Ζηνοδώρα at Samothrace,⁴⁰ for most of the occurrences at Delos are either Semites (see n.19) or Athenians (see below); of uncertain origin, but probably not Delians, are Ζηνόδωρος Μαίκιος [Κοίντου] (i.e. *libertus*?) of the second or first century B.C.,⁴¹ and the graffiti Ζηνόδωρος in the gymnasium.⁴² Elsewhere only two examples, both from a late period: Ἰούλιον Ζενόδωρον, Panticapaeum, A.D. 221,⁴³ and C. Curtius Zenodorus, a *lenuncularius* at Ostia, A.D. 192.⁴⁴

1949] 444–46). He could well be of Macedonian descent, which is consistent with, though not proven by, his father's name. It is interesting that the rare Macedonian name *Βρομερός* occurs in this same papyrus, line 98. For another possibly Macedonian example see n.18.

³⁶ SIG³ no.46.

³⁷ R. Münsterberg, "Die Beamtennamen auf den griechischen Münzen, II," NZ 45 (1912) 26 (for the dating see Robert, *BCH* 57 [1933] 477–81). This example too might appear dubious, for Münsterberg (p.27) evidently read the name as *Μηνόδωρος Ἀναξαγόρου*, naming the example Wien 29016). Head, *BMC Ionia* p.140, nos.203–06, read all four pieces as *ZHNOΔΩ[ΠΟΣ] ΑΝΑΞΑΓ[ΟΡΟΥ]*, but the first part of the name is illegible on the plate (pl.xvi.8). The first letter is also illegible on the example *Sylloge Copenhagen*, Ionia pt.II, pl.16 no.724. I have examined the example in the collection of the American Numismatic Society, however, and report that *ZHNOΔΩ* is absolutely certain.

³⁸ Münsterberg, *op.cit.* (*supra* n.37) 45; *BMC Ionia* p.333 no.50, *Sylloge Copenhagen*, Ionia pt.III, pl.35 no.1561.

³⁹ G. I. Zolotas, *Χιακῶν καὶ Ἐρυθραϊκῶν ἐπιγραφῶν συναγωγὴ* (Athens 1908) 252 no.101.

⁴⁰ *IG* XII.8 199.

⁴¹ *Inscr. Délos* 1739 line 6 (*cf.* 1738).

⁴² *Exploration archéologique de Délos*, fasc.28: *Le gymnase* (Paris 1970) App. III, by M.-Th. Couilloud, p.107 no.4 π e and p.112 no.9 π d. These may be Athenians, *cf.* pp.130–31.

⁴³ *Corpus Inscriptionum Regni Bosphorani* (Moscow 1965) no.99, lines 11–12.

⁴⁴ *CIL* XIV 251 vi 34. *Cf.* also Domitia Zenodora at Puteoli, *CIL* X 2373. These two may both be of Semitic origin. There was a large community of Tyrians at Puteoli during the

Unless we are to entertain the hypothesis that the mathematician Zenodorus was a Hellenized Semite,⁴⁵ the comparative rarity of the name in other parts of the Greek world confirms Crönert's identification. On the basis of the evidence assembled above, one might guess that the mathematician was a Cyrenaean or a resident of Ptolemaic Egypt, or conceivably from Chios or Erythrai. But, as we shall see, there is one other place where the name Zenodorus is, though not common, at least attested several times, namely Attica. And here the evidence of the Philonides papyrus is significant: in both passages where the name Zenodorus occurs or has been plausibly restored in the papyrus, the events are evidently taking place at Athens, though the context is too lacunose to make continuous sense. The relevant passages, as printed by Crönert, are as follows:

fr.31 lines 1–6 (Crönert pp.953–54):

ΖΑΝΤΕΙ γ' ἐλπιδῶν
 [τῆς ἀπο]δοχῆς εἰς Ἀθή-
 [νας ἐν]εγκεῖν ἀδυσκο-
 Ζ καὶ τὸν Ζηνοδώ-
 [ρο]ν αὐτὸν ἀφικόμενος
 εἰς ἄστν, κτλ.

fr.34 lines 1–5 (Crönert p.954):

ἔδωκε καὶ [Ζην]όδωρον [αὐ]-
 τῶι παράγειν ΕΝΑΞΑΠΛΟ

early empire (see the well-known inscription, OGIS 595, a letter of the Tyrian community at Puteoli to the city of Tyre, dated A.D. 174, esp. lines 7–9, ταύτης πάλαι μὲν ἐπεμελοῦντο οἱ ἐν Ποτιόλοις κατοικοῦντες Τύριοι{οι} πολλοὶ ὄντες καὶ πλούσιοι. νῦν δὲ εἰς ὀλίγους ἡμᾶς περιέστη τὸν ἀριθμὸν. The evidence for men of Palestinian or Syrian origin residing at Ostia is less striking, but see R. Meiggs, *Roman Ostia* (Oxford 1960) 215–16.

⁴⁵ This is not in itself implausible. An example of a mathematician from about the same time who was a Hellenized Semite is Βασιλείδης ὁ Τύριος (Hypsicles, [*Euclid.*] *Elem.* XIV, ed. Heiberg, V [BT, Leipzig 1888] p.2; on Βασιλείδης as a typical adoptive Greek name of Phoenicians see Masson, *op.cit.* [*supra* n.23] 690–91). Furthermore, Philonides came from Laodicea πρὸς θαλάσση in Syria (see n.47), and a Ζηνοδώρα is attested from that very city (see n.19), though from a much later period. Therefore it is possible that Zenodorus in the papyrus was a fellow-countryman whom Philonides was introducing to Athens. Even if we adopt this interpretation, the identity of the mathematician and the acquaintance of Philonides is still assured. But it entails a strained reading of the passages in the papyrus, and there is no certain example of a Semite being named Zenodorus as early as this.

Τι μὲν. Καὶ διότι παρα-
γενόμενος εἰς Ἀθήνας
αὐτὸν⁴⁶ ὑπέταξεν ΜΑCΑΡΧ
κτλ.

Philonides himself came from Laodicea πρὸς θαλάσση; but he was an honorary Athenian citizen, as we learn from an Eleusinian decree.⁴⁷ Thus he had plenty of reason to visit Athens, quite apart from his interest in Epicureanism. Nevertheless, the mention of Zenodorus in connection with both visits to Athens which can be inferred from the papyrus may be significant. It is worth investigating the possibility that Zenodorus was an Athenian.

The name *Zηνόδωρος* occurs, to my knowledge, eight times in Attic inscriptions and can be plausibly restored in one other place.⁴⁸ Two of the eight occurrences can be discounted, as they refer to non-Athenians.⁴⁹ But we can add two occurrences of Athenians in inscriptions at

⁴⁶ αὐτὸν is equally possible, as is remarked by R. Philippson, *s.v.* PHILONIDES 5, *RE* 20 (1941) 67 (the article PHILONIDES 7 by K. Orinsky, *ibid.* col.74, is worth quoting in its entirety as a curiosity: “P. wird von Apollonios von Perge [s. Hultsch o. Bd. II S. 151ff.] als Mathematiker angeführt. Er war Epikureer und brach durch seine Interessen als Mathematiker eigentlich die epikureische Tradition [Usener Kl. Schr. III 188ff.]. Seine Heimat und seine Lebenszeit sind uns nicht bekannt.”) Philippson interprets the two passages mentioning Zenodorus in the sense that Philonides introduced Zenodorus to Athens. This is not impossible (see n.45), but rests on supplements to the papyrus which the author describes (col.63) as “meist nur Versuche” and which would be better described as exercises in fantasy.

⁴⁷ Both the city of his origin and his Athenian citizenship are known not from the papyrus but from inscriptions. The facts were pointed out by U. Köhler, “Ein Nachtrag zum Lebenslauf des Epikureers Philonides,” *SBBerl* 1900.2 pp.999–1001. The most recent editions of the relevant inscriptions (all unknown to Philippson, *op.cit.* [*supra* n.46]), who quotes only Köhler and *CIA*) are: *IG* II² 1236 (decree of the Eumolpidae and Kerykes honoring Philonides, his brother Dicaearchus and their father Philonides); *OGIS* 241 (decree of the Delphians honoring Dicaearchus, known only from a copy by Cyriacus of Ancona); *BCH* 45 (1921) 1ff, IV 78–80 (the well-known Delphian list of θεωροδόκοι, in which Philonides and Dicaearchus are named as θεωροδόκοι at Laodicea).

⁴⁸ The only other place where it can even possibly be restored is *IG* II² 1039 line 90, which reads .ηνόδωρος Ζηνοδ[.ου -]ύς (one of a list of ephebes of the tribe Aegeis in the archonship of Apollodorus, *ca.* 80 B.C.). Mitsos, however, in his republication of the inscription, *ArchEph* 1964, opp. p.44, reads .ηνόδωρος Ζήνων[ος Ἐρχιε?]ύς. In the context, *Μ*]ηνόδωρος seems more likely than *Ζ*]ηνόδωρος, *cf.* lines 86–88: [*Κ*]όνων Μηνοδώρου *Κ*]ολλυτεύς | [*Σ*]ωκλείδης Μηνοδώρου *Κ*]ολλυτεύς | [*Μ*]ηνόφιλος Μηνοδότου Ἐ[*ρ*]χιεύς. Kirchner, *PA* no.6193, lists this as a *Ζηνόδωρος*, but the five *Ζηνόδωρος* entries in Kirchner, like the rest of the book, are hopelessly antiquated. Thus Kirchner’s 6197 is certainly a false restoration. The republication of the relevant inscription, now *IG* II² 2707, reads ὄρος χ[ωρίο] | πεπραμ[ένο] | ἐπὶ (λ)ύσει | . . . δώρωι | [*Σ*τει]ριεῖ. Thus there is too little space for [*Ζηνο*]δώρωι.

⁴⁹ *IG* II² 2810 (see n.19), a Zenodorus from Ascalon; *ibid.* 9125 (see n.29), a Cyrenaean.

Delos,⁵⁰ making nine in all. The bearers of the name came from several different demes: Eupyridai, from a late period;⁵¹ Paiania (plausibly restored);⁵² Marathon and Trikorythos (see n.50). But the other five occurrences, which include the earliest examples, refer to men from the same deme and, as examination of the inscriptions shows, from the same family. The most informative inscription is IG II² 2332, a list of contributors for some unknown purpose in the archonship of Hermogenes (183/2 B.C.). Lines 26–36 read: Ζηνόδωρος Λαμπτ[ρεὺς -] | καὶ ὑπὲρ τῶν ἀδε[λφῶν] | Ζηνοδότου Λαμπτ[ρέως] | καὶ ὑπὲρ Ἀφροδισίου Λ[αμ]π[τρέως] | καὶ τοῦ υἱοῦ Ζηνοδώρο[υ] | καὶ ὑπὲρ Δάμωνος Λαμ[π]τ[ρέως] | καὶ τοῦ υἱοῦ Ζηνοδώρο[υ] | καὶ ὑπὲρ Μιλτιάδου Λαμ[π]τ[ρέως] | καὶ ὑπὲρ Ποσειδωνίου Λαμπτ[ρέως] | καὶ τῶν υἱῶν αὐτοῦ Ποσειδω[νίου] | καὶ Ἑρακλείδου -Δ. IG II² 6652, as corrected *ArchEph* 1957 p.165, the gravestone of the above-mentioned Δάμων, supplies us with the name of his father: Δάμων | Ζηνοδώρου | Λαμπτρεὺς. The younger Ποσειδώνιος appears as a *ιεροποιός* in an inscription of about 150 B.C. (IG II² 1938 line 59), and two of his sons, Ποσειδώνιος Ποσειδωνίου and -οσθένης Ποσειδωνίου, were ephebes in the archonships of Agathocles (106/5) and Echecrates (102/1 ?) respectively.⁵³ Finally IG II² 2338, of the archonship of Areios (late first century B.C.) provides us with three more members of the same family, including another Zenodorus. This most interesting inscription is a list of the members of the *γένος* of the Arynandridai, of whom we know nothing except that they exercised some priestly

⁵⁰ *Inscr. Délos* 1953, Ζηνόδωρος Ἑρακλείτου Μαραθῶνιος νικήσας Ἀθήναια τὴν λαμπάδα τῶν παιδῶν (138/7 B.C.); *ibid.* 2136 ἐπ[ὶ ἱε]ρέως Δ - - - | τοῦ Ζηνοδώρου Τρικορυκίου (between 166 and 158/7, cf. P. Roussel, *Les cultes égyptiens à Délos* [Paris–Nancy 1915–16] 118 no.65).

⁵¹ IG II² 6147, Ἰλάρα Ζηνοδώρου | ἐξ Εὐπυριδῶν. There is no doubt that Zenodorus is Hilara's father (not her husband), and hence that this Zenodorus is from Eupyridai. Robert, *REG* 80 (1967) 454, points out that a woman's name plus genitive alone *always* indicates a daughter. The rule is amply confirmed by examination of the inscriptions adjacent to this in IG II².

⁵² S. Dow, *Prytaneis* (*Hesperia* Supp.I, 1937) no.116 line 28 (under Παιανιεῖς): Διονύσιος Ζηνο[δ]ώρου. In the photograph, *ibid.*, neither the ο before the missing δ nor the ω after it are clearly visible, but no other restoration is plausible. This inscription belongs to the archonship of Demeas, which Dow puts at ca. 20 B.C. The inscription is in any case from the second half of the first century B.C.

⁵³ The Ποσειδώνιος Ποσειδωνίου ephebe under Agathocles, *Fouilles de Delphes* III.2 25 col. iii line 4, is not qualified by demotic, but the likelihood that he is to be identified as the eldest son of Ποσειδώνιος (2) of Lamptrai is increased by the appearance of another son of that Poseidonius (duly identified by demotic), a very few years later, in IG II² 1028.

function. Line 22 reads: *Ζηνόδωρος Ἀφροδι[ί]ου Λαμπτρεύς, Παμμένης, υἱός.*⁵⁴ Thus we can construct the stemma shown in Figure 1.

If the mathematician Zenodorus was an Athenian, then it is a plausible guess that he belonged to the family of Lamptrai, amongst whom the name was hereditary. And if he did belong to that family, then he must be identified with *Ζηνόδωρος* (2) of the stemma. What little we know of the family and the man is at least compatible with the identification. The family was fairly wealthy, as is shown by *Ποσειδώνιος* (2) being a *ἱεροποιός*, and by his sons being ephebes at a time when service was voluntary and a matter of social distinction.⁵⁵ Since the

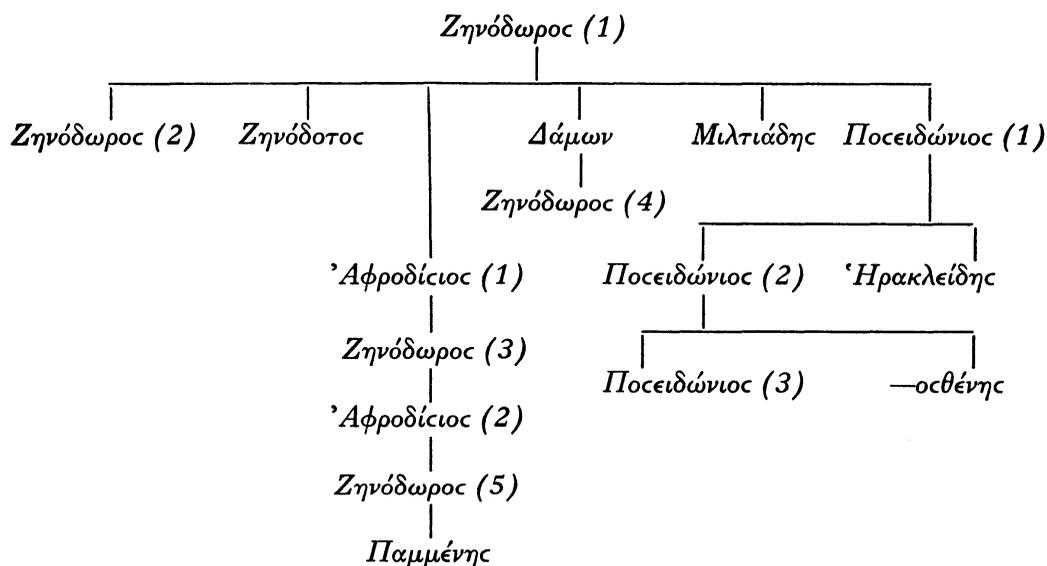


Figure 1. STEMMMA OF THE *Ζηνόδωροι* OF LAMPTRAI

⁵⁴ It is not certain whether the Πα]μμέ[ν]ης Λαμπτρεύς (no patronymic) who was a *theoros* at Delphi in the archonship of Euthydomus (*Fouilles de Delphes* III.2 57 line 9) is to be identified with Pammenes the son of Zenodorus (5). According to W. B. Dinsmoor, *The Archons of Athens in the Hellenistic Age* (Cambridge [Mass.] 1931) 285, Euthydomus was archon in 42/1 B.C. The archonship of Areios falls early in the reign of Augustus but later than 28/7 (see Graindor, *BCH* 38 [1914] 412 n.1). If we make the identification, then Zenodorus (5) must have been an old man at the time of the engraving of *IG II² 2338*, and Aphrodisius (2) was the son, rather than the great-grandson, of Zenodorus (3). The former is the relationship adopted in Fig.1, though the latter cannot be ruled out.

⁵⁵ On this aspect of the Athenian ephebate in the Hellenistic period see W. S. Ferguson, *Hellenistic Athens* (London 1911) 128; C. Pélékidis, *Histoire de l'ephébie attique* (Paris 1962) 169–70. In the year when the younger son of Poseidonius was ephebe there were only 138 ephebes altogether, and 36 of these came from other cities such as Miletus, Cyrene, Rome and Naples (Pélékidis p.184).

family belonged to the priestly γένος of the Amynandridai, it was descended from the old Athenian aristocracy. The background is appropriate for one with the education and the leisure to become a mathematician and a philosopher. A further inference can be made from IG II² 2232 concerning the status of Ζηνόδωρος (2). Since he makes contributions on behalf of the other relations, he is clearly the head of the family, *i.e.* the oldest of the brothers. Three of his brothers have sons, but no son of his own is mentioned. It is a certain inference that he had no male children, and a probable one that he was unmarried. Epicurus is known to have discouraged marriage and the begetting of children,⁵⁶ and though many of his sect did not follow him in this particular, it is conceivable that Zenodorus' childlessness was a consequence of his Epicureanism.

Clearly the identity of the mathematician Zenodorus and the Lampran of IG II² 2232 remains unproven, but I hope to have shown that it is at least plausible. The identity of the mathematician and the acquaintance of Philonides seems to me proven beyond reasonable doubt, and the *floruit* of Zenodorus the mathematician is thus established as early second century B.C.

This dating is important when we come to examine a hitherto unpublished passage mentioning a Zenodorus which occurs in the introduction to the work of the mathematician Diocles *On Burning Mirrors*. Until recently this treatise was known only from two extracts in Eutocius' commentary on Archimedes' *Sphere and Cylinder*.⁵⁷ Now, however, the complete work is available in Arabic translation, of which I have prepared an edition to be published shortly. I give a literal version of the opening passage:⁵⁸

“The book of Diocles on burning mirrors. He said: Pythion the geometer, who was of the people of Thasos, wrote a letter to Conon in which he asked him how to find a mirror surface such that when it is placed facing the sun the rays reflected from it meet the circumference of a circle. And when Zenodorus the astronomer came down to Arcadia and was introduced(?) to us, he asked us how to find a mirror surface such that when it is placed facing the sun the rays reflected

⁵⁶ Clem. Alex. *Strom.* 2.138.3, ed. Stählin p.189, 15–18: Δημόκριτος δὲ γάμον καὶ παιδοποιίαν παραιτεῖται διὰ τὰς πολλὰς ἐξ αὐτῶν ἀηδίας τε καὶ ἀφολλκὰς ἀπὸ τῶν ἀναγκασιωτέρων. συγκατατάττεται δὲ αὐτῷ καὶ Ἐπίκουρος.

⁵⁷ ed. Heiberg² III pp.66–70, 130, 160–74.

⁵⁸ Meshed, Shrine Library, ms. 392/5593 pp.106–07.

from it meet a point and thus cause burning. So we want to explain the answer to the problem posed by Pythion and to that posed by Zenodorus; in the course of this we shall make use of the premises established by our predecessors. One of those two problems, namely the one requiring the construction of a mirror which makes all the rays meet in one point, is the one which was solved practically by Dositheus. The other problem, since it was only theoretical, and there was no argument worthy to serve as proof in its case, was not solved practically. We have set out a compilation of the proofs of both of these problems and elucidated them.”

This passage provides a good deal of new and interesting historical information, which cannot however be discussed here. Two points must be made about the occurrences of the name Zenodorus in it. The first is that both occurrences are my emendations. The text is found in two manuscripts, of which one (Chester Beatty Arabic 5255) is a direct copy of the other (Meshed, Shrine Library 392/5593). Thus only the latter comes into consideration. It is written in a Persian hand, and dated A.H. 867 (= A.D. 1462/3). The two occurrences of the name in it are reproduced in Figure 2. One would transcribe these as *ابيوذامس* and *اينوذامس*, neither of which corresponds to a possible

Figure 2. ARABIC TRANSCRIPTIONS OF THE NAME ‘ZENODORUS’
IN MESHED, SHRINE LIBRARY MS. 392/5593

Greek name. In this script, however, the resemblance of *alif* to *rā* or *zā* is very great, and the corruption from *زينوذورس* or *زينوذروس*⁵⁹ is easily explained. I regard the emendation as certain. The second point is that Zenodorus is referred to as ‘the astronomer’ (*al-munajjim*). This is in itself no bar to identification with the mathematician. It was common practice in antiquity for those whose primary work was in mathematics to take an interest in astronomy also. Notable examples from near the period of Diocles and Zenodorus are Archimedes and Apollonius. Furthermore, we have independent testimony of the existence

⁵⁹ One might rather expect *زينوذورس*, but I have observed that Arabic transcriptions of Greek names frequently use a long vowel to represent the Greek accented syllable rather than a Greek long vowel. This no doubt reflects contemporary Greek pronunciation (like the *z* for the *δ* of *Zηνόδωρος*).

of an 'astronomer' Zenodorus. In a catalogue of *οἱ περὶ τοῦ πόλου συντάξαντες* (where *περὶ τοῦ πόλου* is to be interpreted 'concerning the heavens'), found in ms. Vat.Gr. 381 and published by Maass,⁶⁰ occurs the name *Ζηνόδωρος*. This man was tentatively identified by Maass (*Aratea* p.163) with the mathematician. The identification appears certain in the light of the new evidence.

One important conclusion that can be drawn from the mention of Zenodorus in the introduction to Diocles' treatise concerns the date of Diocles. Since Diocles reports that he had personal contact with Zenodorus, his *floruit* must coincide with that of Zenodorus, namely, early second century B.C. Until now it has been generally assumed that Diocles was later than Apollonius (see n.10). We can now say that Diocles was a contemporary of Apollonius (we have the link Apollonius–Philonides on the one hand, and Philonides–Zenodorus–Diocles on the other). This is completely consistent with what we should conclude from an examination of Diocles' treatise, which in form belongs to the pre-Apollonian tradition of conic sections.⁶¹

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⁶⁰ First in *Hermes* 16 (1881) 388; a better version in his *Aratea* (Berlin 1892) 123.

⁶¹ I must defer a discussion of the difficult question of whether Diocles was at all acquainted with Apollonius' work to the introduction to my forthcoming edition of Diocles' treatise. To D. M. Lewis, O. Neugebauer, P. J. Parsons, A. J. Sachs and Nancy Waggoner I am grateful for assistance with various points in this essay.

ADDENDUM to p.179 n.16 *supra*: To those authorities ignorant of the evidence for Zenodorus' date must now be added the article ZENODOROS 5, *RE* 10A (1972) 18, by K. Ziegler, published while this article was in proof. The multiple omissions and the inextricable confusion in references to the sources for Zenodorus' treatise make the article quite useless. The only reference to the chronological problem is "anscheinend nicht viel jünger als Archimedes," which is derived, I suspect, solely from the discussion of Hultsch, *op.cit.* (*supra* n.1) III 1190 ("non multo post Archimedem"), in a work published in 1878.