# The *Technê* of Aratus' *Leptê* Acrostich

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**Abstract** – This paper sets out to re-approach the famous *leptê* acrostich in Aratus' *Phaenomena* (783-87) by confronting it with other early Greek acrostichs and the discourse of *technê* and *sophia*, which has been shown to play an important role in a gamut of Greek literary texts, including texts very much relevant for the study of Aratus' acrostich. In particular, there is a tantalizing connection between the acrostich in Aratus' poem that poeticized Eudoxus' astronomical work and the so-called *Ars Eudoxi*, a (pseudo-)Eudoxian acrostich *sphragis* from a second-century BC papyrus.

**Keywords** – Aratus; Eudoxus; *Ars Eudoxi*; Acrostichs; Hellenistic Poetry; *Technê*; *Sophia*.

# The *Technê* of Aratus' *Leptê* Acrostich[*]

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*To the memory of Cristiano Castelletti (1971-2017)*

**Λεπτὴ** μὲν καθαρή τε περὶ τρίτον ἦμαρ ἐοῦσα
εὔδιός κ' εἴη, λεπτὴ δὲ καὶ εὖ μάλ' ἐρευθὴς
**π**νευματίη· παχίων δὲ καὶ ἀμβλείῃσι κεραίαις          785
**τ**έτρατον ἐκ τριτάτοιο φόως ἀμενηνὸν ἔχουσα
**ἠ**ὲ νότου ἀμβλύνετ' ἢ ὕδατος ἐγγὺς ἐόντος.

(Arat. 783-87)

If [the Moon is] slender and clear about the third day, she will bode fair weather; if slender and very red, wind; if the crescent is thickish, with blunted horns, having a feeble fourth-day light after the third day, either it is blurred by a southerly or because rain is in the offing. (Transl. Kidd)

This is the famous *leptê* acrostich in Aratus' *Phaenomena*, one of the most striking linguistic games in Hellenistic poetry. It is a little bit like Mona Lisa's smile: it is there, more likely than not, but its exact meaning is elusive and on the whole it is rather mysterious. Since its discovery by Jean-Marie Jacques on 21th October 1959, it has been accepted by almost unanimous consent that the acrostich is a deliberate creation of Aratus.[1] This seems warranted by the fact that the word *leptê* appears not only vertically, spelled out by the first letters of the five subsequent lines of a self-contained passage devoted to the Moon, but also horizontally, as the first of these five lines begins precisely with the adjective *leptê*, so that this is an example of the so-called *gamma*-acrostich.[2] In addition, recent discussions have paid much attention to how the word *leptê* recurs in this passage in various ways, and much ink has been spent over Aratus' ingenuity.[3] It needs to be said, nonetheless, that other than having the *gamma* shape, with its only five letters this is not really a spectacular acrostich. Compare, for instance, two twenty-letter acrostichs in a geographical poem composed under Hadrian by Dionysius Periegetes (112-34 and 513-32).[4] Moreover, the form of the Aratean acrostich is rather odd. It is true that the word *leptos*, which means "slender" but also "refined" in its aesthetic dimension, had much resonance as a programmatic term in Hellenistic poetry.[5] Yet when the adjective is used as a feminine form out of context – because the acrostich message tends to become a detached,

[1] Cf. Jacques; the date, which deserves to be celebrated as the International Acrostich Day, is provided at the end of his discussion. There has recently been an outburst of interest in ancient acrostichs and in particular in the Aratean *leptê* acrostich (for the latter, see n. 3 below). Cristiano Castelletti, to whose memory this discussion pays tribute, was among the champions of the modern acrostich studies. For instructive general discussions, see Courtney, "Greek and Latin Acrostichs"; Luz 1-77, 375-76; Katz.

[2] Note, in addition, that three third-century epigrams on Aratus contain likely reminiscences of his acrostich: Leonidas of Tarentum 101 Gow-Page, Callimachus 27 Pfeiffer = 56 Gow-Page, and King Ptolemy, *SH* 712. This realization goes back to Jacques 57-59; more recently, see Klooster 154-61.

[3] These recent discussions include Hanses; Danielewicz; Trzaskoma.

[4] For a discussion, see Lightfoot.

[5] The literature is vast; for a start, see the discussions referenced in n. 3 above (with Porter).

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self-contained text once it is deciphered – it looks somewhat out of place. There seems to be an implied context, then, which the reader needs to figure out on their own. The most familiar function of ancient acrostichs, either epigraphic or literary ones, is to provide a seal, a sort of cryptic authorial signature.[6] Epigraphic acrostichs usually contain the name of the deceased, in the case of epitaphs, or the name of the donor, in the case of votive inscriptions, and literary acrostichs may likewise be used to embed the poet's signature within the textual fabric of a poem. The Aratean acrostich obviously does no such thing. So what is it exactly that this acrostich does? What does *leptê* actually mean?

The usual answer to this question is that Aratus modelled his acrostich on the famous acrostich which emerges from the first five lines of the last book of the *Iliad* (24.1-5):[7]

> **Λ**ῦτο δ᾽ ἀγών, λαοὶ δὲ θοὰς ἐπὶ νῆας ἕκαστοι
> **ἐ**σκίδναντ᾽ ἰέναι. τοὶ μὲν δόρποιο μέδοντο
> **ὕ**πνου τε γλυκεροῦ ταρπήμεναι· αὐτὰρ Ἀχιλλεὺς
> **κ**λαῖε φίλου ἑτάρου μεμνημένος, οὐδέ μιν ὕπνος
> **ἥ**ιρει πανδαμάτωρ, ἀλλ᾽ ἐστρέφετ᾽ ἔνθα καὶ ἔνθα.      5

> And the games broke up, and the people scattered to go away, each man
> to his fast-running ship, and the rest of them took thought of their dinner
> and of sweet sleep and its enjoyment; only Achilleus
> wept still as he remembered his beloved companion, nor did sleep
> who subdues all come over him, but he tossed from one side to the other. (Transl. Lattimore)

The first letters of these lines spell out the word *leukê*, "white," which is a five-letter adjective and a feminine form, just like Aratus' *leptê*. Eustathius, a Byzantine commentator of the Homeric text, was aware of the presence of the acrostich; he has a comment (*ad loc.*) on how it was created by accident, as at times happens with such linguistic phenomena:

> Ὅτι ἀκροστιχὶς τῶν πρώτων πέντε τῆς ῥαψῳδίας ταύτης ἐπῶν "λεύκη", ὅπερ καὶ τὸ πάθος δηλοῖ σωματικὸν καὶ εἰς φυτοῦ δὲ τέθειται ὄνομα. οὐκ ἐπετηδεύθη δὲ τῷ ποιητῇ, ἀλλ᾽ οὕτω παρατυχὸν τὸ τῆς ἀκροστιχίδος συνέπεσεν, ὁποῖα καὶ ἄλλα παραπίπτουσιν.

> The first five verses of this book spell out the acrostich *leukê*, which is a cutaneous disease and is used of a sort of tree. This was not devised by the poet on purpose, but the acrostich occurred by chance, similarly to other such phenomena that occur accidentally.

Since Gellius mentions Homeric acrostichs too (14.6.4), even though without explicitly adducing any example (which may, incidentally, point to this being common knowledge), we may make an educated guess that learned Hellenistic poets were also aware of the *leukê* acrostich in the *Iliad*. Although this scenario is plausible enough and it explains the rationale for the Aratean acrostich, it does not necessarily tells us everything about what such an elaborate instance of wordplay signifies. In this paper, I would like to explore further intertextual affiliations of the *leptê* acrostich. Although I hope to cast some new light on the particular poetic device invented by Aratus, I will also offer a broader reflection on the place of word games in Greek intellectual discourse, which should be fitting in with the overarching theme of the conference from which this paper originated.

Before we talk more about the intertextuality of the Aratean poem, let us first think for a while about what the earliest Greek acrostichs are used for. It is at times maintained that the

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[6] In addition to the discussions on literary acrostichs listed in n. 1 above, see Garulli on epigraphic acrostichs.

[7] This, again, goes back to Jacques.

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fourth-century BC tragic poet Chaeremon may be credited with the invention of the earliest Greek acrostich.[8] This is because of a fascinating papyrus fragment dated to the first half of the third-century BC (*P. Hibeh* 2.224, Chaeremon fr. 14b Snell; papyrological dots omitted):

> Χαιρήμων ἐν [
> **Χ**ρὴ τιμᾶν θ[
> **Ἀ**ρχὴ γὰρ θνητ[οῖς
> **Ἱ**μείρου πάση[ς
> **Ῥ**ώμην τιμῶμεν μ[                    5
> **Ἦ**θος ἔχειν ὅσιον ζη[
> **Μ**ὴ πᾶν κέρδος ὅρα [
> .[..]ν[.].κιαν σαυτ[

> Chaeremon in...
> One must honour...
> For humans the beginning...
> Desire every...
> We honour strength...                    5
> To possess a pious character...
> Do not fix your eye on every sort of gain...
> ...yourself... (Transl. Wright, line 4 altered)

The papyrus scrap preserves fragments of eight lines of writing. The first line is undoubtedly a caption, as it contains the name Chaeremon, which was followed by a formula that must have contained a title. The subsequent lines contain a poetic text in dactylic metre, probably hexameters (they may come from Chaeremon's *Centaur*, to which Aristotle, *Poet.* 1.1447b21-22, famously refers as "mixed rhapsody composed of all sorts of metres").[9] More importantly, to us, the first letters of these putative hexameters were seen by Richard Kannicht to spell out Chaeremon's acrostich signature, "Chaerem[on]."[10] However, in a recent discussion Christoph Schubert has convincingly argued that in view of the contents of each of the dactylic lines, what the fragment contains is, rather than a consistent passage of a continuous text, a piece of an anthology of gnomic verses that were excerpted from Chaeremon and arranged in such a way as to form the acrostich (Schubert). This suggestion is, in fact, in keeping with what we know about the history of Greek experiments with the visual form of poetry. The emergence of such textual-visual devices as figure poems and acrostichs is usually connected with the efflorescence of book culture in the Hellenistic age (see Bing 15, 18). Whereas the presence of an acrostich in a third-century papyrus anthology of maxims excerpted from earlier drama fits in with the general picture, the direct presence of an acrostich in a fourth-century dramatic text would be something of an untimely aberration.

Furthermore, I am able to point out a close parallel to the acrostich gnomic anthology of Chaeremonic verses as postulated by Schubert. According to Diogenes Laertius, the early fifth-century Coan dramatist Epicharmus was credited with a number of philosophical works, whose authorship was allegedly secured by the acrostichs they contained (D.L. 8.78 = *Pseud-epicharmea* test. 2 Kassel-Austin):

> οὗτος ὑπομνήματα καταλέλοιπεν ἐν οἷς φυσιολογεῖ, γνωμολογεῖ, ἰατρολογεῖ· καὶ παραστιχίδα γε ἐν τοῖς πλείστοις τῶν ὑπομνημάτων πεποίηκεν, οἷς διασαφεῖ ὅτι ἑαυτοῦ ἐστι τὰ συγγράμματα.

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[8] E.g., Luz 7: "Das erste erhaltene nachhomerische Akrostichon stammt aus dem vierten Jhd. v. Chr."
[9] For a discussion, see Wright 126.
[10] As reported in the apparatus to Chaeremon fr. 14b Snell.

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> He [sc. Epicharmus] has left scholarly writings containing his physical, ethical and medical doctrines, and he has introduced acrostichs into most of the writings, which clearly show that they were written by him. (Transl. Hicks, altered; cf. Courtney, "Greek and Latin Acrostichs" 3)

What we should probably envision are anthologies of wisdom passages at least in part excerpted from Epicharmus' plays and circulating under his name, some of these arranged to form acrostichs, much in the manner of the Chaeremon acrostich.[11] A direct testimony to the existence of such a gnomic anthology comes from Athenaeus, who tells us that a certain Axiopistus compiled a collection of Pseudepicharmean *Gnômai* (Ath. 14.648d–e = *Pseudepicharmea* test. 1 Kassel-Austin):

> τὰ δὲ Ψευδεπιχάρμεια ταῦτα ὅτι πεποιήκασιν ἄνδρες ἔνδοξοι ... Φιλόχορος δ' ἐν τοῖς περὶ Μαντικῆς Ἀξιόπιστον τὸν εἴτε Λοκρὸν γένος ἢ Σικυώνιον τὸν Κανόνα καὶ τὰς Γνώμας πεποιηκέναι φησίν.

> Well-known individuals produced these Pseudepicharmic texts ... Philochorus in his *On Prophecy* [*FGrHist* 328 F 79], on the other hand, claims that Axiopistus, whose family was from either Locris or Sicyon, is the author of *The Rule* and *Wise Sayings*. (Transl. Olson)

It may not be by accident that an anthology of pseudepigraphic poetry is compiled by one who goes by the name of Axiopistus, i.e. literally "He-Can-Be-Trusted" (cf. Courtney, "Greek and Latin Acrostichs" 7) – we will see that this rhetoric is very much in accord with the contents of a substantial fragment of the opening of such an anthology of gnomic passages attributed to Epicharmus. The fragment I have in mind has reached us through a papyrus dated, like the Chaeremon acrostich papyrus, to the first half of the third century BC (*P. Hibeh* 1 = *Pseudepicharmea* fr. 244 Kassel-Austin). Unfortunately, there is no trace of acrostichs here, but the testimony of Diogenes Laertius allows us to surmise that the anthology prefaced by this poetic text, by which it is explicitly introduced as a collection of Epicharmus' maxims, did contain acrostichs in its lost part (cf. Courtney, "Greek and Latin Acrostichs" 7-9). The Chaeremon acrostich provides a suggestive illustration of how Epicharmean and Pseudepicharmean passages were arranged to produce the acrostichs. Therefore the extant fragment of the preface to this anthology deserves our closer attention (*Pseudepicharmea* fr. 244.6-16 Kassel-Austin, papyrological dots omitted):[12]

> ἐν δὲ καὶ γνῶμαι <u>σοφαὶ</u> τεῖδ᾽, αἷσιν αἰ πίθοιτό τις,
> <u>δεξιώτερός</u> τέ κ᾽ εἴη βελτίων τ᾽ ἐς πά[ν]τ᾽ ἀνήρ.
> κο]ὔτι πολλὰ δεῖ λέγειν, ἀλλ᾽ ἓν μόνον [τ]ούτων ἔπος
> ποττὸ πρᾶγμα ποτιφέροντα τῶνδ᾽ ἀε[ὶ] τὸ συμφέρον.
> αἰτίαν γὰρ ἦχον ὡς ἄλλως μὲν εἴην [δ]<u>εξιός</u>,             10
> μακρόλογος δὲ κοὐ δυναίμαν <u>ἐν β[ρ]αχεῖ</u> γνώμα[ς λέγ]ειν.
> ταῦτα δὴ 'γὼν εἰσακούσας <u>συντίθημι</u> τὰν <u>τέχναν</u>
> τάνδ᾽, ὅ[π]ως εἴπηι τις· "Ἐπίχαρμος <u>σοφός</u> τις ἐγένετο,
> πολλὰ δ᾽ εἶ]π᾽ ἀστεῖα καὶ παντοῖα καθ᾽ ἓν [ἔπος] λέγων,
> πεῖραν] αὐταυτοῦ διδοὺς ὡς καὶ <u>β[ραχέα</u> καλῶς λέγοι."     15
> εὖ δὲ τάδ]ε μαθὼν ἅπας ἀνὴρ φαν[ήσεται <u>σοφός</u>.

> Within [this book] too are maxims <u>wise</u>; obey them, and you will be a <u>cleverer</u> and a better man for all events. You need no lengthy speech, only a single one of these proverbs; bring round to

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your subject whichever of them is apt. Men used to censure me because, though <u>shrewd</u> enough in other ways, I was a lengthy speaker and I could not express my thoughts <u>with brevity</u>. To this charge I lent an ear, and I composed this *technê*, to make the world exclaim, "Epicharmus was <u>a wise man</u>, and he uttered many witty sayings of many kinds in single verses: himself he lets us test his skill in <u>brevity</u> of speech as well!" He who learns these maxims well shall appear <u>a wise man</u> to the world. (Transl. Page, adapted)

There are several key terms that appear in this passage; *sophia* (with *dexiotês* used virtually interchangeably) is one of these and *technê* is another.[13] Not only does this text put emphasis on the wisdom and cleverness, i.e. *sophia* and *dexiotês*, of Epicharmus' output; it also emphasizes its own ability of cleverly encapsulating the immense, far-ranging *sophia* of Epicharmus in a conveniently miniature, portable format of a book of maxims (*en brachei*). The book which becomes a vehicle for *sophia* is referred to by the author as *technê*, a semantically rich word which highlights the author's craftsmanship and ingenious artistry.

As was observed by Edward Courtney in his highly influential discussion of ancient acrostichs (Courtney, "Greek and Latin Acrostichs" 9), the discourse of *sophia* and *technê* whose fragments appear in the Pseudepicharmean fragment prominently features in another acrostich poem, namely in the epigram to which I will be referring as *Ars Eudoxi* (*P. Par.* 1 verso):[14]

Ἐν τῶιδε δείξω πᾶσιν ἐκμαθεῖν <u>σοφὴν</u>
Ὑμῖν πόλου <u>σύνταξιν</u>, <u>ἐν βραχεῖ λόγωι</u>
Δοὺς τῆσδε <u>τέχνης</u> εἰδέναι σαφῆ πέρι.
Οὐδεὶς γάρ ἐστιν ἐνδεὴς γνώμης ὅτωι
Ξένον φανεῖται, ταῦτ᾽ ἐὰν ξυνῆι καλῶς.          5
Ὁ μὲν στίχος μείς ἐστι, γράμμα δ᾽ ἡμέρα.
Ὑμῖν ἀριθμὸν δ᾽ ἴσον ἔχει τὰ γράμματα
Ταῖς ἡμέραισιν ἃς ἄγει μέγας χρόνος·
Ἐνιαύσιον βροτοῖσι περίοδόν τ᾽ ἔχει
Χρόνος διοικῶν ἀστέρων γνωρίσματα.          10
Νικᾶι δὲ τούτων οὐθὲν ἕτερον, ἀλλ᾽ ἀεὶ
Ἥκει τὰ πάντα ἐς ταὐτὸν ὅτε ἀνέλθηι χρόνος.

Herewith I will reveal to you all the <u>wise composition</u> of the heavens, and give you certain knowledge of this *technê* <u>in brief words</u>. There is nobody so lacking in intelligence that what follows would seem strange to him, so long as he understands these verses well. The line stands for a month, the letter for a day; the letters provide you with a number equal to the days which a Great Year brings. Time brings to men a yearly circle, as it governs the starry signs: of which none outrivals another, but always all come to the same point, when the time comes round. (Transl. Page, as adapted by Squire, *The Iliad in a Nutshell*)

The title I adopt, *Ars Eudoxi* (it is at times incorrectly used for the astronomical treatise on the same papyrus), derives from the contents of the acrostich, which reads *Eudoxou technê*, "the *technê* of Eudoxus." We should no doubt identify this Eudoxus as Eudoxus of Cnidus, who was a disciple of Plato and a polymath famous above all as astronomer and mathematician. The *Ars Eudoxi* is found on the verso of a papyrus roll which can be securely dated to the early second century BC. The recto contains an astronomical treatise whose author is often claimed,

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[13] The rhetoric of *sophia* and *dexiotês* in this passage is strongly reminiscent of the (also emphatically self-referential) parabasis to Aristophanes' *Clouds* (518-62) – and perhaps modelled on it? I owe gratitude to Katarzyna Pietruczuk for bringing this passage to my attention.

[14] Blass remains a useful edition of the papyrus; for a discussion of the *Ars Eudoxi* and the astronomical treatise it accompanies in the papyrus, see now Luz 58-63 and, in the context of the present discussion, esp. Squire, *The Iliad in a Nutshell* 116-19.

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though in truth on rather shaky grounds, to have been one Leptines, otherwise unknown.[15] The treatise is hardly a gem of learning and clarity, and may be described as a handbook of school knowledge about astronomy, but what makes it remarkable is the presence of diagrams and drawings, which makes it the earliest known Greek illustrated papyrus (on this aspect, see Squire, *The Iliad in a Nutshell* 119-20). The *Ars Eudoxi* has the form of a twelve-line iambic epigram. It stands out as a strikingly playful poem. Not only does it contain the acrostich, but in addition each line is composed of precisely thirty letters, except the final line, which contains thirty-five letters. In effect, twelve lines of the poem correspond to twelve months and each letter corresponds to one day of the so-called Great Year as measured by the Egyptians, according to whose solar calendar the year consisted of the twelve thirty-day months and the epagomenal quasi-month of five days. The Egyptian calendar was normally used by Greek astronomers as it was more convenient and allowed more precision than hopelessly numerous and imperfect Greek lunisolar calendars (see Jones 72-74). The reader does not have to figure out all this by himself; the poem explicitly describes its own design in lines 6-8.

Like the preface to the collection of Epicharmean maxims, the *Ars Eudoxi* puts emphasis on *sophia* and *technê*, the latter even more notably so, since the word is included in the acrostich (cf. Courtney, "Greek and Latin Acrostichs" 9). The already familiar theme of miniaturization is also present here (on this aspect in the *Ars Eudoxi*, see Squire, *The Iliad in a Nutshell* 119-21). The trick is not just to transmit knowledge, but to encapsulate it in an artfully miniature form; such is the craft of a wise. On the whole, the verbal parallels between the two texts are striking. Courtney explains that they both used acrostichs, in their function of seals, so as "to veil a forgery" (Courtney, "Greek and Latin Acrostichs" 9); the Pseudepicharmean preface insists on its having been written by Epicharmus, whereas the *Ars Eudoxi* claims to have been composed by Eudoxus. According to Courtney, both texts put emphasis on how wise and elaborate is what they have to offer because "it is characteristic of the forger to entice his readers with the promise of enhanced knowledge" ("Greek and Latin Acrostichs" 9). Although this explanation takes us some of the way towards understanding what these acrostichs do, it does not take us, I believe, all the way there.

The discourse of *sophia* and *technê* has more at length been discussed by Michael Squire in his book on the so-called *Tabulae Iliacae*, i.e. highly refined Roman miniature reliefs, which exhibit an intricate interplay between the scenes from Homeric and other early Greek epic they contain and their textual content. The latter includes epigrams but also playful textual devices such as magic squares and palindromes.[16] Through this textual content, the tablets present themselves as not just encapsulating the wisdom of Homer but also doing so by adopting the craft of Theodorus of Samos, an archaic sculptor who was famous precisely for the skill he displayed in miniaturization (see Squire, *The Iliad in a Nutshell* 283-300 and Petrain 176-79). The epigram from the famous *Tabula Capitolina* (1A) uses to such an effect diction highly reminiscent of the *Ars Eudoxi* (Squire, *The Iliad in a Nutshell* 102-21)[17] and consequently also of the Pseudepicharmean preface:

> <u>τέχνην</u> τὴν Θεοδ]ώρηον μάθε <u>τάξιν</u> Ὁμήρου
> ὄφρα <u>δαεὶς</u> πάσης <u>μέτρον</u> ἔχῃς <u>σοφίας</u>.

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[15] See Bowen. This name brings to mind the third-century BC astrologer Leptines at the Seleucid court who is mentioned in Val. Max. 5.7.*ext*.1 (see Keyser), but obviously there is not much to go on (cf. Luz 58 n. 188). In addition, is it purely by accident that one can hear the word *leptos* in the name of Leptines? Well, probably it is.

[16] Squire, *The Iliad in a Nutshell*; recent comprehensive discussions of the *Tabulae Iliacae* include Valenzuela Montenegro and Petrain.

[17] Cf. also Leventhal, "Counting on Epic" 217 n. 58, who, in addition, notes a correspondence with Archimedes' (?) *Cattle Problem* (*SH* 201).

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> Understand the <u>*technê*</u> of Theodorus, so that, <u>knowing</u> the <u>order</u> of Homer, you may have <u>the measure of all wisdom</u>.[18]

Squire has shown, however, that the discourse of *sophia* and *technê* – or *entechnos sophia*, as we may dub it using a phrase borrowed from Plato (*Prt.* 321d, on Prometheus' theft from Hephaestus and Athena, i.e. the gods with whom *technê* and *sophia* respectively are associated) – is much older and its traces can be found in a number of passages that deal with technology, starting from Homer (*Il.* 15.410-12), Stesichorus (*Il. pers.* fr. 100.9-12 Finglass) and Solon (fr. 13.49-52 West), to Plato (*Prt.* 320d–23a) and Aristotle (*Eth. Nic.* 1141a9-12) (again, Squire, *The Iliad in a Nutshell* 102-21; cf. Petrain 54-59). Particularly relevant for us is the fragmentary passage of the opening of Stesichorus' *Sack of Troy*, not only because it exhibits close resemblance with the wording of the epigram of the *Tabula Capitolina*, but also because one of the inscriptions of the *Tabula Capitolina* explicitly declares that its representation of the sack of Troy is modelled on Stesichorus (see Squire, *The Iliad in a Nutshell* 106-08; Petrain 55-56, 97-102). This is fr. 100.9-12 Finglass – on Epeius the horse-builder (again, I omit papyrological dots):

> νῦν δ' ἄγε μοι λ(έγ)ε πῶς παρ[ὰ καλλιρόου(ς)
> δίνα[ς] Σιμόεντος ἀνὴρ
> θ]εᾶς ἱ[ό]τατι <u>δαεὶς</u> σεμν[ᾶς Ἀθάνας
> <u>μέτ[ρα] τε καὶ σοφίαν</u>.

> Come now, tell me how by the eddies of the fair-flowing Simoeis a man <u>learned</u> <u>the measures of wisdom</u> by the will of the revered goddess Athena. (Transl. Finglass, "How Stesichorus Began his Sack of Troy", adapted)

As a result, the intertextual and intervisual affiliations of the epigram of the *Tabula Capitolina* extend beyond Homer and Theodorus; by alluding to Stesichorus' hendiadys, *metra te kai sophian*, and by echoing the verb of knowing Stesichorus uses, *daeis*, the author of the epigram suggests, or maybe even acknowledges, that his inspiration comes from Athena, who once taught Epeius, the humble carpenter who built the Trojan horse, about "the measures of wisdom."

It is no accident that the same Stesichorean episode of the creation of the Trojan horse by Epeius with Athena's help is, very emphatically, evoked by another playful Hellenistic poem, namely by the figure poem *Axe* composed by Simias of Rhodes (early third century BC):

> Ἀνδροθέᾳ δῶρον ὁ Φωκεὺς κρατερᾶς μηδοσύνας ἦρα τίνων Ἀθάνᾳ
> ὤπασ' Ἐπειὸς πέλεκυν, τῷ ποτε πύργων θεοτεύκτων κατέρειψεν αἶπος,
> τᾶμος, ἐπεὶ τὰν ἱερὰν κηρὶ πυρίπνῳ πόλιν ᾐθάλωσεν
>     Δαρδανιδᾶν χρυσοβαφεῖς τ' ἐστυφέλιξ' ἐκ θεμέθλων ἄνακτας,
>         οὐκ ἐνάριθμος γεγαὼς ἐν προμάχοις Ἀχαιῶν,          5
>         ἀλλ' ἀπὸ κρανᾶν ἰθαρᾶν νᾶμα κόμιζε δυσκλής·
>             νῦν δ' ἐς Ὁμήρειον ἔβα κέλευθον
>             σὰν χάριν, ἁγνὰ πολύβουλε Παλλάς.
>                 τρὶς μάκαρ, ὃν σὺ θυμῷ
>                 ἵλαος ἀμφιδερχθῇς·          10
>                     ὅδ' ὄλβον
>                     ἀεὶ πνεῖ.

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[18] Transl. Squire, *The Iliad in a Nutshell.* Although the beginning of the hexameter is missing, it is safely supplemented from parallel inscriptions in the *Tabulae Iliacae*; cf. Squire, *The Iliad in a Nutshell* 104 and Petrain 50.

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**1–2** Phocian Epeius has offered a gift to the virile goddess Athena, so as to honour her strong counsel; the axe, with which he once overthrew the height of the god-built towers. **3–4** This was when he burnt to ashes the holy city of the Dardans alongside fire-breathing Doom, and thrust down gold-broidered lords from where they were seated. **5** He was not born as one counted among the champions of the Achaeans, **6** but an inglorious person; he carried water from the pure springs. **7** Yet now he has entered on the path of Homer, **8** by your favour, holy Pallas of many counsels. **9–10** Thrice blessed the man whom you with a gracious mind embrace with your gaze. **11–12** He forever breathes happiness. (Transl. Paton, as adapted in Kwapisz)

The axe whose shape this poem takes is precisely the tool used by Epeius to build the Trojan horse, as the poem itself makes clear. Although no traces of the discourse of *entechnos sophia* appear in Simias' poem, we should assume that this discourse is clearly enough evoked by the fact that Simias in various ways alludes not only to the contents, but also to the tone and poetic ideology of Stesichorus' poem, which innovatively bestows proper epic *kleos* on the unheroic figure of Epeius, an outsider in the Greek camp at Troy.[19] What Simias arguably wants the reader to understand by establishing the connection with the passage of Stesichorus is that the Stesichorean "measures of wisdom" and the discourse this phrase represents are a programmatic text for the poets like himself, who elevate the art of formal experiment to the highest level of poetic artistry. The ingenious and highly refined *technê* of Simias, as displayed in the creation of his figure poems, becomes equal to the divinely inspired *technê* of Epeius.

Simias' poetic strategy sheds light on the shared presence, in a number of interconnected texts, of the discourse of technological wisdom on the one hand and on the other of linguistic games, such as the acrostichs of the *Pseudepicharmea* and the *Ars Eudoxi*, and the magic squares of the *Tabulae Iliacae*.[20] Thus we are led to the realization that Hellenistic linguistic games have a rhetoric of their own. What these playful poetic devices speak about is the level of *technê* and *sophia*, or technological/artistic wisdom, achieved by their creators; they are emblematic of the proficiency with which these artisans depict the workings of the mechanism of the world, either the world of nature or the totality of the Homeric world, or of the universe.

I use the word *mechanism* on purpose. Let us now return to the *Ars Eudoxi*. What exactly is this *technê* the knowledge of which the poem claims to be able to reveal, this "wise composition of the heavens" (lines 1-2)? A modern reader might be disappointed by the poem's conclusion, as the sole reflection it apparently brings is that the movement of the heavenly bodies is synchronized with the year cycle (lines 9-12). Yet make no mistake – there is nothing trivial in this realization for the ancient audiences of non-professionals interested in astronomy. A curious and striking parallel for the poem's observation on the interconnectedness of Time and the

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[19] On Simias echoing Stesichorus, see Finglass, "Simias and Stesichorus."

[20] We may surmise that a similar strategy – perhaps reminiscent of Simias? – was implemented by Callimachus in his *Iambus* 7. The extant fragment is heavily damaged, yet it is clear enough that the poem described a statue of Hermes made by "Epeius the horse-builder" (fr. 197.3 Pfeiffer) and meaningfully mentioned the carpenter's axe (line 5) – as Acosta-Hughes (299) notes, "[t]he tools of artistic construction are ... a recurrent motif of the *Iambi*." Although *Iambus* 7 is no figure poem (nor does it contain an acrostich), one should appreciate an interplay between the *technê* of Epeius and the poem's refined form, i.e. its alluding to various genres (see Clayman 38 and Acosta-Hughes 296-97) and the refinement of its metre, which West (150) characterizes as "[a] novel epodic combination . . . from Archilochian and Hipponactean elements." Another poem by Callimachus which may have included elements of the discourse of *entechnos sophia* was his *Athena*, as its title suggests, but we have only precisely the title and the information that this was a riddling poem (therefore a *paignion* or a Lycophronian epyllion?); *test.* 23.9-10 Pfeiffer. I am grateful to Luigi Lehnus for bringing these *Callimachea* to my attention. In addition, note that we see Callimachus alluding to the discourse of *entechnos sophia* (and also of *leptotês*) in the programmatic prologue to his *Aetia*, fr. 1.17-18 (and 24 for *leptotês*) Harder; see Squire, *The Iliad in a Nutshell* 120-21. On *technê* in Callimachus, and other Hellenistic poets, see further Löbl 41-50.

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Cosmos is provided by the most advanced technological artifact Antiquity gave us – the Antikythera mechanism, i.e. a probably early first-century BC device for time measurement and astronomical calculations, whose workings were due to an elaborate machinery of connected gears.[21] The front dial of the mechanism illustrates precisely the same interconnectedness the *Ars Eudoxi* tells us about. It does so by combining two dials: one represents the Great Year, i.e. the Egyptian calendar, whereas the other is inscribed with the names of the Zodiac signs. The pointers of this double dial symbolize the Sun, the Moon and the five planets known to the ancients, so that their movement simulates the travel of the heavenly bodies at once through time and space.

In the context of how the messages of the *Ars Eudoxi* and the Antikythera mechanism are tantalizingly linked, it is a relevant piece of information that Eudoxus is credited with constructing a device which must have been a prototype (even if very basic[22]) of the Antikythera mechanism (Cic. *Resp.* 22):

> *dicebat enim Gallus sphaerae illius alterius solidae atque plenae uetus esse inuentum, et eam a Thalete Milesio primum esse tornatam, post autem ab Eudoxo Cnidio, discipulo, ut ferebat, Platonis, eandem illam astris stellisque, quae caelo inhaererent, esse descriptam; cuius omnem ornatum et descriptionem sumptam ab Eudoxo multis annis post non astrologiae scientia, sed poëtica quadam facultate uersibus Aratum extulisse.*

> For Gallus told us that the other kind of celestial globe, which was solid and contained no hollow space, was a very early invention, the first one of that kind having been constructed by Thales of Miletus, and later marked by Eudoxus of Cnidus (a disciple of Plato, it was claimed) with the constellations and stars which are fixed in the sky. He also said that many years later Aratus, borrowing this whole arrangement and plan from Eudoxus, had described it in verse, without any knowledge of astronomy, but with considerable poetic talent. (Transl. Keyes)

This is one of our sources for information that Aratus' *Phaenomena* poeticized a work by Eudoxus, a fact otherwise well documented by Hipparchus (1.2.1-16) (see Kidd 4, 16-18). Yet only this passage seems to suggest a link between the sphere constructed by Eudoxus and Aratus' poem. As it happens, there is a passage in Aratus which describes the celestial sphere, yet at once probably alludes to a sort of mechanical armillary sphere, surely the invention of Eudoxus (Arat. 529-31) (cf. Kidd 368 *ad loc.*):

> οὔ κεν Ἀθηναίης χειρῶν δεδιδαγμένος ἀνὴρ
> ἄλλῃ κολλήσαιτο κυλινδόμενα τροχάλεια
> τοῖά τε καὶ τόσα, πάντα περὶ σφαιρηδὸν ἑλίσσων.

> In no other way would a man trained in the craftsmanship of Athene weld together revolving wheels in such a pattern and of such a size, rounding off the whole like a sphere. (Transl. Kidd)

In an elaborate poetic manoeuvre, Aratus gives an impression of what the Cosmos looks like through giving a sense of a clever technological device through his poetic art. Noteworthy to us is an echo of the familiar discourse of *entechnos sophia*, which we should recognize in the mention of the "craftsmanship of Athena." Here we see clearly how the *technê* of Aratus' poetry intends to match and reflect the *technê* of Eudoxus' sphere. Something similar, though at a higher level, is arguably at play in the *Ars Eudoxi*, if we assume that it is precisely Eudoxus'

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[21] Our understanding of what the Antikythera mechanism is has recently been revolutionized owing to a complex research project; for a comprehensive account of new findings and a compelling reconstruction of the mechanism, see Jones. I approach the Antikythera mechanism as an artefact of culture from another perspective in Kwapisz and Pietruczuk forthcoming.
[22] See Kidd 17-18. For a discussion of literary testimonies on such astronomical devices, see Edmunds.

sphere that is one of its principal intertexts. Whereas the Antikythera device uses a refined mechanism of gears, dials and pointers to illustrate the intricacy and complexity of the Cosmos, the *Ars Eudoxi* employs to a similar effect elaborate mechanisms of language – i.e. its lavish wordplay. These are two rather different reflections of one and the same *technê*.[23]

This leads us to the problem of what the *Ars Eudoxi* actually is. For a long time since the publication of the papyrus which contains it, it was assumed that the epigram was a sort of poetic preface to the prose astronomical treatise on the recto of the papyrus. However, Christine Luz has recently demonstrated that this is quite unlikely, even though both texts are written by the same hand. Not only does the poem have little to do with the contents of the treatise, but furthermore its position on the recto of col. viii of the papyrus, nowhere near the beginning or the end of the roll, makes the hypothesis about its proem function highly unlikely. More likely, something in the content of the treatise at some point brought the acrostich epigram to the scribe's mind, so he wrote it down on the back of the roll on impulse (Luz 58-63). Moreover, there is further evidence that the two texts, although linked at some level, belong to subtly different literary traditions. The astronomical treatise on the recto, although mostly written in prose, was seen by its first editor, Friedrich Blass, to have derived from a poetic text (Blass 4-6).[24] In some parts of this text, the iambic rhythm is still recognizable; Blass makes the most convincing case for a twenty-two-line self-contained iambic whole marked out by its ring composition and the heading "The Moon's Journey" (Σελήνης πορεία, col. iv 3-30). Even so, the poem from which the astronomical treatise derives and the *Ars Eudoxi* must have been unconnected entities, at least if we decide that Blass's reconstruction is reliable, since the former was apparently composed in the so-called comic trimeters (which allowed anapaests outside the first foot and violations of Porson's law), whereas the *Ars Eudoxi* consists of proper tragic trimeters, a choice which bespeaks its literary aspiration.[25]

So what was the original context of the Eudoxian acrostich epigram? We are in the dark here, but I argue that everything about this poem, from the serious approach to metre it exhibits to its striking form and the curious link with the Antikythera mechanism, should persuade us that we should not easily dismiss this precious find as, e.g., an inconsequential diversion of an Egyptian schoolmaster or a simple mnemonic poem. It may be rewarding to compare the *Ars Eudoxi* with a similar, albeit inscriptional, acrostich epigram in which the number of the letters in each of its twelve lines represents the number of the days in a month – namely *CIG* 2722, from Caria, whose acrostich reads, Μένιππος εὖρε ("Menippus invented this").[26] This poem was more than once cited as a parallel to the *Ars Eudoxi* (Courtney, "Greek and Latin Acrostichs" 10; Luz 63-65), also because it was once dated to 189 BC, which made it nearly contemporary with the *Ars Eudoxi*. This dating is now no longer accepted; the poem has been dated to the Imperial period (see Merkelbach and Stauber 225). This is precisely a

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[23] Note the role that the term *technê* plays in the Hellenistic discourse on mechanics; in particular, the craft of constructing astronomical devices such as Eudoxus' sphere or the Antikythera mechanism is recognized as one of the mechanical *technai*. See Löbl 64-70, esp. 68.

[24] Blass even attempted to demonstrate what large parts of this poem in iambic trimeters may have looked like.

[25] In general, Hellenistic poets were capable of nuancedly using trimeters to suggest a specific generic tradition; e.g., "Lycophron" used elegant tragic trimeters in his *Alexandra* (early second century BC?) to evoke the tone of tragedy, whereas "Pseudo-Scymnus," also in the second century BC, presents his periegetic work as comedy and accordingly uses comic trimeters (on its paracomic prologue, see Hunter). The (second-century BC?) authors of the so-called metrical hypotheses to Athenian plays on the whole tended to adapt their trimeter to the play they summarized (i.e. comedy or tragedy), though this is not a hard rule, as is evident from the hypothesis to Sophocles' *Philoctetes* in comic trimeters (see Michel 29-33).

[26] This is No. 9 in Garulli.

simple mnemonic poem, since its verses represent the unequal months of the local calendar. A real parallel (in Latin) is *AL* 394 Riese, another twelve-liner which analogously illustrates the Roman calendar (to which I will shortly return);[27] the *Ars Eudoxi* cannot have this function, since the months of the Egyptian calendar are of equal length. Furthermore, the Menippus epigram is inferior to the *Ars Eudoxi* in that it manipulates words by subtracting (line 5 παρησίαν) or adding a letter (line 6 ἀριθμήσας). In short, this poem may be modelled on the *Ars Eudoxi*, but it is an inferior imitation.

The fact that the acrostich of the *Ars Eudoxi* spells out the name of Eudoxus brings to mind the Epicharmus and the Chaeremon acrostich seals. This suggests that even though this epigram was not the proem of the astronomical treatise of *P. Par.* 1, it may have originated as something similar – a Eudoxian seal for another astronomical text. Was it a *sphragis* for an astronomical work of Eudoxus, either prosaic or poetic? Or to speculate more wildly – may it have been composed for inscription on a model of the Cosmos built by Eudoxus? We cannot say. At any rate, I do not intend to suggest that this poem was composed by Eudoxus himself; on the contrary, to the best of our knowledge the Pseudeudoxian acrostich composed in correct tragic trimeters may well belong to the Hellenistic period. Yet we are reminded by the complicated genesis of the treatise that accompanies the *Ars Eudoxi* in *P. Par.* 1 that the *Ars Eudoxi* itself may also date from a period earlier than the writing of the papyrus.

Now, conclusions. What I think we have managed to achieve so far is reconstruct a discourse that closely accompanies a number of instances of wordplay, in particular acrostichs, in a gamut of Hellenistic texts. Fragments of this discourse may be read as a self-reflexive commentary on Hellenistic wordplay, which allows us a distinct glimpse into the workings of the mind of its creators. At least two of these texts may be shown to be closely connected with Aratus. One of these is Simias' *Axe*, as Simias was probably a near contemporary of Aratus, and the other is the *Ars Eudoxi* – an astronomical poem which purports to be authored by Eudoxus, whereas it is a well-known fact that Aratus' poem poeticized a work of Eudoxus. Clearly, these texts were conceived in the same intellectual climate as the *Phaenomena*. Moreover, we have seen a reflection of the discourse of technological wisdom in a passage of Aratus himself, one that mentions "the craftsmanship of Athena" when alluding to a Eudoxian wonder of technology (lines 529-31). Therefore it does not seem a stretch to suggest that Aratus' *leptê* acrostich is another embodiment of Hellenistic *entechnos sophia*. What this means is that there is a direct link connecting Aratus' scientific agenda, i.e. his concern with depicting the mechanism of the Cosmos, and the fact that his poem is embellished with an ingenious acrostich. The acrostich is at once an emanation of his learnedness and his technical prowess; its condensed artistry should be seen as a synecdoche of the *technê* Aratus employs to capture the essence of the Cosmos in his poetic creation. The programmatic term he uses in the acrostich, which brings up the concept of *leptotês*, corresponds with the emphasis on *brachy*, or brevity, in the fragments of the discourse of *entechnos sophia* we have seen: the purpose of *technê* is to encapsulate immensity, magnificence and totality in a human-scale epitome.[28] It is in this sense that Aratus' achievement deserves to be characterized as *leptos* – slender and subtle.

One final suggestion. The *Ars Eudoxi* and Aratus' *leptê* acrostich have arguably more in common than has so far been recognized. When we realize than we are talking here about two poetic acrostichs that have close ties to Eudoxus – one purports to be Eudoxus' seal, whereas the other comes from what is a poetic rendering of the teachings of Eudoxus – the possibility of direct dependence of one text upon the other becomes tantalizing. In addition, it is a curious

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[27] On this poem, see Courtney, "The Roman Months" 35.

[28] My thinking here is obviously inspired by the recent discussions of the Hellenistic "poetics of scale" such as Porter; Squire, *The Iliad in a Nutshell* and "Sémantique de l'échelle," Leventhal, "Counting on Epic" and "Eratosthenes' Letter to Ptolemy". See also Kwapisz and Pietruczuk forthcoming.

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fact that *AL* 394 Riese – i.e. the twelve-line poem I have mentioned above, which does the same thing with letters as the *Ars Eudoxi* – displays ties to Aratus: it contains an allusion to Cicero's Latin rendering of Aratus' *Phaenomena* (*AL* 394.11 vs. Cic. *Arat.* 418) (as was pointed out by Courtney, "The Roman Months" 55) and in the mediaeval manuscript tradition formed a collection *inter alia* with the passage of Cicero's *Aratea* on the Zodiac (320–31) (see Hennig 72). One wonders whether we might infer from this Aratean connection that the poet of *AL* 394 was aware of the Eudoxian ancestry of the tradition to which his *technopaegnion* belonged and of how it was linked to Aratus (*AL* 394 does not contain an acrostich).

The relative chronology of the *Ars Eudoxi* and Aratus' *leptê* acrostich is not necessarily easy to establish. One intuitively points to Aratus as the older of the two, and indeed the *leptê* acrostich, once we have established that the Chaeremon acrostich was not really authored by Chaeremon, has a claim to being the earliest deliberate Greek acrostich.[29] Yet there is no reason why not to think that the *Ars Eudoxi* was composed as early as the third century BC. Moreover, it would actually explain a lot if we asumed that the *Ars Eudoxi* – or something similar to it – preceded Aratus' composing his acrostich. Can actually the joint evidence of the *Ars Eudoxi* and the acrostich in Aratus not be taken to suggest that there existed a notion of Eudoxus as the inventor, or a particularly early practitioner, of acrostichs? Now assume that Aratus did entertain such a notion, and moreover was aware of the connection between Eudoxus and another notion, namely one that acrostichs are a particularly stunning manifestation of *technê* – which is what the *Ars Eudoxi* implies. To reach the conclusion that Aratus' *leptê* complements Eudoxus' *technê* would be, then, just a matter of connecting the dots. It is a real pity, therefore, that all this is wild speculation.

However, even if we assume Aratus' priority over the *Ars Eudoxi*, our reading of the former's acrostich can rewardingly be informed by accepting the latter's dependence upon it. This is because the *leptê* acrostich is an open form; its ellipticalness – which is very much in accord with what it says! – invites the reader to engage in a sort of *Ergänzungsspiel* and to guess what it is that the adjective might go with (that is, besides the Moon). An instance of reception may, at times, supply a useful hint in such games, since an ancient poet who indulges in *arte allusiva* is naturally familiar with the model's many contexts that are obscure to us. Hence we have reasons to think that when Callimachus, in the already mentioned tribute to the *Phaenomena* (27.3-4 Pfeiffer = 56.3-4 Gow-Page), speaks of Aratus' λεπταὶ ῥήσιες, "slender discourses," he feels the Aratean vibe better than we do. And we realize that Callimachus is right – *leptê* in the acrostich requires to be complemented precisely by something like *rhêsis*.[30] Yet there are further possibilities. Is the *Ars Eudoxi* not another instructive intertext, now that we have established the relevance of the discourse of *entechnos sophia* for our thinking about Aratus' acrostich? Perhaps even a document of its reception, much like Callimachus' epigram? One way or another, to my ear Aratus' *leptê* nicely rhymes with *Eudoxou technê*.

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[29] Another pretender is *AP* 6.330, which *AP* ascribed to the orator Aeschines, but even if its acrostich θεῖε is deliberate (which I doubt in view of its brevity) there is no reason to think that it was actually authored by Aeschines. It seems now clear that contrary to common belief this epigram is not attested as an epigraphic fragment in Epidaurus; see Bajnok. To put it bluntly, the pretender's claim is unfounded.

[30] I follow here a *per litteras* suggestion by Lucia Floridi.

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## Bibliography

Acosta-Hughes, Benjamin. *Polyeideia: The Iambi of Callimachus and the Archaic Iambic Tradition*. U of California P, 2002.

Bajnok, Dániel. "Aeschines Inscription in Epidaurus? An Old Question Revisited." *Graeco-Latina Brunensia*, vol. 19/1, 2014, pp. 15-26.

Bing, Peter. *The Well-Read Muse: Present and Past in Callimachus and the Hellenistic Poets*. 2nd ed., Michigan Classical P, 2008.

Blass, Friedrich. *Eudoxi ars astronomica qualis in charta Aegyptiaca superest*. Schmidt & Klaunig, 1887.

Bowen, Alan C. "Leptinēs (II)." *The Encyclopedia of Ancient Natural Scientists: The Greek Tradition and its Many Heirs*, edited by Paul T. Keyser and Georgia L. Irby-Massie, Routledge, 2008, p. 505.

Clayman, Dee L. *Callimachus' Iambi*. Brill, 1980.

Courtney, Edward. "The Roman Months in Art and Literature." *Museum Helveticum*, vol. 45, 1988, pp. 33-57.

---. "Greek and Latin Acrostichs." *Philologus*, vol. 134, 1990, pp. 3-13.

Danielewicz, Jerzy. "One Sign after Another: The Fifth ΛΕΠΤΗ in Aratus' *Phaen.* 783-4?" *Classical Quarterly*, vol. 65, 2015, pp. 387-90.

Edmunds, Mike G. "The Antikythera Mechanism and the Mechanical Universe." *Contemporary Physics*, vol. 55/4, 2014, pp. 263-85.

Finglass, Patrick J. "How Stesichorus Began his *Sack of Troy*." *Zeitschrift für Papyrologie und Epigraphik*, vol. 185, 2013, pp. 1-17.

---. "Simias and Stesichorus." *Eikasmos*, vol. 26, 2015, pp. 197-202.

Garulli, Valentina. "Greek Acrostic Verse Inscriptions." Kwapisz, Petrain, and Szymański, *The Muse at Play*, pp. 246-78.

Hanses, Mathias. "The Pun and the Moon in the Sky: Aratus' ΛΕΠΤΗ Acrostic." *Classical Quarterly*, vol. 64, 2014, pp. 609-14.

Hennig, John. "Versus de mensibus." *Traditio*, vol. 11, 1955, pp. 65-90.

Hicks, Robert D. *Diogenes Laertius: Lives of Eminent Philosophers*, vol. II. Harvard UP, 1925.

Hunter, Richard. "The Prologue of the *Periodos to Nicomedes* ('Pseudo-Scymnus')." *Beyond the Canon*, edited by M. Annette Harder, Remco F. Regtuit, and Gerry C. Wakker, Peeters, 2006, pp. 123-40.

Jacques, Jean-Marie. "Sur un acrostiche d'Aratos (*Phén.*, 783–787)." *Revue des Études Anciennes*, vol. 62, 1960, pp. 48-61.

Jones, Alexander. *A Portable Cosmos: Revealing the Antikythera Mechanism, Scientific Wonder of the Ancient World*. Oxford UP, 2017.

Katz, Joshua T. "The Muse at Play: An Introduction." Kwapisz, Petrain, and Szymański, *The Muse at Play*, pp. 1-30.

Keyes, Clinton W. *Cicero: On the Republic. On the Laws*. Harvard UP, 1928.

Keyser, Paul T. "Leptinēs (I)." *The Encyclopedia of Ancient Natural Scientists: The Greek Tradition and its Many Heirs*, edited by Paul T. Keyser and Georgia L. Irby-Massie, Routledge, 2008, p. 505.

Kidd, Douglas. *Aratus: Phaenomena*. Cambridge UP, 1997.

Klooster, Jacqueline. *Poetry as Window and Mirror: Positioning the Poet in Hellenistic Poetry*. Brill, 2011.

Kwapisz, Jan. *The Greek Figure Poems*. Peeters, 2013.

Kwapisz, Jan, David Petrain, and Mikołaj Szymański, editors. *The Muse at Play: Riddles and Wordplay in Greek and Latin Poetry*. De Gruyter, 2013

Kwapisz, Jan, and Katarzyna Pietruczuk. "Your Own Personal Library of Alexandria: Callimachus' Scholarly Works and their Readers." *Callimachus Revisited: New Perspectives in Callimachean Scholarship*, edited by Jacqueline J.H. Klooster, M. Annette Harder, Remco F. Regtuit, and Gerry C. Wakker, Peeters, forthcoming.

Lattimore, Richmond. *The Iliad of Homer*. U of Chicago P, 1961.

Leventhal, Max. "Counting on Epic: Mathematical Poetry and Homeric Epic in Archimedes' *Cattle Problem*." *Ramus*, vol. 44, 2015, pp. 200-21.

---. "Eratosthenes' Letter to Ptolemy: The Literary Mechanics of Empire." *American Journal of Philology*, vol. 138, 2017, pp. 43-84.

Lightfoot, Jane L. *Dionysius Periegetes: Description of the Known World*. Oxford UP, 2014.

Löbl, Rudolf. ΤΕΧΝΗ – *Techne: Untersuchungen zur Bedeutung dieses Wortes in der Zeit nach Aristoteles*, vol. III: *Die Zeit des Hellenismus*. Königshausen & Neumann, 2008.

Luz, Christine. *Technopaignia: Formspiele in der griechischen Dichtung*. Brill, 2010.

Merkelbach, Reinhold, and Josef Stauber. *Steinepigramme aus dem griechischen Osten*, vol. I: *Die Westküste Kleinasiens von Knidos bis Ilion*. Teubner, 1998.

Michel, Wilhelm. *De fabularum Graecarum argumentis metricis*. PhD Dissertation, Giessen, 1908.

Olson, S. Douglas. *Athenaeus: The Learned Banqueters*, vol. VII. Harvard UP, 2011.

Page, Denys L. *Greek Literary Papyri*, vol. I. Heinemann, 1942.

Paton, William R. *The Greek Anthology*, vol. V. Harvard UP, 1918.

Petrain, David. *Homer in Stone: The Tabulae Iliacae in their Roman Context*. Cambridge UP, 2014.

Porter, James I. "Against ΛΕΠΤΟΤΗΣ: Rethinking Hellenistic Aesthetics." *Creating a Hellenistic World*, edited by Andrew Erskine and Lloyd Llewellyn-Jones, Classical P of Wales, 2011, pp. 271-312.

Schubert, Christoph. "Ein literarisches Akrostichon aus der ersten Hälfte des vierten Jahrhunderts v. Chr.? Zu Chairemon, TrGF I, 71 F 14b." *Göttinger Forum für Altertumswissenschaft*, vol. 16, 2013, pp. 389-97.

Squire, Michael J. *The Iliad in a Nutshell: Visualizing Epic on the Tabulae Iliacae*. Oxford UP, 2011.

---. "Sémantique de l'échelle dans l'art et la poésie hellénistiques". *D'Alexandre à Auguste: Dynamiques de la création dans les arts visuels et la poésie*, edited by Pascale Linant de Bellefonds, Évelyne Prioux, and Agnès Rouveret, PU de Rennes, 2016, pp. 183-200.

The *Technê* of Aratus′ *Leptê* Acrostich
Jan Kwapisz

Trzaskoma, Stephen M. "Further Possibilities Regarding the Acrostic at Aratus 783-7." *Classical Quarterly*, vol. 66, 2016, pp. 785-90.

Valenzuela Montenegro, Nina. *Die Tabulae Iliacae: Mythos und Geschichte im Spiegel einer Gruppe frühkaiserzeitlicher Miniaturreliefs*. Dissertation.de, 2004.

West, Martin L. *Greek Metre*. Oxford UP, 1982.

Wright, Matthew. *The Lost Plays of Greek Tragedy*, vol. I: *Neglected Authors*. Bloomsbury, 2016.