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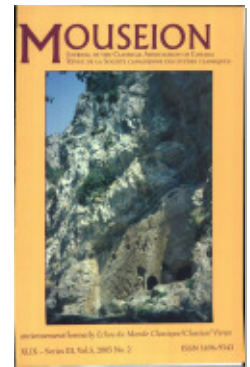
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NOCTES MANILIANAE: THE TERMINAL ORNAMENT IN BOOK III¹

ALEXANDER MACGREGOR

Book 3 ends (618–82) with a description of the four Tropic signs and the Seasons that they inaugurate: first Cancer and Capricorn, properly the “tropics” so-called; then Aries and Libra at the vernal and autumnal equinox, with a vignette of the Season characteristic of each sign; cf. 2.178. This paper contends that the passage is integral to the book, a panoramic climax that links heaven and earth. Moreover, it contains a hitherto unrecognized authorial *sphragis*, a “signature” or token of the poet’s neo-Platonic or rather Pythagorean allegiance.

The critical consensus dismisses the passage as a “terminal ornament.”² The oft-repeated phrase is Housman’s (5².xlvi: on 5.710–45, condemned on similar grounds): “Having professed that he is teaching what powers the four tropic signs enjoy in astrology (*mathematica arte*), the poet merely proffers commonplaces and generalities. Nor for the most part are they doctrines explained at greater length by other astrologers (*astrologorum*), of which several are given at 5.678. In fact, a purple patch is being sewn on the end of the book—or rather a patch tricked out in four colors—and not very well at that. For the conjunctions *sed tamen* (‘but still’ in 3.618), which do not refer to 3.586 or anywhere else with ease, merely inject a deceptive appearance of propositions succeeding each other in order,³ though in fact what is related of

¹ Translations are by the author unless noted otherwise. I would like to thank my colleagues M.W. Dickie, A. Kershaw, and W. Wycislo for their advice and criticism, as well as the anonymous readers of *Mouseion*.

² The consensus consists of Housman followed by Goold and Bailey. Goold (1977) first invokes Housman, then labels the passage “a poetical description” (lxxxii) without discussing either the poetry or the description. Bailey (1979) 168 rejects a generally received conjecture (on 5.217) as “a little too artificial for even that poet,” as if poetry were ever “natural” in Latin or anywhere else. Such condescensions would carry more weight if they were not tautologies as well. The passage is ignored by Volk, who is concerned with a theory of didactic. Hübner’s admirable monograph, *pace* its inclusive title, explicates the poet solely in terms of later judicial astrology, which was planetary. Granted some overlap, it is a mismatch; cf. n. 10 below.

³ The doubled adversatives *sed tamen* could hardly “succeed” anything, even if the work consisted of Euclidean propositions. In fact, the conjunctions point a contrast with the apparent climax of the book, the allocation of the lifespan at

the tropic signs has nothing to do with the lifespan."

Such are Housman's expectations, which have been disappointed to the point of abuse, and his assumptions, which are many and sweeping. Although his assumptions are presented as prescriptive dogmas to be taken as self-evident, they are in fact hypotheses that can be falsified. To consider the two that bear on the conclusion of Book 3: first that the poem as a whole, including the conclusion of Book 3, consists solely of predictive "astrology," to be judged as such.⁴ In other words, the *Astronomica* is no more than an astrological instruction manual.

The first verses do promise to describe how the stars govern the world. That of itself is not astrology; the arrangement of Book 1 follows that of Plato's *Timaeus* and Aristotle's *de Caelo*, which rank as science or philosophy depending on the viewpoint of the reader. Those two works likewise start with the zodiacal firmament and work their way down to earth level by level. Book 1 begins with a star-map that culminates in a paean to the order of the firmament (1.452–531), a proof from design for the existence of God anticipating the mathematical order of Books 2 and 3. The remainder of the book arranges the stars just mapped within the celestial circles (the poles, the colures, and so forth), then sinks to earth level by level.⁵ Next comes the Milky Way and its denizens the noble dead, and finally the comets, God's only emissaries to reach the earth.⁶ Books 2 and 3 cover the celestial motions crucial to

560–617. For adversative priamels see Race (1982), e.g. 13 n. 37.

⁴Space does not permit discussing his more paradoxical *obiter dicta*: viz., that poetic common-places have no place in poetry; generalities are inappropriate to a conclusion; an elevated passage is a "purple patch" (cf. Housman [1937] on 5.538–618); Manilius intended to deceive; when a topic has been exhausted what follows should continue to treat it.

⁵Housman's transposition of 805–8 to follow 538 reverses the level-by-level descent in Manilius; Scaliger's transposition after 812 restores the orderly progress, and is confirmed by the MS reading *etiam* in 813. Goold (1977) xxxi accepts Housman's transposition the grounds that "Aratus had followed just this order," sc. signs, planets, and stellar circles. Since Manilius is voyaging through the heavens, as Volk notes ([2002] 210–211, 225–234), he would be backtracking. For Manilius, though, the planets lie lower than the signs or the circles. Aratus is not his model elsewhere. For Manilius, the zodiac organizes the heavens; Aratus ignores the zodiac and quarters the heavens. At 2.25–38 Manilius derides the mythic aetiologies endemic in Aratus (and Germanicus).

⁶Until Julius Caesar at 1.926, though he goes unnamed; for his deification cf. Ramsey and Licht (1997). The name of a deified emperor seems to have been tabu; so also Alexander (1.770, only his sobriquet, and 1.776). Plato is named at 1.774, but not *qui fabricaverat illum*. Metrical difficulty may have abetted piety. That verb elsewhere is only applied to creative fire, notably celestial; the apparent exception 4.120 has been condemned as spurious on other grounds.

astrologers and astronomers, then and now. Book 3 discusses how the stars determine the human lifespan. That of course was of crucial interest to astrologers then, and to Housman as well, an adept astrologer himself.⁷ But Manilius was at pains to spike that particular gun, and left his formula for calculating the total lifespan deliberately incomplete: he explicitly says that he will not discuss the years allotted by the Quarters (3.583–85), or the Moon and Planets. Nor does he provide any formula, here or later, for combining the allotments and influences of the stars and planets; book 3 only treats the stars.⁸ Nor does he work through a specimen lifespan and how it could be calculated; or conversely how an astrologer could predict a lifespan from a given horoscope and its variables (temples, athla, decans, dodecatemories).

Books 4 and 5 then demonstrate the influence of each constellation on individual natives and collectivities both (e.g. Rome); once again, there is no formula for combining the various influences. In sum, the five books are useless for predictive astrology, whatever the overlap. Instead they exemplify piecemeal the divine governance of the universe by the stars, the embodiment of Reason (1.456–531). Housman's assumption that the poem is astrology in any practical sense is simply false. What he expected to find there, or wanted to, is not to the point.

Housman's second assumption is that explication of a text depends on parallels from other authors, as opposed to explication on its own terms. Little in the conclusion of Book 3, or elsewhere in Manilius, enjoys a parallel in later astrologers—and they are all later. His astronomy is pre-Ptolemaic and ill-attested; astrology was itself a science in its infancy. Moreover, Manilius was the first Roman to treat either at length⁹; but nothing follows from any of this, least of all a cause for

⁷ See Graves (1980) 215–217: his interest “does not, of course, mean he had any personal belief” in astrology. In childhood, his siblings played Solar System on the lawn, with himself the chief luminary; later his own horoscope was cast by a friend (n.s., with Uranus), and he reciprocated. Goold's “consummate astrological scholar” ([1977] ix) avoided hard problems, though; cf. n. 34 below.

⁸ At 3.585 *cum bene constiterit stellarum conditus ordo*, “When planets suitably arranged concur,” merely has the planets ratify the stellar allotments, assuming that the verse refers to planets. It is syntactically independent and detachable; so also 2.644, 2.651, 2.689, 2.835 and 3.508 (likely 2.738–49 as well), which refer to the planets and have been condemned on other grounds. An interpolator tried to harmonize Manilius with later dogmas at 2.732–34 and 2.978–80 (cf. Goold [1977] liii–liv, lxi–lxii); presumably the planets were foisted onto the text at the same time. They play no part in stellar computations, by definition; their irregularity or “difference” was as much an embarrassment to Manilius as to Plato (cf., e.g., *Ti.* 36b–d).

⁹ Manilius stands late in the didactic tradition, of course. But his is always “the first treatment of astrology” *vel sim.* More precisely, it is the first complete

complaint. Housman, however, holds against Manilius not merely his conventionality as a poet following the conventions of poetry but his uniqueness as an astrologer as well.¹⁰ Not just any stick is good enough to beat this dog; either end will do.

So also Goold remarks on the "irrelevance" of the conclusion, on the grounds that it has "no connection with any theme of Book 3, which," he concedes, "it brings to a graceful close" ([1977] lxxxi). It is hard to see how a conclusion can be graceful and incoherent both.

There is in fact an intimate link between the conclusion and the preceding material. Manilius is extruding the four Tropic signs from the earlier zodiacal sequence to assemble them in one place and give them each a complementary vignette of the Seasons that they turn. He could have distributed the contents of 618–82 earlier, when he discussed the varying length of daylight (218–74), where the Tropics are likewise the crucial turning-points; or inside his calculations of the time it takes signs to rise (385–442). But those trains of thought focused on mathematics not susceptible to ornamentation. Manilius wisely defers descriptive details about the Tropics to the end, where they would not be an interruption.

Still, such "poetic" details are integral to Book 3, and no digression, because the Tropics themselves are integral to the mechanics of the heavens. The characteristic effects of the Tropics on earth can thus be combined into an appropriate, and therefore graceful, conclusion—this for three reasons:

1. The four Tropics taken together summarize the zodiac as a whole, whose turning-points they are. Whatever use Manilius might make of them, the book now ends with a sense of fulfillment impossible if he had indulged in another run-through of all twelve signs, much less philoso-

account of stellar geometry and motions, from the firmament down to earth. Aristotle gave no star-map, Aratus gave only the star-map. What is missing in all three is the planets.

¹⁰ In Manilius much is unique or nearly so: the stellar enmities at 2.466–641; the *amantia* of the tripartite scheme 2.466–519 are not found elsewhere; of the 36 features assigned the twelve Temples or "Houses" at 2.788–967 (viz. name, denizen, and influence for each) only eight recur elsewhere (cf. Goold [1977] lviii–lx); at 3.43–159 the circle of Athla duplicates the function of the Temples; at 3.510–59 his Chronocrators are zodiacal not planetary, which is suggestive; at 4.294–407, the Decans; 4.408–501, the *partes damnandae* or unfavorable degrees. For over 700 verses Manilius is either "the last of the line," or a master with no disciples. Just as unique is Book 5, devoted to the παρανατέλλοντα, the extra-zodiacal signs; their influence equals that of the zodiac. Manilius was being rigorously logical; but the practical difficulties can be imagined, and no later astrologer followed his lead.

phical generalities however inspiring.

The poet is in fact translating into poetic and thus diachronic terms the synchronic visualization of time common in mosaic floors of the imperial period; later mosaics often incorporate Mithraic symbolism as well. The center features "the god," Aion ("Endless Time" rather than eternity) or Mithras; he is encircled by the Zodiac, or spins it like a hoop.¹¹ At the four corners the Seasons are depicted, along with their emblematic bounty.¹² The Seasons are thus isolated visually, just as Manilius extrudes the tropic signs that inaugurate them. The Seasons, not the mathematics of the Zodiac, make up the living year, and represent thereby a climactic epiphany on earth of what divine Reason determines in heaven.¹³

The difference of medium between the floor mosaics and the poem has a psychological consequence that exemplifies the axiom of Lessing's *Laocoön*. That is, the eye can take in a mosaic all at once; the ear can only absorb a poetic pattern over the course of time. The meaning of the poem, however, is virtually the same as that of the mosaics or the Modena relief of Aion and the serpent, with emblematic heads in each corner.¹⁴

2. Symbolic of the Zodiac as a whole, the Tropics economically demonstrate its influence on the earth and on mankind with the vignettes of the seasons they inaugurate. Doubtless Manilius (or an astrologer with demanding clients) would have been glad to exhibit natives who died the very moment when Moon, Horoscope, and Temple agreed that they

¹¹ For the image cf. D.Chr. 12.37, upholding the divinity of the firmament as against the Epicurean view that "No creator made the universe ... or even did what boys do with their hoops, which they set in motion and then let roll along on their own."

¹² For such depictions of the Seasons framing the Zodiac, see Jackson (1994), esp. 142–143; the mosaic floor at Mérida (II); 145 and pl. 8: Philippopolis, Syria (III); 154 and pl. 14: Ammaedara, Tunisia (III); 155 and pl. 17: Hippo Regius, Algeria (III); and for Mithraic elements, esp. 132–136, 137 n. 13 and 143 n. 20; 160–163 for hoop-bowling (cf. D.Chr. 12.37, cited in n. 11 above).

¹³ As a reader for the journal reminds us, the Seasons are a *topos* in didactic poetry from Hesiod on. Manilius' *ecphrasis* falls foursquare within that tradition, but the fact says nothing about whether the passage is integral to the book, the point at issue here. For paeans to the seasons cf., e.g., Pl. *Lg.* 886a, *Epin.* 977b; D.Chr. 12.32, 30.31, 41; at Lucretius 5.737–47 even the gods put in an appearance, as at Hor. *Carm.* 4.7; Vergil's *Georgics* works its way through the farmer's year book by book. Even as late as Augustine, *Doctr. Christ.* 2.16.25, four is still hallowed; cf. n. 21 below.

¹⁴ Reproduced in Jackson (1994) fig. 1. The pattern survives into Romanesque and Celtic Gospel illuminations with a full-length Christ and emblems of the evangelists in the corners.

should. But such evidence has always been hard to come by, and as a rhetorical strategy Manilius resorts to the revolution of the seasons to suggest the power of the Signs elsewhere as well: *ex uno disce omnes*, as at 1.483–531, where celestial regularity argued for the existence of God.

Book 3 thus ends with four vignettes that comprise an *a fortiori* argument, so to speak. Earlier in the book, the calculations had been both innovative and difficult, and the bare formulas for allotments to the lifespan lacked examples, even hypothetical ones. Manilius wisely concludes the book with a clinching example of zodiacal influence that would silence any objection—the Seasons. Any reader would now concede the influence of the stars upon this world.

3. The four Tropics¹⁵ allow for twenty-four possible permutations of order: viz. abcd, abdc ..., dcab, dcba. Each could be made to represent a climactic order, given the ease with which symbolism can be imposed.¹⁶ Manilius must have had a compelling reason to choose the order he did: first the pair of actual tropics, then the pair of equinoctial signs.

In each pair the second and climactic sign is the patron of an emperor. For the Tropic, first midsummer Cancer, then Capricorn the emblem of Augustus; the year moves from the culmination of daylight to its wintry nadir. For the Equinoctial, first Aries then Libra, the emblem of Tiberius (4.776); the year moves from springtime beginnings to autumnal fulfillment. The motions of the two pairs are thus opposite in tone. That of the Tropic signs is a decline. Despite its demerits, Capricorn stands second and climactic because of an imposed necessity which overrode all other considerations. Capricorn was emblematic of Augustus.

Neither Cancer nor Capricorn was his actual Horoscope, much less the ascendant at his birth. Augustus was born September 23, in Libra, Tiberius November 16, in Sagittarius. The Moon in fact was in Capricorn and Libra at their respective nativities; the moon was given special prominence in the Egyptian school (i.e., Alexandrian: so Manilius at 3.590, where the Moon adds to the lifespan).¹⁷ In sum, the procession of

¹⁵ So called for convenience and clarity, rather than “cardinals,” viz., the actual tropics Cancer and Capricorn, the “turning” points of the Sun, and the equinoctials Aries and Libra.

¹⁶ Burkert (1972) 188 allows “an idle hour” to discover that 1 + 2 + 3 + 4 yields 10, and the *tetraktys*. A lifetime, though, would not exhaust the seeming significance of a relationship; so here, whatever pattern of the Tropics the poet happened to choose.

¹⁷ Garrod (1912) 114–120 argued that Capricorn was the horoscoping natal sign of Augustus on the basis of Fotheringham’s identification of 22 Sept. 63 BCE o.s. as December 20 n.s. (119). Smyly (1912) 150–159 refuted it. Housman concurred (1².lxix–lxxii; also [1913] 109–114), as does Goold (1977) xii and on 4.552:

the Tropics touches on the previous emperor only to culminate in the one alive and ruling; this motion echoes the climax of Book 1, where Manilius reminds Rome that the god she set among the stars engendered the god alive on earth (1.926). There the divine pair was Julius Caesar and Augustus; here, at a later stage in the composition of the poem, it is Augustus and Tiberius.¹⁸

There is a certain balance, then. It must have struck Manilius as highly significant that the two *principes* of his own lifetime occupied tropic signs and not something plebeian.

Augustus bequeaths the poet unpromising stuff, Capricorn and the dead of winter (3.637–43): the sea is blockaded (*mare clausum*, 3.641); fields and rocks lie stiff and slick. Manilius accentuates the positive; the calm and quiet are emphasized, and Nature rests for a little while to regain her strength for a kinder future. As with the extra-zodiacal signs in Book 5, Manilius displays his remarkable ability to see a deep significance where no one else had, or ever would.

Capricorn, however, will “lengthen day / And now dispel the darkness” (3.639), and this abets the cosmic optimism that runs through the book; cf., e.g., 3.327–84, which has much to say about the increase in daylight, but less about its equally necessary loss. Here the political symbolism emphasizes dispelling the darkness. Manilius does concede that Capricorn at first causes further losses to daylight, but then repairs the loss (3.640)—a reparation symbolic of the sacrifices, indeed mayhem, that inaugurated the principate of Augustus and hindsight would regard as the price to be paid for peace, order, and good government ever after.¹⁹

Hence the pacific details—the sea now closed to ships, and, most important, the *condita castra*: Roman troops now in winter quarters, and not on the march. For many a year Augustus could boast that Romans no longer waged war against fellow citizens much less kindred—*bella*

cf. Bowersock (1990) 380–394, esp. 385–387. Ramsey and Licht (1997) 147–153 convincingly argue that Capricorn is a personal sign adopted (or “reborn,” as Pliny says at *Nat.* 2.23.93–94) after the comet of 44; the horoscope and lunar sign of Augustus remain open questions.

¹⁸Julius Caesar is not credited with even a posthumous horoscope; for Manilius the marvellous youth Augustus founded the regime. His pious revenge (1.913; cf. *Res Gestae* 2) reminded Trogus of Alexander avenging the Persian Wars (so Just. *Epit.* 11.5.6), as well as Achilles avenging first Helen then Patroclus. The accident of history that all three marched east turned into a minor *topos*: revenge will aim for the sunrise at *Eleg. Maec.* 1.56, *exorientis equos*.

¹⁹The proscription of Cicero is just such an embarrassment at Sen. *Suas.* 6–7; cf. also Nero’s Machiavellian speech at *Octavia* 492–532. “He is new at ruling” outlived Zeus.

plus quam civilia. Manilius rejoices in the peace winter enforces.

Tiberius fares better with his *Libra* (3.658–65), which encompasses harvest and sowing both, and their promise of alternating fulfillment and renewal; the bounteous vintage of the Sign looks like a jolly allusion to the habits of an emperor known to his troops as *Biberius Caldus Mero* ("the tippler warm with wine unmixed"; cf. Suet. *Tib.* 42). Manilius fancies wine-bibbing elsewhere, though not much else in the way of creature comforts; cf. 5.234–50 for his eulogy of Crater and its toppers.

In sum, Housman's "terminal ornament" achieves poetic closure, just as it is the necessary conclusion of the celestial mathematics that determine the lifespan. The book fittingly ends with an overview of the Seasons within whose revolutions a lifespan must be lived, since the Tropics represent the earthly and human essence of the four cardinal Signs that bulked large in the mathematics. Here they are treated in their own right. They neither distract the argument with their "poetry," nor are they overshadowed by a mathematical context. Fittingly too, the four Tropics reveal the celestial origins not just of our earthly year, but of the two presiding deities who had ruled Rome so many years themselves in human guise.

Once the Seasons have their due, Book 3 ends *diminuendo* with a repeated reminder that one day alone within each Tropic marks the turn of things, now to lengthen the day, and now shorten it, now to do, and now undo. The antitheses, and the solemnity, recall Ecclesiastes 3:1–8 "There is a season to all things" But Manilius is emphasizing not the reversal but the astronomy, which embodies the idea of a princeps in heaven as on earth. The passage runs to eleven verses (669–79), with a coda of three verses (680–82) that raise one last question. Which degree is the actual turning point in a Tropic—the eighth, the tenth, or the first? At first sight this technical point seems a strange note to end on. To be sure, it ties off the last threads of the technical discussions that were the heart of Book 3 and as such is integral to the run of thought, *pace* Housman. More importantly, it is expressed in a numerological pattern, the Pythagorean *tetraktys*, that adds an emphasis which sympathetic contemporaries would have recognized.²⁰

²⁰ According to Cicero (*Tim.* 1), Nigidius Figulus introduced Pythagoreanism to Rome; the polymath Varro was buried *Pythagorico modo*, whatever that meant (Plin. *Nat.* 35.160). For Manilius, the mixed Platonic-Pythagorean influence of the court astrologer and confidante Thrasyllus set the tone; for his edition of Plato cf. Tarrant (1993) 178–185. Burkert and now Kahn detail the vacillations in the Academy after Plato. At first it was mathematical and cosmological; the Socratic sceptics seceded and became Cynics. Then it reverted to Socratic scepticism, like the Platonism of Cicero in *Natura Deorum*, whereupon the mathematical- and mystical-minded became Pythagoreans, like Cicero's friends.

The pattern is simply ten dots arranged 1-2-3-4, a foursome that represents the triangular number ten.²¹ Pythagoreans swore by the *tetraktys*, which the master supposedly discovered; it ranked as "the kernel of Pythagorean wisdom."²² The exuberant symbolism of its components is not to the point²³; the four seasons suggested its use here.²⁴

Manilius was taken with the pattern. The vignette of *Lepus* at 5.162-71 is arranged in a 1-2-3-4 *tetraktys*. Each sentence is "ropellic," a verse longer than its predecessor, and begins with the anaphora *Ille*. The climactic native is a juggler, presumably with the traditional seven balls—the planets in miniature.²⁵ Another *tetraktys* begins at 5.701, but the archetype was mutilated at 5.709.²⁶ In any case, the pattern informs

Manilius was "Pythagorean" in that sense, steeped in Platonic mathematics, which from the outset had a Pythagorean color. Compare the Masons of Mozart's day; this is not the Pythagoreanism of talking dogs and beans. As a result, Platonic elements in Manilius (cf. 1.456-531 and 4.387-407) rank as "Pythagorean" in the context of the age; uniquely Pythagorean symbols like the *tetraktys* are perforce rare.

²¹ Ten was "the most revered number, because it represented the cosmos as a whole": so Livio (2002) 33; cf. Burkert (1972) 72-73. The components had their own significance: cosmic unity, then feminine two and masculine three. Four, the last of the terms and their sum, was justice and order. Six, the sum of the first three terms, was the first "perfect" number, as being the sum of its factors; for Augustine, this was why God created the world in six days (*C.D.* 11.30).

²² Burkert (1972) 72; cf. *Carm. Aur.* 48-49a; *Iamb. VP* 18.82, 29.162; *Lucian Laps.* 5.

²³ The *tetraktys* represents (or "is") the harmony of the universe and its four geometric components (point, line, plane, solid), among much else (the song of the Sirens, the wisdom of Delphi). Theo Smyrnaeus, *Expositio rerum mathematicarum ad legendum Platonem utilium* 38, gives eleven such tetrads, with the eleventh originally a superset of ten tetrads, as Cornford saw ([1937] 69-70). The significance of the *tetraktys* outlived Pythagoreanism; ten is the number of the Creator at Augustine *Doctr. Christ.* 2.16.25. Cf. Sarton (1952) 1.204; Burnet (1930) 102-104; Kirk, Raven and Schofield (1983) 233; esp. Burkert (1972) 72-73 and 186-188, Shaw (1995) 210-215, Thom (1995) 171-177, and now Kahn (2001) 31-36.

²⁴ The seasons rank as the tenth (penultimate) tetrad in Theo Smyrnaeus; cf. Cornford (1937) 70.

²⁵ Seven balls were the ancient standard; Housman adduces P. Aelius, a contemporary of the poet, juggling seven, "As we ourselves have seen onstage"; Goold (1977) 314 n. a adduces another juggler with seven on an imperial sarcophagus (Daremberg-Saglio 4.479, fig. 5668). The number looks canonical and is an obvious symbol of the planets; Manilius presumably thought it could go without saying.

²⁶ The last *tetraktys* made a fitting climax, after the stellar influences of the last two books—the superiority of Man over Beast (as at 2.523-35). That is, the superiority of Reason (cf. 4.924-30 *et al.*). Alas, the archetype breaks off after

3.669–79:

Sed non per **totas** aequa est versura figuras.
 [omnia nec plenīs flectuntur tempora signis]
Una dies sub utroque aequat sibi tempora noctem,
 dum Libra atque Aries autumnum verque figurant;
Una dies toto Cancrī longissima signo,
 cui nox aequalis Capricornī sidere fertur:
 cetera nunc urgent vicibus, nunc tempora cedunt.
Una ergo in tropicis pars est cernenda figuris,
 quae moveat mundum, quae rerum tempora mutet,
 facta novet, consulta alios declinet in usus,
 omnia in aversum flectat contraque revolvat.
Whole signs do not reverse the seasons four:
 [Nor all times turn within the Signs when full.]
One day alone within each season stands
 The equal of the night, come Balances and Ram;
One day alone prolongs the starry Crab
 And grants a night to match in Capricorn,
 When days to come now wax, and night retreats.
One degree, then, must turn the firmament
 To alter us the fashion of the earth;
 Renew the past; or work the unforeseen,
 Changing its course to spin it round about.

Unfortunately, interpolation at the outset mars the pattern, though it emerges thereafter given the pounding anaphora of *una* that begins 671, 673, and 676.²⁷ The culprit is 3.670, *omnia nec plenīs flectuntur tempora signis*, “Nor all times turn within the Signs when full”; lit. “all times are not reversed by full signs.” The verse should have long since been de-

5.709, one verse short. The pattern that survives is 4-2-3 (Bears, Elephants, Tigers), with anaphora of *Ille* once again; given the damage, to rearrange is not heroic. The lost verse was, I suspect, something like “Man rules them all, since reason rules the man” (*ille quidem dominat, quia homo est, ratione superbus*; cf. 5.636).

²⁷ The form *una* begins a verse only here (*unaque* does at 4.447 and 4.456). The probability that the anaphora at 3.671ff. occurred by chance is at most one in nine million. The total verses (*n*) in Manilius is 4258; once *una* occurs in 671, the probability *p* that it occurred by chance in 673 and 676 as well is $p = \{2/(n-1)\} \times \{1/(n-2)\} = .00000011$. The *p* that *una* occurred in all three by chance is 7.78^{-11} . A similar calculus applies to *ille* at 5.162–71. Such vanishingly small probabilities reinforce the obvious; but there is now no objecting that it occurred “by accident.” As Wilkinson (1969) 317 rightly observes, “When it comes to intricate proportions ... we must remember that ancient poetry was meant to be taken in by the ear, and that beyond a very limited *Präsenszeit* the ear cannot operate.” He was addressing Duckworth’s subtleties, which were yet to be demolished; see Livio (2002) 198–200, and Curchin and Fischler (1981) 129–133. The pattern proposed for Manilius here falls well within the realm of the obvious.

leted.²⁸ The preceding verse determined the tropic degree; 670 extends the idea to cover all twelve signs, which are irrelevant here. Its phrasing is slovenly: *plenis signis* cannot mean the width of a sign, the point of the preceding verse; at 1.462 *plenis membris* refers not to their width, but their sketchy draughtsmanship (e.g., loss of a claw). Moreover, *flectuntur* is a lame equivocation: in 667 the word referred to the disruption of time, not its smooth passage.

Housman reworked 670 to fit the context and conjectured *annua*, as if "yearly times" meant the seasons without further qualification. His parallels are verbal, not substantive.²⁹ At 3.515 *annua tempora* means not the seasons but the span of the entire year: so Lucretius 5.619 and 5.692, Cic. *Arat.* 333, and Germanicus 563–64. It means indefinite "times of year" at Lucr. 2.170 and 3.1005. At Verg. *G.* 1.258 *temporibus* means "seasons" because it is quantified by *quattuor*; at Man. 4.400 *annua vota* are the farmer's prayers each year, not each season.

Even if *annua tempora* meant the four seasons, it is no improvement to turn the irrelevant into the redundant; Housman's reworking of 670 is a prosaic paraphrase of 669. The subsequent anaphora becomes a heavy-handed concession to anyone not sophisticated enough to recognize a tricolon without it, as if the poet were aiming for such an audience. The intrusion of 670 thus raises a simple question. Who would be insensitive to neo-Pythagorean symbolism—Manilius and his potential readership (e.g. Thrasyllus), or the scribes and scholars of later ages?

Once the distraction of 670 is deleted, 669–79 embody a *tetraktys* unmistakable given the anaphora *una* beginning 671, 673, and 676.³⁰ The quasi-numeral *totas*, which sums the preceding discussion, is the corresponding element in 669; it is the first nominal though not the first word. The anaphora of *una* also provides a thematic link to 680–82, where the single tropic degree proves to be the first. Like the typical

²⁸ Elsewhere too the same interpolator tries to "say it all"; his handiwork is most obvious at e.g. 2.732–34 and 968–70, where the interpolation convicts itself because it flatly contradicts a system that the poet has just expounded at length; cf. Goold (1977) liii–liv, xli–xlii.

²⁹ Contrast Housman's insistence at 5.744–45 that the resemblance between the order in the Heavenly City there and the stars at 1.461ff. was purely verbal (*verborum tantum similitudinem*).

³⁰ There is Pythagoreanism elsewhere, perhaps thanks to Thrasyllus; for his use of the *tetraktys* in harmonics, cf. Tarrant (1993) 223. At 3.592–93 the lifespans form a progression, as Goold first noticed ([1977] lxxxix). The maximum allocation, 78 years, "diminishes by successive triangular numbers," viz., 1, 3, 6, 10 ... and so on. This is in fact a Pythagorean reduction, which yields 78 along with a *tetraktys*. It sums the zodiac too; $78 = 1 + 2 + 3 + 4 \dots + 12$. Housman did not see this, and arrived at 78 by a remarkably tortuous path (3².xxvii–xxviii).

priamel tricolon in Manilius, the *tetraktys* here builds to a swelling climax; cf. Lausberg (1973) §451 (*modus per incrementa*) and Race (1982) 7–17. The Pythagorean tetrad thus amounts to a non-verbal *sphragis*—not an embedded acrostic signature, as at Nic. *Ther.* 345–53,³¹ but a visible expression of the poet's philosophic allegiance.

It may add to the numerological significance of the conclusion overall (viz. 618–82) that, once 670 is deleted, the passage now totals 64 verses. That is, the cube of four, considered not as a mere number but as a thought of the poet's God, Reason. Fourness is the essence of the Seasons, as of the elements; now it is embodied in solid geometry, the three-dimensional world in which the Seasons revolve.³² The circle has finally been squared—if only in words. To be sure, a listener or reader would not be counting verses as he moved along. The significance of their sum would rank as a second *sphragis* pattern, hidden under the *tetraktys* that all could see.³³ But it too would be a sign—to the poet himself and to his God, if no one else—that the book of lifespans had indeed come to a fitting close: terminal indeed, but no mere ornament.

* * * * *

There remains the final tercet (3.680–82), with its seeming tentativeness.

³¹ For an impersonal *sphragis* cf. Aratus 783–87, ΑΕΠΤΗ (“elegant”). It is emphasized by the anaphora of λεπτή in 783–84. Here the allegiance was to a literary coterie; his compliment was repaid by Callimachus at *Epigr.* 27.3–4; cf. Kidd (1997) 445–446. If Aratus gave Manilius the idea for a *sphragis*, there is no comparable pattern cited by Kranz or Cameron. Hellenistic *technopaignia* afford the parallel; Manilius was working his poem into the shape of the cosmos.

There may be a personal *sphragis* elsewhere. At 4.152–61 we are told that the native of Gemini turns to poetry and astronomy. At 5.163–71 the native of *Lepus* the Hare (rising at 7° of Gemini) proves a deft juggler, presumably with seven balls; cf. n. 25 above. But if the poet meant to tell us he was born on 28 May, it is a thousand pities he failed to mention the year.

³² The cube of four is the middle term of the “psychogonic” triangle (cf. ps.-Iamblichus, *Theol. Arith.* 46), $3^3 + 4^3 + 5^3 = 6^3$, which underlies Plato's “nuptial number” at *R.* 546b; cf. Cornford (1937) 45–52 and Adam *ad loc.* Given such a precedent, the sterometry here is understandable; cf. n. 12 above.

³³ Nor do audiences hear the colophon on Haydn's scores, AMDG—*ad maiorem Dei gloriam*. One of the journal's referees questions whether a non-verbal *tetraktys* (much less the cube of four) can properly be called a *sphragis*. I think the extension is legitimate; it gives a Pythagorean “stamp” to the poem. Compare Christian tokens—the fish, the triple Amen, the cruciform pattern. The *tetraktys* here would be a gesture and *captatio benevolentiae* that a fellow initiate would recognize in a *recitatio*. Wilkinson (1969) 317 allows the possibility that to amuse himself a poet might indulge in numerological patterns too lengthy for the ear to catch.

has quidam vires octava in parte reponunt;
sunt quibus esse placet *mediae*; nec deficit auctor
qui primae momenta daret frenosque dierum.

681 *mediae scripsi*; *decimae* Housman; *decimam* Bentley; *decimas codd.*

Some will allot the Eighth degree this power,
Others the midmost point; nor do we lack
For an authority who grants the first
The spur and then the bridle on our days.

The verses reflect an old controversy over which degree of a sign is the tropic degree, or node (i.e., where the seasons turn, or the balance of the equinox).³⁴ According to Goold, the first to grasp the nettle, the disagreement arose from attempts to reconcile the Zodiac with the precession of the equinoxes first noticed by Hipparchus: "the variety of opinion over such a factual matter as the nodes of ecliptic and equator clamours for explanation, and of course this lies ready to hand: the precession of the equinoxes."³⁵ If precession were the reason for the uncertainty over the node, Manilius does not tell us; he ignores precession. Indeed he is markedly ill at ease with any phenomenon—the planets in particular—which detracts from the clockwork regularity that proves the existence of God.

In fact, with the exception of Ptolemy no ancient astronomical writer after Hipparchus takes precession into account or even so much as mentions it.³⁶ Precession cannot be the reason Manilius does anything,

³⁴ Housman did not invoke precession, or anything else, to explain why different degrees were in use, much less why Manilius chose the three he did (3rd.68). He quotes Hipparchus (2.1.15), who ascribes "the middle of the signs" (τὰ κημεῖα μέσα) to Eudoxus, and the first to Aratus. Housman refers the eighth, standard at Rome, to Sosigenes and the twelfth to Achilles (23), but knew of no authority for the tenth. In his *Appendix* (74) he adds that Fr. Kugler thought that Babylonian use of the tenth degree might have influenced Manilius; cf. n. 49 below.

³⁵ For precession, cf. Goold (1977) lxxxi–lxxxiv; also Barton (1994) 92; Dicks (1970) 15–16. To put it simply, the zodiac, a geometric construct based on the sun's path, remains fixed; but the earth wobbles as it rotates, and the celestial equator and stars all slip forward or "precess" a degree every 72 years (see n. 38 below). As a result, not long after they were mapped, the stars had noticeably shifted with respect to the Zodiac. Goold (1977) puts it neatly: fifty years from now "we will start getting Taurus babies" when the sun is actually in Pisces. If Hipparchus annotated Aratus before he discovered precession (so Neugebauer [1969] 69), his use of the first degree there was not an attempt to reconcile Aratus with precession. It was irrelevant to his star-chart in any case. Volk (2002) 54 n. 58 confuses the issue; she refers to an "astrological part" of the *Phaenomena*, but there is none.

³⁶ Cf. Evans (1988) 262: precession "is never alluded to by Geminus, Cleo-

nor does it account for the odd range of degrees considered the tropic degree by various authorities. When Goold asserts that precession "lies ready to hand" as an explanation, he is grasping at straws. Precession is irrelevant at 3.680–82.

In any case, the degree of the tropic point was not *pace* Goold a "factual matter" like an angle of declination; it was a matter of calendric convention.³⁷ If precession were at issue here, the difference between the first degree and the eighth—let alone tenth or twelfth—would amount to time-spans far longer than the actual time elapsed between the various authorities for the degrees mentioned.³⁸ Hence Goold assumes without evidence that the zodiacal constellations themselves ascend to a misty past long before the zodiac itself existed; "it is certain" ([1977] lxxxii). The construction of the zodiac then required a fresh "schematization based on tropic points." Whereupon Eudoxus and Aratus each chose different nodal points to "preserve conventions that do not fit the phenomena."³⁹ Such is Goold's scheme of things.

A nodal point is not a "schematization"; still less was Aratus a practicing astronomer trying to save the phenomena (or the zodiac itself, if that is what Goold means by "convention") with a forced explanation of the facts by designating 1° as the tropic instead of the Eudoxan 15° established less than a century earlier. If the different degrees represented different observations, then for no good reason the near-

medes, Theon of Smyrna, Manilius, Pliny, Censorinus, Achilles, Chalcidius, Macrobius, or Martianus Capella. ... The only ancient writers who mention precession besides Ptolemy are Proclus, who denies its existence, and Theon of Alexandria," who edited Ptolemy. Some modern astrologers ignore it; cf. MacNeice (1964) 72–74.

³⁷ Given the instruments available it was impossible to identify the "longest day" with any precision. When Manilius cites an up-to-date measurement for daylight at the winter solstice, nine and a half hours is the best his source can do (3.257). Both Columella (9.14.12) and Pliny (*Nat.* 18.59.221) follow Sosigenes and put the solstice at 8° of Capricorn; but Pliny calls it "mid-winter."

³⁸ The constant of precession per 100 years is 1.38125°; cf. Rochberg (1999) 57 n. 20. If the difference between the tropic degrees reflected the time when an astronomer *observed* the solstice, then a difference of eight degrees between the tropics chosen would mean that around 600 years elapsed between Hipparchus and Sosigenes (fl. 49–44 BCE); fifteen, 1100 years between Eudoxus and Hipparchus. Since that is false, if the difference between the tropics is due to precession, then it must reflect observations taken at different times in the distant past, and not by the astronomer himself. What conceivable use would such values be?

³⁹ If astronomers all knew about precession and were trying to "save the phenomena" from the past by tweaking the tropic points, it is inexplicable that the degree established by Sosigenes remained the standard despite the continued effects of precession.

contemporaries were trying to save quite different sets of phenomena observed more than a thousand years apart. But those considerations are speculative. Goold's account is false to the known history of the zodiac. He is making the assumption (not original to him) that the zodiacal signs were demarcated in a prehistoric age when such precision was in fact impossible—for want of the necessary concepts and instrumentation both. No evidence supports Goold's assumption.⁴⁰

Homer and Hesiod knew of many a constellation still with us, and not one is a zodiacal Sign; they are not attested before the end of the fifth century.⁴¹ Any attempt to posit their existence earlier still is worse than speculation. The prerequisites for the zodiac itself did not exist until Plato's day—notably the concepts of the celestial sphere and the ecliptic, as well as a recognition of the planets ("the wanderers") as *sui generis*.⁴² Before that, the stars that make up the zodiacal Signs were an inconspicuous lot hardly worth grouping. More suitable stars were available for prognostic constellations; the zodiacal stars are meaningful only once spherical geometry existed to give them a context. Even then they had to be manhandled before they fit: Scorpio was dismembered, and its Chelae became Iugum then finally Libra and its bearer.

The different choices attested for the tropic points from the fourth century on may, but need not, reflect actual observation; but even if they did, the observation would have been highly inaccurate given the instrumentation available (a stick on a cloudless winter day, to put it simply).⁴³ The precision of the various tropic points is spurious (or "fudged"), like much else in the ancient record that has passed until recently for observation.⁴⁴ Since the seasons are not the same length in

⁴⁰ See Dicks (1970) 64, 120, and 161–163.

⁴¹ Cf. Dicks (1964) 27–38 (Homer and Hesiod) 64, 120, and esp. 161–163. The exact form if not the existence of the zodiacal signs in the *parapegmata* (public calendars) ascribed to Meton and Euctemon (fl. 431 BCE) is problematic, since they are preserved in Geminus, who is first century BCE at the earliest; cf. Dicks (1964) 84–88, Newton (1976) 163–164, and n. 42 below.

⁴² At *Lg.* 986e–987a Plato can only name Venus and Mercury. They revert to "morning" and "evening" stars at *Ti.* 38c–d; cf. Dicks (1964) 123.

⁴³ Cf. Dicks (1964) 159–166; Newton (1976) 164. The relative position of stars in a constellation was not mapped out with coordinates until 1609; when Hipparchus corrects Aratus, the descriptions are purely verbal. In Babylonian horoscopes an eclipse is so many fingers wide; cf. Rochberg (1999) 54.

⁴⁴ For the *parapegmata* ascribed to Meton and Euctemon, cf. Newton (1976) 163–164, who concluded that Ptolemy often fudged the data to fit his theories. Evans (1998) 267–269 attempts to vindicate Ptolemy, how successfully I am in no position to say. So also the Babylonian tables often proffer not observation but extrapolations therefrom; cf. Newton (1976) 97–110; Rochberg (1999) 40–42.

any case, *pace* Aratus and Manilius, the constancy of a given tropic degree from sign to sign in those authors represents mere calendric convenience there, as elsewhere.

The authorities chose a tropic degree to suit themselves. Eudoxus (fl. 365, but died after Plato, apparently) settled on the fifteenth degree, or, more accurately, "signs in the middle" (so Hipparchus 2.1.15, τὰ σημεῖα μέσα).⁴⁵ Aratus chose the first instead; so *Phaen.* 151 and Hipparchus 2.1.15–18; cf. Kidd (1997) 237 and Dicks (1970) 156. Hipparchus retains the first (2.1.19), at least in his commentary on Aratus.⁴⁶ Thereafter Sosigenes established the eighth degree as the Roman standard during the dictatorship of Caesar, as Pliny tells us (*Nat.* 18.59.221); it is universal in astrological texts; cf. Neugebauer (1969) 188. In the third century Achilles (23) mentions the twelfth for no obvious reason; Babylonian lunar computations mention the tenth degree. Such were the options supposedly open to Manilius.

In Manilius the first degree is the tropic, and no other. The apparent exceptions that Housman and Goold cite are precisely that—apparent. At 3.625–28 *ad aestivae ... fastigia zonae*, "the height of summer," and 637–40 *parte ex adversa*, "opposite," Goold asserts ([1977] lxxxi) that the length of day reverses course "within the sign." True by definition; the seasons cannot turn outside a sign, after all.⁴⁷ But the poet's vague phrasing does not mean "in the middle," much less a given degree other than the first; it is consistent with the tropic point at 1°.

At 3.257 Manilius mentions offhand that in the eighth degree of Capricorn the day is nine and a half hours long at Alexandria. The observation was thus later than Sosigenes' reform; the poet does not translate it into his own system. Since it is true of Rhodes, not Egypt (cf. Goold [1977] 183), Manilius may have gotten it from Thrasyllus, the Rhodian *éminence grise*.⁴⁸ The Egyptian veneer hallows it; Plato, Eudoxus and

⁴⁵ So also Hipparchus 2.1.20–22. The fact that he explicitly calls it the "middle" of a sign rather than a given degree suggests to this writer that the tropic point was left deliberately imprecise because of the difficulties of observation; cf. Neugebauer (1969) 188 and Dicks (1970) 165–166.

⁴⁶ Curiously, though Columella elsewhere follows the Roman style set by Sosigenes and puts the solstice at 8° of Capricorn, he retains the first degree as the actual tropic at 9.14.12. His pretense to authority collapses when he assures us that the eighth degree was the tropic used by Eudoxus and Meton (fl. 431 BCE!) as well as *antiquorum fastus astrologorum* earlier still.

⁴⁷ Any use of the first degree as the tropic would constitute "within the sign" by Goold's standards, which are legalistic (or Stoic): it is all-or-none.

⁴⁸ The eighth degree of Sosigenes was the tropic for Thrasyllus in his *Pinax*, not the first "as some think." For the *Pinax* cf. CCAG 8.3 (1912) 99.6–8. Among his innovations he taught that the size of the moon and circumference of the sun

Pythagoras all made pilgrimages to Egypt to learn its wisdom.

In any case, the eighth degree here does not represent any inconsistency; for him the first degree is always the tropic, and it will in due course become the climactic choice at 3.682. In his day the eighth degree was common, as he implies at 3.680. What then was the third possibility he envisioned? The tenth degree proffered by the MSS does not occur in practice, Greek or Roman; the Babylonian parallel that Housman adduced is illusory.⁴⁹ Goold accepts it, but defends it with no documentation or new evidence, only an allusion to "certain support."

The right reading is not far to seek. The only other tropic "point" in use before the poet's day was the middle of a sign. That was the duly cautious choice of Eudoxus, much of whose now-obsolete system Manilius retains.⁵⁰ Although Manilius himself never uses the middle, he here acknowledges it *honoris causa*; it was the first tropic in use, after all, and the choice of Plato's colleague. For the unmeaning *decimae* of the MSS, *mediae* should be read instead.⁵¹

Since for Manilius the first degree is the tropic, by making it the climax of the tricolon he exalts his own preference without seeming to. According to Goold ([1977] lxxxi), however, Manilius "suggests eccentricity" on the part of the authority who makes the first degree the tropic. Indeed it would be eccentric to put the worst alternative last, and end the book with an anticlimax. In fact, in Manilius climactic order (or

were both eight degrees (*sic*: μέγεθος ... περιφέρεια). If that was his own reason for choosing the eighth degree, it too has nothing to do with precession. We have no idea why Sosigenes chose the eighth.

⁴⁹The idea that the Babylonian tenth degree may have influenced Manilius is not supported by actual horoscopes, which are mostly Seleucid (i.e., after 312). None mention the degree of a sign. They locate the horoscoping planets in a given zodiacal sign, which means the sun is omitted as often as not; cf. Rochberg (1999) 46. Their horizon-based system lacked both the celestial sphere and zodiac as such; cf. Dicks (1970) 169, Newton (1976) 97–98 and Rochberg *passim*. Presumably the Greek zodiacal signs were borrowed *ad hoc*. In sum, the Babylonian horoscopes bear no resemblance to anything in Manilius. In any case, he could have known "Babylonian" lore only via Eudoxus or Hipparchus; neither mentions the tenth degree as a tropic. Housman's "tenth degree" is a will-o'-the-wisp. It is I suspect an Egyptian decan, borrowed and misapplied.

⁵⁰His system divided the zodiac into the sixty degrees of Babylonian sexagesimal astronomy. For other survivals of Eudoxus, cf. 1.566–602, 2.434–52, 2.466–519, 3.271–74, 3.680–82, and Goold (1977) xxxii, lxxxii, and 48 n. b; cf. Hipparchus 2.1.15 and Hyg. *Astr.* 1.7; also Dicks (1970) 151–189.

⁵¹It is hard to say whether the change from *mediae* to *decimae* (very nearly an anagram) was an easy corruption, since *octava* suggested that another numeral should succeed it, or a conscious attempt to substitute a numeral however inept for a word whose associations with Eudoxus would have escaped a scribe or editor unfamiliar with Eudoxus and the poet's debt to him.

"priamel") by itself will indicate authorial preference. So e.g. at 1.118, 684, 817 and 3.5; cf. Race (1982) 7-17 and 24, and Lausberg (1973) §451.

Manilius' own preference is obscured by a knowing Callimachean allusiveness, which has not worn well, obviously, given the critical reaction. But it does not much matter if the poet is referring to Hipparchus with hushed awe, or with assumed diffidence to himself in the third person as his own authority. Manilius clearly believes that the Signs acknowledge the same "primacy" which elsewhere pervades the *ordo* of the principate and universe both. Here the result of his rhetorical manoeuvres is an understated climax, as in the diminuendo that ends Book 5, which by its very lack of emphasis emphasizes the necessity of what could have gone without saying. Of course the first degree controls Time itself.

* * * * *

So ends Book 3. One tropic degree rules the seasons; the seasons in turn epitomized the zodiacal calculations earlier in the book. As this paper has tried to demonstrate, the Seasons are thus no mere "terminal ornament." They are a fitting close, the earthly epiphany of the zodiac.

So much for the mere structure of the book, which any unprejudiced reader might assume enjoyed a modicum of unity; only there has been a hundred years of prejudice. Hence this paper, which also proposes two textual alterations. If the hopelessly corrupt 3.670 is deleted for once and for all, the Pythagorean *tetraktys*, emblem of cosmic unity, heralds the tropic that is unity itself. Even the emendation *mediae* in 681 shares the same cosmic vision in its small way. The poet was honoring his predecessor Eudoxus, heir of Pythagoras and colleague of Plato.

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