

## MANILIUS ON THE IMPERFECT FORMS OF THE CONSTELLATIONS: THE TEXT OF *ASTRONOMICA* 1.463–5 AND 466\*

### ABSTRACT

*This paper presents two proposals to improve the text of an important passage in Manilius' Astronomica, 1.456–68, in which the poet explains natura's rationale for arranging the stars in such a way as to create only a partial, rather than a full, representation of the constellation figures. The text of line 464 is repunctuated in order to give proper emphasis to natura's parsimonious disposition of the stars. Scholars have noted that the sentence atque ignibus ignes | respondent in 466–7 is not consistent with the poet's account of how the constellation figures were delineated nor with what an observer sees in the heavens. The conjecture insignibus (neuter plural), for the transmitted atque ignibus in line 466, is offered to indicate that it is the distinctive features (insignia) of the figures to which specific stars correspond and by means of which the figures are described. Attention is also drawn to a striking paronomasia in 466–7, designat ... insignibus ignes, which creates a meaningful phonetic constellation of celestial fire (ignis), sign (signum) and insigne (distinctive feature) and thus provides evidence, on the linguistic level, of natura's providentia.*

**Keywords:** Manilius; *Astronomica*; constellations; *ignis*; *stella*; *signum*; *insigne*; paronomasia

In Book 1.456–68 of the *Astronomica* Manilius concludes his catalogue of the constellations with a natural-philosophical explanation of why the figures are not depicted in full detail by individual stars.<sup>1</sup>

haec igitur magno diuisas aethere sedes  
signa tenent mundi totum deducta per orbem.  
tu modo corporeis similis ne quaere figuras,  
omnia ut aequali fulgentia membra colore  
deficiat nihil aut uacuum qua lumine cesset. 460  
non poterit mundus sufferre incendia tanta,  
omnia si plenis ardebunt sidera membris.  
quidquid subduxit, flammis natura pepercit  
succubitura oneri, formas distinguere tantum  
contenta et stellis ostendere sidera certis. 465  
linea designat species, atque ignibus ignes

\* In May 2019 it was my great good fortune to be a Visiting Professor in the *Dipartimento di Filologia Classica e Italianistica* at the University of Bologna; during my stay there I was able to make substantial progress on this project. To Francesco Citti, then chair of the department, who extended the invitation, and to his colleagues, Bruna Pieri, Lucia Pasetti, Luigi Pirovano, Daniele Pellacani and Antonio Ziosi, I want to express my deepest gratitude for their unfailing kindness and hospitality. I also want to thank Professor Bruce Gibson and the anonymous reader for criticisms and comments that improved this paper.

<sup>1</sup> K. Volk, *Manilius and his Intellectual Background* (Oxford, 2009), 29–57 provides a detailed discussion of Manilius' description of the celestial sphere.

respondent; media extremis atque ultima summis  
creduntur: satis est si se non omnia celant.<sup>2</sup>

464 *distinguere Vat. Urb. Lat. 667 (ca. 1470) disiungere codd.*<sup>3</sup>

So then, these are the constellations that make their procession through the whole circuit of the heavens and hold their abodes in various parts of the spacious ether. Just don't search for shapes that look like real bodies such that nothing is missing from all their parts or lies dormant where devoid of light. 460  
The firmament will not be able to endure such an inferno of flame if every constellation blazes with fully illumined parts. Nature, whatever it withheld from view, was thrifty with the fires, since it would collapse under the burden, content with marking off recognizable shapes only, and indicating constellations by means of specific stars. An outline traces 465  
visible forms, fires correspond to fires, the central area is imagined from the border, the out-facing surface from the in-facing surface; it is enough if not all is hidden.<sup>4</sup>

<sup>2</sup> The text of Manilius is quoted from G.P. Goold, *M. Manilii Astronomica* (Stuttgart and Leipzig, 1998<sup>2</sup> [1985]). I have repunctuated line 463; my reasons for doing so will be explained shortly.

<sup>3</sup> After being a regular fixture in the early printed editions, *distinguere*, a humanist conjecture, gave way to the results of *recensio* and was replaced, in editions of the nineteenth and twentieth centuries, by *disiungere*, the reading of the primary manuscripts; *disiungere* was printed by F. Jacob, *M. Manilii Astronomicon Libri Quinque* (Berlin, 1846); M. Bechert, *Marci Manili Qui Fertur Astronomicon Libri Quinque*, in J.P. Postgate, *Corpus Poetarum Latinorum*, fasc. 3 (London, 1900); A.E. Housman, *M. Manilii Astronomicon Liber I* (Cambridge, 1937<sup>2</sup>) and *M. Manilii Astronomica* (Cambridge, 1932); T. Breiter, *M. Manilius: Astronomica* (Leipzig, 1908); J. van Wageningen, *M. Manilii Astronomica* (Leipzig, 1915); and S. Feraboli, E. Flores and R. Scarcia, *Manilio: Il poema degli astri (Astronomica)* (Milan, 1996), vol. 1. Housman printed *disiungere* in both of his editions; in his commentary, however, he expressed the reservation that *distinguere* seems to be said more appropriately of shapes (*formas*), i.e. on the implied assumption that *disiungere* is more appropriate to the stars in general, whereas *distinguere* is the precise term for marking off with stars the distinct patterns recognized as constellations. As the *mot juste* for denoting the action of marking off the constellation figures with stars, *distinguere* has been convincingly defended by G.P. Goold, 'Adversaria Maniliana', *Phoenix* 13 (1959), 93–112, at 108–9, and R. Montanari Caldini, 'Le costellazioni in Manilio, ovvero l'imperfezione perfetta', in D. Liuzzi (ed.), *Manilio fra poesia e scienza* (Galatina, 1993), 55–78, at 66–7 = *A&R* 38 (1993), 18–41, at 29–31, which is an important contribution to the understanding of 1.456–82; she compares Cic. *Arat.* fr. 33.161 et [*natura*] *uario pinxit distinguens lumine formas* (J. Soubiran, *Cicéron: Aratea, fragments poétiques* [Paris, 1993<sup>2</sup>]). D. Liuzzi prints *distinguere* in *M. Manilio: Astronomica, Libro I* (Galatina, 1995<sup>2</sup>).

<sup>4</sup> G.P. Goold's indispensable translation, *Manilius: Astronomica* (Cambridge, MA and London, 1977), was the starting point for my translation. There are two significant differences between the two. First, in 457 Goold translates *signa* as 'stars'; this must be a slip for 'constellations'. Manilius begins his catalogue of constellations by announcing that he will tell of the *signa* (1.255–6) everywhere in the heavens; he concludes the catalogue by repeating the keyword *signa* (1.457). The second difference, at lines 463–4, will be discussed above. The rendering of *ultima summis | creduntur* (466–7) as 'the out-facing surface [of the figure] is imagined from the in-facing surface' is intended to represent the two perspectives for viewing the constellations, terrestrial and cosmic, i.e. from outside the celestial sphere looking down on the heavens. In the cosmic perspective, as the representations of the constellations on the Farnese Globe and the Mainz globe show, the figures can be viewed from the backside (*ultima*) rather than the frontside (*summis*); for illustrations see E. Künzl, 'Ein römischer Himmelsglobus der mittleren Kaiserzeit: Studien zur römischen Astralikonographie', *JRGZ* 47 (2000), 495–594: on the Mainz globe, Gemini and Orion (plate 36.1), Serpent-Holder (36.2) and Aquarius (36.4); on the Farnese Atlas, Perseus (43.1) and Serpent-Holder (45.1). E. Dekker, *Illustrating the Phaenomena: Celestial Cartography in Antiquity and the Middle Ages* (Oxford, 2013), provides detailed discussions of the astronomical theory and data on which the Farnese globe (84–102, 111–15) and the Mainz globe (69–80, 106–111) were constructed. If, as G. Thiele argued in *Antike*

The reason, as the poet explains, for only a partial representation of the figures is that the heat generated by completely delineated constellations, that is, figures whose every physical feature was represented by stars, would have been so intense that it would have caused a cosmic conflagration (461–2). This explanation meets the possible objection that divine *ratio* could not have made a providential arrangement of stars, which humans then devised as constellations, because that providential arrangement actually resulted in imperfect constructions made out of the imaginative associations of spatially proximate stars into figures that took on the identity of the names given to them. Manilius responds to this view by pointing out that if *natura*, another name for the divine *ratio*, had produced figures fully represented in all their parts by stars, then the mass of stars would have created such intense heat that the heavens would have suffered combustive ruin. Nature's solution in response to this potential astral catastrophe is a rational one: it marked out the various shapes by representing them only partially with specific stars, an elegant economy of form that prevented disaster. Thus, what might at first be viewed as nature's failure to produce a rational arrangement of the stars for the purpose of constructing fully delineated figures is in fact a proof of nature's *ratio* and *providentia* in avoiding a cosmic conflagration.<sup>5</sup>

In support of this explanation of nature's rational and purposeful plan in the arrangement of the stars, Manilius provides details of its method in 463–5: nature was economical in its placement of stars in the heavens and was content to mark off shapes (*formas*) and to indicate constellations (*sidera*) by means of specific stars (*stellis certis*), a phrase which I understand with *distinguere* as well as *ostendere*.<sup>6</sup> Nature

*Himmelsbilder* (Berlin, 1898), 45–7, Manilius used a celestial globe, then the poet had good reason to mention both views of the figures; his use of a globe is regarded as probable by Dekker, 77 and 97. This explanation of *ultima summis | creduntur* makes unnecessary conjectures intended to improve the sense. R. Ellis, *Noctes Manilianae* (Oxford, 1891), 10, proposed *infima* for *ultima*, apparently meaning 'the lower part is inferred from the top part'. This recommendation would not work very well with a bi-form creature like Capricorn, or with Taurus, which has a top but no bottom; and, in any case, the *linea* defines the shape of the whole figure, top and bottom. The same proposal was made independently by A.Y. Campbell, 'Manilius I.466–8 and 515–17', *CQ* 7 (1957), 186–7, at 186. H.W. Garrod, 'Two editions of Manilius. (With some notes on books I and II)', *CQ* 2 (1908), 123–131, at 130, conjectured *intima*, meaning the interior of the figure, but it is difficult to see how this differs from *media* in relation to *extremis*, i.e. what lies in between the outline of the figure. See also Montanari Caldini (n. 3), 64 n. 37 = *A&R* 27 n. 37.

<sup>5</sup> Manilius' scenario of a superabundance of stars that would generate excessive heat and cause a universal conflagration appears to be without parallel, with the exception of a similar scenario in 5.740–5, where he imagines a conflagration precipitated by the stars of the Milky Way; see W. Hübner, *Manilius*, *Astronomica*, *Buch V* (Berlin and New York, 2010), 2.449 on 5.744. J. Scaliger, *In M. Manili Quinque Libros Astronomicon Commentarius et Castigationes* (Heidelberg, 1590), 51, cited Aristotle's *Meteorologica* 1.35 (340a) to illustrate Manilius' hypothetical conflagration. But there Aristotle, who maintains that the *aether* and the stars are not composed of fire, is making the argument that if the celestial bodies and the intervals between them were in fact composed of fire, then the other elements would have disappeared. The story of Phaethon's errant ride in the chariot of the sun and the ensuing conflagration illustrates a different cosmic event, the sun's deviating from its proper course (Man. 1.735–49 and 4.834–7; see P. Glauthier, 'Repurposing the stars: Manilius, *Astronomica* 1, and the Aratean tradition', *AJPh* 138 [2017], 267–303, at 285–90). Montanari Caldini (n. 3), 76 = *A&R* 39, suggests that the scenario of a universal conflagration caused by a superabundance of stars is original to Manilius. A related notion is present in Ovid's explanation of Jupiter's decision not to destroy humankind with his thunderbolts for fear that they would set the heavens ablaze: *sed timuit ne forte sacer tot ab ignibus aether | conciperet flammis longusque ardesceret axis* (*Met.* 1.254–5).

<sup>6</sup> On the meaning of the terms *stella*, *astrum*, *sidus* and *signum* in Manilius, Housman (n. 3 [1937<sup>2</sup>]), on 1.465 offers a concise and reliable formulation: 'nam apud Manilium *stella* corpus lucidum significat, *signum* figuram e pluribus stellis formatam quam hodie appellamus constellationem, *astrum* et

clearly understood the basic principle of dot-to-dot construction and, in this case, its tremendous advantage for the cosmos. My repunctuation of line 463, with a comma after *subduxit* rather than after *flammis* in the print tradition, is a response to two problems of interpretation. First, Bentley asked the troublesome question about nature's method, 'Cui, amabo, perpercit?' and answered by placing a comma after *subduxit* and conjecturing *sibimet* for *flammis*, a proposal which has gained no acceptance.<sup>7</sup> The unfavourable reception of his conjecture, however, does not provide an answer to his question. And second, the indefinite relative clause, *quidquid subduxit flammis* 'whatever it removed from the fires', may suggest, on a literal level at any rate, that *natura* initially made a mistake in the construction of the firmament by creating too many stars and then corrected the error by removing some. But providential nature does not make mistakes. Both of these problems can be solved by repunctuating the line, as Bentley did, but without resorting to conjecture. The simplest answer to Bentley's question is that *flammis* is the object of *pepercit*; nature's guiding principle was to be thrifty with the stars. With the indefinite relative clause *quidquid subduxit* 'whatever it withdrew from view',<sup>8</sup> that is, the parts of the constellation figures not delineated by stars, the poet concedes that considerable portions of the figures are not represented in the heavens, but at the same time he affirms the correctness of nature's method with the words *flammis pepercit* 'it was thrifty with the fires', because it avoided a cosmic conflagration; better to mark out figures by means of specific stars than to incinerate the cosmos with overheated constellations fully formed. Nature, in Manilius' view, was not concerned with what was missing in the figures (*quidquid subduxit*), but rather with maintaining the necessary economy of stars, the very point which *flammis pepercit* emphasizes.<sup>9</sup>

Manilius' description of Orion (1.387–393), uncharacteristically detailed in comparison to his treatment of the other constellations in the catalogue, provides a good

*sidus utrumuis.*' For a more detailed discussion see D. Liuzzi, 'Stella, astrum, signum, sidus negli *Astronomica* di Manilio', *CCC* 7 (1986), 43–51; and for an overview of the use of these terms in Latin prose and poetry, A. Le Bœuffe, *Le noms latins d'astres et de constellations* (Paris, 1977), 5–40, and on *ignis*, 41. In her review of Le Bœuffe's monograph, R. Montanari Caldini, 'La terminologia latina dei corpi celesti', *A&R* 24 (1979), 156–71 conducts an independent analysis of the terminology, with brief mention of Manilius, 1.465 at 166. There can be no doubt that *ignes* in 1.466 means individual stars; cf. 5.733, where *ignes* refers to the countless stars that fill the heavens.

<sup>7</sup> R. Bentley, *M. Manilii Astronomicon* (London, 1739). Housman (n. 3 [1937<sup>2</sup>]) regarded Bentley's punctuation and conjecture as an improvement in sense but offered his own conjecture *damnis*, for *flammis*, a more plausible palaeographical modification of *flammis* that achieves the same sense, i.e. nature spared herself from catastrophe; he first proposed *damnis* in 'Emendations in the first book of Manilius', *Journal of Philology* 26 (1889), 60–3, at 62 = J. Diggle and F.R.D. Goodyear (edd.), *The Classical Papers of A.E. Housman* (Cambridge, 1972), 2.492–4, at 493. Without *flammis*, however, the text does not yield a clear explanation of nature's method of populating the firmament with stars.

<sup>8</sup> This interpretation of *subduxit* is consistent with *celant* in 468.

<sup>9</sup> Goold (n. 4) translates: 'Whatever nature has removed from such fires she has subtracted from a burden to which she would have proved unequal.' The translation makes the *quidquid*-clause the object of *pepercit*, renders *pepercit* as a synonym for *subduxit* and treats *oneri* as shared between *pepercit* and the participle *succubitura*. The chief difficulty here is that 'subtracted' is not an accurate rendering of *pepercit*; 'to subtract' is not the same thing as 'to be sparing with'. In fact, on this interpretation, the meaning would be more accurately represented by the following, 'Nature was sparing in whatever it removed from the fires for the burden', i.e. nature's procedure was to be economical in removing stars and was trying to maintain the burden rather than reduce it, a sense opposite to the one required, namely that she was sparing in the number of stars that she placed in the heavens in order to reduce the burden. Nature's minimalist method of stellar distribution is confirmed by 464–5.

illustration of the foregoing discussion about nature's thrift in populating the heavens with stars and its method of disposition:

cernere uicinum Geminis licet Oriona  
 in magnam caeli tendentem bracchia partem  
 nec minus extento surgentem ad sidera passu,  
 singula fulgentis umeros cui lumina signant  
 et tribus obliquis demissus ducitur ensis,  
 at caput Orion excelso immersus Olympo  
 per tria subducto signatur lumina uultu.

Near neighbour to the Twins, Orion may be seen stretching his arms over a vast expanse of sky and rising to the stars with no less huge a stride. A single light marks each of his shining shoulders, and three aslant trace the downward line of his sword; yet at the same time, Orion, burying his head high up in the heavens, is marked by three stars on his remote countenance.<sup>10</sup>

Orion is a large and bright constellation in the night sky, but the figure, in all its impressive anatomical detail, is the product of human imagination, which has superimposed on a handful of stars an order and an arrangement that delineates the mighty hunter. As evidence of *natura's* economical disposition of the stars, Manilius illustrates the very process by which, as he later explains in 1.463–5, it marked out recognizable forms and indicated constellations by specific stars (*stellis certis*). In this instance a single star marks (*signant*) each of the shoulders; the head is marked (*signatur*) by three stars; and the sword is traced (*ducitur*) by three stars. According to this description the individual stars function as *signa*, distinct marks, in a pattern providentially arranged by nature, which the human observer constructs as the figure of Orion. In the night sky there are no arms, no legs, no shoulders, no sword, and no head, just stars that function as *signa*, as emphasized by the poet's repetition of the verb *signare*, which are seen and interpreted by the observer who connects the dots, so to speak, and creates the figure with its various parts.

It must be understood, moreover, that after describing nature's method and purpose in arraying the firmament with stars, Manilius then adds, in lines 466–8, the human phase in the formation of the constellation figures. Although he does not specifically mention a human agent in the delineation of the figures, he clearly treats the activity

<sup>10</sup> Goold's translation (n. 4). I have modified his translation of 392–3 to reflect more clearly the syntax; *Orion* is the subject, *caput*, an accusative of respect with *immersus*, and *uultu* a local ablative, though it is usually treated, together with *subducto*, as a loosely appended ablative of attendant circumstance. The combination of adversative *at* and the repetition of Orion's name redirects the observer's view from the large and conspicuous torso to the dimmer and less well-defined head and face, both of which are described in terms (*immersus*, *subducto*) suggesting the enormous height of the constellation. For a different view of 1.392–3 see D.R. Shackleton Bailey, 'The Loeb Manilius', *CPh* 74 (1979), 158–69, at 162–3. In [Eratosth.], *Cat.* 32, cited by Housman (n. 3 [1937<sup>2</sup>]) on 1.393), the three stars in Orion's head are described as *dim* (ἀμυρούς). It is to be noted, however, that in J. Pàmias i Massana and A. Zucker (edd.), *Ératosthène de Cyrène: Catasterismes* (Paris, 2013), Pàmias i Massana prints L. Robert's conjecture λαμπρούς instead of ἀμυρούς (*Eratosthenis Catasterismorum Reliquiae* [Berlin, 1878], 166, in the apparatus), on the evidence of Hyg. *De astr.* 3.33 and the scholia to German. *Arat.* (A. Breysig, *Germanici Caesaris Aratea Cum Scholiis* [Berlin, 1867], 94.1–2, 166.15). The evidence of the Latin Aratus-tradition is not sufficient, in my view, to support the alteration of the Greek text and the astronomical record it represents; see further D. Kidd, *Aratus: Phaenomena* (Cambridge, 1997), note on 322–5.

of drawing figures in the night sky to make constellations as a human one. *Natura* has no need of connecting stellar dots or of observing constellations. Here the poet presents a collaborative effort between *natura* and humans that is paradigmatic for the whole poem: *natura* put *signa* in the heavens; it is up to humans to use their wits to recognize them and understand their meaning.

In this otherwise clear account of how nature disposed the stars in the sky, the sentence in 446–7 *ignibus ignes | respondent* is not consistent with its parsimonious method of distribution. To say that stars correspond to stars suggests some form of symmetrical arrangement in which there is a correspondence of stars representing limbs for human or animal forms, for example, stars representing Andromeda's two legs and two arms or the forelegs of Pegasus; and in the case of inanimate objects, their various components, for example, the balance beam of Libra or the sides of the triangle Deltoton; all of these parts must be supplied by the imagination. One look in the night sky or at a constellation atlas refutes that notion; there is no symmetrical arrangement of the stars in the figures; symmetry, such as it is, is an effect of the selection and deliberate arrangement of them in a constellation by the observer. If, as an alternative, the phrase *ignibus ignes | respondent* is interpreted to mean something like 'the fires are linked to fires', that statement is redundant and imprecise after *linea designat species*, which means that the fires are connected in an outline, and adds nothing to the understanding of how nature marked out and indicated the forms of the constellations with specific stars.

A.E. Housman confessed that he did not understand *ignibus ignes | respondent* and commented that the statement does not correspond to what is observed.<sup>11</sup> In response scholars have made various proposals. In his review of Housman's first edition Garrod conjectured *artubus* for *ignibus*, but this is too restrictive for the great variety of missing parts in the constellation figures, human, animal, and inanimate, and too imprecise since stars correspond only to selected parts, as Manilius' description of Orion makes clear.<sup>12</sup> D.R. Shackleton Bailey, reinterpreting the first syllable of *respondent* as the reflexive pronoun *se*, proposed *ignibus ignes | se spondent*, which he translates 'fires pledge themselves by fires' and understands to mean that the visible stars act as guarantors for imagining the non-existent stars in the figure, a kind of stellar extrapolation, metaphorically expressed as a guarantee, from the seen to the unseen in order to complete all the components of the constellation.<sup>13</sup> Manilius, however, is explaining how the figure is fashioned out of visible stars (*stellis certis*); the outline of the figure is traced through the stars that nature put in place in the heavens; non-existent stars are not part of the process of delineation. Taking a more aggressive approach, A.Y. Campbell (n. 4) rewrote the text: *et singula signis*. He translates, with explanatory comment: 'and particular parts, i.e., groups of stars, do correspond (cf. *V. Aen.* 1.585) to the pictures (figures, objects represented)'. Campbell based his conjecture on two assumptions: first, that *ignibus ignes* was a scribal error precipitated by words having to do with fire in in 459–63 (though it should be noted that *ignis* itself does

<sup>11</sup> Housman, (n. 3 [1937<sup>2</sup>]), on 1.468.

<sup>12</sup> Garrod, (n. 4), 130.

<sup>13</sup> Goold (n. 3), 108–9, cited *respondent* (2.414) in defense of *respondent* at 1.467. The contexts, however, are very different. In 2.414 Manilius is discussing the conjunctions of the zodiacal signs, where the geometrical correspondence between signs is clear; the poet is not discussing the disposition of individual stars as in 1.467. *respondent* in 1.467 is genuine; the problem lies elsewhere in the sentence. See also Montanari Caldini (n. 3), 64 n. 37 = *A&R* 27 n. 37.



not occur in those lines); and second, that in view of the five neuter plurals in 467–68 (*media extremis, ultima summis, omnia*), which he understands to refer to parts of the constellations, a neuter plural, *singula*, was needed in 466 to indicate groups of stars. But the neuter plurals *media extremis* and *ultima summis* do not provide a parallel for *singula* in the sense of ‘groups of stars’ because, as *creduntur* shows, they refer to the surface areas, not the parts, of the constellations that are bounded by the outline and have to be filled in by the imagination. Moreover, it is highly doubtful that *singula* in 466 can mean ‘groups of stars’ since there is nothing in its immediate context to support that meaning; the focus of attention is the disposition of individual stars and their delineation as figures. Clearly there has been a feeling on the part of critics that something is not right in the sentence *ignibus ignes | respondent*, though they fail to identify the problem, namely its inconsistency with the poet’s explanation of nature’s method in its disposition of the stars, as was discussed above; and, consequently, the proposed solutions are not persuasive.<sup>14</sup>

In addition to the problem of inconsistency, two useful observations can be made. First, the conjunction *atque* interrupts what is otherwise an asyndetic series: *linea designat ... media ... creduntur ... satis est*. Second, there is a suggestive paronomasia in *linea designat species atque ignibus ignes*, i.e. a fire (star) is a mark or sign in the heavens for the delineation of a constellation figure and the word ‘fire’ is graphically a sign of its sign-function as a *signum* because its stem *ign-* is embedded in *signum*; an *ignis* is by nature a *signum*; by its light it makes itself conspicuous and, in the case of a constellation, it marks a physical feature of the figure and makes it conspicuous, e.g., the star in each of Orion’s shoulders; fire and sign are inseparable and thus further evidence of nature’s provident reason on both the linguistic and cosmic levels. Any proposal to change the transmitted text should not, in my view, eliminate this paronomasia. Working on the hypothesis of an asyndetic series and a paronomasia of *ignis* and *signum* that is meaningful in its context by emphasizing the function of stars as signs that mark out (*distinguere*) and indicate (*ostendere*) the figures, I want to propose the following text:

linea designat species, insignibus ignes  
respondent

An outline traces visible forms,  
the fires correspond to distinctive features ...

Here the neuter plural *insignia* means the features of a constellation which are indicated by individual stars and thus made recognizable to the observer.<sup>15</sup> As a luminous celestial

<sup>14</sup> D.A. Sutton, “‘Something about fire’ in Manilius’ *Astronomica* 1.466 f. and 1.515 f.,” *Latomus* 74 (2015), 689–98, at 696–7, disagrees with the interpretation of *ignis* as star; he translates ‘Indeed the fires (relating to the flaming constellations in 462–3) correspond to the fiery flames’; and explains, ‘... the line is addressing a fusion of entities or a type of celestial conjugation’.

<sup>15</sup> The noun *insigne* can also be used of celestial bodies in the sense of ‘recognizable object/form’: Cic. *Arat.* fr. 2.2, *praeclara insignia caeli*, here either stars or constellations (Soubiran, n. 3); *Nat. D.* 1.100 *insignia*, referring to sun, moon and stars; Lucr. 5.700 *radiatum insigne diei*, (the sun). Cf. Aratus’ use of ἀγάλματα (‘images / figures’, *Phaen.* 453) for the constellations; Kidd (n. 10) rightly observes that the word emphasizes the recognizability of the constellations. In explaining how the constellations were formed and named, Varro, *Ling.* 7.73 remarks that in the distant past country peasants identified for the first time certain constellations (*signa*) in the sky, which were remarkable in appearance (*insignia*) beyond the rest (*arbitror antiquos rusticos primum notasse quaedam in caelo signa, quae praeter alia erant insignia* ...); for text and commentary see W.D.C. De Melo,

body in the night sky, a star is a conspicuous object and, as such, in the formation of a constellation figure, it corresponds to, and becomes identified with, a distinguishing feature (*insigne*) of the figure, for example, head, shoulder, foot, belt, tail, horn, claws. This identification of individual stars with distinguishing features became so complete that in the description of the constellations, following the tradition established by the preeminence of Aratus' *Phaenomena*, it was more often the distinguishing features, rather than the stars that correspond to them, that are the essential elements in sketching the figure. To speak of the horns of Taurus or the head of Equus, both of which are highly imaginative shapes largely devoid of stars, is to create a recognizable outline out of a few stars which are thought to suggest those features.

The rationale of nature's thrift in the disposition of the stars is now perfectly clear; the *certae stellae* by which nature marked out and indicated the figures correspond to the distinctive features (*insignia*) of the figures, a method which made possible the delineation of the figures without overpopulating the heavens with stars and causing a cosmic conflagration. It is standard procedure in the description of the constellations to identify their distinctive features (*insignia*) by the stars that represent them. Again, Manilius' description of Orion shows the intimate relationship between the stars (*ignes*) and the distinctive features (*insignia*) of the constellation. The stars by which Orion is recognized are said to mark (*signant* 390, *signatur* 393), and thus make distinct and recognizable, the features of the constellation, one star for each shoulder and three for his head; in the case of the three stars that indicate the sword, a different verb is used, *ducitur* in the sense of 'trace', which, nonetheless, indicates that the stars function as signs for the shape of the sword. To cite another example, seven stars mark off (*signant*) the constellation Helice (Ursa Major, 1.297).

What triggered the substitution of *ignibus* for *insignibus* is obvious. In the context of a possible celestial conflagration, an abundance of words for fire (*incendia* 461, *ardebunt* 462, *flammis* 463, *ignes* 466) and the common attracting influence of the last word in the line on the one immediately preceding, especially when the preceding word contains a syllable or syllables shared with the word that follows, are factors that easily would have ignited the chain reaction that resulted in the substitution of *ignibus* for *insignibus*. An additional factor that may have contributed to the change of *insignibus* to *ignibus* is the occurrence of *ignibus ignes* as a hexameter line-ending in Manilius and other poets.<sup>16</sup> After the substitution took place *atque* was added to repair the meter, a simple enough addition. The reading *insignibus* also preserves the asyndeton in 466–8.

Varro: *De Lingua Latina* (Oxford, 2019), 2 vols. Here Varro articulates a basic principle that undergirds attempts at reconstructing the formation and naming of the constellations: the quality of being easily recognizable (*insignis*) in the sky is constitutive of what is identified as a *signum*. And, no doubt, Varro was aware of the connection on the linguistic level between a *signum* and its defining quality as *insignis*. Verg. *Aen.* 11.89 has *insignibus* ('trappings') in the same position in the line, *post bellator equus positus insignibus Aethon*; cf. Ov. *Met.* 9.776 *tuaque haec insignia uidi* (prayer to Isis). One may well wonder whether Vergil is slyly giving a veiled Latin gloss, *-ignibus*, on the horse's Greek name *Aethon*, 'fiery/bright one'. If the name *Aethon* is interpreted as the participle αἴθων, then *ignibus αἴθων* can be construed to mean 'burning with fires'. Cf. Verg. *Aen.* 7.281 *semine ab aetherio spirantis naribus ignem*, on which see J.J. O'Hara, *True names: Vergil and the Alexandrian Tradition of Etymological Wordplay* (Ann Arbor, 2017<sup>2</sup>), 166 and 189; Cic. *Arat.* fr. 34.88 and *De consulatu suo* fr. 2.1 (Soubiran, n. 3); and Ov. *Met.* 1.254, quoted in n. 5.

<sup>16</sup> In addition to 1.466, the line-ending *ignibus ignes* occurs in Manilius at 4.67 and 4.531 (*ignis*), parallels which might have induced the alteration of the text from *insignibus ignes*, and it is found several times in other hexameter poets, Lucr. 6.225 (*ignem*), Ov. *Met.* 2.313, 4.509, *Fast.* 6.439,



With the reading *insignibus* there results an even more remarkable paronomasia, one which provides additional proof of nature's foresight and reveals the human capacity for understanding celestial signification: *linea designat species, insignibus ignes*; the fire of celestial light and the sign-function of that fire are made one because the syllable *ign-* is embedded in *designat* and *insignibus*, and, most importantly, in the word for constellation/sign, *signum*.<sup>17</sup> As a *res manifesta* of nature's foresight and the rational order of the world, which is there to be decoded by human intelligence, a celestial *ignis* indicates an *insigne* which forms part of a *signum*, a sequence of meanings, which can be read on the semantic, astronomical and astrological levels, as well as a graphic *signum* on the writing surface: *designat – ignes – insignia – signum* form their own constellation of meanings.

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and *Trist.* 4.3.65; and *Il. Lat.* 73. Ovid uses twice the line-ending to describe Jupiter's use of the thunderbolt to strike the chariot of the sun and its driver, Phaethon, when it threatened to burn up the earth (*Met.* 2.313 and *Trist.* 4.3.65). The Manilian context of cosmic conflagration may have prompted a misguided attempt to harmonize the text of 1.466 with the action of Ovid's Jupiter who fought fire with fire when the occurrence of a similar conflagration was imminent. This process of harmonization can be seen in *Met.* 11.523 where *ignibus* is followed by the variants *ignes* (Marcianus) and *undae* (cett.). Although editors generally adopt *ignes*, W.S. Anderson, *P. Ovidii Nasonis Metamorphoses* (Leipzig, 1993<sup>2</sup>) printed *undae*, a reading forcefully defended by R. Helm in his review of H. Magnus's *P. Ovidii Nasonis Metamorphoseon libri XV*, in *GGA* 177 (1915), 505–54, at 542–3. A.E. Housman, 'Emendations in Ovid's *Metamorphoses*', *Transactions of the Cambridge Philological Society* 3 (1890), 140–53, at 151 = J. Diggle and F.R.D. Goodyear (edd.), *The Classical Papers of A.E. Housman* (Cambridge, 1972), 1.162–72, at 170 conjectured *imbres*. See further on *Met.* 11.523, F. Bömer, *P. Ovidius Naso: Metamorphosen. Buch X–XI* (Heidelberg, 1980), 5.377.

<sup>17</sup> This type of didactic paronomasia, in which sound-play is employed as a meaningful part of the argument, has well-known precedent in Lucretius, e.g., *mater-materies* (1.167–71) and *ignis-lignum* (1.911–12), on which see J.M. Snyder, *Puns and Poetry in Lucretius' De Rerum Natura* (Amsterdam, 1980), 39–42 and 90–108; for a survey of paronomasia in Latin poetry, J.J. O'Hara (n. 15), 60–4; on wordplay and word patterning in Manilius, T. Takeshita, 'Symmetrical wordplay in the first book of Manilius' *Astronomica*', *AClass* 64 (2021), 317–21, and R.M. Colborn, 'Manilius on the nature of the universe: a study of the natural-philosophical teaching of the *Astronomica*, with select commentary' (Diss., Oxford, 2015), 107–28 (I owe the latter reference to the anonymous reader). In his description of the nameless stars, German. *Arat.* 371–8 employs the same word play, *inter signa ignes* (377), but to different effect; while the phrase *inter signa ignes*, taken by itself, may be seen as an instruction to the reader to recognize that the syllable *ign-* is found in the word *signa*, in the larger context of the nameless stars the poet makes the point that these particular *ignes* are not organized as constellations because they lack a form and a name, and are recognized by the stars of a nearby constellation (*[ignes] per appositis noscuntur lumina signi*, 378); thus these *ignes*, though themselves sources of light, are paradoxically in need of light (*lumina*) in order to be identified by the observer.