

The textual tradition of the *De Astronomia* of Hyginus

The *De Astronomia* of Hyginus was an extremely popular and influential text and source-book from the date of its composition onwards.¹ The identity of its author remains slightly obscure, but the most likely candidate seems to be C. Iulius Hyginus, the Keeper of the Palatine Library during the reign of Augustus Caesar and friend of the poet, Ovid.² This places the work chronologically between Cicero's Latin translation of Aratus's *Phaenomena* (89-86 BC) and the much more ambitious and scholarly Latin translation (or, in some cases, adaptation) of the same poem attributed to Germanicus Caesar (16-17 AD); but Hyginus's intent seems to have been very different from that of his compatriots. One might be romanticising, but whereas it appears to have been appropriate for aspiring politicians and young emperors to prove their talents by reforming a well-known Greek classic into the modern idiom, the 'humble librarian' set himself a very different kind of task: namely, to provide a valuable 'companion guide' to the heavens, the kind of thing the educated reader would welcome when trying to understand the slightly cryptic poetic allusions and more abstruse passages of the poem itself.

There are several passages in the text in which Hyginus outlines his intent and his method. He describes his treatise as 'a kind of rough sketch of a

¹ For a discussion on the name *De Astronomia* of the treatise, see Hygin, *L' Astronomie*, ed Le BOEUFFLE 1983, pp. lxxii-lxxiii.

² For a summary of the relative strengths and weaknesses of this identification, see Le BOEUFFLE 1983, pp. xxxi-xlvi and *L' Astronomie*, ed PIACENTE 1988, pp. vii-xi.

scientific work' that is intended 'not to teach those who do not know the subject, but to rekindle the memories of those who are already knowledgeable'.³ Also, in his preface to Book I, he states that he feels a need to offer clearer explanations of the celestial sphere than Aratus does – not only because Aratus's descriptions are 'somewhat obscure', but also because he wishes to examine these issues more deeply.⁴ In Book IV, he repeats the claim that Aratus has not provided either sufficient or sufficiently clear information, and that his explanation will be more comprehensible.⁵

To achieve his aim, Hyginus follows two paths. First, as would befit his putative role as a librarian, Hyginus brings together material from various different sources in order to compare, explain, amplify or correct the original Greek poem.⁶ As Hyginus sees it, his research has been fairly extensive, if not, indeed, exhaustive.⁷ Amongst Greek sources, his debt to

³ Hyginus, *De Astronomia*, I, preface: *hoc velut rudimento scientiae nisus scripsi ad te, non ut imperito monstrans, sed ut scientissimum commonens* (ed VIRÉ 1992, p. 1 and Le BOEUFFLE 1983, p. 6).

⁴ Hyginus, *De Astronomia*, preface: *Etenim praeter nostram sphaerae quae fuerunt ab Arato obscurius dicta, persecuti planius ostendimus, ut penitus id quod coepimus exquisisse videremur.* (VIRÉ 1992, p. 4 and Le BOEUFFLE 1983, p. 4).

⁵ Hyginus, *De Astronomia*, IV, 1: *...sed quoniam Aratus quattuor circulis sphaeram plurimum valere dicit neque eorum aperte quemquam demonstrat, voluntatem apertius ostendemus et, quemadmodum initio fecimus ...* (VIRÉ 1992, p. 125). Le Boeuffle's reading is slightly different (see Viré's notes to ll. 6 and 7 and Le BOEUFFLE 1983, p. 114).

⁶ The most convenient and comprehensive discussion of Hyginus's sources appears in Le BOEUFFLE 1983, pp. ix-xxiii.

⁷ Hyginus, *De Astronomia*, IV, 14: *Praeterea cum reliqua omnia diligentissime persecuti fuerimus, alienum videtur esse nos non eamdem persequi causam* (VIRÉ 1992, pp. 148-49 and Le BOEUFFLE 1983, p. 138).

Eratosthenes is clear - citing his work 21 times, with ample evidence of additional, uncredited use elsewhere.⁸ Hyginus's dependence on Eratosthenes for both his catasterismic myths and for much of the data in his star catalogue has long been noted, but few have recognized the extent to which it could have been their similar vocations - Eratosthenes was the Keeper of the great Library of Alexandria - that led both authors towards wanting to help the educated reader.

There are numerous further hints of influence from earlier Greek and later Hellenistic sources.⁹ By way of record, Bunte counted 44 Greek authors cited by Hyginus.¹⁰ Hyginus is also intimately acquainted with Latin authors. He mentions Cicero twice by name and there are numerous other discernable, but uncredited, borrowings from him throughout the *De Astronomia*.¹¹ More interesting, perhaps, is Le Boeuffle's suggestion that Hyginus's understanding of the Aratean poem may have been aided by a Latin intermediary. This might have been a now-lost classical version of the Latin *Aratea*; but the more likely influence and possible source for much of Hyginus's material is the work of Nigidius Figulus, whose *De Sphaera* is

⁸ See MARTIN 1956, esp. pp. 95-102 and Le BOEUFFLE 1983, pp. xv- xvi.

⁹ Most intriguingly, though, evidence that Hyginus consulted Hipparchus directly is slim. For, whereas Germanicus certainly corrected a number of the astronomical mistakes in Aratus's text that had been criticized by Hipparchus, Hyginus tends to repeat the errors somewhat, as Le Boeuffle says, '*docilement*'. Also, he does not cite his near-contemporary Geminus, whose introductory Greek treatise on the mathematics of the sphere was certainly circulating in Rome at the time. See LE BOEUFFLE 1983, pp. xv- xvi).

¹⁰ *Hygini Astronomica*, ed BUNTE 1875, pp. 3-6.

¹¹ See Le BOEUFFLE, 1983, p. xvi.

known today only through a relatively few number of fragments.¹² As with Hyginus, Nigidius seems to have been profoundly influenced by the earlier works of Eratosthenes.¹³

In addition to his search through the best written sources - his '*optimi auctores*'¹⁴ - the second path Hyginus used to create a more comprehensible treatise was an empirical one. Le Boeuffle was the first scholar to notice that, many times when Hyginus refers to the celestial sphere ('*sphaera*'), he seems not to be describing observed celestial phenomena, but, rather, referring the reader to an astronomical model. For his explanation on the celestial circles, Hyginus could have used an armillary sphere; but, for his discussions on the inter-relationships between the constellations and especially between the constellations and the celestial circles, it is most likely that Hyginus used a celestial globe as his model.¹⁵ Indeed, Hyginus twice tells us when the use of a celestial globe is essential to understanding the 'mechanics' of the heavens. First, use of a globe as an essential tool for understanding the phenomena of day and the night is explicitly stated in Book IV, 9: ... *sed aliter esse ex ipsa sphaera intellegere licebit*.¹⁶ Further, Hyginus tells us that, without a globe, it would be impossible to understand

¹² See *Nigidii Figuli operum reliquiae*, ed SWOBODA 1889 (repr. Amsterdam 1964) and della CASA 1962.

¹³ See MARTIN 1956, p.124 and Le BOEUFFLE, 1983, pp. xvi.

¹⁴ Hyginus, *De Astronomia*, I, preface (VIRÉ 1992, p. 4).

¹⁵ Le BOEUFFLE 1983, pp. ix-xii.

¹⁶ Hyginus, *De Astronomia*, IV, 9 (VIRÉ 1992, p. 137).

the risings and settings of the signs throughout the year: ... *quid de reliquis signis sine sphaera possit intellegi, sic invenietur*.¹⁷

[note: This following section has benefitted enormously from the original research by Dr Elly Dekker. For and up-to-date version of her research, the reader is invited to consult her forthcoming volume on globes in antiquity due to be published by Cambridge University Press in 2011 or 2012.]

Hyginus was certainly not the first author to find celestial models useful. The early interest in σφαιρικός λόγος ('the doctrine of the sphere') is clear from the two early treatises by Autolykos (fl. ca. 300 BC), *On the moving sphere* and *On risings and settings*, in which characteristics of phenomena, such as risings and settings, are explained in terms of the mathematical properties of the moving sphere.¹⁸ A number of modern scholars have suggested that this implies that celestial globes were actually used as scientific instruments as early as the 4th century BC.¹⁹ The clearest advocacy for the scientific use of celestial models appears in Archimedes's letter to Eratosthenes, where he suggests that they provide a useful tool

¹⁷ Hyginus, *De Astronomia*, IV, 10, 2 (VIRÉ 1992, p. 138).

¹⁸ Autolykos de Pitane, ed AUJAC 1979. See also HUXLEY in *DSB* 1981, I I, pp. 338-9.

¹⁹ See, for example, METTE 1956; BÖKER 1952; AUJAC 1970, pp. 107 and Le BOEUFFLE 1983, pp. x-xi. Amongst the Greek authors, Le Boeuffle cites Autolykos, Euclid, Hypsicles and Archimedes. Some historians have argued that Hipparchus actually used a globe (see NADAL and BRUNET 1983/1984, pp. 201-236). Le Boeuffle argues that it was the Romans in particular- '*avec leur esprit pratique*' - who showed a particular fascination for the instrument; and he mentions Cicero's admiration for the '*planetaires*' of Archimedes and Posidonius. See BOEUFFLE 1983, pp. x - xi, esp. p. x, n. 4 and p. xi, n. 1.

both for conceptualising and testing astronomical problems.²⁰ But the use of celestial models specifically as an aid to teaching or explaining astronomical principles and phenomena - the kind of activity in which Hyginus is specifically engaged - appears to be a slightly later development. For example, Geminus, in his *Introduction to the Phaenomena* (a work that is nearly contemporary with Hyginus's own), explicitly describes two types of globe: a solid one with the constellations delineated and a 'ringed' one.²¹ In particular, he mentions the doctrine of the sphere when discussing topics relating to the rising and setting of the stars, the inequality of day and night throughout the year - two phenomena also singled out by Hyginus - as well as for understanding why one cannot not to trace a 'local horizon' on a mobile sphere and when outlining the movement of the planets.²²

Hyginus sets out his work in four books, each of which is further divided into very clearly delineated chapters.²³ The incipits and explicits of each Book are as follows:

²⁰ See Archimedes, '*Lettre à Ératosthène sur la méthode*' in [*Oeuvres*] *Archimède*, ed. and French transl. MUGLER 1970-72, III (1971), p. 84 and Geminus, *Introduction aux phénomènes*, ed. and French transl. AUJAC 1975, pp. lxx-lxxii.

²¹ See AUJAC 1975, esp. pp. lxx-lxxii, where Aujac argues that Geminus refers to at least four different types of celestial model: the sphere of the constellations (V, 65); the sphere of the fixed stars (I, 23; V, 57; and XII, 14); an armillary sphere (XVI, 10-12); and a planetary model.

²² Geminus, *Introduction to the Phaenomena*, XIV, 9 (rising and setting of the stars); VI, 12 (day and night); V, 63 (when a horizon circle might be traced on the sphere, then - by turning the sphere - it could to pass through the zenith, which is unconceivable and contrary to the theory of the sphere) and XII, 23 and 27 (movement of the planets). See AUJAC 1975, p. lxx, notes 3 and 4.

²³ As Le Boeuffle notes, these divisions into Books and chapters is a modern invention, but they seem to correspond more-or-less to the original intention of the author. See Le

Book I, preface	<i>Hyginus. M. Fabio plurimam salutem. Et si te studio grammaticae artis inductum non solum versuum moderatione – et intium rerum demonstrabimus.</i>
Book I	<i>De Mundo. Mundus appellatur is qui constat ex sole et luna – in simili causa posse constitui suspicamur.</i>
Book II, preface	<i>Sed quoniam quae nobis de terrae positione dicenda fuerunt – ad delectationem afferent lectori.</i>
Book II	<i>Igitur, ut supradiximus, ititium est nobis Arctos – Nos autem omnium corporum deformationem dicere instituimus.</i>
Book III	<i>Igitur incipiemus a polo boreo protinus dicere – cum piscibus stellarum omnino. xii.</i>

Most editions of the *De Astronomia* offer the following section as the end of Book III. In most manuscripts, however, this section is used as the beginning of Book IV:

Quae ad figurationem syderum pertinent ad hunc finem nobis erunt dicta. Reliqua protinus dicemus.

Book IV	<i>Quoniam initio sphaerae circuli quinque quomodo efficerentur – Annum volverunt esse cum sol ab aestivo circulo...</i>
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(As can be seen, Book IV ends mid-sentence. The numerous ways in which medieval and Renaissance scribes dealt with this problem is discussed below.)

BOEUFFLE 1983, p. vii. The only area of minor discrepancy is division between Books III and IV (see below).

Book I begins with the dedication to a certain ‘M. Fabius’²⁴ and an overview of the topic the author intend to discuss: the cosmography of the universe, which includes sections on the celestial sphere and its circles, and the Earth and its zones. Book II is a compendium of catasteristic myths associated with 42 constellations, which are organised in the following manner:

1. Ursa Maior (*Arctus maxima*)
2. Ursa Minor (*Arctus minor*)
3. Draco
4. Bootes (*Arctophylax* or *Arcas/Arcades*)
5. Corona Borealis
6. Hercules
7. Lyra
8. Cygnus
9. Cepheus
10. Cassiopeia
11. Andromeda
12. Perseus
13. Auriga (Hyginus also mentions the stars of Capra and the Haedes in his description of Auriga in Book II.)
14. Ophiuchus (*Anguitenens*), with Serpens as an integral part of the constellation.
15. Sagitta
16. Aquila
17. Delphinus
18. Pegasus
19. Triangulum (*Deltoton*)
20. Aries
21. Taurus (Hyginus adds the myths of the Hyades and Pleiades in the descriptions of Taurus)
22. Gemini
23. Cancer (with a description of the Aselli within this chapter)
24. Leo (with mention of the Coma Berenices in this section)
25. Virgo

²⁴ The identification of this mysterious figure remains the subject of speculation and includes the grammarian, (Fabius) Quintillian. For additional suggestions, see LeBOEUFFLE 1965, esp. p. 290 and Le BOEUFFLE 1983, pp. xxxviii-xlvi.

26. Scorpio
27. Sagittarius (with Corona Austrinus mentioned in this section)
28. Capricorn
29. Aquarius
30. Pisces
31. Cetus
32. Eridanus (mentioning Canopus)
33. Lepus
34. Orion
35. Canis Maior (mentioning the bright star, Sirius, here)
36. Canis Minor (Procyon)
37. Argo
38. Centaurus (mentioning Lupus in this section)
39. Ara
40. Hydra with Crater and Corvus
41. Piscis Austrinus (*Piscis Notius*)

Book II ends with a discussion of the mythologies associated with the five planetary gods and the Milky Way.²⁵

In these chapters, Hyginus tends to cite the authorities he has used to compile the various myths. Most often he lists the alternative identification of a constellation without passing judgment; but, sometimes, he betrays a critical edge. For example, in describing the myths associated with Hercules, he dismisses the Aratean formula that ‘no one can prove who this figure is’ with the claim that ‘we’ (Hyginus usually refers to ‘himself’ in the third-person plural) will ‘try to say something approaching the truth’.²⁶

²⁵ Hyginus does not mention Equuleus, while Libra is mentioned as a part of the constellation of Scorpio.

²⁶ Hyginus, *De Astronomia*, II, 6: *Etsi, quis sit hic, negat Aratus quemquam posse demonstrare, tamen conabimur ut aliquid verisimile dicamus* (VIRÉ 1992, p. 29. English transl. from CONDOS 1997, p. 116). Note that Le Boeuffle’s edition varies slightly in adding an extra *demonstrare* after *conabimur* (see Le BOEUFFLE, 1983, p. 31).

Similarly, he notes that those who refer to the constellation of Cygnus as ‘*ornis*’ are ignorant of its history.²⁷

In Book III, each constellation is described (in the same order as in Book II) in terms of its location relative to the surrounding constellations and the celestial circles, with some indications being given as to the overall shape and disposition of the figure. In addition, Hyginus provides a list of the positions of the stars relative to the figure itself, describing the placements in terms of ‘left’ and ‘right’ and ‘above’ and ‘below’, in line with the tradition of descriptive star catalogues. Moreover, he tends to list the stars from the top of a figure downwards (or from the head to the feet, regardless of the orientation of the figure within the sky). This is very different from the way the more mathematically-oriented astronomers, such as Hipparchus or Ptolemy, describe the constellations.

LeBoeuffle has suggested that confusions between ‘right’ and ‘left’ in some of Hyginus’s descriptions of the constellations can be cited as further evidence that Hyginus used a celestial globe, and not direct observation of the night sky, to construct his descriptions.²⁸ Whereas one might agree with LeBoeuffle’s conclusion, his supporting arguments are less convincing as they reflect, to my mind, a fundamental misunderstanding of what late Roman globes actually looked like.

²⁷ Hyginus, *De Astronomia*, II, 8: *Hunc κύκνον Graeci appellant, quem complures propter ignotam illis historiam communi genere avium ὄρνιν appellaverunt* (VIRÉ, 1992, p. 35 and CONDOS 1997, p. 93).

²⁸ Le BOEUFFLE 1983, pp. xi-xii.

Book IV returns to the subject of cosmology and to astronomical topics, such as the position of the constellations on each celestial circle, the unequal division of the night and day and the risings and settings of the constellations relative to the signs of the zodiac. He discusses the movements of the Sun and the Moon and the five planets and touches upon Pythagorean notions of the harmony of the spheres. The whole work was supposed to have ended with a section on the Metonic cycle, which has been lost.²⁹ It is difficult to determine when this mutilation occurred, but it certainly pre-dates the 9th century, as none of the earliest manuscripts of the text extend beyond this point. As it is, Book IV ends abruptly at the beginning of a section on the division of time, with different generations of scribes either deleting the whole of the incomplete chapter (IV, 19) leaving the incomplete sentence intact, or striving to add some formula of words to provide a tidy resolution. Viré has counted eight main explicits:

1. ... *cum sol ab aestivo circulo ...*
2. ... *cum sol ab aestivo circulo rediens CCCLXV dies suo cursu transigit.*
3. ... *cum sol ab aestivo circulo descendens CCCLXV dies suo cursu transigit.*
4. ... *cum sol ab aestivo circulo redit.*
5. ... *cum sol ab aestivo circulo redeat.*
6. ... *cum sol ab aestivo circulo redeat zodiacum circum ad id signum unde incipibat permetitur.*
7. ... *cum sol ab aestivo circulo zodiacum ad id signum unde incipiebat permetitur.*

²⁹ Hyginus's intentions to speak more fully about the Metonic cycle are signaled in the preface to Book I: *Diximus etiam qua ratione priores astrologi non eodem tempore signa et reliquas stellas reverti dixerint et quare Meton diligentissime observasse videatur et quid reliquos fefellerit in eadem causa.* (VIRÉ 1992, p. 3 and Le BOEUFFLE 1983, pp. 4 and 150, note 22).

8. and, in some manuscripts, the problematic chapter 19 is omitted all together.³⁰

As Viré's collation focuses on those manuscripts dating from the 9th to the 12th centuries, later explicits are not mentioned. To her list, one would add two examples often found in 15th-century versions of the text:

9. ...*cum sol ab aestivo circulo descendens redit ad eundem.*³¹

and the ragged explicit found in another family of manuscripts, which all end mid-sentence in the middle of Book IV, chapter 9:

10. ... *ad eum locum ubi occidere dicatur ibi montium magnitudine.*³²

The very usefulness of Hyginus's wide-ranging and informative text is demonstrated by its post-classical legacy. In the first place, literally hundreds of manuscripts of the complete work or of significant parts of the whole have survived. Second, its contents were also pirated by subsequent scholars and sections of its mythological and cartographical chapters regularly reappear as marginalia and *scholia* accompanying other texts. Not surprisingly, these excerpts are found most often alongside versions of the

³⁰ VIRÉ 1981, esp. p. 184.

³¹ Such as Florence, BNC, Magliabecchiana XI. 114, fol. 17r; Florence, Bibl. Laurenziana, Plut 89. sup 43, fol. 108r; Vatican, Urb lat 1358, fol. 152r and Vatican, Vat lat 3110, fol. 83v.

³² All of these are Italian manuscripts from the 15th century, which seem to be derived from the 12th-century Italian (?) manuscript, Biblioteca Laurenziana, Plut. 29.30. For additional examples of this explicit, see REEVE 1983, p. 188 and VIRÉ 1981, p. 178. For our purposes, it is interesting to note that one of the manuscripts in this textual family is illustrated: Leiden, Voss lat oct 18. Florence, Riccardiana 3011 and London BL Egerton 1050 also have illustrations, but not accompanying the Hyginus sections of the manuscripts.

Aratus latinus, or the Ciceronian and Germanicus translations of the *Phaenomena* - the Latin texts which, arguably, this information was first designed to augment and accompany. Indeed, many of the texts which have been cited as independent creations in this volume are, to a greater or lesser degree, edited versions of the Hyginian text.³³ Its widespread popularity is further demonstrated by the fact that the *De Astronomia* was one of the first of these astronomical works to be printed. The *editio princeps* was published by Augustinus Carnerius in Ferrara in 1475.³⁴ There are at least four further *incunabula* printed in Venice³⁵ and more than a dozen versions of the text printed across Europe (including several editions printed in Venice as well as those printed in Pavia, Cologne, Basle, Paris, Heidelberg, etc.) before 1600.

Given this abundance of primary material, it is no wonder that the text has proved to be a bit of a nightmare for editors. As one scholar noted in his overview of the history of scholarship on the *De Astronomia*, 'Has any classical text been so ill-served by recent scholarship as this?'³⁶ The first modern edition, made for Teubner by Bunte in 1875, was based on only four

³³ As Viré notes, the *De Astronomia* was used extensively by Isidore, Abbo of Fleury, Robert Frescher and numerous anonymous authors during the middle ages and Renaissance. See VIRÉ esp. pp. 11-12, citing the previous works by FONTAINE 1959, pp. 111-12; van de VYVER 1935, esp. p. 141; and BUNTE 1876, pp. 155-86. As she points out, Abbo's treatise usually signaled with the title *Excerptio Abbonis ex Igino de figuratione signorum* (as one sees it, for example, in London BL Roy 13.A.XI), was mistaken by one author as an original text by Hyginus himself (see HASPER 1861). The influence on the *De Astronomia* on Basinio da Parma is discussed in that section.

³⁴ See HAIN 1831, II, p. 116, no. 9061.

³⁵ For the incunables, see HAIN 1831, II nos. 9062-67.

³⁶ REEVE 1983, pp. 187-89, quote cited from p. 187.

German manuscripts, with the criteria underpinning the choice of these particular manuscripts being somewhat obscure, unless it was simply their proximity to his home town.³⁷ Severely criticised at the time of his publication and subsequently,³⁸ it remains the edition most often cited by subsequent scholars and, relatively recently, Bunte's edition reappeared in 1976, in a virtually unchanged edition attributed to Francesco Serra.³⁹ In the interim, it seems that the only effort to make sense of this mountain of material was the unpublished dissertation made by Sister Wilma Fitzgerald in 1967, in which she lists 61 manuscripts (offering collated readings from 28 of these), and her brief but illuminating article on the '*nugae Hyginianae*' of 1974.⁴⁰ More recently, the tides of good fortune seem to have changed: first, with Viré's overview and catalogue of 88 manuscripts in 1981 (and the information she gleaned from having collated 36 of these manuscripts);⁴¹ and then with three new editions of the *De Astronomia* appearing within the last 25 years - Le Boeuffle in 1983,⁴² Vitobello in 1988⁴³ and Viré in 1992.⁴⁴

³⁷ See BUNTE 1875. He relied mainly on Dresden, Dc 183 (9th-10th century), but also used Wolfenbüttel, 3147, 18.16 (12th century, from the Alsace); Leiden, Hemsterhuis 425 (12th century) and Wolfenbüttel, Aug 65 (15th century).

³⁸ Reeve offers a bibliography showing the 'repeated exposure of its inadequacy and inaccuracy'. REEVE 1983, p. 187, n. 1.

³⁹ See *De Astronomia*, ed Serra 1976.

⁴⁰ Written for the University of Missouri (St Louis). See *Dissertations Abstracts*, XXVIII, 1968, no. 3656 A. See also, Sister WILMA FITZGERALD 1974, pp. 193-204.

⁴¹ VIRÉ 1981, pp. 159-276. One should note that some of the descriptions of the manuscripts in the catalogue are not entirely reliable, but the article is a tremendously valuable starting point for a closer study.

⁴² Le BOEUFFLE 1983.

⁴³ C. Giulio Igino, *L'Astronomia*, ed VITOBELLO 1988.

⁴⁴ VIRÉ 1992.

There is no English translation of the text to date, but partial translations of the catasteristic myths and the star catalogues have appeared.⁴⁵

As might be imagined, proposals for a *stemma* outlining the textual history of the *De Astronomia* have been sketchy at best. Most philologists have preferred to define the manuscripts in terms of loose groupings or ‘families’, rather than in more strict terms of a conventional *stemma*.⁴⁶ This problem, of course, is somewhat complicated when one begins to consider how the illustrated versions of these manuscripts might be related to one another.⁴⁷

Surviving copies of Hyginus’s text date from the 9th to the 15th century, with the first illustrated versions appearing sometime in the 11th century.

⁴⁵ Book II has been translated as part of Grant 1960 and the myths and the star catalogue appear in Condos 1997. The latter translation should be treated with due caution and regularly checked against the original.

⁴⁶ The only attempt in relatively recent times to attempt a ‘strict’ *stemma* is in Le Boeuffle’s edition, which, when analyzed, actually serves to support the idea that these manuscripts fall into relatively isolated and somewhat loose groups of 2 or three manuscripts. See Le BOEUFFLE 1983, pp. lxxviii. It might be added that Fitzgerald’s suggestions are made on the comparison of 28 manuscripts and LeBoeuffle used 13 manuscripts. Viré used 36 manuscripts, but did not include any that postdates the 12th century.

⁴⁷ For example, if one considers the manuscripts which Le Boeuffle has attempted to organise into a *stemma*, seven of the manuscripts have illustrations, but only three of these have illustrations in the sections devoted to Hyginus’s text. See Le BOEUFFLE 1983, pp. lxxviii. In Viré’s catalogue of 88 manuscripts, only around 28 are illustrated (the numbers are more difficult to calculate as Viré is somewhat unreliable regarding illustrations (sometimes missing the illustrations all together and often citing a manuscript as being illustrated, when the actual Hyginus section of the manuscript is not illustrated)). See VIRÉ 1981, pp. 163-177.

Despite the very high level of textual variations amongst even the earliest manuscripts, there is a relatively high degree of structural similarity binding all these works together. This suggests that there must have been a single archetype from which all versions of the IV Books of the *De Astronomia* descended.⁴⁸

In her study, Viré used the textual variants found in eight significant passages to help differentiate the manuscripts from each other. These passages were:

1. Book II, 42: the description of the beauty of Phaeton in the section on the planet Jupiter.
2. Book II, 15: details in the tale of Prometheus in the section on Sagitta.
3. Book III, 12: the rising of Auriga.
4. Book III, 21: differences in the placement of the stars in the second Twin.
5. Book IV, 14: description of the distance between the Earth and the Moon.
6. Book IV, 2: description of the Tropic of Cancer relative to the shoulders of Ophiuchus.
7. Book IV, 6: location of the Arctic Circle as it passes through particular constellations.
8. Book IV, 19: the formulae used to end Book IV.⁴⁹

Using this tool, Viré was able to put together a bit more information about how the manuscripts of the *De Astronomia* might be grouped. Her research supported the generally accepted thesis that there are two main families of the *De Astronomia*, whose divergence can be traced to some time in the

⁴⁸ Given this structural cohesion found in the earliest manuscripts, the other alternatives – that there may have been multiple versions of the text circulating in antiquity or that ‘Hyginus’ was a convenient moniker under which various versions of the myths and stellar catalogues were collected – seem less likely.

⁴⁹ See VIRÉ 1981, pp. 178-187.

late-9th to early-10th century. The readings of the first family tend to reflect a more faithful rendering of the classical text and can be subdivided into three further sub-groups (α , β and γ). Interestingly, only two of the 17 manuscripts in this family have illustrations accompanying the text of the *De Astronomia*; but, in terms of ‘quality’, these illustrations are certainly related to a classical model. The second family still depends directly on a 9th/10th century prototype, but its readings are less satisfactory. It can be subdivided into three further groups (δ , ϵ and ζ). Of these, all five manuscripts of group ϵ are illustrated; but the illustrations in these manuscripts are ‘modernized’, 12th-century approximations of the classical constellations. The ‘localization’ of the text seems to be mirrored in the ‘localization’ of the pictures.

Beyond the identification of the two main families and handful of sub-groups, the manuscripts tend to fall into discrete pockets of ones and twos. One finds very few examples of direct copies within these groupings as there almost always seem to be missing intermediaries or mysterious corrections taken from a second, unknown source. Sometimes the readings will be the same, but the format or structure of the chapters will be completely at odds. More than once, a pair of manuscripts will start as sisters and then diverge in their readings half way through. In short, our knowledge about how the text of the *De Astronomia* developed from its inception until the middle years of the 15th century remains stubbornly impenetrable. Seen in this light, one might argue that Viré’s diligent collations and groupings have not moved the state of scholarship much further forward. But, having said

that, one can begin to see how Viré's close examination of these manuscripts has exposed something somewhat unexpected – the extent to which the *De Astronomia* does seem to function as a kind of cultural barometer.

If one traces when and where different copies of the *De Astronomia* appear, there is a remarkably high co-incidence between those times when a *scriptorium* is flourishing and well-connected and the appearance of the work. If scholars are exchanging works, a copy of the *De Astronomia* always seems to make it into one of the bundles. Surely, this exercise could be done with a number of classical texts, but it is intriguing how appearances of the *De Astronomia* seem to echo successive flowerings and fadings of the *scriptoria* across medieval Europe. For example, the two most ancient versions of the text can be associated with two of the most renowned scholars of the early Middle Ages: Leiden Voss lat 8° 15 is the autograph of Ademar of Chabannes and the Vatican manuscript, Reg lat 123, is closely associated with the monk, Oliva of St. Ripoll.⁵⁰ We know that the *De Astronomia* was widely copied in northern France during the late 9th and early 10th centuries. Illustrated manuscripts appear as part of the very fertile exchange of knowledge and texts between France and England at the turn of the 10th century. It resurfaces in the 12th century, in both northern France and southern Germany, its illustrations taking on a new, 'contemporary' look. It seems to disappear for a century or so and then,

⁵⁰ The literature on both these scholars is vast. See the individual bibliographical references for each manuscript.

signalling its re-emergence with an autograph manuscript by Coluccio Salutati,⁵¹ the *De Astronomia* makes its final grand appearance in the humanist *scriptoria* of Renaissance Italy.

⁵¹ Vat lat 3110.

Early manuscripts of the *De Astronomia*

Hyginus I: In the most comprehensive study of the manuscripts to date, Viré identified a fundamental '*bipartition*' in the early textual tradition.⁵² The first Family is, perhaps, the most complex as it reflects the '*l'intense activité des scriptoria français à la fin du IXe siècle et durant le Xe*'. Nevertheless, '*il reproduit le plus complètement et avec le plus fidélité ce qu'a dû être l'oeuvre du mythographe latin*'.

Of the 21 manuscripts in this Family, only three manuscripts are illustrated.⁵³ Two belong within the first of the two sub-groups:

Hyginus I. a. b:

Leiden, Universiteitsbibliotheek

Voss lat 8° 15

St Martial nr Limoges, c. 1025

Vatican, Biblioteca Apostolica

Reg. Lat 123

Sta Maria in Ripoll, before 1056

The pairing of these two manuscripts as the best surviving representatives of a now-lost prototype of the *De Astronomia* shows how complicated this problem of grouping texts can be. Normally, one would begin by looking for basic similarities of format and then drop into the minutiae of shared

⁵² See VIRÉ 1981, esp. pp 192-93 and ff.

⁵³ For a comparative table showing how this distribution of illustrated manuscripts, see Appendix I, below.

readings. In this case, however, the structure of the two manuscripts could not be more different. The Leiden manuscript is a relatively tidy production and contains all IV Books of the *De Astronomia*, with the illustrations accompanying Book III. The illuminated section of Reg lat 123 appears in a section entitled 'HYGINI FABULA',⁵⁴ the text of which is compiled from excerpts taken from a number of classical and early-medieval authors, including 'Aratus', Hyginus, Pliny, Boethius, Bede and Isidore. The excerpts are arranged according to four topics: *De sole*, *De luna*, *De natura rerum* and *De astronomia*. When confronted with such an odd product, the reader's normal reaction is to assume that any author bent on creating such a complicated, almost inter-linear compilation, such as Reg lat 123, would have tailored his citations to fit the grammar and structure of the new work so that it might form a more harmonious whole. Having done this, it would have been normal for the author to cite the work as his own creation. Instead, however, the scholar or scholars behind Reg lat 123 have been exceedingly faithful to the original material. The *excerpta* have been neatly and precisely excised, with original spellings and grammar intact. The text one is able to recreate by stringing-together all these bits and pieces is extremely close to the text found in Leiden 8° 15, with both maintaining a very precise group of shared readings.⁵⁵ In addition to this, the pictures

⁵⁴ For a fuller description and folio references, see the catalogue entry.

⁵⁵ See VIRÉ 1981, pp. 203-06. Explaining why two manuscripts from such different locations might be so close in their readings, Viré notes that the Monastery of Santa Maria in Ripoll was '*une fondation*' of Saint-Victor de Marseille and enjoyed particularly close relations with other *scriptoria* in France, especially those in the Loire Valley and the north of France (see Viré, as above, p. 206). It is interesting that Sister Wilma Fitzgerald does not include the Leiden manuscript in her studies of Hyginus (its absence from her PhD dissertation is

found in the '*Hygini Fabulae*' section of Reg lat 123 (especially those on ff. 183v-204v) are very close to those found in the Leiden manuscript.⁵⁶

The third illustrated manuscript within this Family belongs to the second grouping of Family I manuscripts:

Hyginus I. B. b:

Leiden, Universiteitsbibliotheek
Voss. Lat 4° 92
Southern French (?), 12th century

Textually, it seems to have come from a French exemplar, but it soon left the Continent and served as the model for an unillustrated Hyginus manuscript that was copied at the *scriptorium* in Rochester in the 12th century.⁵⁷

Hyginus - Family II: As mentioned, Family II has one sub-group in which all of the manuscripts are illustrated. All of these manuscripts share a large

noted by REEVE 1983, p. 188 and there is no mention of either the Leiden or the Vatican manuscript in her 1974 publication.). Similarly, Le Boeuffle mentions neither the Leiden nor the Vatican manuscript in his edition of the text (see Le BOUEFFLE 1983).

⁵⁶ Another member of this textual family is St Gall 250, but its illustrations accompany the *Revised Aratus latinus* sections of the manuscript and not the Hyginus (Books I-IV) text. Intriguingly, though, the Vatican pictures do maintain the odd feature of Pegasus eating out of a bowl (fol. 193r).

⁵⁷ London BL Roy. 12. C. IV. See VIRÉ 1981, p. 223.

number of omissions and alterations, which '*dans bien de cas, ont rendu le texte tout à fait incompréhensible*'.⁵⁸ These are:

Hyginus II, ε. a:

Florence, Biblioteca Laurenziana

Ms Plut. 29.30

Italian (?), 12th century

Vienna, ÖNB

Vindob 51

S. German, 12th century

Hyginus II, ε. b:

London, British Library

Arundel 339

S. German (Kastl?), 13th century

Wolfenbüttel, Herzog August Bibliothek

Ms 18. 16. Aug 4°

S. German, 12th century

Hyginus II, ε. c:

S Paul im Lavanttal, Benediktuskabinett

Ms 16/1(XXV. 4. 20)

German, 11th century

⁵⁸ See VIRÉ 1981, p. 242.

Again, these manuscripts differ in format. The Florence, Vienna, Wolfenbüttel and St Paul manuscripts have their illustrations accompanying Book II. In Arundel 339, Books II and III have been abbreviated and conflated so that each chapter begins with a line or two from Book II and then finishes with the stellar catalogue from Book III. Normally, one would argue that such a significant difference in structure means that the manuscript belongs to a different tradition. It also raises questions about the philologist's method of building a case from the minutiae upwards, rather than from the overall structure inwards. Intriguingly, however, and following a pattern we have already seen elsewhere in the establishments of these families, the pictures found in these four manuscripts do share a number of traits and details that are exclusive to this group. So, structure aside, they do form a textual and pictorial whole. And, of course, the geographical tie shared by these manuscripts is worth noting, with only the Florence manuscript existing outside of an overwhelmingly South German provenance. All other things being equal, such a high level of consistency across this grouping should lead one to reconsider the tentative identification of this manuscript as 'Italian' or, at the very least, suggest that if it is Italian, it is a very close copy after a German model.⁵⁹ The Florence manuscript ends imperfectly at Book IV, 9: ... *ad eum locum ubi occidere dicatur ibi montium magnitudine* (fol. 35r); and this is a feature that reappears in a number of 15th-century

⁵⁹ Scholars seem quite coy in allocating a provenance for this manuscript. Neither McGurk (IV 1966 pp. 23-24) nor Viré (1981, p. 166) offers a provenance and Le Boeuffle does not mention the manuscript at all. The only attribution we can find is in Reeve's short essay, where he thanks Prof Munk Olsen for suggesting that it is 's.XII/XIII, Italian'. See REEVE 1983, p. 188, n. 13.

Italian manuscripts, which all seem to have been copied (directly or indirectly) from Florence, Laur. 29.30. Whatever else, it shows that this manuscript (whether or not it was Italian in origin) was certainly in a Florentine collection before the middle years of the Quattrocento, when the first copy appears.

Hyginus III: The rest of the earlier Hyginus manuscripts with illustrations follow the tradition of being extracts or interpretations of the original text. Most of these can be dated to sometime in the 12th century (supporting the idea that there was a second flurry of interest in the *De Astronomia* during this period), but it is difficult to see direct lines of transmission between them and many of these texts are dismissed by classical philologists as having little or nothing to tell us about the original shape of the text. Whereas this seems to be largely true, these manuscripts still provide fascinating insights into how medieval scholars absorbed, conflated, adapted and restructured the information they received. One is tempted to group these texts into a third family, with the *pro viso* that, although they are not physically related, they all represent a similar spirit. Amongst these manuscripts, one would include:

Hyginus III a:

Oxford, Bodleian Library

Bodley 614

Hyginus, *Recensio interpolata*⁶⁰

English, mid-12th century

The text accompanying the illustrations are largely *excerpta* taken from Book II of the *De Astronomia* and with the addition of the star totals for each constellation taken from Book III; but these passages also have been conflated with additional information taken from Isidore (*De natura rerum*) and the *scholia Sangermanensia*. To this extent, the text transcends mere '*excerpta*' and should be seen as a new version of the text - or Hyginus, *Recensio interpolata*.

Hyginus IIIb:

Oxford, Bodleian Library

Digby 83(S.C. 1684)

Hyginus, *Excerpta*

12th century, English

Although Saxl and others have cited this as a direct copy of Bodley 614, the stars in the illustrations show that Bodley 614 and Digby 83 can not have been copied from each other, but derive from the same parent. Also, the text is quite different. It appears as the putative Book IV of a larger work, entitled *Opusculum de ratione sphaerae*, but is actually excerpts from Book II and the star catalogue from Book III.

Hyginus III c:

Baltimore, Walters Art Gallery

Ms 734

Hyginus, *Excerpta*

probably North Italian, late 12th century

⁶⁰ The text of these manuscripts is usually referred to as '*Hygini excerpta*' or, by Sister Wilma Fitzgeralds as '*nugae Hyginiana*'. For the reasoning behind the preferred term - Hyginus, *Recensio interpolata* - see the following paragraph.

This manuscript is an abbreviated version of each of the IV Books of the *De Astronomia*, with the illustrations accompanying *excerpta* from Book III.

Hyginus III d:

London, British Library

Roy Ms 13. A. XI

Excerptio Abbonis ex Hyginus de figuratione signorum

English, 12th century

This work, attributed to Abbo of Fleury by its title, has an illustrated section with slightly massaged excerpts from Book III of the *De Astronomia*.

Hyginus III e:

Munich, Staatsbibliothek

clm 10270

Hyginus, *Excerpta*

Mannheim, 11th century

A very odd manuscript, with fragmentary and often grammatically cryptic excerpts taken from Books II and woven into architectural frameworks surrounding each of the constellation images. These arcades are then flanked by marginal text concerning the positions of the stars, which have been taken from Book III.

Hyginus III f:

Berlin, Staatsbibliothek

Ms 8° 44 (Rose 962)

Hyginus, *Excerpta*

French, 13th c

Standing somewhat apart from this tradition, there is one 13th-century French manuscript, which contains excerpts from Book III of the *De Astronomia*, that are set within other treatises relating to the construction of scientific instruments, such as pillar dials and astrolabes. There are numerous changes in the text and insertions of

Arabic star names in the illustrations. As McGurk has noted, this manuscript is iconographically related to the so-called 'German star-books', such as Munich germ 595, Munich clm 59, Vat Pal lat 1369 and Vat Pal lat 1389.⁶¹ In its combination of sources, it forms an intriguing bridge between the 'eastern' and 'western' traditions.

⁶¹ See McGurk IV 1966, xxiii-iv.

Renaissance Manuscripts of the *De Astronomia*:

The third great flurry of interest in the *De Astronomia* occurs in Italy, during the early years of the Renaissance, as part of the great humanist revival of classical texts. Over 18 manuscripts were created between about 1450 and the 1480 have survived and many of them are very finely illustrated.

Hyginus IV: As originally pointed out by McGurk, one family of manuscripts can be shown to have a close connection with the manuscript once owned by Colluccio Salutati (Vat lat 3110).⁶² These are:

Florence, BNC

Magliabecchiana XI. 114,1

Italian, 2/2 15th c

Florence, Biblioteca Laurenziana

Plut. 89. sup 43

Florentine, 2/2 15 c

Pavia, Biblioteca Universitaria

Aldini 490

Italian, 2/2 15th c

Vatican, Biblioteca Apostolica

Vat lat 3110

Florentine, before 1449

Vatican, Biblioteca Apostolica

Urb. Lat 1358

Florentine, 1470s

⁶² See McGurk IV 1966, p. xix.

In each of these manuscripts the order of Books I-IV are confused, so that the texts run:

1. Hyginus, *De Astronomia*, Books III- IV (with Book III illustrated)
2. An extract from Martianus Capella's *De nuptiis...* (VIII, 844-45) entitled *De differentia temporum ortus signorum*⁶³
3. Hyginus, *De Astronomia*, Book I- II (with Book II paraphrased)⁶⁴
4. An extract from Martianus Capella's *De nuptiis...* (VIII, 855-87) entitled *De circulis planetarum*⁶⁵
5. A section entitled *De polis* *** from where CHECK

Hyginus V: Five other 15th-century Italian manuscripts are structurally related by the odd inversion of Books II and III. These are:

Cambridge, Fitzwilliam Museum

Ms 260

Ferrara or Mantua, 1470-80

Milan, Biblioteca Ambrosiana

T. 47 sup

Italian, 2/2 15th c

Milan, Biblioteca Trivulziana

N. 690 (E. 83)

N. Italian, end 15th c

Oxford, Bodleian Library

Can misc 46

Florence?, end 15th c

Vatican, Biblioteca Apostolica

Chigi H.IV.20

N. Italian, 2/2/15th c

⁶³ For a transcription of this text taken from Pavia, Aldini 490, see p. 36.

⁶⁴ For a transcription of this text taken from Pavia, Aldini 490, see pp. 37-41.

⁶⁵ For a transcription of this text taken from Pavia, Aldini 490, see pp. 42-44.

Their contents run:

- Book I (preface and chapters)
- Book II (preface only)
- Book III (the last sentence)⁶⁶ sliding into
- Book IV
- Book III (chapters; illustrated)
- Book II (preface repeated and chapters).

Hyginus VI: A third set of 15th-century, Italian manuscripts seem to have been copied from the 12th-century manuscript, Florence, Laurenziana Plut 29.30, which ends imperfectly at Book IV, 9: ... *ad eum locum ubi occidere dicatur ibi montium magnitudine*. Illustrated versions of this family include:⁶⁷

Leiden, Universiteitsbibliotheek
Voss lat 8° 18
Italian, 15th century

Hyginus VII: A fourth set of Italian manuscripts contain only Books II and III of the *De Astronomia*. These include:

Florence, Biblioteca Laurenziana
Ashburnham 1148
Italian, 15th century

⁶⁶ As mentioned, many of the manuscripts present what modern editors see as the last sentence of Book III as the first sentence of Book IV.

⁶⁷ Holkham Hall, Ms 331 (Italian, 15th century) is also related to this tradition, but it is not illustrated - contrary to the information supplied by VIRÉ 1981, p. 167.

Vatican, Biblioteca Apostolica
Vat lat 3109
Italian, 15th century

Verona, Biblioteca capitolare
Ms CCLXI
Italian, end 15th century

Hyginus VIII: Finally, there are a number of late 15th-century Italian manuscripts that contain all IV Books of the *De Astronomia* and seem not to have any anomalous passages. They do not form a family in themselves, but must be considered as singletons within the tradition:

Hyginus VIII. a:

Cortona, Libreria del Comune e dell'Accademia Etrusca
Ms 184 (265)
Italian, end 15th century

Hyginus VIII. b:

Florence, BNC
Magliabecchiana XI. 141
Italian, 2/2 15th century

Hyginus VIII. c:

New York, Public Library
Spencer Ms 28
Padua, c. 1465-70

Hyginus VIII. d:

Oxford, Bodleian Library
Can class lat 179
N. Italian, ¾ 15th c

Hyginus VIII. e:

Siena, Biblioteca comunale

Ms L. VI. 25

Italian, dated 1475

The pictorial tradition of the *De astronomia* of Hyginus

I. Introduction:

When trying to understand the history of the illustrations associated with the *De astronomia*, one immediately encounters a fundamental paradox. The vast majority of the earliest and most important versions of the text are not illustrated. As shown in Appendix I of the previous chapter, only eight of the 36 manuscripts predating the 12th century have illustrations accompanying the Hyginus sections. In contrast, however, there are a number of very early and important manuscripts containing versions of the text, in which the *De astronomia* itself is not illustrated, but other astronomical texts within the manuscript do have pictures. The three most striking examples are:

1. There is a small group of 9th-century compilation manuscripts, each of which contain an un-illustrated version Hyginus, the text of the *Revised Aratus latinus*, Cicero's *Aratea*, the *Excerptum de Astrologia* and the *De ordine ac positone stellarum*.⁶⁸ In all of these

⁶⁸ See the now-lost Dresden, Landesbibliothek, Dc. 183 (West Francia, early 9th-century); St Gallen, Stiftsbibliothek, 902 (St Gallen, first half of the 9th century) and its daughter manuscript, St Gallen, Stiftsbibliothek, 250 (St Gallen, mid-9th century). As was first pointed out by Breysig (*Germanici Caesaris Aratea*, 1867, p. xxviii), there are corrections in St Gallen 250 that come from a source close to the '*Sangermanensia* manuscript', Paris BN lat 12957. It is also worth noting that the constellations in St Gallen 250 are marked with stars, while the ones in St Gallen 902 are not. It seems likely that the inclusion of the stars

manuscripts, the constellation illustrations accompany the text of the *Revised Aratus latinus*. The manuscripts also include maps of the summer and winter hemispheres and the depiction of a globe set on a multi-columnar stand.⁶⁹

2. Similarly, the 9th-century manuscript from Fleury, Paris BN lat 8663, also contains all IV Books of the *De astronomia* (ff. 1r-19v), which are not illustrated. The illustrations in this manuscript accompany the stellar catalogue, *De ordine ac positione stellarum in signis* (ff. 20r-24r), which was compiled in Aachen in 809-812.⁷⁰
3. Finally, there are the well-known, early Franco-English illustrated versions of Cicero's *Aratea*. The earliest of these, London BL Harley 647 (820-850, possibly from Lorraine), has illustrations of the constellations in which the actual bodies of the figures themselves have been filled with excerpts taken from Book II and a line relaying the total number of stars in each constellation ('*omnes sunt...*') from Book III of the *De astronomia*. In the two English copies of the French manuscript, one preserves this feature (London BL Cotton Tib C.I (Peterborough, early 12th c)), while the other one discretely removes the excerpts from the body and places them at the top of each page (London BL Cotton Tib BV, pars 1 (English, c. 1000)).

was part of this later campaign of 'corrections'. For a fuller discussion of these manuscripts, see MARTIN 1956, pp. 44- and Le BOURDELLES 1985, pp. 75-77. Note that McGurk preserves Breysig's error in calling the illustrated texts in Dresden DC.183 and St Gallen 902 the '*scholia Sangermanesia*' (McGURK IV 1966, p. xxii).

⁶⁹ For a fuller description, see the sections on the individual manuscripts.

⁷⁰ For a fuller description, see the sections on the individual manuscripts.

So, whereas the text of the *De astronomia* seems to have been reasonably popular and widely diffused from at least the early 9th century and it often appeared set within groups of astronomical texts and star catalogues that were illustrated, there are no surviving examples of an illustrated Hyginus prior to the first half of the 11th century - a relatively late date when considering the development of the illustrations from comparable astronomical manuscripts. When searching for some glimmer of an early history of Hyginus illustrations in these early compilation manuscripts, unfortunately (or, at least, unfortunate for those trying to understand the history of constellation iconography), the pictorial formulae found in these particular sets of illustrations accompanying the *Revised Aratus latinus*, the *De ordine ac positione stellarum* and the Ciceronian *Aratea* do not resemble one another; so, at least, one is fairly confident that there is not a shared 'Hyginian pictorial tradition' underpinning the iconography of these three different sets of illustrations. That is not to say that any one of these sets of pictures might not accurately preserve the appearance of the constellations that appeared in an antique copy of Hyginus's text; it is only to recognise that the link between a hypothetical antique model and the illustrations that appear in the earliest surviving Hyginus manuscripts refuses to be neatly forged.

For this reason, the questions that stand at the heart of any enquiry into the iconography of early Hyginus manuscripts are:

1. Was the *De astronomia* illustrated in antiquity?

2. How would one recognise a 'typically antique' version of these illustrations?
3. Have reflections of this antique tradition survived in any of the manuscripts of the *De astronomia*?

II. Searching for evidence of a classical pictorial tradition in Book II:

As outlined in the previous section, the main difference between Hyginus's text and all the other astronomical works stemming from the so-called 'classical literary tradition' is its structure. Although he obviously knows Aratus's poem and is certainly influenced by its literary tradition, accretions and *accoutrements*, Hyginus takes this material, along with information compiled from numerous other sources, and incorporates it into the new format: 'a kind of rough sketch of a scientific work' that is intended 'not to teach those who do not know the subject, but to rekindle the memories of those who are already knowledgeable'.⁷¹ In short, he is writing a textbook for advanced students of the heavens. Freed from the constraints of having to frame each description in verse, he is able to provide a much more thorough examination of his topics. In particular, at the very core of the work, Hyginus devotes one whole book to the mythological or catasterismic fables associated with the constellations (Book II) and another whole book to the shapes of the constellation, their relative placement in the sky and the number and positions of the stars within each figure (Book III). As a result, there are two possible sections of the treatise, which, conceivably, could have been illustrated in antiquity.

⁷¹ Hyginus, *De Astronomia*, I, preface: *hoc velut rudimento scientiae nisus scripsi ad te, non ut imperito monstrans, sed ut scientissimum commonens* (VIRÉ 1992, p. 1 and Le BOEUFFLE 1983, p. 6).

As it is, the fact that amongst the later medieval and Renaissance manuscripts of the *De astronomia*, some have images set within Book II and others have pictures in Book III supports the notion that either book offers a welcome home for illustration (see APPENDIX IV for a resume of the distribution of the illustrations). But such congeniality does not actually prove that either Book was illustrated in antiquity.

When trying to come to a better understanding of the early history of the various images of the constellations, the question of whether either Book II or Book III (or both) were illustrated in antiquity really only matters if the placement of the pictures in these different settings had a bearing on the iconography of the images themselves. For, behind this issue, there is one fundamental question: if the text of Hyginus was illustrated in antiquity, were the illustrations inherited from an earlier source or were the illustrations ‘bespoke’ and, therefore, specifically prompted by the contents of the text itself? Either way, the task at hand remains the same:

1. to discover whether there are any elements in the existing set of Hyginus-related illustrations that are, in some way, intrinsically ‘more mythological’ and can be connected to the catasterismic sections of Book II;
2. to determine whether there are other images in the existing Hyginus manuscript tradition that might be considered as being ‘more astronomical’ and could be more closely linked with pertinent passages in Book III;

3. and, finally, to explore whether any of these elements reflect specific iconographic details stipulated by the text of the *De astronomica* or, alternatively, can be tied to earlier textual or pictorial sources.

Unfortunately, what might appear to be a relatively easy exercise is rather more difficult to progress than one might first imagine - since the assumption rests on the uneasy premise that, in the 1st century AD, 'mythological' pictures of the constellations do look significantly different from 'astronomical' ones. Also, perhaps more problematically, it raises awkward questions as to where any of these pictures - 'mythological' or 'astronomical' - might have originated. For, if a set of specifically 'mythological' illustrations did appear within Hyginus's Book II, were they 1st-century images, created specifically in response to the text or were they 1st-century images that were extracted from the contemporary pictorial canon? If the latter, was this canon inherited or adapted from an earlier mythological or mythographic source - such as Eratosthenes, for example? Or, was the tradition of the shape of the constellations so well-known in antiquity that even when pictures did appear within a mythological context, the images themselves maintained an iconography which was still, fundamentally, 'astronomical'?

To test this issue of 'mythological' pictures, APPENDIX II summarises the iconographic material presented in the catasterismic sections of ps-Eratosthenes and in Book II of the *De astronomia*. That is to say, the resumé

provided highlights those details, which seem to have the potential to influence the form of the pictures. What one immediately notices from the material collated is that the descriptions in these mythographic sections are actually quite thin. If one did not know how these figures were meant to be portrayed, it would be extremely difficult to create any kind of picture from either source. The only figure in which the positions of limbs and attributes are sufficiently detailed to construct a rudimentary figure is the constellation is Hercules. ps-Eratosthenes mentions the fable of Hercules's labour in the Garden of Hesperides and is quite specific in how the constellation is depicted, though the two parts of his description do not exactly agree:

The figure standing on the Dragon [Draco] is said to be Herakles. He is clearly standing, wrapped in a lion's skin, his club raised. ...

The serpent's head is raised high; Herakles is astride the Serpent and holds it pinned with one knee while he steps on the head with the other foot [*i.e.*: he is kneeling]. His right hand, which holds the club, is extended as if he were about to strike; he wears a lion's skin over his left arm.⁷²

The figure, then, is either standing or he holds the Dragon pinned with one knee; and he is either wrapped in a lion's skin or has it over his left arm. At

⁷² ps-Eratosthenes, *Catasterismi*, 4 (ROBERT 1878, pp. 62-64 and CONDOS 1997, p. 115).

result, even despite the specificity of the description, creating a picture from it would not be easy.

Hyginus is similarly prescriptive, saying that Hercules is shown:

prepared as if for a struggle, holding the lion's skin in his left hand and the club in his right. ... Draco's head is erect; Hercules, on his right knee, attempts to stand on the right side of Draco's head with his left foot; his right arm is extended as if he is to strike; his left is outstretched holding the lion's skin, so that he appears to be struggling mightily.⁷³

In contrast to the description provided by ps-Eratosthenes, Hyginus's formula is sufficiently unambiguous to allow one to construct the figure of a man 'as if prepared for a struggle', kneeling on his right knee and attempting to step on the right side of Draco's head with his left foot. He raises a club in his right hand 'as if to strike' and holds a lion's skin in his outstretched left hand. The Garden of Hesperides is mentioned in the text, but not described, save that the Dragon is said to have his eyes open, never to sleep and his head is erect.

In pursuing the issue of whether one could specify this figure as being particularly 'Hyginian' or, even, 'Roman', it is interesting to note the slight difference between the first description offered by ps-Eratosthenes, where

⁷³ Hyginus, *De astronomia*, II, 6 (VIRÉ1992, p. 29 and CONDOS 1997, p. 117).

Herakles is said to be ‘wrapped in a lion’s skin’ and the second, where he ‘wears the skin over his left arm’. Hyginus follows the latter, describing the way in which Hercules holds the skin in his hand. Whereas there is a marked tendency for the earlier, pre-Roman depictions of the demi-god to have him wearing the lion’s skin like a cloak, often with the head of the lion forming a kind of hood on his head (especially in early Greek vase paintings), it would be too hasty to cite this feature as evidence that this particular pictorial formula betrays the influence of later iconographic developments. The early Greek exceptions of a skin-carrying Herakles, which prove the rule, would include the depiction of the figure on a late 4th-century Athenian *pelikè* in the Allard Pierson Museum in Amsterdam;⁷⁴ the smallish, statue of *Hercules*, which is purported to be a 2nd-century AD Roman copy of a 5th century BC Greek original (attributed to an original by Myron) in the Museum of Fine Arts in Boston;⁷⁵ and, of course, the depiction of the demi-god in the 5th-century relief of *Herakles and the Amazons* from the Temple of Apollo in Bassae, now in the British Museum.⁷⁶ Therefore, the image of a skin-bearing Hercules could be as old as Eudoxus, and it certainly is not a specifically Roman invention.

⁷⁴ Amsterdam, Allard Pierson Museum, inv. 878. See also the way Herakles wears the skin (with head attached) in the Panathenaic amphora by the Berlin Painter, from Vulci (500-480 BC?) in the Martin von Wagner Museum in Wurzburg (inv. 500). For a reproduction of the latter, see BEAZLEY 1930, pl. IX, 2.

⁷⁵ Boston, Museum of Fine Arts, inv. 14,7333. It would seem that the fresco of Hercules found in one of the tombs near Ostia also derives from this tradition. For a reproduction of the latter, see LYTTLETON and FORMAN 1984, p. 22.

⁷⁶ London, British Museum, ref. GR 1815.10-20.18.

To complicate matters slightly, Hyginus also mentions that some people believe the kneeling figure of 'Engonasin' is not Hercules, but is Thamrys, who was blinded by the Muses and is supplicating on his knees. He also cites Aeschylus, who says it is Hercules is on his knees because he is exhausted after his battle with the Ligurians. Finally, he mentions that some say the figure is Ixion and others say it is the bound Prometheus. Intriguingly and, perhaps, significantly, none of the surviving depictions of this figure seems to show either an exhausted or bound figure, suggesting that the primacy of accepted Herculean iconography overwhelmed any other alternatives.⁷⁷

If one explores the myths described in the various sections a bit more closely, the general conclusion is that the catasterismic myths are cited more to explain the history of a figure and, only to a limited degree, its shape. If the iconography of the constellation illustrations that may or may not have appeared in Book II in antiquity had been determined by the contents of the myths - or, even, if they were conditioned by the pre-existing pictorial traditions associated with these myths - two aspects of this process are conspicuously absent.

First, as is the case for Hercules, the variant iconographies for the figures very rarely serve as the basis for the illustrations.⁷⁸ Certainly, amongst the varied forms of constellation images that have survived, one never sees:

⁷⁷ Hyginus, *De astronomia*, II, 6 (VIRÉ 1992, pp. 29-31).

⁷⁸ That is, of course, until the Renaissance when a number of these variant images begin to reappear in the larger-scale astrological decorative cycles. For example, see the artistic invention evident in the calendar cycle in Palazzo d'Arco in Mantua, in the *Sala del*

- Ursa Maior depicted as *Septentriones* (the seven oxen) or as a cart (*hexama*)⁷⁹
- Bootes as the dancing vintner, Icarus, or as Plutus, with his invention of the plow
- Aquila with Venus's sandal
- Delphinus ridden by Arion
- Virgo as Tyche or Fortuna and depicted without a head
- Capricorn as Pan with a fish's tail
- or Pisces as Venus and Cupid.

Second, in his mythological descriptions, Hyginus likes to 'set the scene', often relating his stories at great length. It seems odd, given that a number of these scenes were regularly illustrated in antiquity, that there is a distinct lack of ambient settings or ancillary characters in the extant illustrations of the constellations. For example, knowing the rich traditions of illustrating these stories, one might have expected to see reflections of some of the following images in those manuscripts purporting to be iconographically close to antique models:

- a depiction of Helen of Troy emerging from an egg alongside Leda/Cygnus

Mappamondo in Caprarola and in the *Sala dei Venti* in Mantua. For the specifically 'Hyginian' iconography of the Sala del Mappamondo, see LIPPINCOTT 1990, pp. 185-207.

⁷⁹ Except for the depiction of Ursa Maior as a cart in Apian's map of the circumpolar constellations. See WARNER 1979, p. 8.

- Auriga driving a *quadriga* or accompanied by a second rider
- Aries shown carrying Helle
- Virgo as Erigone or Dike, flying up to heaven
- the death of Chiron with Hercules's arrow in his foot; or Chiron accompanied by Achilles
- Capra suckling Jupiter.
- Orpheus descending into the Underworld (Lyra).
- Aquarius as Deucalion
- or Orion being stung by the Scorpion or struck by Diana's arrows.

None of these images appear in any of the surviving Hyginus manuscripts nor, for that matter, do they appear in any other astronomical manuscripts in either the Aratean or Ptolemaic tradition prior to the Renaissance, when artists felt much more free to create their own versions of the inhabitants of the heavens. Moreover, even though Hyginus dwells on a number of what one might consider as achingly visual aspects of the details in his descriptions of the constellations, none of these features transfers into the manuscript illustrations. For example:

- Cepheus, Cassiopeia and Andromeda are never depicted as Ethiopians.
- Auriga is never shown with his famous serpent's legs
- Cancer is never depicted with the teeth that Hyginus says he bit Hercules
- and Corvus is not shown shaking Hydra, the water-snake.

Having said that, however, there are a handful of images found in both early- and late-Medieval manuscripts that do appear to have grown out of the more narrative versions of the catasterismic myths. These would include:

- Bootes with a wooden cart
- Hercules kneeling before the Dragon in the Garden of Hesperides.
- Corona Borealis with 'Indian gems'
- Auriga in a *biga*
- Aquila carrying Ganymede
- Europa included in the depiction of Taurus
- Gemini as Hercules and Apollo
- Virgo as 'Justitia', holding the Scales
- Sagittarius as a satyr
- and Eridanus as Phaeton.

But if one considers this list more closely, it turns out that majority of these 'mythologised' figures are rarely included as illustrations within the surviving Hyginus manuscripts. The only 'mythologised' constellations that do appear in Hyginus manuscripts tend to be isolated examples, appearing only in manuscripts that 1) can be shown to derive their illustrations from a non-Hyginian pictorial source, or 2) within one or another particularly closely-knit family of manuscripts, the iconography of which never feeds back into the main stream, or, 3) in some of the later, 15th-century Italian

manuscripts, where artistic license has broken down the exclusivity of any one pictorial tradition. For example:

- **Corona Borealis:** The only early Hyginus manuscript in which the crown is clearly decorated with gems is Leiden, Universiteitsbibl. 8° 15, which has illustrations taken from the ps-Bedan tradition.⁸⁰ It also appears as a crown in two later, 15th-century Italian manuscripts.⁸¹
- **Hercules:** Again, the only early Hyginus manuscript to include a depiction of the Garden of Hesperides is the anomalous Leiden, Universiteitsbibl. 8° 15, which has illustrations taken from the ps-Bedan tradition;⁸² and two later, 15th-century manuscripts.⁸³ He does hold a dragon in his right hand in the two Bodleian manuscripts, however.
- **Lyra:** The body of Lyra is not depicted as a tortoise shell in any of the extant Hyginus manuscripts.
- **Auriga:** The Charioteer appears in a *biga* in three early manuscripts: Baltimore, Walters, W 734, Munich, Staatsbibl., clm 10270, and Wolfenbüttel, Herzog August Bibl, 18.16. Aug. 4°. It also appears in the 15th-century, Scot-derived illustrations in Florence, Laurenziana, Plut. 89. sup 43. Note also the odd

⁸⁰ Leiden, Universiteitsbibl. 8° 15, fol. 173r.

⁸¹ Milan, Bibl. Trivulziana, N. 690, fol. 4r and Oxford, Bodleian Library, Can. misc, 46, fol. 106v.

⁸² Leiden, Universiteitsbibl., 8° 15, fol. 173v.

⁸³ Florence, Bibl. Laurenziana, Plut 89 sup 43, fol. .74v and Vatican, Urb. Lat 1358, fol. 124v.

appearance of Auriga, with his feet having been transformed into wheels - probably as a remnant of the *biga* - in Berlin, Staatsbibl. 8° 44 and the 'German' star books'. There also seem to be wheels at the waist of the figure in Leiden, Universiteitsbibl., 8° 18.⁸⁴

- **Andromeda:** She has toilet articles and a dragon at her feet only in the Leiden, Universiteitsbibl, 8° 15 and Vatican, Reg lat 123 - both of which contain ps-Bedan illustrations.⁸⁵
- **Taurus:** Europa is included in the depiction of Taurus in Leiden, Universiteitsbibl. 8° 18. In the closely-related manuscripts of Florence, Laurenziana, Plut 29.30 and St Paul im Lavantthal, Benediktssk. 16/1, the figure appears to be male.⁸⁶
- **Gemini:** One of the Gemini does hold a harp in the later, Scot-derived illustrations of Florence, Laurenziana, Plut 89 sup 43, as well as in Vatican, Urb lat 1358 and in the German picture book, Vatican, Pal lat 1389.⁸⁷

⁸⁴ The folio references for the Hyginus manuscripts are: Baltimore, Walters, W 734, fol. 8r; Berlin, Staatsbibl. 8° 44, fol. 5r ; Florence, Laurenziana, Plut. 89. sup 43 fol. 78v; Leiden, Universiteitsbibl., 8° 18, fol. 102v; Munich, Staatsbibl., clm 10270, fol. 2v and Wolfenbüttel, Herzog August Bibl, 18.16. Aug. 4°, fol. 10v. The 'German star books' are Munich, Staatsbibl., clm 59, fol. 231r; Munich, Staatsbibl., clm 595, fol. 41r; Vatican, Pal lat 1369, fol. 149r and Vatican, Pal lat 1389, fol. 161v.

⁸⁵ The folio references are: Leiden, Universiteitsbibl. 8° 15, fol. 175r and Vatican, Reg lat 123, fol. 186v.

⁸⁶ The folio references are: Florence, Laurenziana, Plut 29.30, fol. 18r; Leiden, Universiteitsbibl. 8° 18, fol. 113v and St Paul im Lavantthal, Benediktssk. 16/1, fol. 18r.

⁸⁷ The folio references are: Florence, Laurenziana, Plut 89 sup 43, fol. 83r; Vatican, Urb lat 1358, fol. 131v and in the 'German star book', Vatican, Pal lat 1389. Also in the Germanicus illustrations in the Florence manuscript, the Gemini are winged and the Right Twin holds a sickle.

- **Cancer:** Asini and the Praesepe appear in only one manuscript, Baltimore, Walters, W 734, but it does not appear in as integrated with the rest of the constellation illustrations, but is found in a separate section in which passages from the *Aratus latinus* and Hyginus, II, 4.2 have been conflated⁸⁸
- **Virgo:** Virgo appears holding the Scales only in the non-Hyginian illustrations of Leiden, Universiteitsbibl., 8° 15 and Vatican, Reg lat 123; and in the idiosyncratic Berlin, Stadtsbibl. 8° 46 and in the ‘German star books’.⁸⁹
- **Sagittarius:** The satyr is a relatively common feature in the earlier Hyginus manuscripts. For example, see Baltimore, Walters, W 734; Florence, Laurenziana, Plut 29.30; Leiden, Universiteitsbibl, 8° 18; London, BL, Arundel 339; Munich, Staatsbibl., clm 10270; Vienna, ÖNB, Vindob 51 and Wolfenbüttel, Herzog August Bibl, 18.16. Aug. 4°. The later manuscripts tend to show the constellation as a centaur.⁹⁰

⁸⁸ Baltimore, Walters, W 734, fol. 20r.

⁸⁹ The folio references for the Hyginus manuscripts are: Berlin, Stadtsbibl. 8° 46, fol. 6r; Leiden, Universiteitsbibl., 8° 15, fol. 178r and Vatican, Reg lat 123, fol. 179r. For the ‘German star books’: Munich, Staatsbibl., clm 59, fol. 233r; Munich, Staatsbibl., clm 595, fol. 42v; Vatican, Pal lat 1369, fol. 150r and Vatican, Pal lat 1389, fol. 166v .

⁹⁰ The folio references are: Baltimore, Walters, W 734, fol. 11r; Florence, Laurenziana, Plut 29.30, fol. 21r; Leiden, Universiteitsbibl, 8° 18, fol. 118r; London, BL, Arundel 339, fol. 82r; Munich, Staatsbibl., clm 10270, fol. 3r; Vienna, ÖNB, Vindob 51, fol. 153r and Wolfenbüttel, Herzog August Bibl, 18.16. Aug. 4°, fol. 18r.

- **Eridanus:** He appears as a youthful nude reclining in or alongside a stream only in the later, Michael Scot-derived illustrations in Florence, Laurenziana, Plut 89 sup 43.⁹¹

Instead, the ‘mythologised’ adaptations that one would tend to associate with the detailed catasterismic myths of the *De Astronomia* of Hyginus actually tend to be found in manuscripts more immediately related to the Aratean tradition, such as in Germanicus’s translation, the *Revised Aratus latinus*, the *De ordine ac positione stellarum*, ps-Bedan *De signis caeli* and in the large number of illustrations relating to the works of Michael Scot.⁹²

⁹¹ The folio references are: Florence, Laurenziana, Plut 89 sup 43, fol. 88r. He appears as an older nude male with horns (river-god?) in the Germanicus sections of the Florence manuscript and in Vatican, Urb lat 1358, fol. 135v.

⁹² It is worth noting that the Byzantine manuscript with illustrated ps-Eratosthenes fragments (Vatican, Vat grec 1087) also preserves a number of ‘mythologised’ elements, such as:

- fol. 305v: Hercules kneeling before the Dragon in the Garden of Hesperides and Corona Borealis with ‘Indian gems’
- fol. 306r Sagittarius as a satyr.
- fol. 307r Virgo as ‘Justitia’, holding the Scales.

But it also preserves a number of features that are not normally connected with ‘Hyginian’ pictorial traditions, such as:

- fol. 301v: a depiction of the five planet gods
- fol. 302v: the Asini and Praesepe and a depiction of Jupiter riding on the back of an eagle
- fol. 303v Aries with a band around his middle
- fol. 306r: Ophiuchus standing on Scorpio
- fol. 308r: Andromeda with her toilet articles.

Note also that, in the zodiacal roundel on fol. 302r, Aries has a ring around its stomach, Gemini are depicted as Hercules and Apollo; Cancer has the Manger on his back, and there is a male figure holding the Scales. The fact that these features tie the images more closely to the ‘Aratean’ pictorial tradition, than to any known Hyginus illustrations, is discussed below.

- Bootes with a wooden cart is exceedingly rare and, to our knowledge, appears only in one 15th-century Germanicus manuscript⁹³
- Hercules kneeling before the Dragon in the Garden of Hesperides appears in almost all the Germanicus, *Revised Aratus latinus* and Michael Scot-related manuscripts; sporadically in the ps-Bedan *De signis caeli* manuscripts and in the Byzantine ps-Eratosthenes manuscript
- Corona Borealis with ‘Indian gems’ in appears in Germanicus and *Revised Aratus latinus* manuscripts and in the Byzantine ps-Eratosthenes manuscript⁹⁴
- Auriga in a *biga* or *quadriga* appears in the early Basel and Madrid 19 Germanicus manuscripts, as well as in almost all of the later, 15th-century ones (where the figure is often female!); in two *Revised Aratus latinus* manuscripts;⁹⁵ regularly in ps-Bedan *De signis caeli*, *De ordine ac positione stellarum*, *Liber Floridus* and Michael Scot-related manuscripts
- an eagle is never shown carrying Ganymede as an illustration for the constellation of Aquila, but the formula does appear in depictions of ‘Vultur cadens’ in the Michael Scot-related manuscripts

⁹³ Montpellier, Ecole de Médecin, 452, fol. 13v.

⁹⁴ The images in ps-Bede and in the *De ordine ac positione* tend to be of a wreath with a single gem or circles - which may be either stars or gems.

⁹⁵ Paris, BN, n.a. 1614, fol. 86r and Vatican, Reg lat 1324. fol. 29r.

- Europa is never included in the depiction of Taurus - except in the Hyginus manuscripts cited below.
- Gemini as Hercules and Apollo (that is, with a Twin holding a harp and the other holding a club) appear in several of the Germanicus manuscripts; in about half the ps-Bedan and *De ordine ac positione stellarum* manuscripts; in all the Michael Scot-related manuscripts (though the figures are often depicted with wings) and in one *Revised Aratus latinus* manuscript.⁹⁶
- Virgo is shown as 'Justitia' holding the Scales in all the *Revised Aratus latinus* and *Liber floridus* manuscripts; in some of the ps-Bedan and *De ordine ac positione stellarum* manuscripts; in the Cicero manuscripts and in the Byzantine ps-Eratosthenes,⁹⁷ but in only one Germanicus manuscript⁹⁸
- Sagittarius appears as satyr in a number of the *De ordine ac positione stellarum* manuscripts, but his appearances in this guise are notably limited in all the other formats: in only one Germanicus manuscript, in one copy of the *Revised Aratus latinus*, one ps-Bedan *De signis caeli* and in one of the Cicero manuscripts.

⁹⁹ He also appears as a satyr in the ps-Eratosthenes fragment.¹⁰⁰

⁹⁶ Prague, Strahov, IX.C. 6, fol. 144v.

⁹⁷ The Michael Scot tradition tends to show a male figure holding a pair of scales, with the exception of Vienna ÖNB, 3394, fol. 216v, where an angel holds the scales.

⁹⁸ Aberystwyth, National Library of Wales, 735C, fol. 16r.

⁹⁹ The appearance in the Germanicus tradition is limited to the Montpellier manuscript, fol. 38r. Sagittarius appears as a satyr in the *RAL* manuscript, Munich, Staatsbibl, clm 560, fol. 112r. He also appears as an odd, two-legged centaur in the *RAL* manuscript, Vatican, Reg lat 1324, fol. 31r. The ps-Bedan satyr appears in Freiburg-im Breisgau, Bibl. des

- and Eridanus appears explicitly as Phaeton - a youthful male figure without horns and without an urn - only in the early Germanicus manuscript, Madrid 19, and in the Michael Scot-related manuscripts.¹⁰¹

This uneven distribution of mythologised images would suggest that, despite his detailed chapter on the catasterismic myths, Hyginus's text is probably not 'the' or, even, 'a' *locus classicus* for these versions of the constellations. The fact that the mythologised pictures do seem more closely tied to the Aratean tradition further supports the notion that this particular pictorial tradition originated as part of the illustrated *scholia* that attached itself to the original Greek text of the *Phaenomena* during the Alexandrian period - the now-lost 'Φ' archetype.

As suggested, the few mythologised images that do appear in Hyginus manuscripts seem to be confined to importations from other pictorial traditions or as isolated examples, common only to a few manuscripts that all belong to the same, closely-related group. As such, these images should probably be considered as being exceptional - but the *status quo* from which they are the exceptions is still not clear. Do they exist as the few survivors from a now-lost tradition, which was filled with richer, mythological

erzbischöflichen-Ordinariats., 35, fol. 7v. The Cicero example is London BL Harley 2506, fol. 39v.

¹⁰⁰ See the catalogue entry.

¹⁰¹ The Madrid image appears on fol. 63v.

images? Or are they, themselves, inspired inventions? Or isolated mutations? At this point, it is difficult to say.

Whereas the prose of Hyginus's mythological descriptions is evocative of the grand visual and visualising traditions of antiquity, the conclusion would seem to be that it is presented, essentially, an adjunct to the astronomical business at hand. Hyginus compiled Book II of *De astronomia* in order to provide a literary and, perhaps, a 'historical' or 'philosophical' explanation for the figures seen in the sky. But his compilation does not perform well as a mythographic handbook, simply because insufficient information is provided. As a result, an artist cannot construct images from the text alone.

One might argue that Hyginus never intended his Book II to be used as a mythographic source, precisely because, from his point of view, the images it describes already exist in the heavens. As he says in the preface to Book I, his aim is 'not to teach those who do not know the subject, but to rekindle the memories of those who are already knowledgeable'.¹⁰² To this end, one imagines that any 'knowledgeable' reader would have understood the astronomical context of Hyginus's treatise and recalled the shapes of the constellations or consulted a secondary source, such as a picture book or a globe. Alternatively, Hyginus does supply generic descriptions for a number of the constellations. For example:

¹⁰² Hyginus, *De Astronomia*, I, preface: *hoc velut rudimento scientiae nisus scripsi ad te, non ut imperito monstrans, sed ut scientissimum commonens* (VIRÉ 1992, p. 1 and Le BOEUFFLE 1983, p. 6).

- Ursa Maior and Ursa Minor are described as bears.
- The body of Lyra is a tortoise-shell.
- Cassiopeia is a woman seated in a chair.
- Andromeda is a woman with her hands outstretched.
- Aquila is an eagle with outstretched wings.
- Delphinus is a dolphin.
- Triangulum is a triangle.
- Cancer is a crab.
- Leo is a lion.
- Sagittarius is probably a centaur with a satyr's tail.¹⁰³
- Capricorn is half-goat and half-fish.
- Cetus is a sea monster.
- Eridanus is a river.
- Orion is a hunter.
- Argo is visible from the stern to the mast.

Conceivably, then, if an artist knew the pictorial formulae for depicting any of these creatures, such as a bear, an eagle, a woman seated in a chair, a

¹⁰³ Note that, whereas Ps-Eratosthenes is convinced that Sagittarius is a satyr, Hyginus seems to dismiss this reading and suggest that Sagittarius is a centaur with horse's limbs as a satyr's tail: See Hyginus, *De Astronomia*, II, 27: *Hunc complures Centaurum esse dixerunt, alii autem hac de causa negaverunt quod nemo Centaurus sagittis sit usus; hic autem quaeritur cur equinis cruribus sit deformatus et caudam habeat ut Satyri. ... itaque lovem fecisse et, cum omnia illius artificia uno corpore vellet significare, crura eius equina fecisse, quod equo multum sit usus, ut sagittas adiunxisse ut ex his et acumen et celeritas esse videretur; caudam satyricam in corpore fixisse, quod iam non minus hoc Musae quam Liber Satyris sit delectatus* (VIRÉ 1992, pp. 73-74).

sea-monster or a hunter - for which, in antiquity, there certainly were established, generic formulae - he could have added pictures to this section of the treatise. If he were knowledgeable about the specific constraints of astronomical iconography, these few hints would generate the right sort of image. If he were less conversant in these matters, then the resulting pictures could have been drawn from any one of a number of competing iconographic traditions and the resulting images may or may not have resembled the correct shapes of the constellations. Indeed, there is evidence to suggest that this is exactly what some illuminators attempted in the Middle Ages, when illustrated versions of the *De astronomia*, secondary sources and celestial globes seem to have been markedly less plentiful, if not completely lacking. The illuminators used these cursory descriptions as signposts to images that - to them - seemed appropriate. It is only with the benefit of hindsight and access to a much wider range of primary materials that modern scholars can see how the images that may have seemed most appropriate were not, in fact, quite correct.

It is important to recognise, however, that even with an understanding of how some of the later illuminators of the *De astronomia* could have used the mythological descriptions in Book II in an *ad hoc* manner to help them construct illustrations for Hyginus's treatise, the evidence suggests that this was not common practice in antiquity. On the contrary, we would suggest that, despite the variety evident in the mythographic sections of Book II, Hyginus has a specific set of images in his mind when he describes the form of each constellation. They are quite clearly formed and relatively simple in

nature - predominantly single images with minimal attributes. In short, the figures Hyginus describes in Book II of *De astronomia* were based on what he assumed to be well-known astronomical configurations.

One final feature of the descriptions in Book II, which helps support the idea that the context of these figures is fundamentally astronomical, is the fact that, whenever Hyginus describes physical relationships between any of these images, the relationship is astronomical, and not mythological. For example:

- Draco is described as stretching its body between the two Bears.¹⁰⁴
- Bootes is said to be ‘following’ Ursa Maior.¹⁰⁵
- Hercules is described as standing on Draco’s head.¹⁰⁶

¹⁰⁴ Hyginus, *De astronomia*, II, 3: *Hic vasto corpore ostenditur inter duas Arctos collocatus* (VIRÉ 1992, pp. 19-20).

¹⁰⁵ Hyginus, *De astronomia*, II, 4: *... hic autem e facto sequens Ursam perspicitur* (VIRÉ 1992, p. 21).

¹⁰⁶ Hyginus, *De astronomia*, II, 6: *... Eratosthenes Herculem dicit supra Draconem collocatum...* (VIRÉ 1992, p. 29). If one reads *supra* as meaning ‘above’ this is a doubly-odd observation. First, astronomers tend to use ‘above’ to mean ‘to the north’, and Hercules is actually to the south of Draco. Second, since the constellation of Hercules is usually depicted inverted, or with his head towards the south, the concept of Draco being ‘above’ him could be understood to mean that Dragon was placed above the head of Hercules - or, again, to the south of it. If, however, Hyginus is using *supra* to mean ‘on top of’, then the description fits. Both English translators of Book II translate this phrase simply as Hercules being located/placed ‘above’ Draco (see GRANT 1960, p. 190 and CONDOS 1997, p. 116) and LeBoeuffle has *... c’est Hercule place au-dessus du Dragon* (see LeBOEUFFLE 1983, p. 31). The Italian translation is more accurate: *... Ercole, al di sopra della costellazione del Dragone* (see VITOBELLO 1988, p. 47); while

- Ophiuchus is located ‘above’ Scorpio.¹⁰⁷
- Aquila flies into the rays of the rising sun and appears ‘above’ Aquarius.¹⁰⁸
- Triangulum is placed above the head of Aries.¹⁰⁹
- Taurus is described as facing the rising Sun. Also, Hyginus mentions that the Hyades are placed on the face of the Bull; and

¹⁰⁷ Hyginus, *De astronomia*, II, 14: ... *qui apud nostros scriptores Anguitenens est dictus, supra Scorpionem constitutus est* (VIRÉ 1992, p. 43). It is interesting to note that there is only one illustration in a Hyginus manuscript that illustrates Ophiuchus standing on the back of Scorpio: Leiden, Universiteitsbibl, 8° 15, fol. 176r, which reflects borrowings from a non-Hyginian pictorial tradition.

¹⁰⁸ Hyginus, *De astronomia*, II, 16: *Quae sola tradita est memoriae contra solis exorientis radios contendere collocare; itaque supra Aquarium volare videtur* (VIRÉ 1992, p. 51). Condos translates this phrase slightly too literally, saying that Aquila is ‘the only bird that tries to fly *against* the rays of the rising sun’, which could be understood as though the bird were flying in the opposite direction (CONDOS 1997, p. 34). Grant translates the phrase as: ‘...it alone, men say, strives to fly straight into the rays of the rising sun’. See GRANT 1957, p. 203. Le Boeuffle offers: *...il s’efforce de voler face aux rayons du soleil levant’* and cites Aristotle, *Historia animalium*, IX, 34, 620a and Pliny, *Historia Naturalis*, X, 10. (LeBOEUFFLE 1883, p. 51). The idea seems to be that Aquila flies towards the east. This description concurs with the first part of ps-Eratosthenes’s description, where he says that Aquila is ‘the only bird that flies toward the sun, not bowing to the sun’s rays ...’. But the description continues in an apparently contradictory vein: ‘... [and he] represents the eagle with wings outspread as if in downward flight’. See ps-Eratosthenes, *Catasterisms*, 30 (ROBERT 1878, p. 156 and CONDOS 1997, p. 33. This difference reflects the fact that the shape and orientation of Aquila is not consistent in the antique sources. Aratus appears to place the head closer to the north (and the constellation of Sagitta). ps-Eratosthenes has it flying towards the east, with its head pointing to the south. Hipparchus only mentions the stars in the body and the wings, so orientation is difficult to determine, but Ptolemy clearly shows the bird flying with its head inverted, towards the south-east (though whether the wings are open is less clear). Hyginus imagines it flying due east (towards Delphinus).

¹⁰⁹ Hyginus, *De astronomia*, II, 19: *Quod Mercurius supra caput Arietis statuisset existimatur* (VIRÉ 1992, p. 58).

the Pleiades appear ‘outside the constellation’ and notes that they are called ‘the Bull’s tail’ by many astronomers.¹¹⁰

- The two stars, called ‘the Asses’ appear on the shell of Cancer.¹¹¹
- Scorpio and Orion are placed in the sky in such a way that when Scorpio rises, Orion sets.¹¹²
- Corona Borealis is placed at Sagittarius’s feet.¹¹³
- The bright star Canopus is below the constellation of Eridanus.¹¹⁴
- Canis Maior has a star, also named ‘Canis’, on his tongue and a very bright star, Sirius, on its head.¹¹⁵

¹¹⁰ Hyginus, *De astronomia*, II, 21: ... *spectat autem ad exortum solis. Cuius oris effigiem quae continent stellae Hyades appellantur. ... Sed has Pleiadas antiqui astrologi seorsum a Tauro deformaverunt. ... et postea a nonnullis astrologis caudam Tauri appellatas.* (VIRÉ 1992, pp. 65-66). Again, this information differs slightly from part of the inconsistent information provided by ps-Eratosthenes, where he first claims that the Hyades are on the forehead and face of the Bull and the Pleiades are towards the rump, and then says that the Pleiades are on the nape of the Bull’s neck, citing Hipparchus’s description of them as having a triangular shape. See ps-Eratosthenes, *Catasterismi*, 14 and 23 (ROBERT 1878, pp. 106, 134 and 36).

¹¹¹ Hyginus, *De astronomia*, II, 23: *In eius deformationis parte sunt quidam qui Asini appellantur, a Libero in testa Cancri duabus stellis omnino figurati* (VIRÉ 1992, p. 68). Interestingly, Hyginus does not mention Praesepe here, though ps-Eratosthenes does. In his description of where the Asini are placed, ps-Eratosthenes contradicts himself again. First, he says that they are placed on the western side of the Crab; and, then, he says they are placed alongside the Manger on the crab’s shell. See ps-Eratosthenes, *Catasterismi*, 11 (ROBERT 1878, pp. 90 and 94). The Asini and Praesepe are only included in the illustrations of one Hyginus manuscript (Walters, W. 634) and, in this case, the illustration does not appear with the rest of the constellation illustrations.

¹¹² Hyginus, *De astronomia*, II, 26: *...itaque eum ita constitutum ut, cum Scorpius exoritur, occidat Orion* (VIRÉ 1992, p. 73).

¹¹³ Hyginus, *De astronomia*, II, 27: *Ante huius pedes stellae sunt paucae in rotundo deformate, quam coronam eius ut ludentis abiectam nonnulli dixerunt* (VIRÉ 1992, p. 74).

¹¹⁴ Hyginus, *De astronomia*, II, 32: *Preterea, quod infra eum quaedam stella sit, clarius ceteris lucens, nomine Canopos appellata* (VIRÉ 1992, p. 78).

- Centaurus is shown walking towards Ara.¹¹⁶
- Piscis Magnus is swallowing the water poured-out by Aquarius.¹¹⁷

From this list, it is clear that Hyginus is describing the constellations either as they appear in the night sky or as they appear on the surface of a celestial globe.

In trying to understand the criteria Hyginus used when compiling his descriptions for Book II, it is revealing to turn again to the comparisons between his texts and those of ps-Eratosthenes (see APENDIX II). The first thing to note is how Hyginus regularly includes a greater number of myths for each constellation and, often, provides longer discourses on their possible significance. But when one compares the figurative descriptions, one finds that, whereas ps-Eratosthenes often provides alternative pictorial formulae for each constellation - most notably, for Hercules, Aquila, the Pleiades and the Manger and the Asses - in the same way that he offers varying mythological explanations, Hyginus, only offers one pictorial formula for each constellation in Book II. The effect of this difference is that it seems as though he is consciously trying to establish or reinforce the idea of a single 'scientific' image, behind the myriad of catasterismic fables. To this end,

¹¹⁵ Hyginus, *De astronomia*, II, 35: *Sed Canis habet in lingua stellam unam quae ipsa Canis appellatur, in capite autem alteram, quas Isis suo nomine statuisse existimatur et Sirion appellasse propter flammae candorem* (VIRÉ 1992, pp. 83-84).

¹¹⁶ Hyginus, *De astronomia*, II, 38: *...itaque ad Aram cum hostia venire Iovis voluntant figuratam* (VIRÉ 1992, p. 86).

¹¹⁷ Hyginus, *De astronomia*, II, 41: *Hic videtur ore aquam excipere a signo Aquarii* (VIRÉ 1992, p. 90).

he edits his sources quite consciously. And, taking this idea further, there is also evidence that Hyginus has deleted a number of specifically astronomical descriptions of the constellations that appear in ps-Eratosthenes's descriptions, moving them, presumably, to other sections of his treatise where they fit better into the context of the argument. For example, Hyginus removes the following descriptions that appear in ps-Eratosthenes from Book II of his *De astronomia*:

- Hyginus deletes the lengthy section describing the placement of Cepheus relative to the celestial circles, in which ps-Eratosthenes says that, from his feet to his chest, Cepheus lies within the Arctic Circle and the rest of his body lies between the Arctic Circle and the Tropic of Cancer.¹¹⁸ A version of this description reappears in Book III of *De astronomia*.¹¹⁹
- ps-Eratosthenes is quite specific in his description of Scorpio that it occupies two-twelfth of the zodiac; while Hyginus, in Book II, merely says that the sign is divided into two parts because it is so large.¹²⁰
- ps-Eratosthenes says that the two fish of Pisces 'do not lie close together' and that they are 'connected as far as the front foot of the Ram', thus providing a fairly accurate description of the shape 'V'-

¹¹⁸ ps-Eratosthenes, *Catasterismi*, 15 (ROBERT 1878, p. 114).

¹¹⁹ Hyginus, *De astronomia*, III, 8: *Cepheus a tergo minoris Arcti constitutus includitur arctico circulo a pedibus a pectus, ut praeter humeros et caput eius nihil occidere videatur...* (VIRÉ 1992, p. 100).

¹²⁰ ps-Eratosthenes, *Catasterismi*, 7 (ROBERT 1878, p. 72) and Hyginus, *De astronomia*, II, 26 (VIRÉ 1992, p. 72).

shaped cord that binds them and its locations relative to Aries.¹²¹

Hyginus does not offer any description of their form in Book II, but does provide a formula close to ps-Eratosthenes's in Book III.¹²²

- ps-Eratosthenes mentions that Eridanus emanates from the left foot of Orion.¹²³ This is dropped by Hyginus from Book II, but it does reappear in Book III.¹²⁴

In trying to make sense of all this information, it does seem possible to reach a few tentative conclusions about any illustrations that might have accompanied the text of Book II of the *De astronomia*.

First, if one can use the text itself as an indication of how any illustrations in this section might have looked, the language and editorial choices used in the descriptions suggest that Hyginus had a very specific set of images in his mind, which were relatively simple and with minimal attributes.

Second, the idea that Hyginus has, indeed, used a set of images taken from a celestial globe for his descriptions in Book II is further supported by the inclusion of several references to the relative positions of the constellations. His description of the simultaneous rising and setting of the two constellations of Scorpio and Orion only makes sense if one has an intimate knowledge of the night sky or has a celestial globe close to hand.

¹²¹ ps-Eratosthenes, *Catasterismi*, 21 (ROBERT 1878, p. 128 and CONDOS 1997, p. 161).

¹²² Hyginus, *De astronomia*, II, 30 and III, 29 (VIRÉ 1992, pp. 76-77 and 116).

¹²³ ps-Eratosthenes, *Catasterismi*, 37 (ROBERT 1878, p. 176).

¹²⁴ Hyginus, *De astronomia*, II, 32 (VIRÉ 1992, pp 77-78).

Third, this combination of factors - images that evoke a fixed and simplified format and evidence of the use of a celestial globe - strongly suggests that, if any illustrations were intended to accompany Book II, they most probably would have resembled the astronomical figures that are described in more detail in Book III.

Fourth and finally, there does not seem any compelling reason to tie those few later illustrations that appear to recall a more mythographic origin - such Taurus being depicted as Europa and the Bull or Virgo as a figure of 'Justitia' holding the scales - to a set of images that might have appeared in antique copies of *De astronomia*. Indeed, everything in Book II suggests that these later images are exactly that: later interpolations.

In sum, the notion that any early, authoritative version of *De astronomia* contained an alternative 'mythological' pictorial tradition seems fatally flawed. Later versions of the text certainly attracted artistic attention; but, in antiquity, the text of Book II was either not illustrated or, if it was, the pictures attached to it were fundamentally astronomical.

III. Searching for evidence of a classical pictorial tradition in Books III and IV

As mentioned in the previous chapter, Hyginus relies on two different types of sources in gathering material for his treatise. One is literary - his *optimes auctores* - and the other seems to be the direct consultation of a celestial globe. Evidence of his reliance on a globe can be seen in some of the descriptions of the constellations in the so-called 'mythological' sections of Book II; but it is in Books II and IV that the dependence on a celestial globe becomes manifest. Given this, it would seem that any illustrations that might have accompanied Hyginus's treatise in antiquity would be drawn from the same pictorial tradition. The question at hand, then, is whether or not the material preserved in the *De astronomia* allows us to reconstruct the salient features of Hyginus's globe?

Before proceeding, however, it might be useful to re-examine why we believe that Hyginus did, indeed, use a celestial globe and that his descriptions of the heavens is not based either on a direct observation of the night sky, nor from the material he could have gleaned from the two-dimensional sources that might have been available to him through the scrolls of his *optimes auctores*.

As has been shown in both Books II and III of the *De Astronomia*, Hyginus describes the figures of the constellations and their position in the heavens in terms of 'left' and 'right' and 'above' and 'below'. LeBoeuffle was the first scholar to suggest that the apparent confusions between 'right' and

‘left’, in some of Hyginus’s descriptions of the constellations, can be cited as evidence that Hyginus used a celestial globe, and not direct observation of the night sky, to construct his descriptions. Le Boeuffle suggests that:

*L’influence des sphères illustrées se devine par un détail particulier dans les descriptions des figures célestes: il en résulte, en effet, des confusions entre la droite et la gauche des images. Car celui qui contemple un globe fabriqué se trouve comme s’il était à l’extérieur du firmament, contrairement à la positions réelle : ce qui constitue la partie droite d’une figure pour un observateur terrestre lui paraît en former la partie gauche et inversement: ou bien il doit supposer que les images lui sont renvoyées comme par un miroir central [...]. Nous aurons l’occasion de relever dans le traité d’Hygin des divergences ou contradictions de ce genre.*¹²⁵

In order to examine LeBoeuffle’s thesis in more detail, one might consider a few constellations in particular.

[note: This section was researched and written primarily by Dr Elly Dekker. An updated and corrected version of the essay will appear in her forthcoming volume on globes in antiquity due to be published by Cambridge University press in 2011 or 2012 and to which the reader is invited to turn.]

‘Right’ and ‘left’ and Hipparchus’s rule:

In formulating the figures of the constellations, it is generally assumed that antique astronomers visualised each figure in the night sky so that it faced the viewer, standing on the surface of the earth. As this is the formula stipulated by Hipparchus, it has been referred to as ‘Hipparchus’s rule’.¹²⁶

This orientation, in turn, defines the ‘right’ and the ‘left’ side of each

¹²⁵ Le BOEUFFLE 1983, pp. xi-xii.

¹²⁶ On ‘Hipparchus’s rule’, see DEKKER 2010, esp. pp. 20-24.

figure.¹²⁷ In his description of Virgo (one of the examples mentioned by LeBoeuffle) Hyginus mentions that she has the star Spica in her *right* hand.¹²⁸ From an earthly perspective - with Maiden visualised as facing the viewer - the bright star Spica (α Vir) is in the *left* hand of Virgo. Accordingly, both Hipparchus and Ptolemy placed Spica in Virgo's *left* hand.¹²⁹ A 'left-hand' Spica is astronomically correct.

As is explained elsewhere in this volume, the corollary of Hipparchus's rule is that all figures depicted on the surface of the globe should be constructed so that they are facing away from the viewer (as if they were facing 'inwards' towards the terrestrial sphere at the centre of the celestial sphere). When Virgo is placed on a celestial globe, facing away from the viewer, Spica should still remain in her *left* hand. For example, on the correctly designed globe held by the Farnese *Atlas*, Virgo holds Spica in her left hand.¹³⁰ This fact undermines LeBoeuffle's contention that the use of a globe automatically implies a 'right-hand Spica'.

In the last decade, a number of previously unknown antique globes have come to light, which make it clear that, in antiquity, globe-makers did not

¹²⁷ *Hipparchi in Arati et Eudoxi Phaenomena commentariorum libri tres*, ed. and German transl. MANITIUS 1894, with German translation, I 4, 5 and 6, p. 33. See also the sections on 'Hipparchus's rule' in DEKKER 2010, pp. 20-24.

¹²⁸ Hyginus, *De Astronomia*, III, 24 (VIRÉ 1992, p. 112 and Le BOEUFFLE 1983, p. 103).

¹²⁹ Ptolemy says this explicitly. See Ptolemy, *Syntaxis mathematica (Almagest)*, VII, 5, 27 (TOOMER 1984, p. 369). Hipparchus mentions only the name Spica so its Hipparchan location can only be determined indirectly, being on the left side of the body of Virgo.

¹³⁰ The only exception to this rule is Andromeda.

always maintain the rule that constellation figures should look inwards towards the terrestrial sphere. On one such recently discovered globe - a 2nd-century Roman globe known as the 'Paris/Kugel globe' - the constellation figures face the viewer.¹³¹ This change of orientation has meant that the 'left' and 'right' sides of each figure have been exchanged. Indeed, on the Paris/Kugel globe, the star Spica is held in Virgo's *right* hand, instead of in her *left* one. The discovery of the Paris/Kugel globe proves that, whereas a 'right-handed Spica' may well reflect the use of a globe, it can only do so when the globe itself violates Hipparchus's rule.

Globes like the Farnese and the Paris one are extreme examples, however. The 2nd-century Roman globe in Mainz globe is an example of a sphere in which some constellations are presented facing the viewer and others are depicted facing away. On the Mainz globe, Cepheus, Cassiopeia, Andromeda and Virgo face the viewer, so they are not drawn according to Hipparchus's rule. Whereas it is impossible to make generalizations from a list of three differing examples, it seems quite possible that many antique globes failed to uphold the astronomical rigour of Hipparchus's rule. If these 'mixed type' of globes were relatively common in antiquity, then many of the discrepancies noted by LeBoeuffle become less significant. And, as becomes increasingly clear as the details of the *De Astronomia* are explored, if Hyginus relied solely on a globe to frame his descriptions of the constellations, it must have been one of the 'mixed type' celestial globes.

¹³¹ See DEKKER 2011/12 for a full discussion and bibliography.

In his assessment of Hyginus's descriptions of the constellations, LeBoeuffle seems unaware of the fact that images violating Hipparchus's rule, such as Virgo carrying a branch (Spica) in her right hand, are not only found on astronomically 'improperly designed' globes. Such errors also occur in the constellation images that appear in illustrated manuscripts. As one of the recurring themes of this volume has shown, the source of these images is not always clear. But, for the sake of this particular argument, there seem two alternatives: either these depictions were copied directly from a 'mixed type' celestial globe or they were adapted from a 'correctly designed' globe. If the latter is the case, then it seems possible that an artist, ignorant of the astronomy underpinning these figures, could easily make the aesthetic judgement to turn the figures around, so that they all faced the viewer. Rather than turning the image round (as should have been done in order to maintain the 'left' and 'right' characteristics) the artist might have traced the figure from the original or simply redrawn it in mirror-image, thereby making the back the front. This transposition would be particularly easy when one was copying a globe where the details of clothing were sparse or the contours of the figures themselves relatively minimal. Using either of these methods, Spica is moved from the 'correct left' to the 'incorrect right' hand.

The complexity of this issue of 'right' and 'left' is well-demonstrated by the fact that texts of the descriptive star catalogues themselves are inconsistent. In the texts of early descriptive star catalogues, such as those in ps-Eratosthenes, the *scholia Basileensia* and the *De ordine ac positione*,

Spica is placed in the left hand, as it should be. Other star catalogues, such as *Aratus latinus*, the *Revised Aratus latinus* and the *De signis caeli*, do not mention Spica explicitly, although there is a star listed in each hand. And later descriptive catalogues, such as the *scholia Stroziana* and Michael Scot, describe Spica in the right hand, as Hyginus did. When comparing the texts with the illustrations, however, a surprisingly different picture emerges. For example, a ‘left-handed Spica’ appears in the ps-Eratosthenes manuscript, Vat grec 1087 and in the *De ordine ac positione* manuscript, Madrid 3307 - following the stipulations outlined in the text in both manuscripts, which describe Spica placed in the left hand. Most of the illustrated Germanicus manuscripts (such as Bern 88, Boulogne 188 and those with the *Basileensia scholia*) and all of the *Revised Aratus latinus* and *De signis caeli* manuscripts show Virgo with Spica in her right hand, which can not be explained by the text itself. Beyond existing as yet another salutary lesson that the relationship between text and illustration in these manuscripts is not as straight-forward as one might wish, it also underlines the likelihood that manuscripts images of a ‘right-handed Spica’ existed in antiquity.

In conclusion, one could argue that the ‘right-handed Spica’, described in the *De Astronomia* supports the view that Hyginus consulted a celestial globe when compiling his treatise, but the existence of a ‘right-handed Spica’ does not, in itself, preclude the use of other pictorial sources. This type of figure could have been taken directly from a globe, such as the Paris or Mainz one; but, equally plausibly, the image could easily have come from

an manuscript containing images of the constellations, which had been derived either 1) directly from a globe showing mirror images of the constellations, or 2) indirectly from a ‘correctly designed’ globe.¹³² Thus, whatever else might be said of them, left-to-right confusions cannot in themselves be employed as definitive evidence for the use of a globe.

The Great Circles and star catalogues:

Having recognised that the ‘left/right’ orientation of a constellation figure cannot, in itself, be used to determine whether or not Hyginus used a globe to construct his images, there are other aspects of Hyginus’s descriptions that do point to a specific model. In Book III, each section describing a constellation often begins with an explanation of how the constellation is placed with respect to one of the celestial circles. In the entry on Virgo, for example, Hyginus tells the reader that Virgo is located below the feet of Boötes, touches the hind part of Leo with her head and that she touches the celestial equator with her right hand (that is, the one with Spica).¹³³

Clearly, such information cannot have been derived from a cycle of illustrations of individual constellations, since circles are not taken into account in such cycles. It must have been obtained either from a contemporary treatise on astronomy, which included a detailed description

¹³² All the illustrated Germanicus manuscripts and all those with the text of the *Revised Aratus latinus* show Spica as a branch or ear of wheat held in Virgo’s right hand.

¹³³ Hyginus, *De Astronomia*, III, 24: *Virgo infra pedes Bootis collocata capite posteriorem partem Leonis, dextra manu circulum aequinoctialem tangit ...* (VIRÉ 1992, p. 112 Le BOEUFFLE 1983, p. 103)

of the celestial sky; or it was derived from either a two-dimensional pictorial source, such as a planispheric map, in which the constellations were presented as being set within the grid of the main celestial circles, or it was derived from a three-dimensional source - namely, a celestial globe.

Several astronomical treatises are known to have existed in antiquity, but only a few have survived. As mentioned, Hyginus repeatedly refers to the work of Eratosthenes; though, today, only echoes of the original myths and the star catalogue exist (known collectively as the ‘pseudo-Eratosthenes’).¹³⁴ Martin believes that these fragments originally formed part of a more extensive treatise, the structure and details of which have survived in Hyginus’s *De Astronomia*.¹³⁵ Such a hypothesis cannot be dismissed out of hand, but it is important to note that Hyginus’s description of the constellations in Book III of the *De Astronomia* often differ significantly from those found in the ps-Eratosthenes fragments. This difference seems particularly intriguing since many of the other descriptive star catalogues are actually closer to the *formulae* preserved in ps-Eratosthenes than Hyginus is. If one takes the description of Virgo as an example, Hyginus differs not only in the description of her location relative to the celestial circles, he is the only source to mention the appearance of a single star in her right hand (rather than one in each hand); he omits one star in each elbow and he lists only 6 stars scattered over her dress (whereas the other catalogues all mention 10 stars). It seems, then, that the

¹³⁴ For more on the text of ps-Eratosthenes, see the Commentary in that section.

¹³⁵ MARTIN 1956, pp. 73-125. One might also consider the possible role of Nigidius Figulus.

text of Eratosthenes has been preserved better in the descriptive star catalogues, than in the text of the *De Astronomia*. As such, it becomes even more unlikely that the deviations seen in Hyginus's descriptions can be explained away with the broad claim that they are all manifestations of errors that originated in the work of Eratosthenes. Hyginus relied very heavily on Eratosthenes's work, but it was not his only source.

Another ambiguous feature of Hyginus's book is that his data in Book III are not always consistent with the information supplied in Book IV. For example, in Book III, the right hand of Virgo is described as lying on the Equator; in Book IV, it is not. Le Boeuffle has convincingly argued some of these discrepancies arise from the fact that, in Book IV, Hyginus has made a conscious attempt to provide material lacking in the original Aratean poem.¹³⁶ So, although in Book IV he follows Aratus closely in describing those constellations located on four of the major celestial circles (the two Tropics, the Equator and the Zodiac), Hyginus adds information concerning those constellations located on three additional circles: the ever-visible circle, the ever-invisible circle and the Milky Way. Very few descriptions of the series of constellations located on these circles are known from other manuals, so they well may be a Hyginian addition, pointing again to the use of a different textual or pictorial source.

In his *Commentary*, Hipparchus lists the constellations that Eudoxus claimed were on the ever-visible and ever-invisible circles. Although Hyginus agrees

¹³⁶ Le BOEUFFLE 1983, p. xxiv-xxv.

with Eudoxus in placing one of the wings of Cygnus on the ever-visible circle, his list has not been slavishly copied from Eudoxus's text. For example, Hyginus includes features, such as the right hand of Perseus and the feet and knee of Hercules on the ever-visible circle, and he says that the feet of Centaurus are on the ever-invisible circle. None of these details are listed by Eudoxus. In looking among other possible '*optimes auctores*' for the originator of these details, the only comparable source is much later. The 5th-century encyclopedist, Martianus Capella, also discusses the constellations on the main celestial circles.¹³⁷ Some - but not all - of the details of his list of constellations located on the ever-visible circle agree with Hyginus, but he deliberately refrains from telling his readers which constellations are on the ever-invisible circle.¹³⁸ Moreover, his treatise does not include a detailed description of the celestial sky.

Instead, the easiest solution to the question of Hyginus's source is, once again, the suggestion that he consulted a celestial globe - a thesis supported

¹³⁷ Martianus Capella, 'De nuptiis Mercurii et Philologiae', VIII, 803-887 in *Opera* (Willis, 1983, pp. 302-337). For a somewhat rough English translation, see STAHL *et.al.* 1977, pp. 322-325.

¹³⁸ Martianus Capella, 'De nuptiis Mercurii et Philologiae', VIII, 831: *Ultimus ex parallelis, qui vocatur antarcticus, tantundem spatii quantum septentrionalis includit. Quen quidem meantem, quibus sideribus oculetur, ego poteram memorare; neque enim mihi ulla caelestis globi portio habetur incognita. Sed quoniam per ignota superioris parties visibus hominumque distenditur, dicere praetermitto, ne incomperta falsitatem admiscere videatur assertio.* (ed. Willis, 1983, p. 313). The English translation of this passage is: 'The last of the celestial parallel, the antarctic', encompasses as much space as the arctic circle. I could reveal which constellations are marked by its circular course, for no part of the celestial sphere is unknown to me. But since the circle stretches through regions not known or visible, to men of the upper hemisphere, *I shall omit mention of them, lest my unverified statement appear to smack of falsehood*'. (see Stahl *et. al.* 1977, p. 323).

by the extensive attention paid to the location of the constellations in Book III to the inclusion of information on the latitude-dependent ever-visible and ever-invisible circles in Book IV.

The great toe of Hercules:

In turning to a closer inspection of the iconography of individual constellations, one notes that the Hyginus's detailed description of the position of Hercules with respect to the ever-visible circle is unique to Hyginus: both feet and the right knee are placed on it. Furthermore, Hyginus says that it is actually the 'end of his great toe of the *right* foot' that is on the circle; and that the *left* foot is crushing the head of Draco.¹³⁹ The left side of Hercules is further specified by the lion's skin, which the hero holds in his left hand.¹⁴⁰ Astronomically, this sketch of the posture of Hercules is correct.

In his *Commentary*, Hipparchus had discussed the matter of which foot crushes the head of Draco in detail, severely criticizing Eudoxus and Aratus for placing the right foot of Engonasin (Hercules) on the head of Draco, saying it should be the left foot.¹⁴¹ Hyginus correctly describes the position

¹³⁹ Hyginus, *De Astronomia*, III, 5: *Hic positus inter duos circulos arcticum et aestivum utrisque pedibus et dextro genu, quem ante diximus, arcticum circulum finit, ita tamen ut dextro pede prioribus digitis circulum terminet, sinistro autem toto caput Draconis opprimere conetur.* (VIRÉ 1992, p. 97 and Le BOEUFFLE 1983, p. 89). : In Book II, 6, Hercules is also said to be on his *right* knee trying to crush the head of Draco with his left foot, but his great toe is not mentioned.

¹⁴⁰ Hyginus, *De Astronomia*, III, 5 (VIRÉ 1992, p. 98 and Le BOEUFFLE, Paris 1983, p. 90): ... *in sinistra manu quattuor [stellas] quas pellem leonis esse nonnulli dixerunt.*

¹⁴¹ See MANITIUS 1894, pp. 34-35.

of Hercules in Book III; but, he then confuses his readers in Book IV, when he says that the *right* foot, the *left* knee and the *end of the great toe* of his *left* foot are on the ever-visible circle.¹⁴² This is a mirror image of the details of Hercules that Hyginus described in Book III. It recalls the Aratean tradition, although details, such as the toe, are not part of that tradition. It is possible that this slip reflects Hyginus's desire to adjust the earlier description so that it conformed more closely to Aratus's text. Having said that, though, LeBoeuffle has pointed out that the text in this part of Book IV is fairly corrupt, and it is unwise to draw too many conclusions from it.¹⁴³

The more interesting part of this discussion of Hercules's feet, however, is the very specific assertion that the end of his great toe is on the ever-visible circle. This detail is not found in any written source and it sounds like the kind of detail that one might glean from studying a pictorial source. To that end, it is worth noting that not only does the posture of Hercules on the globe of the Farnese *Atlas* agree in all its details with Hyginus's description, but that his great toe is neatly resting on the ever-visible circle.

Finally, the description of Hercules as touching the Tropic of Cancer with his extended right hand is another example of Hyginus's description of the constellation that appears to be unique. The detail is described in Book III, but is not repeated in Book IV. And, like the detail of Hercules's great toe, even though there seems to be no other textual authority supporting the

¹⁴² Hyginus, *De Astronomia*, IV, 6: ... *et dextra planta genuque sinistro et pedis prioribus digitis is qui Engonasin vocatur* (Viré, 1992, p. 134 and Le BOEUFFLE 1983, p. 123).

¹⁴³ Le BOEUFFLE 1983, p. 207, chapter 6, note 5.

existence of this feature, it appears clearly delineated on the surface of the Farnese globe.

The puzzling case of Boötes:

The description of the stars within the constellation of Boötes is one of the most intriguing ones included in Hyginus's *De Astronomia*. In Book III, he lists the following details of the positions of the stars within the constellation figure:¹⁴⁴

1. four stars in the left hand which never set
2. one star in the head
3. one on each shoulder
4. one on each nipple, but the right one is brighter
5. the brighter one [of those on the nipples] is above a weak star
6. a bright one at the right elbow
7. one on the belt and more brilliant than the rest, this star is Arcturus
8. one on each foot

¹⁴⁴ Hyginus, *De Astronomia*, III, 3: *Habet autem in manu sinistra stellas quattuor quae numquam occidere dicuntur, in capite stellam unam, in utroque humero singulas, in utraque mamma singulas, sed clariorem, dextram, et sub ea alteram obscuram, et in cubito dextro claram unam, in zona unam clarius ceteris lucentem - haec stella Arcturus appellatur - in utrisque pedibus singulas.* (VIRÉ 1992, p. 97 and Le BOEUFFLE, 1983, p. 89).

This description deviates in a number of ways from the other star catalogues. One difference concerns his placement of the bright star, Arcturus, in the figure's belt. Aratus describes the place of *Arcturus* ὑπὸ ζώνῃ ('beneath his belt').¹⁴⁵ All the other descriptive stars catalogues (ps-Eratosthenes, the *scholia Basileensia*, *De ordine ac positione*, *Aratus latinus*, *Revised Aratus latinus*, *De signis caeli* and the *scholia Stroziana*) place Arcturus between his knees. Also the mathematical star catalogues of Hipparchus and Ptolemy place Arcturus below the belt between the knees; and these catalogues describe an additional star (ε Boo) in the belt. In another star list, which appears to derive from Hipparchus, this star (ε Boo) is indicated as *quae est in zona Bootae*.¹⁴⁶ Kidd suggests that the *scholia* linked the name Arcturus erroneously to this star in the belt.¹⁴⁷ If so, Hyginus's deviating description is simply due to a transcription or translation error.

Another deviation is Hyginus's claim that the four stars, which never set, are in the *left* hand of the figure. This is astronomically correct. Yet, it is telling that all the other descriptive stars catalogues (ps-Eratosthenes, the *scholia Basileensia*, *De ordine ac positione*, *Aratus latinus*, *Revised Aratus latinus*, *De signis caeli* and the *scholia Stroziana*) place these four stars, which never set, in the *right* hand. The mirror image described in these

¹⁴⁵ Aratus, *Phaenomena* 94 (KIDD 1997, p. 78).

¹⁴⁶ Hermetis Trismegisti, *De triginta sex Decanis*, chapter XXV (*De stellis fixis in quibus gradibus orientur signorum*), ed FERABOLI and MATTON 1994, pp. [redacted].

¹⁴⁷ Aratus, *Phaenomena* (KIDD 1997, comment to line 94 on p. 214-5).

latter sources was probably taken from a globe on which Boötes was depicted facing the viewer (violating Hipparchus's rule). Indeed, the fact that this feature is combined in at least four of the sources with a description of the stars that are placed in each of the nipples makes it clear that this mirror-image figure must have been depicted as facing the viewer. When the four stars in the right hand are combined with those placed by in the nipples, one arrives at a mirror image that must ultimately go back to a source in which Boötes is presented violating Hipparchus's rule.¹⁴⁸ The Paris/Kugel globe presents the figure in this manner.

Hyginus must have had a reason to place the four stars, which never set, in the *left* hand, instead of the *right* hand. If the change was made as an intentional correction of the 'mirror' description, found in the parent source from which ps-Eratosthenes, the *scholia Basileensia* and the *De Ordine ac positione* star catalogues were derived, then he accomplished only a part of the correction needed. The star which is set in the *right* elbow as part of the *right* arm in these catalogues should also then have been placed in the *left*, instead of the *right*, elbow. Hyginus failed to do this. It demonstrates that the description presented in the other descriptive stars catalogues also served as the starting point of Hyginus.

¹⁴⁸ The description of the stars in the nipples appears in ps-Eratosthenes, *scholia Basileensia*, *De ordine ac positione* and the *scholia Stroziana*. The description of Boötes in the star catalogues of the *Aratus latinus*, *Revised Aratus latinus* and the *De signis caeli* is a somewhat corrupted version.

In considering why Hyginus might have wanted to move the stars from the *right* hand to the *left* one of Bootes, one notes that in the introduction in Book III, Bootes is placed relative to the main circles in the following manner:

1. his left hand is within the ever-visible circle, and one never sees it rising or setting
2. he is inclined lengthways between the ever-visible circle and the Tropic of Cancer
3. his right foot is on the Tropic of Cancer
4. his shoulders and chest are separated from the body by the circle that passes through the poles and touches Aries and the Claws.¹⁴⁹

This position of Boötes relative to the main circles is not specified in any of the other descriptive catalogues and must have come from a different textual or pictorial source. Yet this introduction provides Hyginus with a reason to move the four stars of the *right* hand into the *left* hand in his star catalogue. For, indeed, if the left hand is placed inside the ever-visible circle, then that hand must be the one with the stars that never set.

But what is the source of this placement of Boötes? In order to find an answer, one must examine the image of Bootes itself in greater detail.

¹⁴⁹ Hyginus, *De Astronomia*, III.3: ... *huius manum sinistram circulus arcticus includit ita ut neque occidere neque exoriri videatur. Ipse autem positus ab arctico circulo ad aestivum definitur, inclinatus in longitudinem, dextro pede aestivo circulo nixus; huius humeros et pectos a reliquo corpore dividit circulus qui per utrosque polos transiens tangit Arietem at Chelas.* (VIRÉ 1992, p. 96 and Le BOEUFFLE 1983, p. 88).

The placement of the left hand of Boötes within the ever-visible circle points to an astronomically correct image, such one one sees depicted on the Farnese globe. The right foot can be identified with ζ Boo, following the descriptions of Hipparchus.¹⁵⁰ In Hipparchus's day, the declination of ζ Boo was days 24°. Therefore, the star was almost directly on the Tropic of Cancer. This feature is also preserved on the Farnese globe. Also, the inclined attitude of Boötes is well delineated by the image on this globe. One difference, however, is that the Farnese globe places the figure of Bootes completely east of the autumnal equinoctial colure, whereas Hyginus says that the colure separates Boötes's shoulders and chest from the body. In other words, according to Hyginus, Boötes lies directly on the colure.

The placement of Boötes on the autumnal equinoctial colure recalls Eudoxus. In his *Commentary*, Hipparchus records that the Eudoxan colure passed through the left hand and lengthways through the middle of Boötes.¹⁵¹ Hipparchus severely criticised this description of the figure, arguing that it was not astronomically correct. Yet, the description of Eudoxus has left many traces in antiquity. The source employed by Martianus Capella alluded to above, for example, also describes Boötes on the autumnal equinoctial. As Martianus Capella relates, the colure passes through the left side of Boötes and the bright star, Arcturus and the left hand of Boötes is inside the ever-visible circle.¹⁵²

¹⁵⁰ MANITUS 1894, pp. 120-21;186-87 and 258-59.

¹⁵¹ MANITIUS 1894, pp. 188-19.

¹⁵² Martianus Capella, 'De nuptiis...', VIII, 832 and 841 (WILLIS 1983, pp. 314 and 317 and STAHL et. al. 1977, pp. 324 and 327. CHECK

Antique globes also bear witness of the Eudoxan tradition of placing Boötes directly on the colure. On the Paris/Kugel globe, for example, the colure separates the upper part of the body from the lower, more or less in agreement with Hyginus's description. Note that on this globe, however, it is the right hand that is set inside the ever-visible circle, and not the left hand.

The evidence presented by these various sources shows that, in antiquity, a Eudoxan tradition existed alongside others, including those which were, presumably, based on globes reflecting Hipparchan, astronomical accuracy. Sadly, the existence of this Eudoxan tradition has been misunderstood and misrepresented again and again in the literature - even by Hipparchus himself. Hipparchus classified the 'Eudoxan Boötes' as just another error amongst the many he had encountered in the Eudoxan-Arateans description of the sky. But the position of Boötes is internally consistent with Eudoxus's statement that the equinoctial colures pass through the middle of the constellations of Aries and of the Claws.¹⁵³ Hipparchus misinterpreted this description because he thought that the Eudoxan colures pass through the middle of the respective *signs*, instead of through the variably-sized *constellations* (the alleged 'Ari 15°-convention'). On a truly Eudoxan celestial sphere, the colures should pass through the middle of the respective zodiacal *constellations*, not through the 30°-wide zodiacal signs.

⁹⁷ MANITIUS 1894, pp. 116-19.

⁹⁸ For a fuller discussion of the ramifications of the Eudoxan colures, see DEKKER 2011/12.

Hyginus describes of the equinoctial colures as touching Aries and the Claws (... *circulus qui per utrosque polos transiens tangit Arietem et Chelas*). If Hyginus were speaking in terms of the constellations here, then his statement would not agree with Eudoxus's description of the colures. It is noteworthy that the same inconsistency is seen on the Paris globe, where the colure that runs through the body of Boötes also touches the head of Aries.

Another Eudoxan feature found in the *De Astronomia* is the description of the the winter solstitial colure passing through Sagitta.¹⁵⁴ Again, this feature is clearly marked on the Paris/Kugel globe. Martianus Capella says that that the colure passes through the tip of Sagitta rather than through the middle.¹⁵⁵ Considering that in Hipparchus's day Sagitta was already completely east of the winter solstitial colure this detail can be seen as yet another trace of Eudoxan cartography.

Hyginus's description of Boötes shows that he may well have been familiar with the source material used by Martianus Capella, but this possibility does not explain all Hyginian features. The following is a list of those details, which Hyginus lists in Book III, but which do *not* appear in either Book IV or in Martianus Capella's text:

¹⁵⁴ Hyginus, *De Astronomia*, III, 14 (VIRÉ 1992, p. 105 and Le BOEUFFLE 1983, p. 97.

¹⁵⁵ Martianus Capella, 'De nuptiis...', VIII, 833 (WILLIS 1983, p. 314 and STAHL *et. al.* 1977, p. 324.

on the ever-visible circle:	the right hand of Perseus ¹⁵⁶
on the Tropic of Cancer:	the right foot of Boötes ¹⁵⁷ the hand of Hercules ¹⁵⁸ the head of Cassiopeia and her right hand ¹⁵⁹
on the Equator:	the feet of Canis Minor ¹⁶⁰ the right hand of Virgo ¹⁶¹ the tip of the tail of Serpens ¹⁶² the tip of the rounded tail of Delphinus ¹⁶³

To date, there is no treatise that can account for these items in Hyginus's descriptions of the constellations. In hypothesizing about their source, there seem to be three alternatives: 1) these details may have come from the now-lost source that was shared by Hyginus and Martianus Capella, and Martianus has simply omitted them from his cursory list; or 2) there is another, as yet unidentified source behind Hyginus's additions or 3) he may have collected this information from his own investigations of the surface of a celestial globe. If the last alternative were true, then certain aspects of this globe must have been similar to those features found on the Paris/Kugel globe.

¹⁵⁶ Hyginus, *De Astronomia*, III, 11 (VIRÉ 1992, p. 102 and Le Boeuffle 1983, p. 94).

¹⁵⁷ Hyginus, *De Astronomia*, III, 3 (VIRÉ 1992, p. 96 and Le BOEUFFLE 1983, p. 88).

¹⁵⁸ Hyginus, *De Astronomia*, III, 5 (VIRÉ 1992, pp. 97-98 and Le BOEUFFLE 1983, p. 89-90).

¹⁵⁹ Hyginus, *De Astronomia*, III, 9 (VIRÉ 1992, pp. 100-101 and Le BOEUFFLE 1983, p. 92).

¹⁶⁰ Hyginus, *De Astronomia*, III, 35 (VIRÉ 1992, p. 120 Le BOEUFFLE 1983, p. 110).

¹⁶¹ Hyginus, *De Astronomia*, III, 24 (VIRÉ 1992, p. 112 and Le BOEUFFLE 1983, p. p. 103).

¹⁶² Hyginus, *De Astronomia*, III, 13 (VIRÉ 1992, p. 104 Le BOEUFFLE 1983, p. 96).

¹⁶³ Hyginus, *De Astronomia*, III, 16 (VIRÉ 1992, p. 107 and. Le BOEUFFLE Paris 1983, p. 94).

The positions of Triangulum and Andromeda:

The descriptions of the constellations in Book III often indicate how the constellations are placed with respect to others. In one example, Hyginus records that the constellation Triangulum appears above the head of Aries, not far from the *right leg* of Andromeda.¹⁶⁴ This is not astronomically correct: Triangulum should be described as being beside the *left* leg of Andromeda, because it is south of Andromeda, on her left side. Hyginus's mention of Andromeda's *right* leg could not have been derived from the text of one of the descriptive stellar catalogues, as the position of Triangulum is not specified with respect to Andromeda and the leg itself is not specified in the description of the locations of the stars within the constellation Andromeda. Again, the best explanation seems to be that Hyginus used a pictorial source, in which the relative positions of the constellations were depicted with Andromeda facing the viewer (violating Hipparchus's rule). When the constellations are presented in this manner, Triangulum seems to flank her right leg. And, if one consults the Paris/Kugel globe once again, one sees Triangulum tucked below the right leg of Andromeda.

This use of a mirror-image of Andromeda (one that violates Hipparchus's rule) is further supported by Hyginus's description of Andromeda in Book III, where he mentions that the Tropic of Cancer cuts through her breast and

¹⁶⁴ Hyginus, *De Astronomia*, III, 18: ... *supra caput Arietis non longe ab Andromedae dextro crure* (VIRÉ 1992, p. 108 and Le BOEUFFLE 1893, p. 100).

left hand.¹⁶⁵ Similar details are listed in Book IV, where the reader is assured that the head, the breast and the right hand are between the Tropic of Cancer and the equator.¹⁶⁶ Here, Hyginus clearly deviates from the Aratean tradition, exemplified by Eudoxus and Aratus, which placed the *right* hand or arm on the Tropic of Cancer.¹⁶⁷ As might be expected, analogous images of Hyginus's description of Andromeda relative to the main circles can be found only on a globe with mirror images, such as the Paris/Kugel globe or the Mainz globe

The tail of Cygnus pointing towards Cepheus:

In addition to the evidence already presented, there is also the passage in which the tip of the tail of Cygnus is described as touching the head of Cepheus.¹⁶⁸ This piece of information is not found in the other descriptive star catalogues. The line connecting the stars in the body and the tail of Cygnus (γ and α Cyg, respectively) does point in the direction of the

¹⁶⁵ Hyginus, *De Astronomia*, III, 10: *Huius medium pectus et manum sinistram circulus aestivus dividit...* (VIRÉ 1992, p. 101 and Le BOEUFFLE 1893, p. 93).

¹⁶⁶ Hyginus, *De Astronomia*, IV, 2: *... Andromeda autem a pectore et manu sinistra dividitur atque ita evenit ut caput eius cum toto pectore et manu dextra videatur esse inter aestivum et aequinoctialem circulum reliquum autem corpus inter aestivum et arcticum finem.* (VIRÉ 1992, p. 126 and Le BOEUFFLE 1893, p. 115).

¹⁶⁷ Hipparchus, *In Arati et Eudoxi Phaenomena commentariorum ...* I 10, 6 (MANITIUS 1894, pp. 99-101) and Aratus, *Phaenomena*, v. 484 (KIDD 1997, p. 109). The right arm is also recorded by Germanicus, Martianus Capella, *Aratus latinus* (Maass 1898, pp. 277-78), and in the *Revised Aratus latinus* (Maass 1898, p. 113). Note, however, that in the earlier section of the *Aratus latinus* (Maass 1898, p. 113), the left hand is listed.

¹⁶⁸ Hyginus, *De Astronomia*, III, 7: *... cauda iungitur extrema sum capite Cephei.* (VIRÉ 1992, p. 99 and Le BOEUFFLE 1893, p. 91).

brightest star in the head of Cepheus (ζ Cep), but the star in the tail of Cygnus (α Cyg) and the one in the head of Cepheus (ζ Cep) are almost 20° apart. The feature of the tip of the tail of Cygnus touching the head of Cepheus is an unrealistic, non-astronomical detail. It does, however, reappear within the wider pictorial tradition and appears in one of the planispheric maps.¹⁶⁹ Its inclusion in Hyginus's description can only be explained by the use of an inaccurately constructed celestial globe or map.

Conclusion:

Reading Hyginus's text more closely, one feels that - regardless of whether or not our author was, indeed, the Librarian of the Palatine Library - Hyginus has learned his astronomy not only from the flat surfaces of 'books', but he must have consulted a pictorial source, such as a map or a globe, as well.

In principle, maps and globes provide the same sort of description of the celestial sky. Therefore, most of the cartographic details discussed above could have been derived from a map. However, it is only with a globe that one can simulate important astronomical phenomena, such as the rising and the setting of the stars. This is why Hyginus takes pains to explain that a globe as an essential tool for understanding the celestial phenomena.¹⁷⁰

¹⁶⁹ For a discussion of these maps, see DEKKER 2011/12.

¹⁷⁰ Hyginus, *De Astronomia*, IV, 9: ... *sed aliter esse ex ipsa sphaera intellegere licebit*; and IV, 10, 2: ... *quid de reliquis signis sine sphaera possit intellegi, sic inuenietur*. (VIRE 1992, pp. 137-38 and Le BOEUFFLE 1983, p. 126-27).

Hyginus also explains why, in order to use the globe, one has to set it in the right position (that is, for the correct geographical latitude). Aratus and other classical authors fixed this position by stating that 5 out of 8 parts of the Tropic of Cancer are above the local horizon and 3 out of 8 are below the local horizon. The same method is used by Hyginus in Book IV, where he explains to his readers that if one adjusts the globe to the correct latitude, so that the ever-visible circle is always above the horizon and the ever-invisible circle never, one finds that, with regard to the the summer circle in 8 parts, 5 parts are above the horizon and 3 parts are below the horizon.¹⁷¹

Hyginus's concern with globes is also apparent from his mention of some construction details. In Book I, he discusses how physically to trace the main celestial circles on a sphere.¹⁷² In the same book, he also explains how to divide the zodiac in 12 equal parts.¹⁷³ In Book IV, in a chapter on the daily motion of the celestial sky, Hyginus speaks explicitly of the construction of spheres.¹⁷⁴

¹⁷¹ Hyginus, *De Astronomia*, IV, 2.2 : *Cum enim sphaeram ita constitueris.....* (VIRE 1992, p. 127 and Le BOEUFFLE 1893, p. 116).

¹⁷² Hyginus, *De Astronomia*, I, 7 (VIRE 1992, pp. 6-10) and Le BOEUFFLE 1983, pp. 8-9 (as I, 6, 2)). The ratios used by Hyginus are the same as described by Geminus for the construction of a globe.

¹⁷³ Hyginus, *De Astronomia*, I, 7: *Duodecim signorum partes sic dividuntur...* (VIRE 1992, p. 9 and Le BOEUFFLE, Paris 1983, p. 10 (as I, 6, 4)).

¹⁷⁴ Hyginus, *De Astronomia*, IV, 8, 2: *Quicumque enim sphaeram fecerit, non poterit efficere ut, sphaera stante, nihilominus stellae versentur.* (VIRE 1992, p. 136 and Le BOEUFFLE 1893, p. 125).

The analysis presented above further shows that all the features in the descriptions of the constellations in Book III that are unique to Hyginus and do not occur in any of the other descriptive stellar catalogues are part of the antique cartographic traditions that are exemplified in globes. This, above all, confirms the hypothesis that Hyginus wrote his *De Astronomia* with the help of a globe.

The globe from which Hyginus derived all sorts of details concerning the positions of the constellations relative to the various circles would not have been part of the Hipparchan mathematical tradition of astronomy.

Moreover, there is no evidence that Hipparchus's criticism of the Eudoxan astronomy was even known to Hyginus. Also, the overall lack of accuracy that marks Hyginus's descriptions shows his ignorance of Hipparchan astronomy.

The globe consulted by Hyginus in writing his astronomy was probably one that would fit into a somewhat distorted Eudoxan tradition, which places Boötes on the vernal equinoctial colure, as this is seen on the Paris/Kugel globe. In contrast to the Paris/Kugel globe, however, Hyginus's globe would have been of the 'mixed type', in which some constellations (Virgo and Andromeda) were drawn in mirror-image and others (Hercules and Boötes) were depicted as seen from behind. The globe must have been mounted so that it could be turned round to show the rising and setting of the Sun and the stars.

This evidence collected from the *De Astronomia* also shows that, in addition to well-known texts related to the Eudoxan / Aratean / ps-Eratosthenes tradition and, in addition to a globe Hyginus may also have used other popular, Roman astronomical texts, such as the now-lost astronomical work of Varro, which by many is believed to have been the most important source of Martianus Capella. In short, Hyginus's *De Astronomia* exemplifies the corpus of Roman popular astronomy as it existed in books and on globes more than any other source.

The question that still remains unanswered, however, is: even though Hyginus certainly used a celestial globe for his own research and he suggests to his readers that they should follow his lead, does it follow that the original text of the *De Astronomia* was not originally intended to be illustrated - on the assumption that it did not require illustrations, since the illustrations for every facet of the text could be found on the surface of a globe?

Returning to the three questions that were asked at the beginning of this chapter, it seems that we have sufficient information to answer only the second one: how would one recognise a 'typically antique' version of these illustrations? Having isolated a few pictorial features that seem to be specifically 'Hyginian', though, we now have the tools to tackle the third question: Have reflections of this antique tradition survived in any of the later manuscripts of the *De astronomia*? If we do find a legacy of these

Hyginian images in later manuscripts, the most likely explanation would be that the manuscripts were, indeed, illustrated in antiquity.

IV. GROUPING THE MANUSCRIPTS ACCORDING TO THEIR ILLUSTRATIONS

When one tries to group the extant illustrated Hyginus manuscripts according to pictorial families, the issues highlighted in previous sections of this Commentary remain stubbornly problematic.

GROUP I

Of the pre-Renaissance manuscripts, there is a broad affinity amongst a group of manuscripts that appear to stem from a ‘Germanic’ tradition. And share the following features:

- **URSA MAIOR** and **URSA MINOR** are depicted individually.
- **BOOTES** stands to the left, with his left arm trailing behind him.
- **HERCULES** is not in the Garden of Hesperides
- One or more of the grouping of **CEPHEUS/CASSIOPEIA/ANDROMEDA** and **PERSEUS** are stacked vertically in the margin.

These manuscripts include:¹⁷⁵

Group I.a

S Paul im Lavanttal, Benediktsskabinett

Ms 16/1 (XXV. 4. 20)

German, 11th century

Florence, Biblioteca Laurenziana

Ms Plut. 29.30

Italian (?), 12th century

¹⁷⁵ Le Boueffle omits the Florence and London manuscripts, groups Wolfenbüttel 18.16 with Vienna ÖNB 51 and has St Paul im Lavantthal as representing another tradition. See Le BOUEFFLE 1983, p. lxxviii. Viré groups the manuscripts as: II. ε. a) Florence and Vienna; II. ε. b.) London and Wolfenbüttel and II. ε. c.) St Paul im Lavantthal. See VIRÉ 1981, pp. 243-49.

Leiden, Universiteitsbibliothek

Voss lat 8° 18

Italian (?), end 15th century

Of this sub-group, the manuscript from Florence is most often described as being Italian;¹⁷⁶ but, when one examines its pictures more closely, the iconography of the illustrations is so close to that found in the St Paul im Lavantthal it would seem its immediate model (if not its own provenance) is more likely to be German than Italian. Indeed, one might even suggest that the St Paul manuscript could easily be the parent manuscript of the Florence one, with the Florentine manuscript demonstrating all the characteristics of a poor copy.

The Leiden manuscript, Voss 8° 18, is a more distant, free copy of the St Paul manuscript and has also been given an Italian provenance. It is written in a very attractive humanist hand, but it is obvious that the artist who added the pictures was not only relatively untalented, but that he drew his pictures from a model very close to the much earlier St Paul and Florence manuscripts. Having said that, however, the artist has added a number of contemporary 'updates' (such as the modern *lira di braccio* for Lyra and the appearance of Perseus and Orion in armour), but is still intimately tied to the pictorial tradition of the two older manuscripts in the postures and attributes of the majority of the figures. Further, all three sets of pictures appear within the mythological sections of Book II of the *De astronomia*.

¹⁷⁶ See the catalogue entry.

The shared features in this sub-group include:

- Individual representations of **URSA MAIOR** (facing left) and **URSA MINOR** (facing right).
- **DRACO INTER ARCTOS** appear in the St Paul and Florence manuscripts (the bears are back-to-back in the St Paul manuscript and are both standing with their backs towards the top of the page in the Florence one). It is missing from the Leiden one.
- In the St Paul and Florence manuscripts, **BOOTES** is dressed in a large diaper-like garment, with a nude torso, leaping to the left and with his left arm and left leg trailing backwards so that his body is curved like a 'C'. In the Leiden manuscript, he wears a belted tunic and stands squarely on both feet, though his arms are in a similar position to the two other manuscripts.
- **HERCULES** kneels on his right knee to the left, with the lion skin held behind his left knee in his leading hand and he holds a plant in his upraised following hand.
- In the St Paul and Florence manuscripts, **LYRA** is shaped like a harp with the bridge across the top of the instrument. In the Leiden manuscript, it is depicted as a lute or *lira de braccio*.
- **CYGNUS** stands to the left and opens its beak as if squawking.
- In the St Paul and Florence manuscripts, **ANDROMEDA** is nude and walks to the left with both her hands raised. She is dressed and emerges from water or clouds in the Leiden Manuscript.
- In the St Paul and Florence manuscripts, **PERSEUS** is dressed in a diaper-like garment. He wears contemporary armour in the Leiden manuscript.
- **AURIGA** faces away from the viewer, exposing his bare buttocks with his flail in his outstretched right hand and a goat or three on his extended left arm. In the Leiden manuscript, Auriga is very different. He faces towards the viewer and has a wheel placed behind his buttocks to the left. He has an animal head on his left shoulder and an animal in his left hand. He holds his right hand aloft.
- **OPHIUCHUS** marches to the left and **SERPENS** crosses his body with an 'X'. He faces slightly to the right in the Leiden manuscript.
- **DELPHINUS** is placed upside-down on the page with its body arched so that it forms a 'C'.
- **PEGASUS** is half a winged horse, which ends in a series of tubes (like a Michelin man).
- **TAURUS** is a full bull being ridden by a human figure to the left (Europa and the bull?).

At that point, the pictures in the St Paul manuscript come to an end. But there are a number of defining features that appear in the Florence (and to a lesser extent in the Leiden manuscript), which one assumes must have also existed in the St Paul one. These include:

- **GEMINI** as two nude figures with their inner arms entwined. The figures in the Florence manuscript appear to be female and both walk to the left, with their left legs crossing in front of their right ones.
- In the Florence manuscript, **CANCER** with one of the Aselli standing in front of it.
- **VIRGO** is winged. In the Florence manuscript, she stands pointing with her left hand to the plant held in her left. In the Leiden manuscript, she holds plants to either side and wears a crown.
- **SAGITTARIUS** as a satyr facing to the left, with its back to the viewer.
- **AQUARIUS** is a reclining nude male figure, with his head to the left, holding the pouring urn in front of his hips with the spout downwards.
- In the Florence manuscript, **CETUS** as a dog/lion-headed monster facing to the right. He is missing in the Leiden manuscript.
- **ERIDANUS** is a stream.
- **ORION** stands to the left with both arms outstretched and holding a stick in his upraised left hand and with a sword/scabbard worn diagonally from his belt (the Florence manuscript shows him with a cloak draped over his extended right arm, but the Leiden manuscript has him holding a shield in this hand and wearing armour and a helmet).
- **CENTAURUS** is depicted as a satyr in the Florence manuscript and as a nude figure with a long tail (also presumably a satyr) in the Leiden manuscript.
- **ARA** is a square altar and the Florence manuscript has 4 candles on the top surface.
- **HYDRA** is a long snake that hugs the ground, saving his slightly raised head, which has an open mouth. **CRATER** is placed very close to the head and **CORVUS** faces forward, pecking at the Snake's body.

One feature that the manuscripts share, but which has been broken by the way in which the illustrations fall across the pages, is the layering of the pictures of Cepheus, Cassiopeia, Andromeda and Perseus. In all these, the pictures have been arranged down one side of the page, flanking the text

and stacked on top of the other so that feet of the upper one often intrudes on to the head or shoulders of the lower one.

Group I.b

Wolfenbüttel, Herzog August Bibliothek

Ms 18. 16. Aug 4°

S. German, 12th century

London, British Library

Arundel 339

S. German (Kastl?), 13th century

Two other manuscripts from GROUP I.b – London BL Arundel 339 and Wolfenbüttel 18.16 – share some of the feature of the St Paul and Florence manuscripts, such as the stacking of the pictures of Cepheus, Cassiopeia, Andromeda and Perseus, which suggests a similar provenance, but the large number of differences preclude them from being included in the same sub-group. Instead, the Arundel and Wolfenbüttel share so many identical details between them that they form a sub-set of sister manuscripts within this larger family. Intriguingly, the two manuscripts also represent another case in which the format of the text in each is different: the images in the London manuscript accompany an abbreviated conflation of Books II and III, and the Wolfenbüttel pictures appear alongside an abbreviated form of Book II.¹⁷⁷ Their common traits include:

- Individual depictions of **URSA MAIOR** and **URSA MINOR**.
- **DRACO** is depicted on its own, placed vertically with a comb and beard.

¹⁷⁷ **CHECK this text.**

- **BOOTES** walks to the left with his right hand stretched in front of him and his left hand raised behind his head (in the London manuscript, he has a halo above his head).
- **HERCULES** stands to the left with bent knees, holding a full lion on the hand of his extended left hand and raises his club with his right above his head.
- **LYRA** is shaped in three sections with a foot, a round belly and a triangular top, with two sounding holes.
- **CYGNUS** stands facing the viewer and raises his right leg.
- **CEPHEUS, CASSIOPEIA, ANDROMEDA** and **ANDROMEDA** are stacked on top of each other. Andromeda walks to the left with her right hand lowered and her left hand raised behind her head.
- **PERSEUS** holds the Medusa's head upside-down by its hair in his right hand and holds a sickle in his upraised left hand.
- **AURIGA** is drawn in a *biga* to the right with two goats on his raised left arm and an odd piece of drapery in his raised right hand.
- **OPHIUCHUS** stands frontally with the **SERPENS** crossed in front of his hips (the London Ophiuchus is definitely female).
- **DELPHINUS** has tusks sprouting from its lower jaw.
- **PEGASUS** is half a winged horse whose body ends in a curl.
- **ARIES** leaps to the left and looks backwards to the right.
- **TAURUS** is a full bull, lying to the right.
- **GEMINI** embrace each other at the shoulders.
- **VIRGO** holds a plant in her upraised right hand to which she points with her left hand.
- **SAGITTARIUS** is a satyr, shooting an arrow to the left with his back to the viewer.
- **CETUS** is a pig-faced, winged sea monster, with a curl in its tail.
- **ERIDANUS** is a river god, seated beside his stream.
- **ORION'S** right arm is covered with a cloth and he raises a sword in his left hand.
- **ARGO** has a kind of garment like a dalmatic in place of its main sail.
- **CENTAURUS** marches to the left, carrying **LUPUS** (a hare) in his right hand and leaning a trident on his left shoulder.
- **ARA** is a round altar

Group I.c (singleton)

Vienna, ÖNB

Vindob 51

S. German, 12th century

Whereas Vienna ÖNB 51 shares some features with the London and Wolfenbüttel manuscripts, there is also evidence that the pictures in this manuscript have been contaminated by another source. The shared traits include:

- **URSA MAIOR** and **URSA MINOR** are depicted individually, but Vienna 51 shows a hunched Ursa Minor similar to those found in the ps-Bede *De signis caeli* manuscripts.
- **DRACO** is depicted separately, but he is placed horizontally and has only 2 bends.
- **BOOTES** stands facing the viewer, but the posture is slightly different and his left hand is lowered so that it is in front of his chest (slightly reminiscent of the *De ordine* manuscripts, Paris BN n.a. 1614 and St Petersburg)
- **CEPHEUS**, **CASSIOPEIA** and **ANDROMEDA** are stacked in the margin, but Cepheus walks to the right, and Andromeda walks to the left with both arms raised.
- **CYGNUS** is splayed as in the Wolfenbüttel manuscript, but also such as one sees in the *Revised Aratus latinus* manuscript, Prague IX.C.6 , the *De signis caeli* manuscript, Frieberg 35 and the *De ordine* manuscripts, Berlin 130, Madrid 3307, Monza and Paris 8663.
- **ARIES** leaping to the left and looking backwards to the right.
- **GEMINI** embrace each other.

The major differences include:

- **HERCULES** has the lion is draped over his extended right arm and his left arm is held down by his side (the position of the lion and the posture in general recalling the *De ordine* manuscripts, such as Paris BN 12117, and Getty VII, 5).
- **LYRA** is a gourd-shaped.
- **PERSEUS** has wings on his feet.
- **AURIGA** trots to the left with the 2 goats cradled in the hook of his left arm. He raises the flail above his head with his right hand.
- **OPHIUCHUS** walks to the right with the **SERPENS** crossing at his back.
- **TAURUS** is half a bull to the left with its right leg extended and its left one tucked under (like the majority of the Germanicus manuscripts and the *De signis caeli* manuscripts, Dijon 448 and Padua 27).
- **VIRGO** has neither wings nor attributes and stands with her right hand raised and her left hand held down by her belt (as if she should be holding the scales, as one sees in the *Revised Aratus latinus* manuscripts, Dresden Dc 183, St Gall 902 and

250, the DSC manuscript, Padua 27 or Venice VIII. 22, or the *De ordine* manuscripts Paris 12117 and St Petersburg.). Similar postures, but always holding attributes, also appear in later 'Germanic' Hyginus manuscripts, such as Berlin 8° 44, Munich 59, and Vat Pal lat 1369.

- **ORION** has a club in the right hand.
- **ARGO** has a building on the deck and an animal's face at the stern.
- **CENTAURUS** holds **LUPUS** in his right hand and the beast arches away from him. Holds a spear vertically in his left hand.
- **ARA** is rectangular with a grill on the top.

This similarities in the constellation figures in the six manuscripts of GROUP I suggests that, despite the fact that they belong to different philological stemmata, pictorially, they each seem to be related to a similar iconographic model. The most noteworthy feature shared by all these manuscripts is the depiction of Eridanus as a stylised river or stream. This is an extremely rare feature in the Aratean corpus. Indeed, the depictions of Andromeda as walking and Hercules without his garden – as well as the image of Gemini as two nude figures (in this case, women) walking to the left with their inner arms intertwined in the Florence manuscript – are much more characteristic of the illustrations attached to the various versions of the constellations that appear in the Ptolemaic/ stellar tables tradition. Noting that Florence Plut 29.30 also contains illustrations concerning the construction of an astrolabe, perhaps the link to the more astronomically-derived 'Ptolemaic'/stellar table models for these pictures is not as far-fetched as might first seem.¹⁷⁸

¹⁷⁸ Florence, Bibl. Laurenziana, Plut. 29.30, ff. 36r-39v. See especially the illustration of a rete with 17 star pointers on fol. 38v and the sketch of a latitude plate on fol. 39v.

As has been demonstrated in the previous section, Hyginus must have used a celestial globe to construct his descriptions of the heavens and he even suggests to his readers that they should follow his lead, since a celestial globe is essential to understanding the ‘mechanics’ of the heavens. The repeated reference to *sphaerae* in the text prompted Le Boeuffle to suggest that *De Astronomia* was actually written as a manual for the use of a globe.¹⁷⁹ This suggestion is supported by a later, medieval poem, in which the author claims he has constructed an image from Hyginus’s descriptions:

*Haec pictura docet quicquid recitavit Hyginus
In septem quinque describens sidera signis
Ad caeli terraeque globos in mole rotundos.
Mallem prorsus opus solidis insigne figuris,
Quas nequit in **plano** similes expendere quibus,
Cum lateant intus quaedam curvisque profundis.*¹⁸⁰

If the *De Astronomia* had been written as a manual to be used in conjunction with a globe, it would not need to be illustrated, since the reader could refer to a three-dimensional model for pictorial information. And, if the text were meant to be used with a globe, it could support Byvanck’s theory that the treatise was not transmitted to the medieval

¹⁷⁹ Le BOEUFFLE 1983, p. ix.

¹⁸⁰ The verse is taken from the 11th-century manuscript, Paris, BN, lat 12117, which also contains an illustrated text of the ps-Bedan *De signis caeli*. See *Poetae Latini minores* (BAEHRENS 1879-83, V (1883)), p. 380 (LXVIII: INCERTI DE SPHAERA CAELI). See also Le BOEUFFLE 1983, p. xlv. A German translation appears in STÜCKELBERGER 1994, p. 36: *Diese Abbildung zeigt, was Hygin in seiner Beschreibung der 35 Sternbilder dargelegt hat, indem sie die kugelförmige Gestalt des Himmels und der Erde nachahmt. Vorziehen wurde ich freilich ein Werk mit körperlichen Figuren, die man nicht entsprechend in der Ebene ausbreiten kann, da doch gewisse Teile im Innern der gekrümmten Oberfläche verborgen sind.*

Latin West from antiquity in an illustrated form.¹⁸¹ This does not necessarily imply that pictorial features did not play a significant role in Hyginus's work. On the contrary: in addition to his inclusion of the attributes held by the constellation figures and what one might call the 'cartographic' details, such as individual postures and their positions within the night sky, Hyginus's descriptions are full of the kind of pictorial details, which clearly indicate that he is describing a very specific set of images. For example:

- **AQUARIUS** is described as being 'represented as pouring water into some object'.¹⁸²
- **ARGO** is represented 'from stern to mast'.¹⁸³
- **Auriga** is described as holding reins in his hands.¹⁸⁴
- **BOOTES** appears to be following the Bear.¹⁸⁵
- **CAPRICORN'S** lower body is in the shape of a fish.¹⁸⁶
- **CENTAURUS** is depicted, by the will of Jupiter, as if coming to the altar with an offering.¹⁸⁷

¹⁸¹ See BYVANCK 1949, p.190. One must, however, disagree with his bold conclusion that, in antiquity, '*de geleerden van de klassieke Oudheid waren niet op afbeeldeingen in hun werken gesteld*' / 'illustrations were generally not allowed in scientific works' (see pp. 184, 202 and 230). One only need cite the numerous examples of illustrated scientific texts published by Weitzmann. For such examples, see WEITZMANN 1947, esp. pp. 47 ff (noting the quote on p. 47: '...therefore, from at least the 5th century on we can actually assume diagrammatic drawings in scientific texts') and 118 ff.; and WEITZMANN 1971, esp. chapter 2 ('The Greek Sources of Islamic Scientific Illustrations', pp. 20-24) and chapter 6 ('The Classical Heritage in the Art of Constantinople', pp. 151-75).

¹⁸² Hyginus, *De Astronomia*, II, 29: *Itaque ostenditur ut aquam aliquo infundens* (VIRÉ 1992, p. 76).

¹⁸³ Hyginus, *De Astronomia*, II, 37: *divisa enim est a puppi usque ad malum* (VIRÉ 1992, p. 84).

¹⁸⁴ Hyginus, *De Astronomia*, III, 12: *...manibus ut lora tenens figuratur* (VIRÉ 1992, p. 103).

¹⁸⁵ Hyginus, *De Astronomia*, II, 3: *hic autem e facto sequens Ursam perspicitur...* (VIRÉ 1992, p. 21).

¹⁸⁶ Hyginus, *De Astronomia*, II, 28: *hac etiam de causa eius inferiorem partem piscis esse formatione* (VIRÉ 1992, p. 74).

¹⁸⁷ Hyginus, *De Astronomia*, II, 12: *itaque ad Aram cum hostia venire Iovis voluntate figuratam* (VIRÉ 1992, p. 86).

- **CORVUS** appears to be shaking **HYDRA'S** tail with his beak in order to gain access to the water cup (**CRATER**).¹⁸⁸
- **CORONA AUSTRINUS** is described as a wreath, cast off as in play.¹⁸⁹
- **HERCULES** is described as kneeling on his right knee and attempting to step on the right side of the erect head of **DRACO**, with his left foot. His left arm is extended as if to strike and his left is outstretched holding the lion's skin so that he appears to be struggling mightily.¹⁹⁰
- **LYRA** is described as being made from a tortoise shell and having 7 strings.¹⁹¹

Whether or not these descriptions have been derived from the surface of a globe, from mural decorations or from an illustrated hand-scroll, they have certainly been crafted by an author who not only has detailed images in front of him, but who also has a vivid visual imagination and a talent for describing those images.

One intriguing aspect of these pictorial details listed above is that most of them have been cited from Book II of *De Astronomia*, the Book in which the mythological tales are presented. Similarly, most of the illustrations in the GROUP I manuscripts accompany Book II. Does this co-incidence between where one finds textual detail in Hyginus and where the illustrations are placed in later, medieval manuscripts support the suggestion that Book II of

¹⁸⁸ Hyginus, *De Astronomia*, II, 40: *videtur enim rostro caudam eius extemam ververare ut tamquam sinat se ad crateram transire* (VIRÉ 1992, p. 87-88).

¹⁸⁹ Hyginus, *De Astronomia*, II, 27: *... quam coronam eius ut ludentis abiectam nonnulli dixerunt* (VIRÉ 1992, p. 74).

¹⁹⁰ Hyginus, *De Astronomia*, II, 6: *... eumque paratum ut ad decertandum, sinistra manu pellem leonis, dextra clavam tenetem: conatur interficere draconem Hesperidum custodem qui numquam oculos operuisse somno coactus existimatur, quo magis custos appositus esse demonstratur* (VIRÉ 1992, p. 29).

¹⁹¹ Hyginus, *De Astronomia*, II, 7: *... a Mercurio facta de testudine; ... septem cordas instituisse ex Atlantidum numero* (VIRÉ 1992, pp. 31-33).

De Astronomia might have been the section of the work that was illustrated in antiquity?

If one compares the illustrations in the Group I manuscripts with the broadest range of cartographic models, including the Paris/Kugel globe, the Mainz globe, and the various cartographic planispheres preserved in the medieval manuscripts, similarities include:

- **DRACO INTER ARCTOS:** in the St Paul im Lavantthal manuscript, the bears are shown back-to-back and facing in opposite directions, as they are in the Paris/Kugel and Mainz globes; and the Aberystwyth, Basle, Berlin, Burgo de Osma, Harley 647, Munich, Vat grec 1087 and Vat Reg lat 123 planispheres; and Darmstadt hemispheres.
- **BOOTES:** the image of a nude man with 'triangular underwear' (St Paul and Florence) does not appear in any of the globes, but the posture of the right arm held out in front of the figure (all manuscripts) does appear in the Paris/Kugel and Mainz globes and the Basle, Berlin and Vat grec 1087 planispheres; and Darmstadt and Vat grec 1087 hemispheres.
- **HERCULES:** as nude, facing to the left, with both knees bent appears in all of the manuscripts and all of the globes. The very strange posture evident in St Paul, Florence and the Leiden manuscript is very close to the figure in the Aberystwyth planisphere and the Monza hemisphere. In the Mainz globe and Aberystwyth, Berlin and Vat grec 1087 planispheres and the Vat grec 1087 hemispheres, he holds a club upraised in his following hand, similar to St Paul, Florence and Leiden 8° 18.
- **CEPHEUS:** with his hands down by his sides in St Paul, Florence and Leiden manuscripts is also in the Aberystwyth, Berlin and Harley 647 planispheres; and the Monza hemisphere.
- **ANDROMEDA:** stands facing the viewer with her left arm raised slightly higher than her right in the Florence, Leiden, Wolfenbuttel and Arundel manuscripts and in the Paris/Kugel globe and Darmstadt hemispheres and the Monza and Vat grec 1291 hemispheres.
- **PERSEUS:** moving to the left, with a short skirt around his hips and with the Medusa in his leading hand and the *harpe* in his leading hand in St Paul and Florence and is very close to the Aberystwyth planisphere.

- **AURIGA:** faces away from the viewer, to the right, with the flail in his leading hand trailing behind him in the St Paul and Florence manuscripts and in the Mainz globe. He drives a cart in the Paris/Kugel globe and in the Wolfenbuttel and Arundel manuscripts.
- **OPHIUCHUS:** is nude, stands facing the right and the **SERPENS** crosses in front of his hips in all of the manuscripts and in the Monza hemisphere.
- **DELPHINUS:** with its body curved so that it is shaped like a 'C' also appears in the Monza hemisphere.
- **PEGASUS:** with his legs stuck straight out in front of him appears in the St Paul, Florence and Arundel manuscripts and in the Monza hemisphere.
- **GEMINI:** nude and facing the viewer with arms intertwined appear in Florence and Leiden manuscripts and in the Paris/Kugel globe; and the Basle planisphere and in the Paris BN, n.a. 1614 Paris BN 12957, Vat grec 1087 and Vat Reg lat 1234 hemispheres.
- **VIRGO:** is winged in the Florence and Leiden manuscript and in the Mainz and pre-Sūfī Florence and Paris globes and the Harley 647 and Vat grec 1087 planispheres.
- **SAGITTARIUS:** appears as a satyr in all of the manuscripts and in the Aberystwyth planisphere and in the two St Gallen, and Vat grec 1087, Vat Reg lat 1324 hemispheres. The figure is certainly bi-pedal in the pre-Sūfī Paris globe; and in the Monza, Paris n.a. 1614 and Paris BN 12957 hemispheres.
- **ERIDANUS:** as a segment of river appears in the Florence, Leiden and Vienna 51 manuscript, in all the globes; and in the Aberystwyth, Basle, Burgo de Osma, Munich and Vat grec 1087 planispheres; and the Darmstadt ,Vat grec 1087 and Vat grec 1291 hemispheres..
- **ORION:** walking to the left, with his leading arm covered by his cloak and holding a club in his following arm appears in the Florence, Wolfenbuttel, Arundel and Vienna manuscripts; and in the Aberystwyth, Berlin, Burgo de Osma and Vat grec 1087 planispheres and Aberystwyth, two St Gallen, Vat grec 1291 and Vat Reg lat 1324 hemispheres.

As it stands, this list is slightly problematic as it does not point to a single source – either globe or planisphere – that could account for all the idiosyncratic constellation figures found in this GROUP, such as, in particular, the Cepheus with his hands by his sides, Ophiuchus with the crossed snake, the curled Delphinus, the intertwined Gemini, Sagittarius as a satyr and Eridanus depicted as a river. It does, however, show that these

figures do crop up decorating the surfaces of late-antique globes with both Western and Eastern provenances, and they feature in a number of globe-derived formats. As a result, the suggestion that some late-antique or early-medieval author took these images from a globe or a map and inserted them into his copy of Hyginus, which, by chance, served as the basis of a number of similar manuscripts copied in Southern Germany between the 9th and 13th centuries, becomes increasingly plausible.

The other possibility, of course, is that antique versions of Hyginus's text were illustrated with images similar to those found on contemporary globes and that the south German Hyginus manuscripts and the related planispheres and hemispheres all reflect the sorts of illustrations that accompanied an illustrated version of the text that existed in antiquity.

There are two aspects of this suggestion that are slightly troubling. The first is trying to understand why the constellation illustrations are found within Book II, when it is clearly Book III that describes the details of the constellations on a celestial globe. The second is the inclusion of Europa and the bull for the constellation of Taurus and the depiction of Hercules in the Garden of the Hesperides—both of which, patently, comes from a mythographic and not an astronomical source.

One possible answer to this quandary might be uncovered by reconsidering how Hyginus composed his treatise. Remembering the numerous astronomical texts circulating in Rome at the time — in both the Greek and,

hypothetically, Latin versions of the Alexandrine compilation as well as in any number of now-lost texts – it may be that he used different sources for the different Books of his work. Possibly, he saw Book III as being his own, strictly astronomical work derived from ‘empirical’ study of an existing globe or an existing globe and some early star catalogues. This combination of sources would help to explain why many of the features in Book III of *De astronimia* are shared with Eratosthenes, but not all: it was not Hyginus’s only ‘astronomical’ source.

Conversely, Book II may have been compiled from a myriad of poetic, literary and encyclopedic sources. To our eyes, it might seem that Eratosthenes is the most important mythological source, but it is entirely possible that a wide variety of illustrations relating to the castasterismic fables of the stars were available to Hyginus. Moreover, some of the more popular myths certainly would have had their own iconographic traditions derived from other sources, such as literary texts, mural painting, vase decoration and other minor arts; since, for those subjects for which there is a well-established iconography or pictorial tradition –such as how one depicts bears, lyres, geese, eagles, dolphins, crabs, lions, hares, ships, altars and dogs – the consistency between ‘pictorial type’ and constellation image is often surprisingly high. By the 1st century AD, the pictorial formulae illustrating some of the more popular myths – such as those involving Perseus, Andromeda, Cepheus and Cassiopeia and Cetus or of Europa and the Bull and Hercules in the Garden of the Hesperides certainly had developed a strong and relatively consistent iconographies. If a Roman

illustrator were looking for pictorial models on which to base his drawings of the ‘constellations’, there was certainly a corpus of ‘types’ available, though they may not have been, strictly speaking ‘scientifically’, or perhaps it is wiser to say ‘observationally’ astronomical.

It seem possible, then, that Book II of the *De astronomia* text may have been illustrated in antiquity, with its pictures having been compiled – much as its text was – from a number of different authoritative sources: mythological, astronomical and pictorial. Set within the specific context of an astronomical textbook, most of the pictures bore a strong resemblance to the kind of images that were used to depict the constellations in celestial cartography. For others, the competing pictorial traditions were too strong and they slipped away from the norm.

More than one modern scholar has suggested that Book II was illustrated by medieval scholars because they were more interested in the mythology of the heavens than the cartography.¹⁹² While possible, it is important to point out that neither pagan mythology nor observational astronomy were tremendously popular subjects for much of the medieval period, so the creation of an imaginary league table seems slightly beside the point. Instead, it is much more likely that these early Germanic manuscripts preserve illustrated versions of Book II because that was what was illustrated in their original model - whether or not this model was genuinely antique, however, remains a mystery.

¹⁹² McGURK 1966, p. xxvi.

Given that readers of the *De astronomia* were advised by the author himself to consult a globe in order to understand the cartography of the heavens, then there appears to be no real reason to include illustrations in either Book III or IV. But, even if either of these books were illustrated in antiquity, no echoes of the tradition have survived. Indeed, when medieval authors attempt to reconstruct the shapes of the constellations for Book III specifically *without* the aid of a globe, they are forced they turn to other available, illustrated astronomical works, such as the ps-Bedan *De signis caeli* and import the images from its star catalogue into the appropriate sections of Hyginus's Book III – as will be seen in the following group of manuscripts.

GROUP II (singleton)

Leiden, Universiteitsbibliotheek

Voss lat 4°92

Southern France, 12th century

Although the text of this manuscript is very close to that found in the philological **GROUP I** manuscripts,¹⁹³ the illustrations are significantly different. Iconographically, any claim to a classical prototype has been completely broken. Instead, it seems the artist of this manuscript has taken the opportunity to restructure his constellations in line with the forms found in some of the grotesque marginalia of the period. That is to say,

¹⁹³ This manuscript is part of the philological 'Family I. B. 2'.

codicologically, the illustrations have been stacked in the outer margins of the and not incorporated into the body of the text (suggesting, perhaps, that they were, at some point in this pictorial family's distant past, added to a pre-existing text); and, second, that the pictures themselves have been heavily influenced by contemporary stylistic developments in their form. Certain flourishes, such as Draco's second head, the dragon biting Hercules's leg and the transformation of Lyra into an Irish harp, suggest decorative amalgamations stemming from much-earlier insular manuscripts. As such, Leiden Voss lat 4° 92 is an iconographic singleton, falling outside the other pictorial families of the *De astronomia*; but, it is still important nonetheless, since there exists as yet another example of a manuscript, which can claim a certain degree of philological authority, but its pictures appear to have been imported from an unrelated and, at this point, unknown source. One feature worth noting is that this importation of pictures has been into Book II of the text - the mythological section - and not into the stellar catalogues of Book III. For reasons that are not all together clear, this seems to be the more popular location for illustrations in the medieval manuscripts of Hyginus's text.

Some of the elements that appear in the St Paul and Florence manuscripts (and, to a lesser extent, the Leiden 8° 18 one) do reappear in this manuscript. In particular, all share the following:

- The individual depiction of **URSA MAIOR** (to the left) and **URSA MINOR** (to the right) appears in all.

- The picture of **HERCULES** with his left leg so awkwardly raised could be an approximation of the odd, 'C'-shaped Bootes in the St Paul and Florence manuscripts.
- If the artist did not understand the billowing drapery of **CASSIOPEIA**'s skirt and mantle as seen in a model similar to the St Paul manuscript, then it is possible to see this as a series of clouds. Similarly, if this profusion was stacked directly over the head of **ANDROMEDA** in the original, it might give rise to the strange depiction of rocks or plants see above her head in the Leiden Voss. Lat. 4° 92 manuscript. Interestingly, this 'cloud' feature is very similar to the confused lower terminations of Cassiopeia and Andromeda in the Leiden 8° 18 manuscript.
- The depiction **AURIGA'S** flail is similar in the GROUP Ia manuscripts.
- The posture of **OPHIUCHUS** and **SERPENS** is similar in all the manuscripts.
- **ARIES** stands to the right in all four manuscripts.
- **TAURUS** is full in the Leiden 4° 92 manuscript, as in the GROUP Ia manuscripts, but does not have the rider.
- **ERIDANUS** is depicted as a stylised segment of water in all four manuscripts.

The anomalies, however, include:

- **DRACO** is shown individually and as a dragon with two heads (one on his neck and one on his tail).
- **BOOTES** is walking to the left and holding a curled plant in his left hand.
- **CORONA BOREALIS** is a compass rose or shield.
- **HERCULES** is walking to the left and looking up towards the right, with his right thigh bitten by an animal head, his left leg bent at an acute angle and holding a plant in his left hand.
- **LYRA** is depicted twice, once as an Irish harp.
- **CASSIOPEIA** enveloped by water or clouds to her waist.
- **ANDROMEDA** is kneeling to the left with a series of semi-circles above her head (plants? rocks?).
- **AQUILA** is splayed.
- **DELPHINUS** has oversized tusks coming from its lower jaw.
- **PEGASUS** is a full horse without wings.
- **GEMINI** are embracing or wrestling.
- **AQUARIUS** is carrying both an urns and a mace (?).
- **ORION** has a sword and a mace.
- **CENTAURUS** is holding a large curved stick above his head, and holding **LUPUS** on his back so that its feet touch the stick.

Also, it is worth noting that all the human figures are dressed in ‘modern’ dress, with the women wearing tight-fitting tunics with long, bell-shaped sleeves and the men sport tunics with short skirts, gathered at the waist.

GROUP III

As mentioned in the introduction, the vast majority of the earliest and most important versions of *De astronomia* are not illustrated. Beyond this, however, the two earliest surviving illustrated manuscripts contain pictures that clearly have been taken from another pictorial source. This apparent lack of illustration in early medieval manuscripts could be used to support Byvanck’s theory that the treatise was not transmitted to the medieval Latin West from antiquity in an illustrated form. Equally, it could indicate that illustrated versions of the text were only re-discovered at a later date. At any rate, whereas this particular family of illustrations does not provide definitive evidence about how a set of classical ‘Hyginian’ image might have looked, it does provide some fascinating insights into the history of the construction of astronomical manuscripts in the 11th century. These manuscripts are:

Leiden, Universiteitsbibliotheek

Voss lat 8° 15

St Martial near Limoges, c. 1025

Vatican, Biblioteca Apostolica

Reg lat 123

Intriguingly, the illustrations in these two manuscripts have little in common with the pictures that appear alongside the non-illustrated texts of the *De astronomia* mentioned above: namely, the illustrated versions of the *Revised Aratus latinus*, the illustrated *De ordine ac positione stellarum* and the illustrated Ciceronian *Aratea*. Instead, the illustrations in both manuscripts derive from an easily identifiable model and, as such, shed light upon another facet of the early history of illustrated stellar catalogues: namely, how iconographic traditions were transposed from one text to another.

In the section on the textual tradition of these manuscripts, it was noted that, whereas the texts preserved in these two manuscripts are very close and belong to a group that are believed to resemble most closely a lost classical prototype, the form in which the texts are presented in each manuscript is radically different. First, the manuscripts are very different codicologically. As Viré points out, the general form of the Leiden manuscript is:

*... recopié pêle-mêle des notes éparses et des textes profanes et religieux sur les feuillets de dimensions inégales, sans souci de la mise en page. [...] Il a également veillé à illustrer de figures plusieurs des textes transcrits, encore qu'il s'agisse, plutôt que de dessins, d'esquisses griffonnées à la hâte sur des morceaux de mauvais parchemin et vraisemblablement destinées à servir des modèles pour des peintures d'une exécution plus soignée.*¹⁹⁴

¹⁹⁴ VIRÉ 1981, pp. 159-276, esp. p. 205. Within the deleted brackets, Viré notes that: '*Il s'est fait aider par plusieurs copistes, comme le montrent le trace et le forme de l'écriture, qui varient d'un fascicule à l'autre du codex*'. This description seems to run counter to the

Whereas the script in the Vatican manuscript shows

*... a une trace régulier tout au long du codex et le texte est agrémenté de tables astronomiques et des dessins en couleurs représentant les constellations, que qui nous permet de dire qu'il s'agissait d'un exemplaire de bibliothèque de belle qualité.*¹⁹⁵

Second, in the Leiden manuscript, the IV Books of *De astronomia* are presented in their correct order (as will be discussed in more detail below) and the illustrations appear accompanying the descriptive star catalogue of Book III (ff. 172v-181v).¹⁹⁶ In the Vatican manuscript, the text is actually a compilation of excerpts taken from a number of classical and early-medieval authors, including 'Aratus', Hyginus, Pliny, Boethius, Bede and Isidore. The excerpts are arranged according to four topics: *De sole*, *De luna*, *De natura rerum* and *De astronomia*. The constellation pictures are presented in two tranches, with the twelve zodiac signs discussed and illustrated first (ff. 175v-182v) and the remaining constellations of the northern and southern celestial hemisphere following (ff. 184v-204v).

The structural difference between the two manuscript appears to reflect the way in which the text has been manipulated to different ends by each of its scribes. The primary motive behind the structure of the Leiden

previous observation by Byvanck that the pages of the manuscript are largely written in one hand - and a rather illustrious, well-known hand at that: namely, Adémar de Chabannes (see Byvanck 1931, pp. 69-72, citation from p. 69). Byvanck's assessment has survived in the literature and it is unclear if Viré actually intended to challenge this view.

¹⁹⁵ *ibid.*

¹⁹⁶ McGurk errs in citing the Leiden manuscript and Munich, Staatsbibliothek, clm 10270 as 'being the only two out of twelve Hyginus manuscripts, which have survived from 1025 to 1225, to illustrate Book III, and not Book II...' (see McGURK IV 1966, p. xxii).

manuscript seems to be philological and the approach reflects the interests of a scribe whose primary aim is to create an appropriately conscientious copy of a classical text. The Vatican manuscript is a scholastic compilation, whose author brings together various textual sources into one volume. As such, each manuscript reveals a different method of how an 11th-century scholar might deal with the 'authority' of his model. And, as we shall see, this divergence of opinion or, perhaps, 'ambition' manifests itself in how the illustrations are handled, as well.

The third difference between these two manuscripts is the manner or style in which each has been executed. The Vatican pictures are more highly-coloured, more painterly in their execution and many of them retain the feature of each constellation grouping being set within a coloured frame and against a coloured background, which certainly harks back to the pictorial conventions of a classical prototype. The style in which the constellations are portrayed imbues them with a certain 'classical feel', and suggests that the illuminator was specifically tasked not only with copying the form of the figures, but with reproducing the loose and fluid style in which the pictures in his pictorial model were painted. In this case, the 'authority' of the source carries through to the style in which the pictures are painted. Having said that, however, it is clear that the artist of the Vatican manuscript is often a bit unsure about many of the details of what he is copying. For example, he misunderstands the structure of the *harpe* held by Perseus, misses the identity (sex and attributes) of the severed head of Medusa, is very confused over the pictorial formula of Pegasus's head set

against the profile of his left wing and does not understand or cannot reproduce the implied anatomical structure behind Sagittarius's foreshortened right arm.

In contrast, the Leiden pictures are all done as line drawings. This change in medium suggests to modern eyes that these drawings have lost their direct stylistic connection to a presumed late-classical prototype - but only on the assumption that any such prototype was executed in a painterly fashion. Nevertheless, this stylistic distance is exacerbated by the fact that the antique formula of framing each constellation, which is evident in the Vatican manuscript, also has been jettisoned, so that the pictures appear somewhat jumbled into the text and do not always sit comfortably on the page.

Even though there may have been an equal number of intermediaries between these two Hyginus manuscripts and their shared archetype, the Leiden Hyginus has completely lost what modern scholars understand to be the 'look' of a classical manuscript.¹⁹⁷ But, if one moves beyond the immediate impressions generated by these stylistic changes and considers

¹⁹⁷ One is only so circumspect in making this judgment because our sense of what the illustrations in a 'classical manuscript' look like may have been incorrectly swayed by the few, relatively luxurious and painterly examples of late-Antique manuscripts that have survived. If one considers, for example, the scratchy and unframed ink drawings found in papyrus rolls, it is easy to imagine how this less formal approach to the page its illustrations, which most modern scholars tend to interpret as being a medieval development, could actually represent a relatively clear reflection of common, work-a-day classical pictorial conventions. For such examples, see WEITZMANN 1947, esp. pp. 49-53 and WEITZMANN 1971, esp. chapter 5.

more closely how each figure has been constructed – form, posture, attributes, clothing, etc. – it becomes clear that the artist of the Leiden pictures does have a profound respect for the authority of his model: it is just that he manifests it in a different way.¹⁹⁸

In comparing what is known about the provenance of these two manuscripts, one notes that the Vatican manuscript was written in the Spanish Monastery of Santa Maria de Ripoll, under the supervision of the well-known scholar, Brother Olivo; but the actual execution of manuscript has been attributed to another, less well-known and, perhaps, junior monk, named Arnaldus.¹⁹⁹ This kind of ‘distribution of labour’ within a large and well-run scriptorium certainly must lie behind many of the structural and stylistic decisions that were made in the creation of this very beautiful and prestigious manuscript.

Conversely, both the text and the images of the Hyginus sections of the Leiden manuscript have been convincingly attributed to the single hand of the well-known bibliophile and monk from Saint-Cybard d’Angoulême, Adémar de Chabannes (988-1034), and it is possible that the manuscript was written for his own, personal use.²⁰⁰ In general, Adémar’s reputation does not rest upon his drawing skills, but lies in his authorship of a set of

¹⁹⁹ See DELISLE 1896, pp. 241-35, esp. pp. 1-3 and 61-79 [*** CHECK this ref is about Reg lat 123]; VIRÉ 1981, p. 205, n. 3 and Hyginus, *De Astronomia* (VIRÉ 1992, p. xvii).

²⁰⁰ As cited above, Byvanck suggested that the pages of the manuscript are ‘écrits en grande parties par Adémar pour son usage personnel’ (BYVANCK 1931, p. 69). See also DELISLE 1896; PORCHER 1950, pp. 43-57, esp. pp. 50-54; and the more recent attributions listed by GABORIT-CHOPIN 1967, pp. 163-225, esp. pp. 165-66.

important chronicles and sermons and for his great industry as a copyist, with at least 15 manuscripts bearing his *ex libris* and another twenty-or-so betraying his characteristic handwriting. Indeed, his drawings have actually suffered damnation by faint praise from recent scholars, with their value described in terms of their being important ‘iconographic documents’ or because they allow the art historian a glimpse into ‘the aesthetic taste of an 11th-century monk’.²⁰¹ But, at least as far his illustrations to the *De astronomia* are concerned, Adémar actually shows himself to be unusually adept at understanding, interpreting and recreating pictorial formulae. If one compares the illustrations in the Vatican Hyginus with those in the Leiden manuscript, it becomes quite clear that, in all the elements where the Vatican artist goes awry, Adémar copes beautifully. For example, he is able to delineate the two-bladed shape of Perseus’s *harpe* without difficulty and clearly shows the Medusa’s head as being encircled by snaky curls. He successfully depicts the head of the open-mouthed Pegasus set in front of the forward curve of his left wing, and he fully understands the foreshortening of Sagittarius’s right arm.

Considering that these two manuscripts are (very) roughly contemporary and come from what many would consider to be broadly similar (monastic) provenance, it is interesting to see how they reflect very different concerns in ‘picture-making’. On the one hand, the Vatican artist seems to have been interested primarily with the overall ‘look’ of his drawings and he manages to be quite successful in recreating the feel of a late-classical model. But

²⁰¹ See GABORIT-CHOPIN 1967, p. 163.

there is a lack of control here: the anatomy of his figures is often a bit confused and the attributes held by some of the figures are unclear. For what the artist gains in style, he loses in iconographic precision. Adémar, on the other hand, either is not interested or not able to recreate the stylistic impression of a classical manuscript. Or, perhaps, if his immediate model was executed as a set of line drawings, he may have had no idea of what a painterly classical image looked like. Nevertheless, the transition from paint to pen has allowed, or maybe even encouraged, Adémar to focus on the details of each figure. As a result, his pictures provide a keener insight into the individual pictorial components of their model. It is the sort of attention to detail that one might expect of a careful and talented scribe, but one would not normally expect a man primarily interested in texts to have been quite so skilled a draughtsman.

While Adémar may not be known primarily for his great artistic skill, his illustrated Hyginus proves that he was really several steps beyond being merely competent artist. Further, if one compares the costumes that the human figures wear in each manuscript, one sees that Adémar has infused his figures with a slightly more 'modern' (*i.e.*: 11th-century) feel. For example, he shows more interest in the decorative aspects of the clothing, often detailing patterned belts, shoes and hats with great enthusiasm. Making broad and somewhat unsubstantiated assumptions about the life of an 11th-century monk, one feels that Adémar's pictures are rather surprisingly worldly. But then, during the 10th to 12th centuries, the Abbey

de Saint-Martial was '*l'un des lieux majeurs de la civilisation occidentale*', so perhaps such acuity should not be quite so surprising.²⁰²

In considering the iconography of the constellation images in more detail, it is worth noting that the division of the Vatican constellations into two sections - the zodiacal constellations on ff. 165v-182v and the extra-zodiacal constellations on ff. 184v-204v - does appear to signal one of the major differences in the pictorial models behind these two manuscripts. For, whereas the extra-zodiacal constellations in the Leiden and Vatican manuscripts are quite close and undoubtedly reflect a common 'parent', comparison between the illustrations of the zodiacal constellations reveals a number of interesting anomalies that suggest the influence of a second pictorial tradition in the Vatican zodiacal pictures. To this extent, the Vatican collation, as a whole, shows evidence of being slightly further away from the hypothetical 'parent'. Whether these small differences reflect an additional or intermediary source is not clear; but this observation does fall in line with the fact that the Vatican Hyginus is a compilation and, by definition, its author would have consulted a wider number of sources to create it. The Leiden Hyginus, however, was composed by a scholar wishing to carry on the tradition of a very particular text.

The shared characteristics in the extra-zodiacal constellations of the Leiden and Vatican Hyginus manuscripts include:

²⁰² PORCHER 1950, p. 43.

- **URSA MAIOR** and **URSA MINOR** are represented both individually and as part of the *DRACO INTER ARCTOS* grouping, with **DRACO** having 3 bends in its body.
- **CORONA BOREALIS** is a segmented circle with two ribbons hanging from the bottom.
- **BOOTES** wears a *tunica exomis*, stands lunging to the right with the one arm extended in front of him and the other arm raised and holding a curved stick. In the Leiden manuscript, the Bootes definitely faces away from the viewer (note the back of the left foot), but it is less clear in the Vatican manuscript (though a comparison with the figure of Sagittarius suggest that it, too, might present Bootes with his back to the viewer). If both these images do, indeed, present a back view, then it is his right arm that holds the curved stick.
- **HERCULES** is depicted in the Garden of the Hesperides.
- **OPHIUCHUS** stands on **SCORPIO** and **SERPENS** makes an 'X' with his body near the man's hips.
- **CEPHEUS** wears a mitre-like hat with two tassels hanging from the bottom of it.
- **CASSIOPEIA** sits on a high-backed throne with a concave top and sits on a cushion. She turns her head to the left.
- **ANDROMEDA** is shown standing between 'pillars' on which toilet articles are displayed. She has a dragon curled at her feet.
- **AURIGA** is posed and dressed the same in both manuscripts.
- **PERSEUS** is nude and flies to the left with wings on his feet.
- **CYGNUS** faces to the right and lifts his right foot.
- **ORION** rushes to the left, and his left hand is swathed in a piece of his cape. He also has an empty scabbard on his hip.
- **CETUS** has a pointed beak and a crest on its head.
- **CANIS MAIOR** has a halo and a star in his mouth.
- **ERIDANUS** is depicted as the bust of a figure, set behind a rectangular parapet, with his right hand raised and a plant standing on the right edge of the parapet.
- **PISCIS AUSTRINUS** is depicted upside-down.

The few differences in the extra-zodiacal constellations include:

- In the Leiden manuscript, **BOOTES** has a skin with visible feet and tail draped over his left arm. In the Vatican manuscript, Bootes has a piece of shredded fabric over that arm.
- The artist of the Leiden **ANDROMEDA** understands the components of the picture better than the Vatican artist does. The Leiden artist shows the 'pillars' as rocky outcrops and details how her wrists are chained to them. The 'pillars' drawn by the Vatican artist resemble plants. Having said that, however, Adémar is not quite sure

how to delineate Andromeda's garment, showing her torso nude, but having the hem of a long skirt around her ankles. The Vatican artist shows her chastely clad in a long dress.

- Capra is shown on **AURIGA'S** shoulder in the Leiden manuscript and is depicted standing in front of the Charioteer in the Vatican manuscript.
- In the Leiden manuscript, **PEGASUS** faces to the right with his head set in profile against the curve of his left wing. In the Vatican manuscript, the wing has become transformed into a circular shape disassociated from his body, which he bites.²⁰³
- In the Leiden manuscript, **PERSEUS** holds a Medusa's head that is encircled with shapes that look like snakes. In the Vatican manuscript, the severed head is definitely a bearded male. Also, the understanding of the shape of the *harpe* is clearer in the Leiden manuscript.
- The Vatican manuscript illustrates the **PLEIADES** (labelling them: Vergiliae). The Leiden manuscript does not illustrate the Pleiades.
- In the Vatican manuscript, **AQUILA** stands on an arrow; he does not in the Leiden manuscript.
- In the Leiden manuscript, there is a small dog's head to the right of the stern of **ARGO**. No head appears in the Vatican manuscript. Also, there is only one rudder blade in the Leiden manuscript and two in the Vatican one.
- In the Vatican manuscript, **CENTAURUS** holds **LUPUS** (a dog) in his right hand and a rabbit and a sword in his left hand (assuming that the Centaur is facing away from the viewer). His front legs are crossed. In the Leiden manuscript, his left hand and lower arm are completely enveloped in a furry skin and he steps forwards with his left front foot.

Considering the zodiacal images, there are a number of similarities in the figures of **LEO**, **VIRGO** (Virgo holds the Scales in her left hand in both manuscripts), **CAPRICORN**, **AQUARIUS** (depicted as Ganymede floating to the left, wearing trousers and a Phrygian cap, with both hands resting on the base of an upturned urn from which water pours, with the water curving so that it flows under his feet) and **PISCES** (both back-to-back). But there are some significant divergences. For example,

²⁰³ For more on the biting and eating Pegasus, see LIPPINCOTT 1993, p. 41.

- The figure of **ARIES** (and **DELTOTON**) in the Leiden manuscript does not appear to be by the same hand as the rest of the drawings. If it is a later addition, it would help to explain the odd pictorial formula of the Ram lying down and facing to the right. In the Vatican manuscript, Aries leaps to the left and looks over its shoulder.
- **TAURUS** is similarly shaped in both manuscripts, but he has an 'X' on his face in the Leiden manuscript.
- The **GEMINI** are similarly depicted as warriors holding spears in their outer hands in both manuscripts, but **CANCER** appears (as a round crab) between the feet of the Twins in the Leiden manuscript and not in the Vatican one, where it is depicted separately as a solitary crayfish.
- **SAGITTARIUS** has a flowing skin as a cape in the Leiden manuscript. In the Vatican manuscript, he has a scarf and the artist has misunderstood the foreshortening of the right arm (pulling the string of the bow) and drawn it as an oval protruding from the centaur's back.

Despite these numerous differences –structural presentation, style, relative competency of the artist and attention to detail – the pictures of the Leiden and Vatican manuscripts are still sufficiently close to suggest that they both derive, ultimately, from a shared pictorial tradition. This tradition, however, did not resemble any of the other iconographic traditions seemingly able to lay some claim to antiquity, such as those preserved in the Leiden *Aratea*, or the Basle or Madrid Germanicus manuscripts. Instead, these manuscripts preserve a set of features that differentiates them as an autonomous group.

These particular features are:

- **URSA MAIOR** and **URSA MINOR** are depicted individually and as part of *Draco inter arctos*.
- **AURIGA** is holding a straight stick with a floppy single thong in his right hand.
- **CYGNUS** is lifting his right leg and touching his chest with its beak.
- **CEPHEUS** has tassels floating from the bottom of his mitre
- **ANDROMEDA** has toilet articles on her pillars of rocks and with a small dragon curled at her feet.

- **VIRGO** is floating to the left, holding the Scales behind her back in her left hand.
- **ERIDANUS** is a male bust placed behind a rectangular parapet with a plant to the right side.

The Leiden manuscript contains a few additional pictorial oddities that do not appear in the Vatican manuscript. For example:

- **GEMINI** has a round **CANCER** between their feet.
- **TAURUS** has an 'X' on his face.
- **ARGO** has a dog's head below the stern of the ship.
- **CENTAURUS** has his left arm enveloped by an animal's skin.

And the Vatican manuscript is noteworthy in its presentation of **PEGASUS** with his head in front of a circle that looks as if the horse is eating out of a bowl.

As has long been noted, several of the defining features found in these two Hyginus manuscripts first appear in a Carolingian manuscript of the ps-Bedan *De signis caeli* from Fleury-sur-Loire: Paris BN lat 5543.²⁰⁴ Equally

²⁰⁴ Byvanck first signalled that the illustrations were taken, '*sans doute, d'un manuscrit d'Aratos, et representent encore la tradition antique*' (see BYVANCK 1931, p. 70). But, in a later publication, he specifically cited the relationship between the illustrations the ps-Bedan manuscripts, Paris BN lat 5543 and lat 5239, and the Vatican Hyginus, Reg lat 123 (see BYVANCK 1949, pp. 169-235 p. 189). In a later passage, he cited the *Revised Aratus latinus* manuscript, Paris BN lat 12957, as the source of the illustrations in 'Paris [BN] lat. 5543, etc. and in the illustrations in the Hyginus of Ademar' ('... *het voorbeeld is geweest van de illustratie in Beda's Catalogus van de sterren (Par. lat. 5543, enz.) en van de illustratie in den Hyginus van Ademar*'.). See BYVANCK 1949 p. 191. In the English summary on pp. 199-233, the strength of both passages have become somewhat neutered. The full description of the ps-Bede manuscript has been abbreviated, stating only that the illustrations that appear in ps-Bede are ... 'the same as in the Aratus latinus' and that 'the work of Hyginus is illustrated with similar figures' (p. 202) and that the Leiden manuscript was 'copied either from the catalogue of stars [ps-Bede] or the Aratus latinus' (p. 230). See

interestingly, many of these features also reappear in a later, 10th-century copy of the *De signis caeli*, Paris BN lat 5239. Whereas the Leiden Hyginus certainly shares similar formulae for the majority of its pictures with Paris BN lat 5543 and Paris BN lat 5239, there are a sufficient number of discrepancies to suggest that the Leiden pictures are not directly – or perhaps, it would be wiser to say ‘solely’ – derived from either.²⁰⁵ One interesting (but perhaps over-valued) detail in the history of these three manuscripts is that it is highly likely that Adémar knew the 10th-century illustrations now contained within Paris BN lat 5239 as they, too, were painted at the Abbey of Saint-Martial. Further, the manuscript as it is currently bound contains a series of tables of the *circuli decemnovennales*, one of which (for the year 1018) is written in the highly characteristic hand of Adémar himself.²⁰⁶ But, as is clear from the chart above, even though Adémar may have known the manuscript, the only major pictorial detail shared by both that does not appear in the finer, Carolingian *De signis caeli* manuscript, Paris BN lat 5543, is the inclusion of the disfigured ‘cornucopia’ in the image of Eridanus.²⁰⁷ Indeed, a close comparison of the three manuscripts reveals two things: first, there are a number of features, which appear in both Paris manuscripts and have not been carried over to the

also GABORIT-CHOPIN 1967, pp. 186-191) and McGURK 1973, pp. 198-99 and the catalogue entry on Aberystwyth 735C.

²⁰⁵ See BYVANCK 1931, pp. _____ and GABORIT-CHOPIN 1967, pp. 186-191.

²⁰⁶ See PORCHER 1950, p. 58, no. 3. and GABORIT-CHOPIN 1967, p. 188.

²⁰⁷ In addition to this feature, one might add the knobbly supporting beams in the depictions of Lyra, the relative nudity of Andromeda and the inclusion of six toilet articles on her rocks (versus five in Paris BN lat5543). This is also noted by GABORIT-CHOPIN 1967, p. 188.

Leiden Hyginus;²⁰⁸ and second, that the constellation images in the Leiden Hyginus are actually much closer stylistically and pictorially to the Carolingian *De signis caeli* manuscript, Paris BN 5543, than to the 10th-century Saint-Martial copy of the text.²⁰⁹ This closer comparison proves

²⁰⁸ These include the very long tail of **Ursa Minor** in both the individual picture of the constellation and in the *Draco inter arctos* picture; **Gemini** wearing closed-toed boots (they wear sandals in the Leiden Hyginus) and **Aries** has a band around his waist (though, most likely, the Aries in the Leiden Hyginus is a later addition to the manuscript). The last two are also noted by GABORIT-CHOPIN 1967, p. 188.

²⁰⁹ Against this, note how the Carolingian *De signis caeli*, Paris BN lat 5543 and the Leiden Hyginus share the following pictorial details, which do not appear in Paris BN lat 5239:

- the upward tilt of the head of **Hercules** and the way the toes of his left foot rest on the tail of the **Snake**
- **Cygnus** depicted with two wings showing (Paris BN lat 5239 has only one wing depicted)
- **Bootes** depicted wearing a furry or tattered skirt with a skin draped over his extended arm and with wild hair sprouting from his head.
- the shape of **Cepheus's** cap
- the way in which the Phrygian cap worn by **Cassiopeia** rises above the back of her throne and the decoration on her dress
- an understanding of how **Andromeda's** wrists are chained to her rocks and the detail of how her stole falls over her outstretched arms.
- the Phrygian cap worn by **Perseus**, the oversized wings on his feet and the inclusion of the curving contour of his buttocks.
- the large horns borne by the Haedi in the depiction of **Auriga**.
- the body of **Pegasus** ends in an oval cut-off.
- **Cancer** with a circular/oval body.
- **Leo** runs to the left.
- **Virgo** wears a belt and kicks up her left leg.
- **Aquarius** wears a Phrygian cap and the stream runs below his feet.
- the mane on **Cetus's** neck.
- the construction of **Orion's** tunic and the decoration on his boots.
- the inclusion of two steering oars in **Argo**.
- the position of **Centaurus's** legs, with the left front and right rear feet lifted.
- the shape of **Ara's** flames.
- the shape of **Crater's** handles.

that, even though Adémar may have known the illustrations currently in Paris BN lat 5239, it is difficult to argue that it was the primary source of inspiration for his Hyginus pictures.

One possible reason for this could be that there were probably better models readily available. For, if one considers the illustrations in Paris BN lat 5239 with a certain degree of dispassion, it must be admitted that they are really rather poor. They are rough and notably lacking in detail. Their schematic quality is summary to such an extent that it almost seems as if they have been inexpertly traced from another source, rather than drawn.

In addressing the problem of the obvious disparities between Adémar's drawings in the Leiden Hyginus and the two Parisian manuscripts of the *De signis caeli*, Byvanck proposed that there must have been a now-lost, hypothetical 'X' manuscript, which combined all the disparate features seen in both Paris manuscripts and served as the pictorial model for Adémar's drawings. Instead, it would seem that this 'X' makes more sense when it is placed closer to the hypothetical archetype that stands behind a more extended group of manuscripts – a group which would also include the illustrations in three German ps-Bedan manuscripts: the 11th-century manuscript, Vat lat 643; its early 12th-century copy, Zwettl 296; and Zwettl's 12th-century copy, Klosterneuberg 685.²¹⁰ As the similarities between a number of individual ps-Bedan constellations and those found in

²¹⁰ These are all members of the *De signis caeli* II pictorial family. For additional information, see the pertinent pages in the *De signis caeli* Commentary and catalogue.

the manuscripts of the *Revised Aratus latinus* have been noted by previous scholars, the first temptation would be to jump towards the easiest solution and propose that this 'X' was itself a ps-Bede manuscript, dating to sometime soon after the composition of the text (or sometime in the mid-9th century) and that this manuscript drew many of its pictorial formulae from the illustrations accompanying early manuscripts of the *Revised Aratus latinus*.

One problem with such a suggestion is that there does not seem to be a version of the *Revised Aratus latinus* in which the stars have been included by the hand of the original scribe;²¹¹ but since we are lacking so many

²¹¹ One would argue that there are no manuscript of the *Revised Aratus latinus* that has its stars marked, but St Gallen 250 has stars marked on some of the constellations. See the discussion of the likely provenance of these star positions in the Commentary of the *Revised Aratus latinus* manuscripts. As noted in the catalogue entry on this manuscript, stars appear on **Draco, Hercules, Virgo, Gemini**, one star on **Cancer**, stars on **Leo, Auriga, Taurus, Cepheus, Cassiopeia, Andromeda, Pegasus, Aries, Triangulum, Pisces, Aquarius, Cygnus, Capricorn, Sagittarius, Aquila, Delphinus, Orion, Canis Maior, Lepus, Argo, Centaurus, Hydra/Crate/Corvus** and **Canis Minor**. There are different hands evident in the illumination of this manuscript, and it seems that the decision to include stars rests with one particular illuminator. As noted, however, St Gallen 250 is a copy of the slightly older manuscript, St Gallen 902, and has benefited from having been corrected against another manuscript. As St Gallen 902 does not include stars, it seems most likely that the stars in St Gallen 250 were imported from another source. Indeed, if one considers the positions of the stars in St Gallen 250 more closely, a number of factors begin to reveal themselves. First, the stars in St Gallen 250 are often placed in a such a schematic fashion (as in geometric grouping of three and fours), that it limits the possibility that there was a sophisticated astronomical source behind this importation. Instead, the illuminator of these illustrations has taken the information on which he based the placement of his stars either directly from the text of one of the available stellar catalogues or from the illustrations found in them. If one compares the positions of the stars in the St Gallen manuscript with the descriptions in these catalogues, it is surprising to note that the level of co-incidence is surprisingly low. The highest level of co-incidence is with the text of Hyginus, closely

hypothetical archetypes and linking prototypes throughout the whole history of these literary manuscripts, the proposal of a missing *Revised Aratus latinus* illustrated archetype, from which the pictures of the *De signis caeli* – and, by extension, the Group II Hyginus illustrations – have been drawn cannot be proven either way.²¹² If one compares the appearance of some specific details of these manuscripts across a chronological chart, interesting patterns emerge (see Table 1 below).

One telling feature that further divides the chart is whether or not the constellations have their stars marked. The two Paris manuscripts do not have stars.²¹³ Adémar's Hyginus does have stars in the first few constellations, but they soon peter out.²¹⁴ The constellation figures in the Vatican Hyginus and the three ps-Bede manuscripts (Vat lat 643, Zwettl and Klosterneuberg) do all have stars. If nothing else, this distribution supports the proposal that a single 'X' could not have been the sole parent of this close-knit family of manuscripts. Amongst the hypothetical spawn of 'x' manuscripts, there must have been one with stars included.

followed by the ps-Bedan *De signis caeli*, then ps-Eratosthenes, the *scholia Stroziana* and the *Aratus latinus*, with the text of the *Revised Aratus latinus* actually lagging quite far behind!

²¹² For more on the roots of this pictorial tradition, see the relevant pages in the section on the *De signis caeli*.

²¹³ Paris BN lat 5239 does have a few constellations marked with stars (Ursa Maior, Ursa Minor, Draco, Corona Borealis, Ophiuchus, Serpens and Scorpio), but their haphazard placement suggests they have been added by a later hand.

²¹⁴ On the positioning of the stars in the Leiden manuscript, see the catalogue entry.

This archetype spawned a nebula of ‘x’ copies over the next 300 years - of which the ones listed in the above chart represent a sadly meagre selection occasioned by an appallingly low rate of survival. Paris BN lat 5543 may well reflect a first second generation copy of ‘X’, but it is patently not the parent of any of the other manuscripts. Instead, it and the other manuscripts listed here, are all cousins and second cousins, reflecting only occasionally the shape of their common ancestor.

Another interesting feature, evident from the material presented in Table 1, is how the Vatican *De signis caeli*, Vat lat 643, appears to contain the largest number of shared features. The only notable detail that is lacking is the depiction of Bootes as a wild man. For these reasons, it would seem that the illustrations in Vat lat 643 should be seen as an important pictorial link between these disparate manuscripts. If one assumes that there is a prototype behind all these manuscripts that is the source of the majority of the idiosyncratic features that define this pictorial tradition, then Vat lat 643 – with its stars clearly delineated – might provide the clearest reflection of what that prototype looked like.

The similarities sustained by these manuscripts, however, do prove the strength and importance of this particular pictorial tradition. The fact that this set of pictures reappears in a number of different contexts shows that it must have been both widely and significantly diffused. In addition to its appearance in the Leiden and Vatican Hyginus manuscripts, for example, one finds this pictorial tradition resurfacing in the illustrations to an 11th-

century Germanicus *Aratea* in Aberystwyth.²¹⁵ The shared features in this manuscript include (see Table 1):

- **BOOTES** as a ‘wild man’; with shredded fabric over his outstretched arm (although, in the Leiden Hyginus, the fabric consists of the recognizable skin of an animal).
- **VIRGO** floating to the left, carrying the scales in her left hand.
- The **GEMINI** with **CANCER** between their feet.
- **TAURUS** with an ‘X’ across his face.
- **CEPHEUS** with tassels on his hat.
- **ANDROMEDA** with her toilet articles and a serpent at her feet.
- **PEGASUS** with his head set in front of his left wing (as one saw in the Leiden Hyginus).²¹⁶

Certainly the Aberystwyth manuscript fills the criteria of a compilation manuscript, with its texts and maps drawing from several different sources;²¹⁷ and it is interesting to note the extent to which the iconography of the constellations pictures, at least, preserve many of the traits of this close-knit pictorial family.²¹⁸ Also, it is important that the constellations in this section have their stars marked.

From the number of other pictorial traditions discussed in the volume, one can clearly see that this particular one was not the only iconographic alternative available to scribes and illuminators. Nevertheless, it must have been deemed as sufficiently ‘authoritative’ to merit inclusion in so many

²¹⁵ Parts of this compilation can also be traced to Limoges. For more information on the complicated heritage of this manuscript, see McGURK 1973, pp. 197-216 and for the connection to the *De signis caeli*, see esp. pp. 198- 200. See also the catalogue entry, in the Germanicus section.

²¹⁶ See McGURK 1973, pp. 198-99.

²¹⁷ For more information about the contents of this manuscript, see the catalogue entry.

²¹⁸ Whereas the picture cycle in the Germanicus *Aratea* in Aberystwyth is not complete, these shared characteristics are present in what does survive.

dissimilar manuscripts, especially since, in at least three instances, the texts that needed illustrating were by classical authors. The fact that the illustrations in both the Leiden and Vatican Hyginus manuscripts were taken from the *De signis caeli* suggests that an illustrated Hyginus manuscript did not exist in either Limoges or Ripoll in the first half of the 11th century. This, in itself, calls into question once again whether or not an ‘illustrated Hyginus’ existed in antiquity.

Returning now to the differing structures of the two Hyginus manuscripts and considering how this process of incorporating the *De signis caeli* illustrations was achieved, it is clear that, in the Leiden Hyginus, the task was significantly complex as it involved adapting the *De signis caeli* illustrations to a significantly different format. The data presented in Table 2 illustrates the degree of change in the order of the constellations. It shows clearly that the adaptation process included

- rearranging the pictures from the sequence in which they appear in the *De signis caeli* to the order in which they appear in the *De astronomia*;
- cleverly determining how many pictures should fit on each page to accommodate the exact amount of the new Hyginian text
- taking into account that the parchment of this particular manuscript is terribly uneven (especially on the backing folii ff. 172r-v and ff. 174r-v) and adjusting the size and spacing of the script to accommodate these irregularities.

The possibility that Adémar might have copied his pictures directly from a Hyginus manuscript in which the illustrations from the *De signis caeli* had already been inserted is diminished when one realises that the pictures in the Leiden manuscripts were clearly drawn on the pages before the text was

added as the edges of the text hug the contours established by the drawings. This is particularly noticeable as the parchment from which the manuscript was constructed is very scrappy and nearly every folio differs in size or shape.²¹⁹ The final process of accommodating the combined format of text-and-illustration on a deformed page tips the balance, as it is very difficult to imagine that the extruded tail of text that appears alongside the illustrations of Cepheus and Cassiopeia (ff. 174r-v) could have been copied from a similarly deformed model. Instead, it strongly suggests that it was Adémar himself who incorporated the *De signis caeli* illustrations into Book III of the *De astronomia*. Somehow, though, one feels that if anyone could have overcome these series of obstacles, it would have been he; and, once again, one is prompted to admire this level of skill and resilience of this bookish monk.

The scribe and artist of the Vatican Hyginus had much the easier task in composing his treatise. Since this book consisted of excerpts taken from Book III of the *De astronomia* and other sources, the sequence of the constellations was not set by the order of the Hyginian text itself. Instead, as the Table 3 demonstrates, the solution to the problem of how to order the sections on each constellation was to extract the eleven zodiacal constellations and describe them first. The compiler then presented the

²¹⁹ This point is made by VIRÉ (see pp. _____ above) and BYVANCK 1931, p 69.

remaining thirty groups of constellations²²⁰ with their snippets of Hyginian text more or less in the order that they appear in the *De signis caeli*.

The similarity in the order of the extra-zodiacal illustrations in the Vatican Hyginus and the *De signis caeli* and the marked difference between this and the order in which the constellations are presented in Book III of the *De astronomia*, proves the extent to which the order of the illustrations of a *De signis caeli* manuscript informed the structure of this manuscript.

There is one final issue that merits attention and this concerns the placement of the stars in the Leiden and Vatican Hyginus manuscripts.

Tellingly, there are only four sets of stars marked in the Leiden Hyginus.

These may have been by Adémar himself or may be evidence of later tinkering. These are:

- **HERCULES** has 1 star in his head, 1 in each shoulder, 1 on each side, 1 under his left arm, 1 in his right forearm, 1 in the right hand, 2 in his right thigh, 1 in his right knee, 1 on the back of his right knee, 2 on his right shin, 1 on his right foot and 4 stars close to the lion's skin, or 19 stars in all.
- **LYRA** has 1 star at the top of each vertical bar, 2 at the top of each curved side and 1 at the base, or 7 stars in all.
- **CYGNUS** has 5 stars in each wing, 1 in its neck, 1 in its head, 1 in the tail, or 13 stars in all.
- **TRIANGULUM** has 1 star in each corner.

If one compares the positions of the stars in the Leiden Hyginus with the information taken from the various descriptive star catalogues, it becomes

²²⁰ That is, with Ophiuchus, Serpens and Scorpio; Aquila and Sagitta; Centaurus and Lupus and Hydra, Crater and Corvus as discrete groupings.

apparent that the stars in these four constellations have been drawn precisely from the stellar positions listed in Book III of the *De astronomia*, and not from *De signis caeli* tradition.

Perhaps, at this stage, one begins projecting one's own sense of disorientation into the mind of the medieval scribe, but one can imagine how, after having succeeded in the Herculean task of transporting one set of pictures into an alien text, the challenge of trying to place the stars within each constellation became insurmountable. The positioning of the individual stars in the descriptive star lists in Book III of the *De astronomia* rarely accord with those described or depicted in the *De signis caeli*. Taking the stars of Hercules as an example:

Hyginus, *De astronomia*, III²²¹

in capite stellam unam
 in sinistro brachio unam
 in utroque humero singulas clare lucentes
 in manu sinistra unam
 [-]
 in dextro cubito alteram
 [-]
 in utroque latere singulas, sed clariorem in sinistro
 in dextro femine duas
 in genu unam
 in poplite unam
 in crure duas
 in pede unam, quae dicitur clara
 in sinistra manu quattuor quas pellem leonis esse
 nonnulli dixerunt.

ps.-Bede, *De signis caeli* (re-ordered to collate)²²²

in capite 1
 [-]
 in utroque humero 1 splendidam
 [-]
 in dextra manu 1
 [-]
 in cubito sinistro 1
 [-]
 in dextra coxa 2
 in genu dextro 1; in sinistro genu 1
 [-]
 in eadem tibia 1
 [-]
 et in Ropalo, quem tenet in eadem manu, 1.

Faced with this alarming high level of discrepancy, Adémar faced three options: 1) to copy the positions of the stars as they appeared in his *De*

²²¹ Hyginus, *De Astronomia*, III, 5 (VIRÉ 1992, p. 98).

²²² ps.-Bede, *De signis caeli* (dell'ERA 1979, p. 284).

signis caeli model - if, indeed, his exemplar did contain stars (noting that neither Paris BN lat 5543 nor Paris BN lat 5239 have stars, but that the Vatican 643/Zwettl/Klosterneuberg manuscripts do); or 2) to attempt to add the stars to his illustrations according to the directions provided in Book III of the *De astronomia* or 3) to abandon the enterprise altogether, since his two ‘authorities’ differed so wildly. As one can see, he started to enter the positions of the stars in accordance with the text of Book III, but apparently lost heart and finally chose the third option.²²³

If one checks on the stars in the Vatican Hyginus, Vat Reg lat 123, it becomes clear that the placement of the stars in this manuscript is rather confused. A superficial comparison between the Vatican Hyginus and the ps-Bedan amalgam, Vat lat 643, suggests that the positions of the stars in the two manuscripts are broadly similar. If one then quantifies this impression a bit more closely, however, and compares these two sets of illustrations with three textual sources, the pattern becomes slightly more complex (see Table 4).

The first thing that becomes clear is that the consonance between the star placements in Vat Reg lat 123 and the ps-Bedan Vat lat 643 is not at all as strong as it seems at first glance. Second, there is no apparent pattern of

²²³ For Hercules, he enters the following stars: 1 in the head, 1 in each shoulder, 1 on each side, 1 under his left arm, 1 on his right forearm, 1 in his right hand, 3 on his right thigh, 1 on his right knee, 2 on his right shin, 1 on his right foot and 4 close to the lion’s skin. The text of the manuscript is virtually identical to that found in Viré’s edition. The other possibility, of course, is that the stars in Adémar’s manuscript reflect the tinkering of a later hand. Regardless and for the same reasons, the task is soon abandoned.

agreement between the positions of the stars in the Vatican Hyginus and any single version of the descriptive stars catalogues.

Digging a bit more deeply for an answer, it is interesting to note that, whereas star catalogues from Book III of the *De astronomia* are included for each constellation, in some cases, the Vatican manuscript also includes a second star catalogue taken from the *De signis caeli*. This means that the illuminator of the manuscript was regularly (though not always) faced with three possible sources to use as the basis of his star positions: 1) the Hyginus text, 2) the *De signis caeli* picture and, sometimes, 3) the *De signis caeli* text. By closely comparing image and text, one sees that his choice of which source to use was not always consistent. For example:

- For several of the constellations, Hyginus's description of the stars is identical to those found on the *De signis caeli* catalogue. The stars in the following constellation agree with both traditions: **SCORPIO, URSA MINOR, CORONA BOREALIS, SAGITTA, TRIANGULUM, PISCIS AUSTRINUS, ARA and CANIS MINOR.**
- In some cases, the positions of the stars placed inside the constellations follow the descriptions found in the excerpts from Book III of the *De astronomia*. This is true for the following constellations: **URSA MAIOR, CYGNUS, ARIES, LEO, ORION, CANIS MAIOR and LEPUS.**
- A number of other constellations show the influence of the *De signis caeli* descriptions. Some, such as **AURIGA, CASSIOPEIA and DELPHINUS**, have their stars placed exactly as stipulated in the *De signis caeli* text. While others, such as **TAURUS, VIRGO, OPHIUCHUS (with SERPENS and SCORPIO), CEPHEUS and PERSEUS**, represent a certain degree of laxity, but the placement of the stars is generally closer to the *De signis caeli* descriptions than to those found in the *De astronomia*. A special case is **ORION**. In Hyginus's description there are 3 stars placed in sword, whereas, in the *De signis caeli* catalogue, these 3 stars are placed in the mantle of Orion. In the present manuscript, one finds 3 erased stars in the mantle and 3 stars (actually dots) in the sword. The shapes of the erased stars

agree with the normal placement of the 3 stars in the mantle and probably represent the original intention of the artist. At a later date, another reader erased them and placed 3 dots in the sword instead. Thus, it seems safe to conclude that the stars in Orion were originally placed in accordance with the *De signis caeli* tradition.

- The image of **BOOTES** reflects a slightly more complicated process. The excerpt from the *De astronomia* (III, 3) describing the positions of 14 stars of Bootes appears on fol. 185r, immediately following the picture of Ursa Minor. Clearly, the text has run on in this way because that is how it appears in Hyginus, where he discusses Boötes immediately after his description of Draco. But, even though the text appears on fol. 185r, the illustration of Bootes actually appears several folii later (on fol. 189v), after the illustration of Ophiuchus and Serpens (fol. 188v). Once again, this demonstrates how the order of the pictures in Vat Reg lat 123 follows that used in the *De signis caeli* catalogue, where Boötes is described after the constellation of Ophiuchus with Serpens and Scorpio. Flanking the illustration of Bootes, one does find a Hyginian excerpt - but one taken from the catasteristic myths from Book II of the *De astronomia* (II, 3). This myth is followed by an additional description of the stars, taken from the *De signis caeli* catalogue and describing the positions of 16 stars.

In the descriptions of the positions of Boötes's stars, there are two significant differences between the *De astronomia* and the *De signis caeli* catalogues. First, the *De signis caeli* lists 4 stars in the elbow. These stars are missing in Hyginus's description. Second, the *De signis caeli* catalogue does not mention the bright star, Arcturus. Hyginus places Arcturus *in zona*, or 'in the belt'. Tellingly, the illustration in Vat Reg lat 123 includes the 4 stars in the arm of Bootes and excludes Arcturus. This proves, that in this case, the artist took his star positions from the text or an illustration of the *De signis caeli*. To complicate matters slightly, however, there is a star missing from the picture. The *De signis caeli* catalogue stipulates 1 star in each nipple and the picture shows only 1 star in the breast of the figure. This may explain why the scribe has ended this section of his text with the following notation: *Sunt omnes xv*. The stars mentioned in the text clearly add up to 16, but when he counted the stars in the illustration, the scribe counted only 15 stars and felt compelled to amend the text accordingly.

- Similar problems crop up in the pictures of **HYDRA**, **CORVUS** and **CRATER**, where text from the *De signis caeli* catalogue is included after the excerpts from the *De astronomia* (III, 39). Hyginus says that the three constellations should have 27, 7 and 8 stars respectively. In the *De signis caeli* catalogue, the number of stars is listed as 3 in Hydra, 3 in Crater and 4 in Corvus. If one counts the star in the beak

of Corvus as belonging to that constellation, then the Vatican artist places the stars exactly as stipulated, with 3 stars in the body of Hydra, 3 in the Crater and 4 in Corvus. Here, however, the scribe has not been tremendously accurate. First, he makes a series of mistakes in his transcription:

... [*Serpens*] *habet stellas iiiii* [*sic = iii*]: *in vertice* [*sic = cervice*] *i*, *in pectore i*,
in ventre i.

Corvus vero habet stellas .iii. [*sic = iiiii*] *in rostro i*, *in ala ii*, *in genitale i*.

Urna autem in medio labiorum habet stellas obscuras iii.

And, second, he comes up with a total (*Sunt omnes xi*), thus deviating from the original (it should be: *Sunt omnes x*). The artist has drawn 10 stars and the original text stipulates 10 stars, but the scribe has miscalculated and provides a total of 11 stars.

- The constellation of **CAPRICORN** is another interesting example. In the Hyginus manuscripts, the total number of stars is usually listed as 26,²²⁴ but the actual number of stars described is equal to 20. In Vat Reg lat 123, the scribe has added an extra 6 stars to Hyginus's description of the horns of the constellation (*in cornibus vi*), thereby ensuring that the total number of stars adds up to the right number of 26 stars. There is no known source for this number of stars in the horns, however. Hyginus, for example, does not list any stars in the horns of Capricorn; and the text of *De signis caeli* mentions 2 stars in each horn and 2 in the head. Interestingly, the picture in Vat Reg lat 123 does not illustrate 6 stars in the horn, but follows the *De signis caeli* prescription of 2 stars in each horn and 2 in the head (which, one might note, does equate to 6 stars in the head of the beast, so may have been the ultimate source for the transposition). Also, note that the illustration actually shows a total number of 27 stars. This is due to the addition of an extra, unstipulated star in the feet (the description lists only 2 stars in the feet instead of 3.)
- In the description of **AQUARIUS**, Hyginus mentions 14 stars in the figure of the water-bearer and 30 in his stream. The Vatican scribe mis-records this as 22 stars in the figure and 30 in the stream. The text of the *De signis caeli* stipulates 18 stars in the figure and 2 in the water. The illustration of Aquarius, however, shows 14 in the figure, 1 in the urn and 7 in the water. If one adds up the total numbers of stars in the illustration, it totals 24 stars.

²²⁴ See Hyginus, *De astronomia*, III, 27 (Viré 1992, p. 114).

- The position of the stars within **HERCULES** is also problematic, seeming not to follow either Hyginus or the *De signis caeli* catalogue. For example, Hyginus says that there are 4 stars on the lion's skin. The Vatican picture has neither a lion's skin (being one of those examples in which the lion has been replaced by a decapitated, bearded male head), nor are there 4 stars placed here. The *De signis caeli* catalogue mentions 1 star on each knee and 1 on each shin, but in the Vatican illustration, there are 2 stars on his right thigh, 1 on each knee, 1 on the right calf and 1 on the right foot. Both star catalogues include 1 star in each shoulder, but the Vatican Hercules has a star only on one shoulder. It seems that the stars in this figure are slightly closer to the *De signis caeli* catalogue, but one cannot explain the placement of all stars using only this source.
- A similar uncertainty is also evident in the depiction of **ARGO**. Hyginus and the *De signis caeli* catalogue both stipulate 26 stars. The Vatican picture shows 27 stars. The Vatican Argo depicts 5 stars in each oar, following the *De signis caeli* catalogue (Hyginus says 5 in one oar and 4 in the other); but follows Hyginus in placing 9 stars (albeit somewhat haphazardly) somewhere on the hull of the ship (the *De signis caeli* catalogue has 8 stars on the hull). In the Hyginus excerpt (III, 36) flanking the picture, the scribe makes a mistake and, instead of listing *Ita tota est stellarum xxvi*, he drops a letter and writes: *Ita tota est stellarum xvi*
- Both **PEGASUS** and **AQUILA** have particularly odd features. For **PEGASUS**, the Hyginus text (Book III, 17) is identical to that in the *De signis caeli* catalogue. In the illustration, however, the placement of the stars deviates from these descriptions. The texts stipulate: 1 star on the shoulder (there are none in the picture), 1 on the back (the illustration has 3 in the wings) and 1 in each knee (the illustration has 1 in the left knee, but the right knee has been damaged, so there may have originally been a star there). For **AQUILA**, both descriptions mention 4 stars (Hyginus places 1 star in the head, 1 in the tail and 1 in each wing; while the *De signis caeli* catalogue there are 1 in the foot, 1 in the body, 1 in the beak and 1 below it); but the picture in Vat Reg lat 123 shows 5 stars: 1 star in his head, 3 in his chest, 1 in his foot.
- In addition to all these small oddities, there are a number of straightforward errors in Vat Reg lat 123. For example, in the picture of **CETUS**, there are 5 stars in his belly and 6 in his tail. According to Hyginus (Book III, 30), there should be 6 in the belly and 5 in his tail. The text on fol. 202v is attributed to Hyginus (HYGINI FABULA DE CETU CXIII), but it is actually taken from the *De signis caeli*, which places 6 stars in the belly and 6 in the tail.

The conclusion to be drawn from these observations seems clear. The scribe/illuminator of Vat Reg lat 123 must have had at his disposal an illustrated manuscript of the *De signis caeli* catalogue with pictures adorned by stars. Most likely, this manuscript looked something like the German *De signis caeli* manuscripts, Vat lat 643, Zwettl 296 and Klosterneuberg 685. The French *De signis caeli* manuscripts, Paris BN lat 5239 and lat 5543 could not have been the model for the Vatican Hyginus, since they lack stars. In pulling together the different sources for his compilation, the scribe followed the order of the *De signis caeli* manuscript - with the exception of the zodiacal constellations, which he placed at the beginning. For the text describing each constellation, he drew liberally from Books II and III of the *De astronomia*, but also reverted to the star catalogues found in the *De signis caeli* from time to time. His accuracy was middling and he rarely verified the number or positions of the stars in the illustrations against the text or texts he included in his compilation. One would love to credit the scribe of the Vatican Hyginus with the lofty ambition of bringing together differing sources in an attempt to rectify one against the other. But it is very difficult to detect any pattern behind his choices. Instead, his sliding from source to source and his marked inability to check the positions and the totals of the stars listed in the text against the pictures seems to suggest that his aim was to copy and compile, and leave the resolution of these inconsistencies to someone else.

In summary, the texts of Leiden 8° 15 and Vat Reg lat 123 are very close.

Their illustrations are similar, with both sets of pictures derived from those

found in manuscripts of the *De signis caeli*. The constellation pictures, which served as the model for the Vatican Hyginus, certainly had stars. Whether or not the model behind the Leiden Hyginus had stars is uncertain, but the fact that only four constellations in Adémar's manuscript have stars included does seem to reflect the author's inability to reconcile the position of the stars from an illustrated *De signis caeli* with the stellar positions described in Book III of the *De astronomia*. Had his pictorial model been without stars, adding Hyginian stars to the pictures would have been a relatively easy task - though, of course, the discrepancies between the descriptions in the *De signis caeli* catalogue and the *De astronomia* catalogue might have presented an equally daunting obstacle to a careful textual scholar, such as Adémar. The fact that another rogue manuscript in this extended *De signis caeli* pictorial family, the Aberystwyth Germanicus, has star marked and that it, like the Leiden Hyginus, comes from the Limoges area, further supports the likelihood that the pictures in Adémar's model included stars. Indeed, it is worth noting that, in contrast to manuscripts of the *Revised Aratus latinus*, which generally do not contain stars, manuscripts of the *De signis caeli* regularly do. The reason for this may be fairly straight-forward: the *De signis caeli* is not an extended treatise on the heavens, but is simply a star catalogue. As such, an illustrated version of the text had only two tasks: to depict the outlines of the constellations and to show how the stars mentioned in the catalogue fit within these figures.

Tables for GROUP III: (compiled by Elly Dekker)

Table 1

Defining feature	Paris 5543 DSC	Paris 5239 DSC	Leiden 8° 15 HYG	Vat Reg lat 123 HYG	Vat lat 643 DSC	Zwettl 296 DSC	Klost 685 DSC	Aberst 735C GER
2 bears / <i>Draco inter arctos</i>	x	x	x	x	x	x	x	x
Auriga with a floppy thong	x	x	x	x	x	x	x	□
Cepheus with tassels	x	x	x	x	x	x	x	x
Perseus with winged feet	x	x	x	x	x	x	x	□
Eridanus as bust	x	x	x	x	x	x	x	□
Andromeda with a dragon at her feet	x	x	x	x	x	x	x	x
Andromeda with toilet articles	x	x	x	x	x	x	-	x
Navis with a dog's head	x	x	x	-	x	x	x*	□
Cygnus lifting his right leg	x	x	x	x	x	-	-	□
Eridanus with 'cornucopia'	-	x	x	x	x	x	-	□
Bootes with a shredded skin	x	-	[x]	x	x	x	x	x
Hercules holding a bearded male head	-	-	x	x	x	x	x	x
Taurus with an 'X'	x	x	x	-	x	-	-	x
Centaurus with his left arm in a skin	x	x	x	-	x	-	-	□
Virgo floating with Scales	x	-**	x	x	x	-	-	x
Gemini with Cancer between their feet	-	-	x	-	x	x	x	x
Pegasus with bowl	-	-	[x]	x	x	x	x	[x]
Bootes as a 'wild man'	x	-	x	-	-	-	-	x

Stars marked	-	-	[x]	x	x	x	x	x

x: the feature present; [x]: the feature is present in a restricted sense; -: the feature absent; □: the constellation missing

*there is a dog's head on the top of the mast; ** Virgo holds the Scales, but is standing and not floating

Table 2: Order of the constellations in Leiden 8° 15, compared to those of Hyginus III and DSC

Constellation	HYG III	Leiden 8° 15	DSC
Ursa Maior	1	1	1
Ursa Minor	1	2	2
Draco (inter arctos)	2	3	3
Bootes	3	4	8
Corona Borealis	4	5	5
Hercules	5	6	4
Lyra	6	7	23
Cygnus	7	8	24
Cepheus	8	9	15
Cassiopeia	9	10	16
Andromeda	10	11	17
Perseus	11	12	22
Auriga	12	13	13
Ophiuchus	13	14	6
Serpens	13	14	6
Scorpio		14	
Sagitta	14	15	27
Aquila	15	16	28
Delphinus	16	17	29
Pegasus	17	18	18
Triangulum	18	19	20
Aries	19	20	19
Taurus	20	21	14
Gemini	21	22	10
Cancer	22	23	11
Leo	23	24	12
Virgo	24	25	9
Scorpio	25	26	7
Sagittarius	26	27	27
Capricorn	27	28	26
Aquarius	28	29	25
Pisces	29	30	21

Cetus	30	31	34
Eridanus	31	32	35
Lepus	32	33	32
Orion	33	34	30
Canis Maior	34	35	31
Canis Minor	35	36	40
Argo	36	37	33
Centaurus	37	38	38
Lupus	37	38	38
Ara	38	39	37
Hydra	39	40	39
Crater	39	40	39
Corvus	39	40	39
Piscis Austrinus	40	41	36

Table 3: Order of the constellations in Vat Reg Lat 123, compared to those of Hyginus III and DSC

Constellation	DSC	Vat Reg Lat 123	HYG III
Aries	19	1	19
Taurus	14	2	20
Gemini	10	3	21
Cancer	11	4	22
Leo	12	5	23
Virgo	9	6	24
Scorpio	7	7	25
Sagittarius	27	8	26
Capricorn	26	9	27
Aquarius	25	10	28
Pisces	21	11	29
Ursa Maior	1	12	1
Ursa Minor	2	13	1
Draco (inter arctos)	3	14	2
Hercules	4	15	5
Corona Borealis	5	16	4
Ophiuchus	6	17	13
Serpens	6	17	13
Scorpio		17	
Bootes	8	18	3
Auriga	13	19	12
Cepheus	15	20	8
Cassiopeia	16	21	9
Andromeda	17	22	10
Pegasus	18	23	17
Triangulum	20	24	18
Perseus	22	25	11
Lyra	23	26	6
Cygnus	24	27	7
Sagitta	27	28	14
Aquila	28	29	15
Delphinus	29	30	16

Orion	30	31	33
Canis Maior	31	32	34
Lepus	32	33	32
Argo	33	34	36
Cetus	34	35	30
Eridanus	35	36	31
Piscis Austrinus	36	37	40
Ara	37	38	38
Centaurus	38	39	37
Lupus	38	39	37
Hydra	39	40	39
Crater	39	40	39
Corvus	39	40	39
Canis Minor	40	41	35

Table 4:

Constellation	Vat Reg lat 123	Vat lat 643	Text Hyginus	Text RAL	Text ps-Bede
Ursa Maior	21	16	21	17	16
Ursa Minor	7	7	7	7	7
Draco	16	15	15	15	15
Hercules	13	10/11	19	13	12
Corona Borealis	9	9	9	9	9
Ophiuchus	11	17	17	17	17
Serpens	4	6	23	6	6
Scorpio	19	19	19	19	19
Bootes	15	16	14	15	16
Auriga	10	10	7	8	10
Cepheus	20	22	19	15	21
Cassiopeia	12	13	13	14	13
Andromeda	23	20	21	14	13
Pegasus	16/18	18	18	18	18
Triangulum	3	3	3	3	3
Perseus	16	16	18	18	16
Lyra	8	9	9	8	9
Cygnus	13	14	13	13	14
Sagitta	4	0	4	4	4
Aquila	5	4	4	4	4
Delphinus	9	9	10	9	9
Aries	19	17	17	17	17
Taurus	18	18	14	18	18
Gemini					
The left Twin	8	5	8	5	5
The right Twin	9	5/7	10	10	7
Cancer	19	15	18	14	15
Leo	19	13	19	13	13
Virgo	21	19	21	19	19
Scorpio	19	19	19	19	19
Sagittarius	15	15	15	13	15
Capricorn	27	26	20	23	26

Aquarius	16	20	14	12	12
The water	7	2	30	30	2
Pisces	40	39	41	39	39
Orion	17	16	17	17	17
Canis Maior	18	20	19	16	17
Lepus	6	7	6	7	7
Navis	27	25	26	17	26
Cetus	13	14	13	13	14
Eridanus	12	18	13	13	16
Piscis Austrinus	12	12	12	12	12
Ara	4	4	4	4	4
Centaurus	18	23/24	24	33	24
Lupus	9	9	10	10	9
Hydra	3	3	27	26	3
Crater	3	3	8	7	3
Corvus	4	4	7	7	4
Canis Minor	3	3	3	3	3

GROUPS IV-VIII

As mentioned in the previous section, there are a number of manuscripts in which the text of the *De astronomia* is presented as extracts or interpolations of the original text. Pictorially, this group is actually composed of a number of singleton or paired manuscripts, with very little iconographic overlap between the sub-groups.

GROUP IV

The first sub-group consists of a pair of manuscripts containing different texts, but are closely related in their pictures:

Oxford, Bodleian Library

Bodley 614

Hyginus, *Recensio interpolata*²²⁵

English, mid-12th century

Oxford, Bodleian Library

Digby 83 (S.C. 1684)

Hyginus, *Excerpta*

English, 12th century

²²⁵ The text of these manuscripts is usually referred to as '*Hygini excerpta*' or, by Sister Wilma Fitzgerald as '*nugae Hyginiana*'. For the reasoning behind the preferred term - Hyginus, *Recensio interpolata* - see the following paragraph.

They share the following characteristics:

- The opening picture shows **BOOTES** standing to the left of a circular frame in which there is the depiction of **DRACO INTER ARCTOS**. His left hand is extended so that it enters the frame and he holds a club in his raised right hand.
- **CORONA BOREALIS** is depicted as a set of concentric circles held in the extended right hand of a female figure, who holds a plant in her right hand.
- **HERCULES** holds a 2-legged winged dragon in his extended left hand and holds a club in his raised right hand.
- **LYRA** is a deformed *bucranium* (compare the images in the Cicero manuscripts).
- **CEPHEUS** is seated on a throne with a cushion.
- **ANDROMEDA** is nude to the waist and wears a long robe around her legs. She stands frontally with her arms to the side and her wrists are tied by a rope that passes horizontally at the level of her hips. There is a large knot at her waist.
- **PERSEUS** has oversized wings on both his head and his feet and the Medusa's head has snaky hair.
- **PLEIADES** are 7 busts sets within roundels within a circular frame and the **HYADES** are 7 busts sets within roundels within a circular frame.
- **OPHIUCHUS** is nude and stands to the left with Serpens wrapped once around his waist and its tail passes between his legs.
- **AURIGA** stands to the right with the two kids in his raised right hand, an upside-down flail with 3 thongs in his left hand and Capra on his left shoulder. He is nude, save a long cloak.
- **PEGASUS** is depicted as a full horse with clear male genitalia.
- **TRIANGULUM** has foliate decoration in its centre.
- **ARIES** runs to the left and looks back over his shoulder to the right.
- **TAURUS** is a full bull.
- **GEMINI** embrace at their shoulders.
- **LEO'S** tail runs between his hind legs.
- **VIRGO** is without wings.
- **SCORPIO** is placed vertically on the page with his head towards the top and a leonine face. Instead of claws, he has two human arms that grasp the crossbar of a pair of Scales.
- **CENTAURUS** walks to the left and holds a dead animal in his outstretched tight hand. He holds a plant (*thyrsus*) in his left hand and streaming from his shoulder there is an animal skin (with face and two front legs clearly visible).
- **CETUS** is a fat fish with tusks.

The minor differences include:

- The female figure holding **CORONA BOREALIS** in the Bodley manuscript has a halo around her head, but the one in the Digby manuscript does not.
- The wings of **CYGNUS** are splayed in Bodley 614, but both point backwards in Digby 83.
- **OPHIUCHUS** is bearded in Digby 83, but not in Bodley 614.
- **CAPRA** has no horns in Bodley 614, but very long horns in Digby 83.
- **SAGITTARIUS** is bearded in Bodley 614, but not in Digby 83.
- The stream of **AQUARIUS** passed between both leg and ends in front of his right foot in Bodley 614, but is passes in front of his left leg and curls around the front foot of Aquarius in Digby 83.
- In Bodley 614, both fish in **PISCES** have their backs to the tops; in Digby 83, they are stomach-to-stomach.
- **ORION** is very different in each manuscript. In Bodley 614, he stands under a triple-arched piece of architecture (see the similar depictions in Cicero manuscripts). He raises a club in his right hand and has a sword attached to his waist. In Digby 83, he has no architecture, raises a sword in his right hand, raises a club in is left hand and wears a long scabbard at his waist.
- The structure of **NAVIS** is similar, but Bodley 614 has as animal's head at the end of its stern and Digby 83 does not.
- The postures of **ERIDANUS** are similar, but Bodley 614 has 'STELLA CANOPUS' set within a circular frame. In Digby 83, there is just a large star-shaped design beneath the right foot of Eridanus.
- Bodley 614 ends incompletely, but Digby 83 has an illustration of **ARA** as a Christian altar with two candles on top, and **HYDRA** as a two-legged dragon with 7 heads.

Notes on the stars in the Oxford Manuscripts Bodley 614 and Digby 83²²⁶

(compiled by Elly Dekker)

Medieval scribes do not not always place the stars in the pictures accurately and only very rarely does one fine all the stars marked (see Table below). So it is in generally difficult to conclude from the marked stars

²²⁶ Four constellations (Ara, Hya, Crv and Crt) are absent included in Bodley 614 and for that reason not included in the analysis.

which descriptive catalogues was used by a scribe. Fortunately there are always some characteristic features that hold only for one specific descriptive catalogue which allows one to identify the star catalogue.

Star positions in Bodley 614 and Digby 83 are typically of the 'Hyginus-type' because

- **BOÖTES:** Hyginus mentions the 4 stars in left hand that never set. All other catalogues place these stars in the right hand.
- **ARIES:** Hyginus has 3 stars on the horns, all other stars catalogues have 3 in the nose
- **CAPRICORN:** Hyginus has no stars in his horns, but other star catalogue do.
- **AQUILA:** Hyginus places 1 star in each wing, 1 in the head and 1 in the tail; other star catalogues do not have this configuration.

The following feature is only in **Bodley 614**

- **PISCES:** Hyginus places 17 stars on the top Fish, other catalogue have 12 or 15 stars.

Table A , there is a collation of the eighteen constellations or parts thereof for which the total numbers of stars are the same in the two manuscripts and they are in agreement with Hyginus. It shows how carefully the scribe has placed the stars.

What this chart shows is that the star positions in these two manuscripts are related through their deviations.

Table A: Stars which are the same in all three sources

Modern Name	Order			Number of stars			Difference		
	Hyg	Bod	Dig	Hyg	Bod	Dig	H-B	H-D	B-D
	III	614	83	III	614	83			
UMi	1	12	1	7	7	7	0	0	0
Dra	2	13	2	15	15	15	0	0	0
Her	5	16	5	19	19	19	0	0	0
Lyr	6	17	6	9	9	9	0	0	0
Aur	12	24	13	7	7	7	0	0	0
Oph	13	23	12	17	17	17	0	0	0
Aql	15	26	15	4	4	4	0	0	0
Tri	18	29	18	3	3	3	0	0	0
Tau	20	2	20	14	14	14	0	0	0
Pleiades	20a	21a	11a	7	7	7	0	0	0
Hyades		21b	11b	7	7	7	0	0	0
Gem 2	21	4	21	10	10	10	0	0	0
Sco	25	7	25	19	19	19	0	0	0
Psc 2	29	11	29	12	12	12	0	0	0
Cet	30	37	37	13	13	13	0	0	0
CMa	34	32	32	19	19	19	0	0	0
CMi	35	33	33	3	3	3	0	0	0
PsA	40	38	38	12	12	12	0	0	0

Both manuscripts share a number of errors which is clear from Table B in which we have collected all constellations or parts thereof (in all 9) for which the total numbers of stars are the same in the two manuscripts but disagree with Hyginus.

Table B: Stars are the same in the two manuscripts, but differ from Hyginus

Modern Name	Order			Number of stars			Difference		
	Hyg III	Bod 614	Dig 83	Hyg III	Bod 614	Dig 83	H-B	H-D	B-D
CrB	4	15	4	9	10	10	-1	-1	0
Lep	32	31	31	6	7	7	-1	-1	0
Cyg	7	18	7	13	8	8	5	5	0
Cep	8	19	8	19	18	18	1	1	0
Del	16	27	16	10	9	9	1	1	0
Ari	19	1	19	17	16	16	1	1	0
Cnc	22	4	22	18	15	15	3	3	0
Argo	36	34	34	26	21	21	5	5	0
Cen	37	36	36	24	22	22	2	2	0

Some of these differences are simply due to error. These are

- **CORONA BOREALIS** should have 9 stars. In both manuscripts there are 10.
- **LEPUS** should have 6 stars. In both manuscripts there are 7.
- **CYGNUS** which should have 5 stars in each wing. Both manuscripts have 5 stars distributed over both wings, thus missing 5 stars
- **NAVIS** should have 5 stars in the keel and 4 in the stern. In both manuscripts there are 4 stars in the keel and the other 5 are missing.

For the remaining constellations in table B (Cep, Del, Ari, Cnc, and Cen) a number of stars are missing. This could be negligence rather than error; but, the fact that this is shared by the two manuscripts underscores the close relation between them.

Having said that, however, Neither manuscript is a direct copy of the other. Table C compares all the constellations illustrations (6) for which the total numbers of in Digby 83 are less than those in Bodley 614.

Table C: Numbers of stars in Dig 83 less than in Bod 614

Modern Name	Order			Number of stars			Difference		
	Hyg III	Bod 614	Dig 83	Hyg III	Bod 614	Dig 83	H-B	H-D	B-D
Sgt	14	25	14	4	4	3	0	1	1
Leo	23	5	23	19	15	14	4	5	1
Cap	27	9	27	20	20	19	0	0	1
Lup	37	36	36	10	9	8	1	2	1
Psc 1	29	11	29	17	17	14	0	3	3
Peg	17	28	17	18	16	12	2	6	4

In all the cases in this comparison, the numbers of stars in Bodley 614 are equal or less than those prescribed by Hyginus. If we assume that Bodley 614 was the example from which Digby 83 stems, we must assume that the scribe of Digby 83 was rather negligent in copying the stars. The data in Table C make it clear that Bodley 614 could not simply have been copied from Digby 83. For example, there are 4 stars in the nose and head of Pegasus in Bodley 614, which are absent in Digby 83; and the northern Fish of Pisces has 17 stars, three of which are missing in Digby 83.

It is more difficult to explain the differences collected in table D, where all constellations or parts thereof (in all 13) are listed for which the total numbers of in Digby 83 are in excess to those in Bodley 614.

Table D: Numbers of stars in Dig 83 in excess of those in Bod 614

Modern Name	Order			Number of stars			Difference		
	Hyg III	Bod 614	Dig 83	Hyg III	Bod 614	Dig 83	H-B	H-D	B-D
Boo	3	14	3	14	11	12	3	2	-1
And	10	21	10	21	18	19	3	2	-1
Ser	13	23	12	23	22	23	1	0	-1
Sgr	26	8	26	15	14	15	1	0	-1
Aqr	28	10	28	14	12	13	2	1	-1
Eri	31	35	35	13	13	14	0	-1	-1
UMa	1	12	1	21	19	21	2	0	-2
Cas	9	20	9	13	10	12	3	1	-2
Per	11	22	11	18	13	15	5	3	-2
Gem 1	21	3	21	8	6	8	2	0	-2
Vir	24	6	24	21	14	16	7	5	-2
Psc 3	29	11	29	12	10	12	2	0	-2
Ori	33	30	30	17	15	17	2	0	-2

Blind interpretation of these numbers may lead to wrong conclusions. This is illustrated by the example of Boötes for which the relevant data are summarized in the table below.

Hyginus	Bodley 614	Digby 83
Boötes has		
4 in the left hand	2 in the left hand	+
1 star in his head	+	+
1 on each shoulder	+	+
1 on each nipple	+	+
1 below the right nipple	-	-
1 on the right elbow	+	-
1 in the belt	+	+
1 on each foot	+	+
in all 14 stars	in all 11 stars	in all 12 stars

The stars marked in the two manuscripts differ in two aspects: in Bodley 614 there are 2 stars in the left hand, whereas there are 4 in Digby 83. In contrast, the star plotted in Bodley 614 in the right elbow is missing from Digby 83. This example reinforces one's perception that one manuscript cannot simply have been copied from the other.

Another interesting example is the stars in Perseus. The relevant data are summarized in the table below.

Hyginus	Bodley 614	Digby 83
Perseus has		
1 star on each shoulder	-	+
1 on each hand	-	+
1 on his belly	+	+
1 at the right side	[+]	[+]

1 on the right thigh	-	-
1 close to the (right) knee	+	+
1 on the (right lower) leg	+	-
1 on the (right) foot	+	+
1 on the left thigh	+	+
1 on the (left) knee	+	+
2 on the (left lower) leg	+	1 on the (left lower) leg
4 in the (head in the) left hand, called the Gorgon head	+	+

in all 18 stars

in all 13 stars

in all 15 stars

In Digby 83, there are stars in each shoulder and each hand which are absent in Bod ley614. At the same time, in Bodley 614 there is 1 star in the right lower leg and 1 on the (left lower) leg, which are missing in Digby 83. Again, this supports the suggestion that one configuration cannot simply be a copy of the other.

Other constellations listed in table D are simpler to interpret. An example is the southern Fish of Pisces (Psc3) has 12 stars, two of which are missing in Bodley 614, indicating that the scribe of Digby 83 could not simply have taken over the data from Bodley 614. This conclusion suggests the possibility that this scribe consulted another manuscript with the complete Hyginus text.

Conclusion

Either the two manuscripts stem from one and the same parent, which had the errors they have in common or the scribe of the one manuscript used in

addition to the other manuscript another one, which contained the text of the star catalogue of Hyginus.

GROUP V (singleton)

Baltimore, Walters Art Gallery

Ms 734

Hyginus, Excerpta

probably North Italian, late 12th century

This manuscript is an abbreviated version of each of the IV Books of the *De astronomia*, with the illustrations accompanying excerpta from Book III. Though its illustrations are decidedly quirky, there are some features that tie it - albeit at some distance - from the two Oxford manuscripts. For example:

- **BOOTES** is depicted with part of his hand extending so that it touches the Arctic Circle, which encloses **URSA MAIOR** and **URSA MINOR**, which are back-to-back.
- **PERSEUS** has wings on his feet and Medusa has snaky hair.
- **TAURUS** is a full bull.
- The tail of **LEO** runs between his hind legs.

Other characteristics include:

- **HERCULES** holds an oddly splayed lion skin behind his body to the right and the animal's tail ends in a heart-shape.
- **LYRA** is composed of two S-shaped supports, the tops of which are depicted as animal heads
- **ANDROMEDA** is dressed in a long robe and her arms are tied to rocks/trees on either side.
- **AURIGA** is in a square chariot drawn by two horses to the right with one goat on his left shoulder and another facing him.
- **AQUILA** holds a rectangular box in his claws.
- **DELPHINUS** has a large tusk.
- **SAGITTARIUS** is a satyr.
- **CETUS** has a dog's face.
- **ORION** raises a sword with his right hand.
- **CENTAURUS** has wild hair, leaps to the right and holds a long spear in his right hand. He holds **LUPUS** (rabbit?) in his outstretched left hand).
- On fol. 20r, the **ASINI** are depicted eating from a cylindrical trough.

A number of these images seem to have been adopted from other pictorial traditions. The pictures in the *De ordine ac positione stellarum* show a number of similarities. For example,

the depiction of Andromeda tied to rock/plants, fully clothed and without tubular sleeves;²²⁷ and Centaurus shown with a long spear held in his right hand so that it crosses his body.²²⁸

Sagittarius does appear as a satyr in many formats, but it also appears most consistently as a feature in the *De ordine ac positione stellarum* manuscripts.²²⁹ There also seems to be an awareness of other Hyginus manuscripts. *For example*, Delphinus is rarely shown with a tusk, but does appear in some of the other Hyginus manuscripts.²³⁰

Finally, some of the images in the Walters manuscript do not have parallels within the other manuscript traditions. For example, Auriga within a chariot appears sporadically throughout many of the constellation manuscripts, but there seems not to be another case in which Capra faces the Charioteer from the front (right). Similarly, Aquila holding a box (quiver of arrows?) appears to be unique to this manuscript.

As noted above, the picture of Bootes in the Walters manuscript is distantly related to the images in the GROUP IV Hyginus manuscripts. In the latter, Bootes stands with his left hand inserted into the Arctic Circle. Below this image, there is a depiction of a female figure holding Corona Borealis. In the Baltimore manuscript, these images seem to have been conflated into one.²³¹ Here the illuminator has cleverly combined the textual stipulations

²²⁷ See, for example, the illustrations in Madrid 3307; Munich 210; Monza; Paris BN lat 12117; Vatican, Reg lat 309 and Vat lat 645.

²²⁸ See, Austin TX 29; Berlin 130; Madrid 3307; Monza; Paris BN lat 8663 and Vat lat 645.

²²⁹ See, for example, the DOA manuscripts: Berlin 130; Los Angeles, Getty, XII. 5; Madrid 3307; Monza; Paris BN lat 8663; Vat lat 645 and Vienna 12600.

²³⁰ See London BL Arundel 339 and Wolfenbuttel.

²³¹ Baltimore, Walters Art Gallery, Ms W. 734, fol. 5v. See D. Miner, 'Since De Ricci B Western Illuminated Manuscripts Acquired Since 1934. A Report in Two parts, Part II', *Journal of the Walters Art Gallery*, XXXI-XXXII, 1968-69, pp. 41-115 esp. pp. 83-87 and figure 30; LIPPINCOTT 1985, pp. 42-70, esp. p. 49 and LIPPINCOTT 2006, pp. 24-25.

that the hand of Boötes, touches both the Arctic Circle (*Arctophylax. Huius manum sinistram circulis arcticus includit ita*)²³² and the constellation of Corona Borealis, the Northern Crown (*...coronam humero sinistro prope contingere Arctophylax videtur*),²³³ by splitting the upper and lower contours of Boötes's arm. The top contour of the arm rises up the page so that it Boötes's hand rests on the lower edge of the Arctic Circle, which contains Draco and the two Bears. The lower contour of his arm runs along the bottom of the page, coming to rest on one of the tendrils of the leafy crown.

GROUP VI (singleton)

Berlin, Staatsbibliothek

Ms 8° 44 (Rose 962)

Hyginus, Excerpta

French, 13th century

Textually, the Berlin manuscript is somewhat distant from the other Hyginus manuscripts. In terms of its pictures, however, there seems to be some connection to the Baltimore Hyginus manuscript. It is not a direct or, even, an indirect copy, but the consonances are intriguing. For example:

- The upside-down curved stick held almost like a support by **BOOTES** in the Baltimore manuscript, reappears as a wooden crutch in the Berlin one.
- **HERCULES** appears with a full lion draped over his extended left arm in both manuscripts.
- **LYRA** has animal-head termini at the end of its side supports in both manuscripts.
- **GEMINI** are nude and embrace with crossed inner arms.
- **CANCER** is a crayfish.
- **SCORPIO** has a tapering tail and **CAPRICORN** has long curved horns.
- **NAVIS** has an animal head/heads at stern or bow.

²³² Hyginus, *Astronomica*, III, 3 (VIRÉ 1992, pp. 96).

²³³ Hyginus, *Astronomica*, III, 4 (VIRÉ 1992, pp. 97).

- **CENTAURUS** holds a long spear (or trident in the case of the Berlin manuscript) in his right hand so that the shaft crosses the torso.

There are a few features in the constellation figures in the Berlin manuscript, which clearly derive from another model; or, perhaps, are misunderstandings of other relatively straight-forward images. These are:

- **BOOTES** holds a 3-thonged flail in his raised right hand.
- **ANDROMEDA** has large rings on the wrists of her upraised hands and these are caught by large U-shaped meat-hooks.
- **AURIGA'S** feet have been transformed into wheels. He is nude, holds a 3-thonged flail in his extended right hand and wears a tightly fitting sleeping cap on his head.
- **AQUILA** is a heraldic eagle.
- **VIRGO** holds Scales in her left hand.
- **ERIDANUS** is a stream coming from an upturned pot.
- **CETUS** has a lion's face and a tapering tail (leo marinis?)
- **ARA** is a Christian altar with 2 candles.

As McGurk has noted, the Berlin manuscript is iconographically related to the so-called 'German star-books'.²³⁴ In these, the constellations are scattered across the page, with labels rather than accompanying text. Stars have been included in all the figures and some of the Latin names have been derived from Latin stellar tables (as one saw in the Berlin Hyginus). Even though these manuscripts fall well outside the Hyginus-tradition, the pictures are so close to those found in the Berlin Hyginus, that it seems appropriate to *mention them here and refer the reader to the appropriate sections of the catalogue.*

²³⁴ See MCGURK IV 1966, pp. xxiii-iv.

Munich, Staatsbibliothek (see under *Classical Stellar Tables - 'Ptolemaic' picture books*)

Germ. 595

German, 15th century

Munich Staatsbibliothek (see under *Classical Stellar Tables - Guido Bonatti*)

clm 59

German, 15th century

Vatican, Biblioteca Apostolica (see under *Classical Stellar Tables - 'Ptolemaic' picture books*)

Pal lat 1369

German, 15th century

Vatican, Biblioteca Apostolica (see under *Classical Stellar Tables - 'Ptolemaic' picture books*)

Pal lat 1389

German, 15th century

The pictorial features shared with the Berlin manuscript include:

- **DRACO** depicted as a snake within the two bears, with his head seen from the top (note that in Munich 59, the trio are set within a circular frame, similar to the Baltimore and two Bodley Hyginus manuscripts).
- **BOOTES** with one arm raised and with the other arm leaning on a 'T'-shaped crutch. In both Munich 59 and Pal lat 1389, he holds a thonged flail above his head.
- **HERCULES** is nude, stands to the right and has the lion draped over his extended left arm, He holds a club in his raised right arm. In Munich 595, he has a sleeping cap on his head as in the Berlin manuscript.
- **LYRA'S** side supports end in animal heads.
- **CYGNUS** is presented in profile. It is labeled 'vultur cadens' in all the German star-books.
- **AQUILA** is presented as a heraldic eagle.
- **CASSIOPEIA'S** throne has animal-heads as finials at the seat level.
- **ANDROMEDA** is dressed and has her hands held upwards by rings and meat-hooks.
- The wild-haired medusa head held by **PERSEUS** in the Berlin manuscript reappears in Munich 59 and Pal lat 1389, but the head has been transformed into a rayed shield, decorated with a human face in Munich 595 and Pal lat 1369 .

- **AURIGA** has wheels on *his* feet and holds a club in his raised right hand (it is a flail in Munich 59)
- **OPHIUCHUS** is nude and walks to the left, with his left leg raised, and the **SERPENS** wrapped around his middle.
- **GEMINI** are nude and intertwine their inner arms at shoulder height (the right Twin holds a harp in Pal lat 1389).
- **VIRGO** holds the Scales in her left hand and there is an independent picture of **LIBRA** included.
- **SAGITTARIUS** wears a hat.
- **AQUARIUS** holds an upturned urn in his extended right hand and holds a trident in his left hand.
- **ERIDANUS** is a stream flowing from an upturned urn.
- **CETUS** is a lion-faced sea monster with a tapering tail (labeled ‘pistrix lupus vel anguis’ in Munich 595, and the two Vatican manuscripts).
- **ORION** has a sword at his waist, raises a club in his following hand and has a pieces of cloth draped over his leading hand (he faces to the right in all but Munich 59).
- **CENTAURUS** carries a trident.
- **ARA** is a Christian altar with candles on it.

GROUP VII (singleton)

London, British Library

Roy Ms 13. A. XI

Excerptio Abbonis ex Hyginus de figuratione signorum

English, 12th century

As mentioned in the previously, this work, attributed to Abbo of Fleury, has an illustrated section with slightly massaged excerpts from Book III of the *De astronomia*. The illustrations are quite unlike anything else in the Hyginus corpus and seem to have been influenced by pictures outside the astronomical traditions.

Significant features include:

- **BOOTES** as a bearded and mustachioed male figure lunging to the left with his right hand raised and his left hand holding a plant.
- **CORONA BOREALIS** has a 'green man' face at its center.
- **HERCULES** is nude, rushes to the left and holds a large lion by the scruff of its neck in his extended left hand.
- **ANDROMEDA** is dressed and stands with her arms entwined by climbing vines.
- **PERSEUS** has wings on his head and holds the head of a male captive (not decapitated).
- **AURIGA** holds a flail in his upraised right hand and has 2 goats on his left shoulder.
- **OPHIUCHUS** is represented by a snake in a tree, similar to those normally seen accompanying Hercules.
- **SAGITTA** is an arrow pointing at a boar's chin.
- **DELPHINUS** is a lion-faced sea monster with horse's hooves on its front legs.
- **PEGASUS** is winged and full-bodied.
- **TRIANGULUM** has a small male figure set within it.
- **LIBRA** is a female figure holding the Scales in her right hand
- **AQUARIUS** stands on a fish.
- **ERIDANUS** is a snaky sea monster with a stream coming from its mouth.
- **CANOPUS** is depicted separately and labeled. It is a disembodied head with water pouring from the mouth.
- **CANIS MAIOR** has a halo around its head.
- **CENTAURUS** bites the hind foot of Lupus
- **LUPUS** is included separately as a lion.

GROUP VIII (singleton)

Munich, Staatsbibliothek

clm 10270

Hyginus, *Excerpta*

Mannheim, 11th century

This manuscript is something of a curiosity and the sources for the pictures are hard to pin down as it seems that various images were used in the creation of its constellations. For example:

- The first image of **DRACO INTER ARCTOS** has the bears with both their backs upwards, but **URSA MAIOR** (labeled ‘calisto’) is hunched like the depiction of **URSA MAIOR** does appear in the Hyginus manuscript, Vienna 51. More often, however, one finds this hunched bear as a representation of **URSA MINOR** in the ps-Bedan tradition.²³⁵
- **CORONA BOREALIS** is depicted as two ‘S’-shaped snakes with animal heads. The configuration recalls the depictions of **LYRA** on the GROUP VI manuscripts.
- **HERCULES** is nude, kneels to the left and has the lion draped over his extended left knee in a manner similar to that found in the GROUP I Hyginus manuscripts from St Paul im Lavantthal and Florence, Laurenziana, Plut 29.30.
- **CYGNUS** is splayed frontally and has its neck to the side, as one sees in the Bern and Boulogne Germanicus manuscripts, the Freiburg ps-Bedan *De signis caeli* and a number of the *De ordine ac positione stellarum* manuscripts.²³⁶
- **PERSEUS** has wings on his feet only. He holds an animal’s head with rays in his right hand that is similar to the misunderstood depictions of Medusa in the ‘*Ptolemaic*’ *picture-book* manuscripts.
- There is a separate depiction of **Libra** as in the ‘*Ptolemaic*’ *picture-book* manuscripts.
- **SAGITTARIUS** is a satyr as in the GROUP *Ib and Ic*, the *Leiden 8° 18* and the *Baltimore manuscripts*.
- **ORION** rushes to the left with his leading arm covered by a cloak as in GROUP I and II manuscripts.
- **CENTAURUS** has a long spear as in the ‘*Ptolemaic*’ *picture-book* manuscripts.
- **ERIDANUS** is a kneeling male figure pouring water from two urns and is unlike anything else in the corpus.

²³⁵ See Freiburg 35; Oxford, Bodleian, Laud misc 644; Padua 27 and Venice VIII. 22. See also the depiction of Ursa Minor in Paris BN lat 9663.

²³⁶ Such as Berlin 130; Madrid 3307 and Monza.

The Italian Renaissance Manuscripts of the *De astronomia*

As the Renaissance manuscripts of Hyginus were all created within a relatively short period of time and within a limited geographical radius, it is interesting to see how disparate the pictorial traditions are. They all appear 'of a type' but closer examination tends to reveal more differences than similarities. For this reason - even within sets of manuscripts which all derive from the same philological parent - the pictures in these manuscripts all belong to different iconographic groups.

There is one major detail, however that neatly splits these manuscripts into two main groups: the depiction of Aries intra triangulum. As has been explained in a previous publication,²³⁷ Aratus, apparently following Eudoxus, describes the constellation of Aries as 'faint and starless' when the Moon is bright, but he adds that it can be easily located in the heavens by its proximity to the bright stars of the girdle of Andromeda and the stars of the constellation Deltoton, the Triangle, which are found a little to the north of the Ram.²³⁸ Hipparchus, in his commentary on the *Phaenomena*, counts this characterization of the stars of Aries as further proof of the general deficiency of Aratus's astronomical knowledge since, as Hipparchus explains, the three stars in the head of Aries are much brighter than any of the stars which form either Andromeda's girdle or the Deltoton.²³⁹ Despite this, however, the idea that the Deltoton appears in the sky as a signifier of the constellation of Aries survives in the astronomical literature, primarily, it seems, because the astrological myths supporting this description had already become established.²⁴⁰

²³⁷ LIPPINCOTT 2006, esp. pp. 21-23.

²³⁸ See Aratus, *Phaenomena*, vv. 228-29 and 233-38.

²³⁹ See *Hipparchi in Arati et Eudoxi Phaenomena ...* (ed. Manitius, as in n. 33, above), pp. 56-9

²⁴⁰ See the passages in pseudo-Eratosthenes, *Catasterismi*, 19; Germanicus, *Aratea*, ll. 234-37 and the *scholia* to Germanicus's translation edited in *Germanici Caesaris Aratea* (ed BREYSIG 1867: the *Basiliensia scholia* (p. 81); the *Stroziana* (pp. 144-45) and *Sangermanensia scholia* (pp. 144-45)). See also the descriptions in Vitruvius, *De architecture*, IX, iv; Manilius, *Astronomica*, I, 615 and note the way the descriptions carries

Astronomically, Deltoton appears in the night sky to the north, or ‘above’ the Ram—or as Hyginus describes it in Book III of the *De astronomia*, Aries is ‘*infra Triangulum*’.²⁴¹ Curiously, in a number of late-14th and 15th-century manuscript texts, the preposition *infra* is inconsistent, with the word often being mis-transcribed so that the ‘f’ of *infra* turns into a ‘t’. Hence, the phrase now reads ‘*intra Triangulum*’. And, with a slip of the pen, the figure of the Ram is no longer below the triangle, he is inside it. As evidence of the fact that at least some illuminators read the texts they were supposed to be illustrating, the image of the Ram changes in the majority of the Hyginus manuscripts preserving this reading. In these versions, the head of the Ram is now neatly placed within the three sides of the Triangle.²⁴² This new image of the Deltoton-bearing Ram becomes sufficiently authoritative to influence a number of 15th-century humanist authors, such as Matteo

on in the medieval sources, such as pseudo-Bede, *De signis caeli* (MAASS 1898, p. 587); Hrabanus Maurus, *De computo* (MAASS 1898, p. 587); and in all but one of the seven extant manuscripts of the *Liber floridus* of Lambertus of St Omer.

²⁴¹ Hyginus, *Astronomica*, III, xix.

²⁴² Hyginus manuscripts which contain the Deltoton-bearing Ram include Cambridge, Fitzwilliam Museum, Ms 260, fol. 16r; Florence, BNC, Magliabecchiana, Ms XI. 141, fol. 62r; Milan, Biblioteca Ambrosiana, Ms T. 47 sup., fol. 54r; Milan, Biblioteca Trivulziana, Ms N. 690 (E. 83), fol. 17v; New York, Public Library, Spencer Collection, Ms 28, fol. 49r; Oxford, Bodleian Library, Ms Can. lat. 179, fol. 40v; Oxford, Bodleian Library, Ms Can. misc. 46, fol. 113r; Pavia, Biblioteca Universitaria, Aldini 490, fol. 87r; Vatican, Biblioteca Apostolica, Vat. lat. 3109, ff. 39v and 57v; Vatican, Biblioteca Apostolica, Vat. lat. 3110, fol. 71v; Verona, Biblioteca Capitolare, Ms CCLXI, fol. 79r. Not all of these manuscripts, however, maintain the variant reading.

Palmieri,²⁴³ Leonardo Dati²⁴⁴ and Basinio da Parma²⁴⁵, as well as in the decoration of the frescoes of the *Salone dei Mesi* in the Palazzo Schifanoia in Ferrara.

GROUP IXa (intra)

Attached to Renaissance manuscripts in which Books II and III are reversed, there is a family of seven manuscripts which belong to the same pictorial group. These are:

²⁴³ See Matteo Palmieri's, *Città di Vita* manuscript (Florence, Biblioteca Laurenziana, Plut. 40, sup. 53, fol. 41v), where he describes this part of the sky: *presso ariete in cielo ad questo stallo/ deltheto porta con le corna torte/ & son tre stelle vanno quasi in ballo.*

²⁴⁴ Leonardo Dati later adds a commentary to the manuscript (dated 2 June 1473). On fol. 44v, his notes record: *Sciendum hic est arietem duodecim signorum zodiaci principem contrahere in aequinoctiali circulo caput et illud intra triangulum tenere, quem deltheton vocant.* The illustration on fol. 44v shows a Deltoton-bearing Ram.

²⁴⁵ Basinio da Parma, *Astronomica*, III, xix in *Basini Parmensis Poetae Opera praestantiora opportunis commentariis inlustrata*, ed. by L. Drudi, Rimini 1794, I, p. 315:

*Primum Aries signum est...
caputque novum magni quod magna Trigoni
forma tegit.*

Basinio manuscripts which include illustrations of the Deltoton-bearing Ram include Bologna, Biblioteca comunale dell'Archiginasio, Ms A. 173, fol. 17r; Cambridge, University Library, Ms Dd. 4. 64, fol. 26r; London, Wellcome Institute Library, Ms 122, fol. 138r; Munich, Staatsbibliothek, clm. 99r; Oxford, Bodleian Library, Bodley Ms 646, fol. 17r; Parma, Biblioteca Palatina, Ms Parmense 27, fol. 47v; Parma, Biblioteca Palatina, Ms Parmense 1008, fol. 9v; Rome, Biblioteca Casanatense, Ms 4059, fol. 18v; Venice, Biblioteca Marciana, Ms XII. 194 (4128), fol. 15v and the manuscript sold at Sotheby's (London), 23 June 1992, lot 72, p. 38. The one Basinio manuscript not to have a Deltoton-bearing Ram is the copy in the Biblioteca Marucelliana in Florence, Ms C.CCLI, in which the majority of the pictures have actually been copied directly from the 1513 Paucidrapius edition of Hyginus's *Astronomica*.

Cambridge, Fitzwilliam Museum
Ms 260
Ferrara or Mantua, 1470-80

Florence, Biblioteca Nazionale Centrale
Magliabecchiana XI. 141
Italian, second half 15th century

Milan, Biblioteca Ambrosiana
T. 47 sup
Italian, second half 15th century

Oxford, Bodleian Library
Can class lat 179
North Italian, third quarter 15th century

Siena, Biblioteca comunale
Ms L. VI. 25
Italian, dated 1475

Vatican, Biblioteca Apostolica
Vat lat 3109
Italian, 15th century

Verona, Biblioteca capitolare
Ms CCLXI
Italian, end 15th century

The Ambrosiana and Vatican manuscripts are rather freer versions of other illustrations, in which the costumes of the figures have been made 'more fashionable'. Nevertheless, the comportment of the figures is similar. The defining features of this group are:

- **DRACO INTER ARCTOS**, with DRACO's head towards the bottom of the page. Both of the depictions of DRACO in the Vatican manuscript have wings.
- **BOOTES** stands to the right, with his left leg on a box, holding a teardrop-shaped shield over his left arm and raising a club above his head in his right. In the Ambrosiana manuscript, he has lost his club and his shield is shaped. His shield is also shaped in the Fitzwilliam manuscript, and he has lost his box. BOOTES wears armour in the second Vatican series.

- **HERCULES** stands facing the viewer with the lion-skin draped over his extended left arm (with the face visible) and a club raised in his right hand. He holds a sword in the second Vatican set.
- **LYRA** is a stepped zither.
- **CEPHEUS** has a pointed mitre on his head (he has an identical, wide belt in the Verona, Oxford and Florence manuscripts)
- **ANDROMEDA** is nude to the waist, clutching at her shirt with her right hand and trailing her left hand behind her (except in the Fitzwilliam and two Vatican versions, where she is fully clothed and rests her right arm by her side).
- **PERSEUS** is dressed in armour, holds the Medusa head in front of him and has a long curved sword held above his head (except for Fitzwilliam manuscript, in which he is dressed in a jerkin and tights; and in the Florence and first Vatican set, where he has a straight sword).
- **AURIGA** is dressed in rags, holds a flail in his raised right hand, two goat (rabbit?) head in his raised left hand and has a goat (rabbit) on his left shoulder.
- **OPHIUCHUS** is nude, walks to the left and has **SERPENS** wrapped around his hips. OPHIUCHUS is female in the Fitzwilliam manuscript.
- **DELPHINUS** is on his back.
- **PEGASUS** has a bridle.
- **ARIES** is 'intra Triangulum'.
- **CANCER** has a crescent moon along its bottom (not in the Siena or two Vatican sets).
- **SCORPIO** holds the **SCALES** (not in the Fitzwilliam manuscript).
- **SAGITTARIUS** has no attributes, but a bow.
- **CETUS** has a dog's face (not in the Fitzwilliam manuscript).
- **ERIDANUS** is a standing nude male, pouring water to the left. The Verona ERIDANUS appears to be female and, in the second Vatican set, he pours the water between his legs.
- **ORION** tucks his left thumb in his belt and holds a sword aloft in his right hand. In the second Vatican set, he walks to the left, and has a scabbard at his waist.
- **ARGO** is a full ship.
- **HYDRA** is a two-legged dragon.

GROUP IXb (*intra* - pair 1)

Five of the 15th-century, Italian Hyginus manuscripts are structurally related by the odd inversion of Books II and III. In their pictures, two of these are sufficiently close to be considered 'sister' manuscripts:

Oxford, Bodleian Library

Can misc 46

Florence?, end 15th century

Milan, Biblioteca Trivulziana

N. 690 (E. 83)

North Italian, end 15th century

In these manuscripts, there is a conscious attempt to render the constellation figures *all'antica*, in terms of dress and structure. Similarities include:

- **BOOTES** stands to the right with a shaped shield covering his left arm and with his left leg raised because it is placed on a box. He holds a club in his raised right hand and has a billowing cloak.
- **CORONA BOREALIS** is a spiky crown with an elaborate ribbon curling beneath it.
- **HERCULES** lunges to the left, holding the lion by its hind leg in his left hand and holding a club raised in his right.
- **LYRA** is a zither.
- **CEPHEUS** wears an elaborate crown on his head.
- **ANDROMEDA** is nude to the waist, catches her skirt at her waist and lifts her left arm behind her.
- **PERSEUS** is in armour, with wings on his feet and holds a scimitar above his head with his left hand.
- **AURIGA** stands facing the viewer with a tunic dress, two horn-heads in his extended left hand and a goat on his shoulder.
- **OPHIUCHUS** is nude and walks to the left, with the SERPENS wrapped around his hips.
- **DELPHINUS** lies on its back.

- **ARIES** is 'intra triangulum'.
- **TAURUS** emerges from clouds.
- **GEMINI** are nude youths who shake hands.
- **VIRGO** is winged.
- **SCORPIO** holds the **SCALES**
- **CAPRICORN** has a unicorn's horn.
- **ERIDANUS** is a standing nude male, pouring water to the left.
- **ORION** is in armour and holds his left thumb tucked in his belt and a sword vertically in his right hand.
- **ARGO** is a full ship.
- **CENTAURUS** leaps to the left, with **Lupus** (a rabbit) held in his right hand and a stick held in his left hand.
- **ARA** is a square altar with a *bucranium* on it.
- **HYDRA** is a two-legged dragon.

GROUP IXc (intra- pair 2)

Vatican, Biblioteca Apostolica

Vat lat 3110

Florentine, before 1449

Florence, Biblioteca Nazionale Centrale

Magliabecchiana XI. 114,1

Italian, second half 15th century

These two manuscripts have an unusual sequence of texts, which also appear in **PAIR 3** and Florence, Laur. 89 sup 43

1. Hyginus, *Astronomica*, Books I-IV
2. Hyginus, *Astronomica*, Books III- IV

These are nearly identical mother/daughter manuscripts, with the Florentine manuscript being an incomplete copy of the Vatican one (the

pictures are intermittent in the first section and end with Taurus). The illustrations accompany Book III of *De astronomia*.

The similarities are:

- **DRACO INTER ARCTOS** with the Bears back-to back, and with **DRACO'S** head towards the bottom of the page.
- **BOOTES** is dressed in a short tunic, walking to the right, holding a twig upraised in his right hand and his left hand is covered by a teardrop-shaped shield. In both cases, the dress and its decoration are identical.
- **CORONA BOREALIS** are two concentric circles with stars between the circles.
- **HERCULES** is dressed in a short, loose tunic with leggings and bands around his ankles. He holds a thin, branched stick upraised above his head in his right hand and has a lion's skin (with face, three legs and tail visible) draped over his outstretched left arm.
- **LYRA** is as a two-stepped zither with 3 sets of 5 strings and a curl on the right side.
- **AURIGA** is dressed in a tunic with a band around the hips and a $\frac{3}{4}$ -length cape. He has tights and small boots. He stands facing the viewer with a 3-thonged, beaded flail in his right hand, a goat's head with curved horns coming out of the left side of his head. He has a second goat sitting on his outstretched left hand.
- **AQUILA** stands to the right with his wings outstretched to either side.
- **TAURUS** is depicted as half a bull facing to the left, with his body cut off by three slightly curved lines. He holds both his hooves out in front of him and has a circlet of stars in front of his nose.

The only difference between these two manuscripts is in the representation of **Ophiuchus**. In the Vatican manuscript, he is a nude youth, who walks to the left, with **Serpens** wrapped around his hips, with its head to the left and with its head facing towards the man. In the Florentine manuscript, he stands facing the viewer with his head slightly tilted to the right and the head of **Serpens** is also on the right.

After the pictures in the Florentine manuscript end, Vat lat 3110 continues with the following characteristic pictures:

- **ANDROMEDA** is nude to the waist, walking to the left, but turning to the right with her and her right hand trailing behind her.
- **CEPHEUS** has a pointed hat and no attributes.
- **CASSIOPEIA** is dressed.
- **PERSEUS** walks to the left and holds a straight sword above his head in his right hand, with the medusa's head in his right.
- **OPHIUCHUS** is nude and walks to the left with the Serpens around his hips.
- **PEGASUS** is depicted as half a winged horse, flying to the right and wearing a bridle. Its body emerges from the clouds and both feet are curled in front of him.
- **ARIES** is depicted *intra Triangulum* ('... et exoriens caput infra triangulum'). He walks to the left and looks backwards over his shoulder to the right.
- **GEMINI** are depicted as two young men dressed in short tunics with $\frac{3}{4}$ -length capes. They face each other and grasp each other's right hands. The left Twin raises his left hand in salutation.
- **CANCER** has a round body.
- **LEO** walks to the right, but turns his head to face the viewer and holds his tail up in a backwards 'S'.
- **VIRGO** stands facing the viewer with wings that are raised to either side. She holds four stems of wheat in her right hand and lifts her left hand in a gesture of salutation. She is dressed in a long robe with a long cloak and her head is covered.
- **SAGITTARIUS** has no attributes but his bow.
- **AQUARIUS** is dressed in a short, tight tunic and has a long cape flowing from his shoulders. His low-slung belt is decorated with 6 squares. He stands facing the viewer and holds both of his arms straight out to the sides. In his left hand, he grasps the foot of an upturned urn, from which water pours
- **CETUS** is a dog-faced creature with dog's paws, and a curled tail that ends in a trefoil.
- **ERIDANUS** is a nude youthful male figure with two donkey's ears on his head. He stands with his weight on his left leg, lunging slightly to the right, but with his head turned back to the left. He holds the bottom of his urn with his left hand and the neck with his right, so that it is horizontal, but water still gushes forth from it.

- **ORION** stands facing the viewer wearing a cuirass, with decorative patterns on the chest and belly, and with a skirt that has a band along the hem. He also has a long mantle. He is bearded and holds a long straight sword raised above his head with his right hand and rests the thumb of his left hand in his belt.
- **ARGO** is depicted as half ship, sailing to the right, with its decorated poop deck at the left. It has fully-filled sails and rigging with 6 pulleys. It has two steering oars at the back.
- **CENTAURUS** is a centaur whose human part is nude and he rushes to the left. It has no attributes other than **LUPUS** (a hare) being held in the centaur's outstretched right hand in front of him.
- **ARA** is two-tiered cylindrical structure with three arches on the bottom storey and flames coming out of the top.
- **HYDRA** is a 2-legged dragon, standing to the left with its wings folded close to its body. It has a beaky face, long ears (with flames coming out of them) and a tripartite tongue sticking out

GROUP XIc (distant - singleton)

Florence, Biblioteca Laurenziana

Ashburnam 1148

Italian, 15th century

This manuscript is a very poor copy of the same tradition one sees in the GROUP IXa manuscripts. Most of the differences appear to be a result of misunderstandings or lack of artistic skill. Given this, the real differences include:

- **BOOTES** holds a club, rather than a twig.
- **HERCULES** walks to the right.
- **PERSEUS** holds a scimitar.
- **AURIGA** has lost his goats.
- **ARIES** has a small **TRIANGULUM** behind his head.
- **TAURUS** is full.
- **SCORPIO** does not hold the Scales.
- **ERIDANUS** has neither horns nor ass's ears.
- **ORION** walks to the left

- NAVIS is full.
- HYDRA has lost his legs.

GROUP IXd (*intra* - pair 3)

Pavia, Biblioteca Universitaria

Aldini 490

Italian, second half 15th century

Vatican, Biblioteca Apostolica

Urb. Lat 1358

Florentine, 1470s

In the same textual recension as PAIR 2, there are two additional ‘sister’ manuscripts, which share a number of pictorial details with Vat lat 3110. Many of the figures are reversed, but the dissimilarities outweigh the similarities. For this reason, they form a separate pictorial group. The similarities are:

- The position of *DRACO INTER ARCTOS* with the DRACO’S head towards the bottom of the page and the Bears back-to-back.
- CEPHEUS wears a pointed mitre and has no attributes.
- PERSEUS has a sword in his raised left hand.
- DELPHINUS is depicted upside down.
- ARIES’S head is ‘intra triangulum’.
- TAURUS is half a bull with a circlet of stars at his nose.
- GEMINI are two youth who shake hands.
- CANCER is round bodied and faces to the left.
- VIRGO is winged; Scorpio holds the scales; Sagittarius has no attributes.
- CETUS has a dog’s face.
- ERIDANUS is posed like the figure in Vat 3110, but he has horns instead of ass’s ears.
- HYDRA is a two-legged dragon.

The differences are:

- **BOOTES** is reversed from Vat lat 3110, with a shield over his extended right arm and a club raised in his left.
- **HERCULES** leans to the right (opposite of Vat lat 3110) and holds a club in his raised left hand.
- **CYGNUS** is a stork.
- **ANDROMEDA** is a male figure, nude to the waist, but his posture is related to the female Andromeda of Vat lat 3110, with the right hand on the right hip and the left hand trailing to the side.
- **AQUARIUS** is an old man (but holds the jar like the figure in Vat 3110)
- **CASSIOPEIA** is a young, dressed woman.
- **AURIGA** has lost his cloak, and his attributes have switched sides.
- **AQUILA** is depicted as a dove flying to the right
- **OPHIUCHUS** faces away from the viewer.
- **PEGASUS** has no bridle.
- **ORION** is nude to the waist, holds his right hand on his hip and a sword aloft in his left hand.
- **NAVIS** is a full ship.

GROUP IXe (singleton)

New York, Public Library
Spencer Ms 28
Padua, c. 1465-70

Although amongst the most beautiful illustrated astronomical manuscripts, the NYPL Spencer manuscript is a unique creation. Many of the drawings can be related to other pictures in the Hyginus pictorial traditions, but the quality of detail and the addition of numerous artistic flourishes, means that it supersedes the existing corpus. Similarities to previous pictorial formulae include:

- **DRACO INTER ARCTOS** is shown with Draco's head toward the bottom of the page and the bears are back-to-back.
- **BOOTES** is nude and stands to the left, with a shaped shield strapped to his left arm and a club raised in his right hand. His left foot rests on a low box.
- **OPHIUCHUS** is nude and walks to the right.
- **DELPHINUS** is on his back.
- **ARIES** is 'intra Triangulum'.
- The **GEMINI** are nude and embrace at the shoulder.
- **SCORPIO** holds the Scales.
- **CORONA BOREALIS** is a golden crown.
- **HERCULES** is nude and kneels to the right. He wears a wreath in his hair and holds a club vertically in his right hand. He wears the Lion's skin over his shoulders and across his left arm.
- **LYRA** is a wooden sounding board.
- **ANDROMEDA** walks to the left, with her right hand down by her side and her left hand trailing behind her. She holds a chain in her left hand.
- **PERSEUS** is in armour, holds a curved sword above his head with his right hand and holds the Medusa's head, which has snakes and bat's wings.
- **AURIGA** holds a lariat in his right hand, has a rearing goat on his left forearm and two goats in his left hand.
- **VIRGO** is winged and walks to the right, holding a club (?) in her right hand.
- **SAGITTARIUS** has **CORONA AUSTRINUS** beneath his front feet.
- **ERIDANUS** is a merman, pouring water to the left.
- **ORION** rushes to the left. He wields a mace in his raised right hand and grasps the pommel of his sword with his right.
- **ARGO** is half a ship.
- **CENTAURUS** carries an arrow in his left hand, which rests on his left shoulder.
- **HYDRA** is a long, thin snake.

GROUP IXf (singleton)

There is another manuscript belonging to this textual recension, which shares many of its features but is a much freer copy of the original, with a number of small changes to the pictures:

Florence, **Biblioteca Laurenziana**

Plut. 89. sup 43

Florentine, second half 15 century

The similarities include:

- the position of **DRACO INTER ARCTOS**.
- **BOOTES** is similar in posture and both have the same tear-drop-shaped shield and twig, though the Florentine figure has freer hair and a looser (more 15th century) tunic
- **HERCULES** is similar, but the garment and hair of the Florentine figure are looser.
- **TAURUS** is half a bull with a circlet of stars by his nose.
- **VIRGO** is winged
- **SCORPIO** holds the Scales in his claw.

But there are differences in the following figures:

- **LYRA** is depicted as a lyre and not as a two-stepped zither.
- **CYGNUS** faces to the right, and not the left.
- **CEPHEUS** has a round cap and has a sword hanging from his belt
- **CASSIOPEIA** is nude to the waist (she is clothed in Vat lat 3110)
- **ANDROMEDA** stands facing the viewer with her hands tied to two leafless trees.
- **PERSEUS** has a scimitar in his right hand and is nude except for a drape around his shoulders and genitals. Medusa is held in the left hand.
- **AURIGA** is drawn in a square cart by 2 bulls and 2 horses.
- **OPHIUCHUS** is nude and stands facing the viewer with the snake around his hips
- **SAGITTA** is depicted as a bow and arrow.
- **AQUILA** has wings outstretched and faces to the left.
- **PEGASUS** has no bridle.
- **TRIANGULUM** appears on its own (there is no depiction of Aries).
- **GEMINI** are nude with long capes. The left Twin holds a sickle in his outer hand.
- **SAGITTARIUS** has a long animal-skin cloak and horns on his head.
- **AQUARIUS** holds the urn with both hands.
- **CETUS** is a fierce fish
- **ERIDANUS** is a reclining nude youth.
- **ORION** walks to the right and has a club in his raised right hand and a shield in front of him, held in his left hand.

- **ARGO** is a full ship.
- **CENTAURUS** has a spear with a rabbit tied to its end. He has a canteen over his right wrist and he holds the **LUPUS** with its feet upwards in that hand. He is part human, part ox.
- **HYDRA** is a snake.

GROUP X (singleton)

Vatican, Biblioteca Apostolica
Chigi H.IV.20
North Italian, second half 15th century

In this manuscript, only six of the illustrations have been filled in. From this small selection, however, it seems that these pictures fall outside of the other Hyginus pictorial groupings. For example:

- **DRACO** has a 'Z'-shaped body with numerous smaller curves. His dragon's head towards the bottom of the page and he is arranged as if he should have bears placed within his bends.
- **AQUILA** is an eagle carrying a youthful Ganymede.
- **CEPHEUS** kneels towards the left on his right knee, with his back to the viewer. His arms are outstretched to either side, but bent at the elbow.
- **CASSIOPEIA** is seated facing to the left on a throne with a high curved back. She looks upwards towards the left.
- **ANDROMEDA** walks away from the viewer and has her long hair streaming down her back. Her cloak has slipped so that it exposes her back and her buttock. She is chained around the waist and holds the end of the chain in her right hand with its ring dangling over her right arm.

GROUP XI (singleton)

Cortona, Libreria del Comune e dell'Accademia Etrusca
Ms 184 (265)
Italian, end 15th century

Again, the Cortona manuscript shares many features with the other Renaissance manuscripts, but is not sufficiently consistent in its similarities with any of the other groups to be included in them. For example:

- **HERCULES** both wears the lion skin and displays its head in his outstretched left hand.
- **CORONA** is depicted as a crown
- **BOOTES** stands slightly to the right and raises his left hand above his head. He holds a stick vertically in his lowered right hand.
- **CYGNUS** is a splayed crane seen from the front.
- **CEPHEUS** kneels to the left, with his arms held like a W.
- **ANDROMEDA** is nude to the waist and her arms are held to the sides, tied to two posts with club-like tops.
- **PERSEUS** is in his armour and walks to the left. He holds a sickle in his raised right hand and holds the Medusa by the hair in his left hand. There is blood coming from her neck.
- **AURIGA** holds a goat to his chest with his left hand and there is another goat peering over his left shoulder. He raises the flail with three thongs in his right hand.
- **ARIES** trots to the right and looks back to the left.
- **TAURUS** is half a bull facing towards the left with lyre-shaped horns.
- **GEMINI** are nude infants standing with their arms outstretched with the inner ones crossed.
- **VIRGO** is winged, has a halo and carries the Spica in her left hand.
- **Sagittarius** is a centaur with a fillet around his head and his human half is dressed in a jerkin.
- **PISCES** are depicted twice: once with both backs upwards and swimming in different directions with the stream between their mouths; and once set at a right angle, with the stream between their tails.
- **ERIDANUS** is a bit of stylized stream.

- **ORION** is in armour and walks to the right in profile. He holds a club raised in his right hand behind his head and holds his left hand extended in front of him. There appears to be the remnant of a shield in this hand, but there is also a stylized stream issuing from it (like a banner).
- **CENTAURUS** walks to the left and holds **LUPUS** (a rabbit) vertically by its heels in front of him.
- **ARA** is a stepped altar with the Star of David on its front face.
- **Hydra** is a long snake facing to the right with **CORVUS** facing towards his head.

V. Illustrations of the constellations in incunabela

In 1482, Erhardt Ratdolt published an edition of Hyginus's *De astronomia*, illustrated with a series of woodblock prints of the constellations.²⁴⁶ The figures from which Ratdolt's illustrations were derived are not related to those found in contemporary Italian Hyginus manuscripts, but to a series of constellation images drawn from the illuminated manuscripts of Michael Scot's *Liber Introductorius*. Ratdolt's illustrated Hyginus includes the Scot-derived figures of:

- **BOOTES** carrying both a sickle and a spear, wearing a hat and standing next to a sheaf of wheat.
- **AURIGA** standing in a cart drawn by two oxen and two horses, carrying Capra on his shoulder and the Haedi on the wrist of his rein-holding hand.
- **CEPHEUS** facing the viewer and walking to the right with his arms stretched straight out to the side, wearing peasant's clothes with a close-fitting cap on his head and a sword at his waist.
- **CASSIOPEIA** with a bleeding hand.
- a male **ANDROMEDA** shown with genitalia exposed.
- **SAGITTARIUS** with horns.
- **ERIDANUS** nude and lying by the bank of a river.
- **ARA** surrounded by flying demons.
- **GALAXIA** depicted as two women, one of which holds a *mandorla* decorated with stars.

The impact of Ratdolt's illustrations on astrological iconography cannot be overestimated. His blocks were re-used and served as the model for nine of

²⁴⁶ Ratdolt's 1482 edition of *De astronomia* is actually the *editio secundus*, postdating the Ferrarese *editio princeps* by seven years. See L. Hain, *Repertorium Bibliographicum*, Stuttgart and Paris 1831, II, p. 116, nos. 9061 and 9062. It was undoubtedly intended that the constellation illustrations were to be added by hand to the Ferrarese *editio princeps*, witness the description of blank spaces left in the copy of the edition currently in the Bibliothèque National de France (*Catalogue general des livres imprimés de la Bibliothèque Nationale. Auteurs*, Paris 1929, LXXV, p. 404).

the ten editions of *De astronomia* printed between 1482 and 1520. They also reappear in the two illustrated editions of the annotated Germanicus translations of the *Phaenomena*; in one illustrated edition of Thomas Radinus Todisclus's *Sideralis abyssus* and in one edition of Paulus Venetus's *Summa philsoophie naturalis*. The effect of this proliferation was such that the pictorial formulae from all the other manuscripts traditions were overwhelmed and supplanted completely.

The virtual absence of an active Hyginus-Basinio manuscript iconography is made clear by examining one of the two manuscripts of Basinio's *Astronomica*, which contain slightly idiosyncratic illustrations.²⁴⁷ The manuscript in the Biblioteca Marucelliana in Florence has been illustrated by two different hands.²⁴⁸ Six of the illustrations appear to have been drawn contemporaneously with the writing of the text. These figures fit easily into the Hyginus-Basinio constellation iconography as it is established in the other 15th-century manuscripts.²⁴⁹ All of these figures are finely drawn, the shading is indicated with parallel lines and the figures generally stand on a sketchily indicated groundline. The remaining illustrations were added to the manuscript after 1513. The second group of drawings is considerably more crude and cross-hatching is used to indicate shadows. Stylistically and iconographically, they are exact copies of the rough constellation pictures

²⁴⁷ See pp. .

²⁴⁸ Florence, Biblioteca Marucelliana, C.CCLI. For a short description of the manuscript, see the catalogue

²⁴⁹ The figures of Andromeda, Hercules, Aries, Gemini, Leo and Pisces were completed during the first phase of the manuscript's illumination. Note the closeness of the Gemini to the Gemini in the Basinio manuscript, Parma, parm. lat. 1008, fol. 10r.

found in the Hyginus edition printed by Jacobus Paucidrapius de Burgofranco in Venice in 1513.²⁵⁰ It would seem that one of the owners of the Marucelliana manuscript inherited an incompletely illustrated manuscript. Sometime after 1513, this fault was remedied; but, by this time, the most readily available pictorial source for constellation illustration was the Michael Scot-based illustrations taken from Ratdolt's Hyginus woodcut.

To repeat slightly, the defining features of the 1482 Ratdolt HYGINUS illustrations are as follows:

- **DRACO INTER ARCTOS** with **DRACO** shaped like an 'S' and with a dragon's head. The bears are back-to-back, facing into the body of the Snake. Draco has 2 stars in the eyes, 2 on the jaw, 2 on the head and 10 along the body, or 16 stars in all. **URSA MAIOR** has 12 stars around the head, 2 on the shoulder, 3 on the tail, 1 on the left front leg and 1 on the right hind leg, or 19 stars in all. **URSA MINOR** has 3 on the tail and 1 in each foot, or 7 stars in all.
- **BOOTES** walks to the left, but looks over his shoulder to the right. He is carrying a sickle in his right hand and a spear in his left. He is dressed like a peasant, with a wide-brimmed hat, a short coat and tattered leggings, with bare feet. There is a sheaf of wheat to his left. He has 1 star in the hat, 1 on each shoulder, 3 on the chest, 1 at the waist, 1 on his right elbow, 1 on each foot and 3 on the spear, or 13 stars in all.
- **CORONA BOREALIS** is depicted as a crown with 9 stars along the head-band.
- **HERCULES** is nude and runs toward the left, towards the Serpent in the Garden of Hesperides. He faces away from the viewer and is bearded and has long hair. Covering his left arm, there is a lion's skin with a face, 4 legs and a tail visible. In his right hand, he holds a club with its end pointing downwards. He has 1 star in the head, 1 on each shoulder, 1 on the chest, 3 along the back, 2 in the right knee, 2 in the right calf, 1 in the right foot, 1 in the left arm, 4 in the lion's skin and 1 on the left hand, or 18 stars in all.

²⁵⁰ The dependence on the 1513 Paucidrapius edition is made clear by a number of details, such as the left-facing Cygnus; the eagle-like Aquila and the tri-lobed bowl into which Aquarius pours his water. See also, the relationship to Scot-related figures in the figures of Bootes (fol. 7r) and Auriga (fol. 11r).

- **LYRA** is shaped like a harp with the supports shaped like bull's horns and the sounding board looking like vegetation, there are a series of lines connecting the cross-bar to the bottom. There are 9 stars.
- **CYGNUS** stands facing the right with its head lowered and its wings raised. It has 1 star in the head, 1 in the neck, 5 in each wing and 1 on the tail, or 13 stars in all.
- **CEPHEUS** stands facing the viewer, walking to the right, with his arms stretched straight out to the side, with a close-fitting cap on his head and a sword held at his left hip. He has 2 stars in the head, 1 on each shoulder, 1 on the chest, 3 at the waist, 2 in the left knee, 1 on the left elbow, 1 in each hand and 3 on each foot, or 19 stars in all.
- **CASSIOPEIA** is depicted seated on throne with a stick-top to which her hands are tied. She is nude to the waist and her long hair is also exposed. She inclines her head to the left and there is a stream of blood coming from her right hand. She has 1 star in the head, 1 on each shoulder, 1 in the right breast, 2 at the waist, 1 on her left knee, 1 on her right foot and 4 on the throne, or 12 stars in all.
- **ANDROMEDA** is set within a rocky landscape, wearing a short tunic, which exposes her male genitalia, her long hair is also exposed. Her hands are tied to two bare trees on either side of her. She has 1 star in the head, 1 in each shoulder, 1 in each elbow, 1 in each hand, 4 across the chest, 3 at the waist, 1 in each knee and 2 in each foot, or 20 stars in all.
- **PERSEUS** is nude, except for a mantle thrown across his shoulder. He walks to the left, but turns his bearded head backwards to the right. He has a shield hanging from his left shoulder and wings on his feet. He holds the Medusa's head by its hair in his extended left hand and holds a scimitar in his raised right hand. He has 1 star on each shoulder, 1 at the waist, 2 on the left hip, 1 on each hand, 1 on each knee, 2 on the right leg, 1 in the left foot and 4 in the Medusa's head, or 16 stars in all.
- **AURIGA** is standing in a square cart so that nothing shows beneath his hips. He is being drawn to the right by two oxen and two horses, He holds the reins in his left hand and raises his right hand in the air. He has a softly pointed cap and bell sleeves on his tunic, and is carrying Capra on his left shoulder and the Haedi on the wrist of his rein-holding hand. He has 1 star on the head, 1 on each shoulder, 1 on the left elbow and 2 in the left hand, or 6 stars in all.
- **OPHIUCHUS** is nude, faces towards the viewer and walks to the left. He holds the **SERPENS** in a horizontal position, and it is wrapped so that it crosses behind his back and scoops low in front of his genitals. Serpens's head is to the left and faces the man. Ophiuchus has 1 star in the head, 1 on each shoulder, 4 in the right hand and 3 in the left hand, 2 at the waist, 1 on each knee, 1 on the right shin, and 1 on each foot, or 16 stars in all. Serpens has 5 in the head and 16 in the body, or 21 stars in all.

- **AQUILA** faces to the right, but turns his head backwards over his shoulder to the left. His wings are outstretched to either side. He has 1 star in the head, 1 in each wing and 1 in the tail, or 4 stars in all.
- **DELPHINUS** is a fish with a curved snout swimming to the left. It has 4 stars in the face, 1 on the back, 3 on the belly and 2 on the tail, or 10 stars in all.
- **PEGASUS** is depicted as half a winged horse flying to the right with its body ending in clouds. It has 2 stars on the nose, 1 on the forehead, 1 on each ear, 4 on the neck, 1 on the back, 1 on the shoulder, 1 on the chest, 2 on each front knee and 1 on the belly, or 17 stars in all.
- **TRIANGULUM** is depicted as an equilateral triangle with a star in each corner.
- **ARIES** walks to the left, but turns its head back to the right. It has very shaggy fleece. It has 1 star on the head, 3 on the horns, 3 on the neck, 4 on the back, 3 on the flank, 1 on the belly, 1 on the right front foot, 1 on the left hind foot and 1 in the tail, or 18 stars in all.
- **TAURUS** is depicted as half a bull facing to the left, with his right hoof extended and his left hoof tucked under. He ends in clouds. He has 1 star on each horn, 3 on the forehead, 1 in each eye, a circlet of 6 in front of his nose, 1 on the chest, 3 on the back, 1 on each knee and 1 in the left hoof, or 20 stars in all.
- **GEMINI** are depicted as two nude males, with only long cloaks flowing from their shoulders. They stand facing each other with their inner arms crossed so they have their hands on each other's shoulders. They are winged. The left Twin holds a sickle in his right hand and the left holds a lyre in his left hand. The left twin has 1 star in the head, 1 on each shoulder, 1 on his right hand, 1 on each knee, 1 on the right foot and 2 on the left foot, or 9 stars in all. The right Twin has 1 on the head, 1 on each shoulder, 1 on the right elbow, 1 on each knee and 1 on each foot, or 7 stars in all.
- **CANCER** is round-bodied and faces the right, with 2 claws and 8 legs. It has 1 star on the nose, 2 on the shell, 2 on the left claw and 3 on the right claw and 6 on the top claws and 4 on the bottom claws, or 18 stars in all.
- **LEO** stands facing to the left with his head turned back to the right. His tail runs between his legs and rises above his back, He has 3 stars in the head, 2 on the neck, 2 on the chest, 4 on the torso and 2 on the belly, 1 on the right front foot, 1 on the left hind leg, 1 on the left hind foot and 2 on the tail, or 18 stars in all.
- **VIRGO** is winged and stands to the left, wearing a long robe. She holds a plant in her right hand and a caduceus in her left hand. She has 1 star in her head, 2 on each wing, 1 on each shoulder, 1 in each hand, 7 across her knees and 1 in each foot, or 17 stars in all.
- **SCORPIO** faces to the right and holds the Scales in his right claw. He has a segmented tail, 2 claws and 4 legs on each side. He has 3 stars in the face, 3 in the

shell, 1 at each side, 2 in each claw, 5 on the tail and 2 on the sting, or 19 stars in all. There are no stars in the Scales.

- **SAGITTARIUS** leaps to the left. He is horned and bearded and a lion's skin cloak billows out to the right. He holds the bow in his extended left hand and he wears a shirt on his human half. There is a **SAGITTA** between his horse's legs and a circlet of stars (**CORONA AUSTRINA**) between his front feet. He has 2 star in the head, 2 in the cloak, 2 surrounding the elbow, 1 in the left hand, 1 on the tip of the arrow, 2 on the bow, 1 at the human waist, 1 on each foreknee, 1 on the tip of the lion's tail and 1 on the right front hoof, or 15 stars in all. Corona Austrina has 7 stars.
- **CAPRICORN** faces to the left and stands on his left leg with his right leg tucked under. His tail is knotted and ends in a trefoil. It has 1 star on the nose, 1 on the neck, 2 on the chest, 7 along the back, 2 in the right hoof, 7 on the belly and 2 at the end of the tail, or 22 stars in all.
- **AQUARIUS** stands to the right, wearing a short tunic and a short cape that billows out behind him. He holds a ewer in both his hands in front of him and the water from it pours into a large, flat dish. He has 2 stars in the head, 1 on each shoulder, 1 on each nipple, 1 on each elbow, 1 on the left hand, 1 on each knee, 1 on the right thigh and 1 on each foot, or 14 stars. There are 16 stars in the urn and stream.
- **PISCES** swim in opposite directions, belly-to-belly, with their mouths connected by a line. There are 12 stars in the top fish; 12 in the cord and 17 in the bottom fish, or 31 stars in all.
- **CETUS** is a 'hairy' fish that swims to the right with an elephant's trunk for a nose and a nautilus shell for an eye. It has tusks rising from its lower jaw and its tail ends in a curl. It has 6 stars in the belly, 5 in the tail and 2 at the end of the tail or 13 stars in all.
- **ERIDANUS** is a nude male figure, lying belly down in a river, with his head towards the right, but he is turning to look back to the left. He leans his head on his right hand and raising his left arm behind him. He has 13 stars in the water.
- **LEPUS** runs to the left. It has 1 star in each ear, 2 in the torso and 1 on each front foot, or 6 stars in all.
- **ORION** walks to the right and is wearing Renaissance armour. He holds a shield with a human face on it in his extended left hand. He raises a club with his right hand and wears a sword on his left hip. His head is bare. He has 3 stars in the head, 1 on each shoulder, 3 at the waist, 1 on each knee, 1 on each foot, 1 on the right elbow, 1 on the right hand and 3 in the club, or 17 stars in all.
- **CANIS MAIOR** is a sleek dog that runs to the left. It has 1 star in each ear, 1 on the head, 1 on the mouth, 3 on the back, 2 on the neck, 3 on the right front foot, 1 on the groin, 1 on each hind foot and 4 on the tail, or 19 stars in all.

- **CANIS MINOR** is a hound that rushes to the left. It has 1 star in the head, 1 on the neck and 1 on the groin, or 3 stars in all.
- **NAVIS** is depicted as ½ a ship set in water with its curved stern to the left. There is a mast at the right with 4 ropes trailing to the deck, 2 steering oars and three rowing oars and a small turtle at its cut-off on the right. It has 4 stars on the mast, 5 on the hull, 5 at the waterline, 4 in one steering oar and 5 in the other, or 23 stars in all.
- **CENTAURUS** walks to the right and is half-man and half-ox. His human ½ wears a shirt and holds a spear over his left shoulder with a dead rabbit tied by its heels to the end. On his outstretched right hand he holds Lupus (a small cow?) on its back with its legs in the air. He also has a round-bellied urn hanging from this wrist. He has 3 stars in the head, 1 on each shoulder, 2 on his back, 2 at his join, 1 on the ox's chest, 1 on each foreleg, 3 on the belly of the ox, 2 in each hind leg and 2 in the tail, or 21 stars in all. Lupus has 3 on the face, 4 in its feet, 1 on the shoulder and 2 on the tail, or 10 stars in all.
- **ARA** is a square structure with three steps and an arcaded front. There are flames coming from the top. The flames have a winged demon with a snake's tail rising on the left, and a winged demon falling of the left. There are 4 stars.
- **HYDRA** is a snake that is set diagonally to the left so that it appears to be climbing into a leafy tree on that side. **CRATER** is a two-handled cup placed on its back and **CORVUS** is a bird that faces to the front of the Snake. Hydra has 3 stars in the head and 23 stars in the body, or 26 stars in all. Crater has 2 stars on the rim, 4 in the body and 2 in the handles, or 8 stars in all. Corvus has 5 stars in the body and 2 on the feet, or 7 stars in all.
- **PISCIS AUSTRINUS** is a large fish set in the water, swimming to the left, with a smaller fish placed under its belly (belly-to-belly) also swimming to the left. Water gushes forth from the larger fish's mouth. The larger fish has 12 stars.
- **GALAXIA** is depicted as two women in long gowns with their hair exposed. One figure lies down diagonally with her head towards the left. She holds a *mandorla* vertically in her hands, which is decorated with 37 stars. The figure to the right is seated and adopts a melancholic pose on leaning her head in her left hand. Her right hand lies in her lap.

In comparing the incunables dating from 1485 to 1520 with Ratdolt's original illustrations, the following differences are evident:

1. HYGINUS - Venice: Erhardt Ratdolt, 22 January 1485

Blocks from 1482 HYGINUS re-used, with the exception of:

- a reverse image of Scorpio
- added a block of a disembodied hand coming out of the clauda holding an armillary sphere with the label: *scemmus sphaeraecina (sic)*

2. HYGINUS - Venice: Thomas de Blavis, 7 June 1488

The illustrations are copies after 1485 HYGINUS, which are less fine and, in most cases, reversed from the originals. The copies were clearly made after the 1485 edition and not the 1482 edition - witness the depiction of Scorpio, in which the stars of its face are drawn within the contours of the head. de Blavis also copied Ratdolt's page format, initials and the '*scemmus sphaeraecina*'. There are some idiosyncracies in some of the figures arising, apparently, from defects in the printing blocks, which make the de Blavius blocks easily identifiable when they are later re-used. These include:

- Hercules with blackened eyes
- distortion in the mouth of Auriga, where part of the wood has broken off
- mis-cut mouth of Serpens
- lost eyes in Eridanus
- lost eyes in Sagittarius
- a double contour line along the back of Centaurus.

3. FRAGMENTUM ARATI - Venice: Antonio de Strata, 25 October 1488

de Strata re-uses de Blavis's 1488 HYGINUS blocks. The constellations are arranged according to the order in which they are described by Aratus. Therefore, a number of mistakes occur in the matching of illustrations with text. For example:

- the figure of Orion is used for both Bootes and Perseus
- Sagittarius is used to illustrate Orion.

In addition to this:

- Galaxia, Andromeda, Ophiuchus, Sagitta, Scorpio, Capricorn, Cetus and Canis Maior have been deleted
- a new representations of Bootes as an oxen-driver
- a new representation of the Pleiades as 7 female figures
- a new representation of Ara as a standing nude male wearing a cap with donkey's ears and from whose head flames issue (= Cepheus ?)
- a new planisphere has been added

- a second use of the block for Pegasus has been made, but only the front half of the horse has been printed.
- Triangulum appears above the head of Aries.

4. FRAGMENTUM ARATI - Venice: Aldus Manutius, October 1499

Manutius has re-used the de Blavis 1488 HYGINUS blocks with the following exceptions, which have been taken from the de Strata 1488 FRAGMENTUM ARATI:

- a male figure for Ara
- an oxen-driving Bootes
- 7 female figure for Pleiades
- planisphere.

In addition to this:

- Orion is taken from the de Blavis 1488 HYGINUS and is used for both Perseus and the first depiction of Bootes
- Sagittarius is used to illustrate Orion
- Galaxia, Hercules, Andromeda, Sagitta, Scorpio, Capricorn and Canis Maior have been deleted.
- the forequarters of a second Pegasus have been added
- there is a new image for Triangulum and the one above the head of Aries has been deleted.

5. HYGINUS - Venice: Johannes de Baptista Sessa, 25 August 1502

Most of the illustrations in this edition are copies after de Blavis's 1488 HYGINUS pictures. Changes occur in:

- a new, nude Perseus
- a new, nude Andromeda
- Delphinus is more porpoise-like
- Argo has lost its turtle
- Orion's costume has been updated to look more contemporary
- all of the zodiacal constellations have been copied after the blocks used in two earlier editions of the ASTROLABIUM PLANUM (the 1494 Johannes Emericus de Sipra and the 1502 Luc'Antonio Giunta editions)
- Galaxia has been altered so that the second female no longer has a melancholic posture
- an armillary sphere has been added, labelled: *scemma sphaericum secundum Higinii descriptionem*'.

6. HYGINUS - Paris: Thomas Kees, 24 May 1412 (*sic* = 1512)

These illustrations appear to be a mélange of copies after the 1502 Sessa HYGINUS and the 1488 de Blavis HYGINUS. The feature derived from the 1502 Sessa HYGINUS include:

- the non-melancholic Galaxia
- Corona Borealis
- the nude Andromeda
- the nude Perseus
- the ASTROLABIUM PLANUM-derived zodiacal signs
- the handle-less Crater.

Features derived from the 1488 de Blavis HYGINUS include:

- Draco with the two bears
- Bootes with a sickle and a sheaf of wheat
- Orion
- Navis with its turtle.

Finally:

- a new figure of Ophiuchus has been added.

7. HYGINUS - Venice: Melchior Sessa, 15 September 1512

The illustrations are re-used blocks from or copies after the 1502 Sessa HYGINUS.

For example:

- fols. Gii and Giii have been directly lifted from the 1502 Sessa HYGINUS.
- the title, pagination, characters and numbers have all been re-used from the 1502 Sessa HYGINUS
- the hand holding an armillary sphere is taken from 1502 Sessa HYGINUS.
- 43 of the 47 constellation figures have been poorly copied from the 1502 Sessa HYGINUS

There are different sources for the following:

- **4 constellations**
- the title page has been taken from the edition of Sacrobosco's SPHAERA MUNDI (3 December 1501).

8. HYGINUS - Venice: Jacobus Paucidrapius de Burgofranco, 12 January 1513

The illustrations are copies after the Ratdolt 1482 HYGINUS. Note especially the label of 'PHILLIRIDES' for Centaurus and the melancholic Galaxia. A few figures betray other sources. These include:

- Aries, Taurus and Gemini have been copied after the ASTROLABIUM PLANUM-derived zodiac signs.
- there are two prints of the armillary sphere similar to the 1502 Sessa HYGINUS.

9. HYGINUS - Paris: Jehan Lambert, X Kal. Septembris 1513

The illustrations are from re-used blocks from the 1512 Thomas Kees HYGINUS blocks. The image of Ophiuchus with the end of Serpens's tail cut off has been re-printed in the volume to accompany an elegy entitled 'Elegia Amicitiae'.

10. RADINUS TODISCHUS, SIDERALIS ABYSSUS - Paris: Thomas Kees, May 1514

Re-use of the 1512 Thomas Kees HYGINUS blocks to which a second armillary sphere has been added.

11. HYGINUS - Venice: Melchior Sessa and Pietro Ravani, 24 March 1517

Re-use of all the 1502 Sessa HYGINUS blocks.

12. HYGINUS - Paris: Pasquier Lambert, Pridie Kal. Septembris 1517

Re-use of all the 1512 Kees HYGINUS blocks to which a new representation of Atlas has been added.

The only illustrated Hyginus incunabula not to use images related to Ratdolt's 1482 edition is the 1512 edition printed in Venice by Melchior Sessa. In this volume, the figures appear to have been derived from a

celestial globe or globe-based stellar map, since most of them are depicted with their backs towards the viewer.

APPENDIX I:

In placing the illustrated manuscripts against the matrix of Viré's grouping one finds the following:

Hyginus I:

α.a: not illustrated

though St Gall 250 does contain an illustrated version of the *Revised Aratus latinus*.

α.b: two of two are illustrated

Leiden, Universiteitsbibliotheek, Voss lat 8° 15 (St Martial nr Limoges; c. 1025)

Vatican, Biblioteca Apostolica, Reg. Lat 123 (Sta Maria in Ripoll; before 1056)

α.c: not illustrated

α.d: not illustrated

α.e: not illustrated

β.a: not illustrated

though London BL Harley 2506 has an illustrated version of Cicero's *Aratea*

β.b: one of two is illustrated

Leiden, Universiteitsbibliotheek, Voss lat 4° 92 (12th century)

β.c: not illustrated

β.d: not illustrated

γ.a: not illustrated

γ.b: not illustrated

but Paris BN lat 8663 contains an illustrated version of the *De ordine ac positone stellarum in signis*

Hyginus II:

δ.a: not illustrated

ε.a: two of two are illustrated

Florence, Laurenziana, Plut. 29.30 (12th century)

Vienna ÖNB, 51 (12th century)

ε.b: two of two are illustrated

London BL Arundel 339 (12th century)

Wolfenbüttel, 18.16.Aug 4° (12th century)

ε.c: one of one is illustrated

St Paul im Lavantthal 16/1 (12th century)

ε. d: not illustrated

ζ.a: not illustrated

ζ.b: not illustrated

APPENDIX II:

The three Hyginus-related texts found in the **Hyginus IV** manuscripts (Florence, BNC Magliabecchiana XI. 114,1; Florence, Laur. Plut. 89. sup 43; Pavia Aldini 490; Vat lat 3110 and Urb. lat 1358). Readings taken from Pavia 490.

I. ff. 14v-15r:

De differentia temporum ortus signorum (= variant of Martianus Capella, *De nuptiis...* VIII, 844-45; compare WILLIS 1983, pp. 319-20).

Temporum quoque ipsorum signorum quibus oriuntur aut occident habenda est distantia secundum marchianum. Nam que transversa oriuntur et recta occidunt. celeriores autem habent quam occasus. contra autem que recta oriuntur et transversa conducuntur tardius oriuntur. Hec omnia manifestat alhancabuth super primum almucantarch cooperante almeri. Nam cancer signum recte oritur inclinatumque mersatur: licet hoc in capricorno parva inflectione curvetur. Oritur duabus horis et duodecima parte hore occidit ac deunce Minima in isto distantia.

Leo autem oritur duabus horis et tertia parte unius hore. Occidit vero hora semis et sexta parte. Virgo oritur duabus horis et dimidia et sexta parte hore: similiter et libra occidunt hora et tertia parte. at scorpius deminuit ortum et auget occasum non quod oblique oriatur sed recte. At quia prope equinoctium est. Oritur enim horis duabus et tertia parte occidit hora semis et sexta parte in hore. Sagittarius oritur horis duabus et duodecima parte // (15r) hore. At invicem que transversa oriuntur et recta occidit breviores ortus occupant quam occasus. Denique ex his est signum caprocorni quod oritur hora et deunce. occidit duabus horis et duodecima parte hore. Aquarij vero proximum signum oritur hora et dimidia et sexta parte hore. Occidit horis duabus et tertia parte hore. Sequens piscium signum oritur hora et tertia parte hore. occidit duabus horis et dimidia et Sexta parte hore. Eandem mensuram aries utriusque temporis secundum (servum?) sicut et taurus.

Taurus oritur hora et dimidia parte hore At gemini oriuntur hora et deunce. Occidunt duabus horis et duodecima parte hore. Quod enim in ortu illi habuerunt ista habent in occasum. Sequitur.

II. ff. 115r-127r:

Iginij gramatici astrologia sequitur (= Hyginus, *De Astronomia*, Book I, preface - I, 9 and the abbreviated version of Book II (Sed quoniam que nobis terrę positione – cum pressisset mammam deformavit circulum. Compare with VIRÉ 1992, pp. 15-94.)).

(121v) Sed quoniam que nobis de terrę positione // (122r) dicenda fuerunt et speram totam diffinivimus non que in ea signa sunt (changed to sint) nominabimus sigillatim. E quibus igitur primum.

E quibus primum duas arcticos et draconem deinde artifelaca cum corona dicemus et eum qui engonasin vocatur. ex inde liram cum olore et cefeo et eius uxore cassiepia filiaque andromeda et genero perseo. Dicimus etiam protinus aurigam a grecis eniocum appellatum. Ophiucus preterea cum aquila et sagitta parvoque delphine.

Inde equum dicemus cum eo sidere quod deltoton vocatur. His corporibus enumeratis ad duodecim signa pervenimus ea sunt hec aries taurus gemini: deinde cancer cum leone et virgine. preteria libra dimidia pars scorpionis cum sagittario et capricorno aquarius autem cum piscibus reliquas habet partes. His enumeratis suo ordine est cetus cum eridano flumine et lepore: deinde orion cum cane et eo signo quod prochion vocatur. preterea est argo cum centauro et ara: deinde ydra cum pisce qui nothus vocatur. horum omnium non inutile videtur historias proponere que certe aut utilitatem ad // (122v) ad scientiam aut iocunditatem as delectationem afferent lectori. Prima igitur ursa id est arctos calisto filia lycaonis dicitur de qua diverse fabule habentur. Arctos minor est minor ursa. hanc cinosuram esse unam de nutricibus lovis ex ydeis nymphis dixit Glosthones. Nonnulli autem elicen et cinosuram lovis nutrices esse dixerunt.

Sed maiorem arctum complures plaustri similem dixerunt ex septem stellis formatur. due quarum pro bobus et quinque pro plaustro habentur. Inde etiam triones idest triturantes dicuntur. Parmensicus ait 25 stellas esse ut urse species non septem stellis profiteretur. et ille qui ante plastrum sequens boetes appellabatur idem artofilax est dictus. Homerus eodem nomine currum et plastrum appellari. Boeten autem nunquam meminit arctofilaca nominari. Serpens vasto corpore inter duos arctos collocatur: qui dicitur aurea mala hesperidum custodisse et ab hercule interfectus a lunone in astra collectus. Nonnulli dixerunt hunc draconem a gigantibus Minerve obiectum cum eos oppugnaret. Minervam autem illum // (123r) arreptum ad ipsum axem celi fixisse. Arthofilax archas nomine lovis et calistonis filius dicitur: quem dicitur Lycaon cum lupiter ad eum in hospicium venisset

cum alia carne concisum pro epulis apposuisset Iovi quo facto Iupiter eum mutavit. pueri autem membra collocata et reformata cuidam etholorum dedit alendum. qui adolescens factus cum matrem ursam factam vellet occidere in celum cum illa fuit translatus et arcton servans arctofilax dicitur. Nonnulli hunc ycarum patrem Erigonis dixerunt qui ligurgo vineas a bacho sibi traditas extirpante interempto de eius corio utrem fecit circa i (crossed through) quem uno impletum socios suos saltare fecit.

Corona hic estimatur adriamnes fuisse a libero patre in sidera collocata. Engonasin hunc hemtostenes dicit herculem esse contra draconem collatum ut ad dimicandum paratam sinistra manu pellem leonis dextra clavam tenentem. Habet enim draco caput erectum. Hercules autem dextro genu nixus sinistro pede capitis eius dextram partem opprimere conatur. Lira inter astra constituta est quia a mercurio inventa orpheo est tradita quo mortuo in celum translata // (123v) fuit. Olor iste in celo est collocatus Orium omne genus avium greci appellaverunt.

Iupiter cum Menesi nimpham amasset nec cumea comisseri posset venerem in aquilam et se in olorem transmutavit et sic aquilam fugiens ad Menesim confugit. Que in gremio suo eum suscepit et sic iupiter eam stupravit et in celum avolant at cingnum et aquilam se sequentem inter astra collocavit id vel cignus qui est Leda concubuit.

Cepheus pater andromede causa persei in celo est collocatus. Cassiepia uxor eius se formam nercidas prestare iactavit. Pro quo facto inter sidera sedens resupinato capite ferri videtur. Andromeda Minerve beneficio grati persei inter astra collocata. Perseus multimodo genere virtutum inter astra collocatur. Heniochus hunc nos aurigam vocamus nomine erictonium qui in celo collocatus est. Huius in humero sinistro capra instare et in manu sinistra hedi dicuntur formari Permanicus ait quendam fuisse crete regem ad cuius filias iupiter ad nutriendum fuit datus que cum lac non haberent admiserunt ei capram amaloum que eum // (124r) dicitur educasse. Hec habunt duos edos et Iovi collectaneos qui propter beneficium in celum etiam translati. Ophiocus anguitenens dicitur supra scorpionem constitutus tenens anguem medium corpus eius implicantem. Sagitta ista una de Hercules esse dicitur qua interfecto aquilam que Promethei iecur fertur exedisce. Alij dicunt aquilam hanc Iovi amanti Ganimedem tradidisse. Delphin iste antifio cum nubere nollet (vollet?) Neptuno manuit ut nuberet. et ipse in nuptijs eius administravit qua gratia in celo est collocatus. Equus iste Pegasus Deltoton hoc sidus in triangulo positum admodum grece littere delte sic appellatur quod Mercurius supra caput aries posuit: ideo ut obscuritas arietis huius splendore significaretur et Iovis nomine greci dios primam litteram deformaret. Alij figuram sicilie deputaverint nonnulli totius orbis tres angulos habentis. Aries iste qui frixum et hellem portavit qui sibi met auream pellem extraxit et frixo dedit in memoriam sui: ipse autem ad sidera venit quare obscurius videtur. Vel ille qui libero

sitienti in // (124v) egypto apparuit et ideo in celo translatus est In quo cum sol est omnia recreantur et est quasi principium signorum.

Taurus iste dicitur esse qui europam rapuit. prior pars apparet ut tauri posterior obscurus apparet. Cuius effigiem que continent stelle hiades dicuntur numero septem. He etiam dicuntur nutrices liberi patris. vel dicuntur filie atlantis et electre. Alexander ait hise et boete filias. Pliades autem explicem oceani et athalte. Sed has pliadas seorsum a tauro formaverunt quidam astrologi quas cum Orion amavit eas insecutus est per spetem angues quarum Iupiter misertus in celo eas locavit. Itaque adhuc Orion eas fugientes ad occasum sequi videtur. Nonnulli in cauda tauri locaverunt.

Alij vergilias appellaverunt quod post ver oriatur. Et he quidem amplioem habent honorem quia in earum signum oriente estas significari videtur occidente hiens ostenditur quod aliis non est traditum signis.

Gemini sunt castor et pollux. qui propter fraternam concordiam inter astra locantur

Cancer iste dicitur luonis beneficio inter astra locatus: quia pedem Herculis ydram // (125r) expugnantis mordicus arripuit. In eius forma stelle sunt due. in capite que asini dicuntur a libero patre in celo locate qui cum veneret ad paludem transivit quo facto asinos in celo locavit. Leo iste dicitur a lunone constitutus princeps ferarum: vel ille quem hercules interfecit suo primo certamine: cuius supra simulacrum proxime virgini sunt alie septem stelle ad caudam leonis in triangulo collocate quas crines berotinis ptolomei esse uxoris dixerunt. virginem hanc hesiodus dixit lovis et themedis filiam. Aratus dixit Austre at aurore filiam in aureo seculo esse iustissimam et pro malicia arguntei in celum volasse. Alij cererem alij fortunam, alij erigonem Icaris filiam. In hoc conveniunt quod caput eius obscurum dicunt. Scorpius hic pro magnitudine membrorum in 2 signa dividitur: quorum effigiem nostri libram dixerunt. cuius hec est causa quod cum Orion venaretur et in eo multum confideret dixit diane et latone se omnia que de terra procreantur posse interficere. Terra irata immisit ei scorpionem qui eum interficere monstratur. Iupiter autem admiratus // (125v) in celum scorpionem locavit in signum ne homines sibi nimium diana aut propter studium orionem in celum love consentiente locavit. Id est ut cum scorpius oriatur occidat orion. Sagittarium centaurum plures dixerunt. alij negaverunt quod nemo centaurus sagittis usus sit. Quare tamen equinis crinibus sit deformatus habens caudam satiri quia venator equus usus fuit cum sagittis vel per sagittas acumen et celeritas designatur et cum satiris solebat morari quod totum Iupiter in suo corpore voluit designare. Ante pedes eius sunt stelle pauce in rotundum formate quam coronam eius esse dixerunt.

Capricornus iste dicitur caper cum quo Iupiter fuit nutritus quem Iupiter in celum locavit ut capram nutricem suam hic dicitur habere caudam piscis. Aquarium complures ganimedem

dixerunt. alij deucalionem qui eo regnante tanta vis aque incesserat ut cataclunus factus diceretur.

Pisces dicuntur isti venerem cupidinem tiphona suscepisse fugientes unde syri non comedunt pisces. Cetus iste dicitur belva neptuno missa ut andromedam interficeret a Perseo interfecta et in astra collocata. Flumen hoc eridanum dicunt vel nilum vel oceanum; sed de nilo verius dicitur. propterea quod infra eum est quedam stella clarius ceteris lucens que canopus dicitur. canopus enim quedam insula dicitur in nilo sita. Lepus orion canem fugere dicitur. nam cum ut oportebat eum venatorem finxerunt: ita leporem ad pedes eius fugientem significaverunt ut venator appareat. Canis iste dicitur custos europe a love positus esse ad minda (?) pervenisse quem procis cephalis uxor dicitur laborantem sanasse et pro beneficio ei canem dedit qui vulpentebanam fere vicit et ambo mutati in lapidem fuerunt. Nonnulli dixerunt eum canem Orionis. alij icari. sed canis habet in lingua stellam que ipsa canis appellatur.

In capite autem alteram quam suo nomine statuisse existimatur et sirion appellata est que preter ceteros lucere videretur.

Prochion autem maiorem canem exoriri videtur qui canis orionis a nonnullis dicitur.

Argo pro celeritate Greco nomine appellata est vel quia argus eam invenit. Navis illa divisa est a puppi usque ad malum signi- // (126v) ficans ut homines fractis navibus pertimescerent. Centaurus dicitur chiro saturni filius esse qui non modo centauros sed homines iustitia superasse dicitur. Esculapium et achillem nutritum qui sagitta herculis ab eo hospitati super pedem collapsa interiit et inter astra collocatus fuit cum hostia quam super ara tenens immolare videtur. Ara in hac primum dii minores sacrificaverunt. Ydra in qua corvus insidere et crater positus existimatur. Corvus in tutela appollinis susceptus eo sacrificante ad aquam missus sicut fructum expectans moram faciens tandem ydram inveniens ad excusationem secum apportavit. quo amisso hac pena eum affecit ut quam diu maturesceret corvus non biberet non posset tunc enim pertusum guttur habet.

Itaque cum vellet situm corvi significare inter sidera constituit crateram et supposuit que corvum sitientem moraretur. Videtur enim caudam rostro eius verberare tanquam sitiatis se ad crateram transire. Piscis iste qui nothus dicitur ore aquam excipere a signo aquarij videtur. Qui laborante irim quondam servasse dicitur. pro quo beneficio simul- // (127r) lachrum eius inter astra constituit. Itaque siri simulachrum piscium pro dijs colunt.

Lactea via dicitur deformata lunonis lacte perfusa. Saturnus quod enim devorato lapide pronatis dixit lunoni ut ei lac daret que cum pressisset mammam deformavit circum.

III. ff. 127r-130v:

De circulis planetarum = variant of Martianus Capella, *De nuptiis...*, VIII 855-87 (WILLIS 1983, pp. 323-36).

Terra centrum est spere celestis et omnium signorum non tamen centrum est circulorum planetarum. Solaris enim orbita de qua magis videretur per vices et propinquitates descensusque ad terras cursus que submittit Itaque pro signorum conditionibus sublimatur et cum medietatem linearum in latitudinem zodiaci sol libratus excurrat orbem tamen solis obliquitas meatus aut imprimit aut extollit. quamvis eque distent a terra signa zodiaci. solaris tamen circulis que evehitur aut descendit Itaque sol habet circulos 183 per quos aut a solstitio ad brumam redit aut ab eadem in solsticialem lineam sublevatur.

Mars duplos circulos facit. Iovis stella duodecies excrescit. Occidit vicies cumulatur Saturnus eos circulos qui paralleli etiam dicti sunt circumcurrunt qui motus omnium cum mundo proveniunt et terras orbitibus occidit (127v) sibusque circueunt non tamen terra centrum est circulorum istorum planetarum quisque quis enim circulus cuius libet diversionem habet centrum. Veneris et mercurij circuli terras omnino non ambiunt sed circa solem laxiore ambitu circulantur. Denique circulorum suorum centrum in sole constituunt ita ut supra ipsum aliquando intra plerumque propinquiores terris ferantur. Sed cum supra solem sunt propinquior est ei mercurius cum intra solem venus ut pote qui orbe castiore diffusioreque curvetur. luna autem per omnes zodiaci partes currens nunc in aquilonem provehitur nunc in austrum deveniens infimatur utrum que momentis excurrunt sicut ypancus quoque constituit. Itaque tamen ut descendens ascendensque solarem lineam per quam mediam inter suas utrisque lateris partes medio fertur libramento nullam excedens partem absque ipso libre confinio Ibi enim se in austrum aquilonemque deflectit ad dimidium fere momentum aut acutis aut spaciosis idest phanis angulis secet nec possit tamen ad idem hoc est ita ut est posita eodem mense eadem parte sic ad solem reverti eadem (128r) latitudinis portione nisi mense 2° 3° 5° Hoc est anno 19°. Nam ut sub eadem die hisdem propinquitatibus siderum in errantium ad idem redeat faciunt anni 55 ut verum etiam planetarum hisdem rationibus sub eadem specie contingat idem maximi (with 'de' written above it) prolixitas spectanda est. Itaque ceterae planetae lumen habent a seipso. Luna vero semper nisi tunc cum patitur eclipsim. hemisperio versus solem ab ipso sole illuminatur ita etiam ut cum 30 subiecerit se soli et nullum nobis lumen ostendat superne que solem spectat pleno lumine lucessit lucubrandiores cum luminis sui radij in terras perveniunt ut si quis ex speculo lumine represso effigiem lucis accipiat. Que quidem luna cum morientibus comprehenderit obscuratur et cum in occasu deserverit lucessit. Que etiam 13 orbis sui partes die nocteque transcurrit. cum pro latitudine circulorum quos obbeunt eodem interstitio mars dimidiam partem.

Iupiter 12 unius parties. Saturnus vicesiam octavam unius portionis excurrat Illud quoque manifestum quod zodiacus circa cancrum capricornumque flexior equinoctialem pene directum secat. Nunc de // (128v) planetarum cursu convenit intueri earumque precipue que circa solem peragratoe mundana volvuntur. Nam mercurius pene anno circulum ducens per octo latitudinis orbis alterna incitus diversitate discurrit. Huius veneris circulos epicyclos? esse dicimus idest non intra ambitum proprium rotunditatem telluris includere sed de latere quodammodo circumduci. Qui ut oriri subinde occidereque videantur mundani motus raptibus involvuntur. Sed idem mercurius licet solem ex diversis circulis contineat ab eo tamen nunquam ultra 32 partes poterit aberrare nec duobus signis absistere nec preteriens nunc consistens aut certe regrediens. Oritur autem ante ortum vel post occasum solis sed duos habet occasus unum cum radijs solis supervenientis ab ortu oculitur alium cum retrogradatione sui vicinie solis admotus non apparet Ab eo quippe solis lumine infra 20 momenta abesse non poterit licet maioribus partibus aberrarit qui ultra secundum signum non poterit inveniri. et has tamen obscuratoes ortusque perspicuos quarto quoque mense nec id tamen semper ostendit. At venus // (129r) circa anni confinia ambire proprium circulum perdocetur. Nam diebus 300 et aliquot latitudinis vero partibus lune similis pervagatur 50 momentis a solis orbe discedens licet plus a 46 partibus aberare non valeat et in suo posita circulo cum varia diversitate circumdat: quia aliquando eum transcurrit aliquando subsequitur nec comprehendit. aliquando superferret: nonnunquam (with dots underneath) subiacet idest elevatur super nonnunquam subiacet: quippe qui non annis omnibus revocet cursum. Tunc etiam cum retrograditur ultra anni circulum tardior collustrat orbem cum aut directo curcu meat ex xi mense circulum complet et nunc faciens ortum in luciferum nunc post occasum solis effulgens vesper vel vesperugo nominatur. Que quidem in ortu matutino plerumque quatuor mensibus immoratur.

Que quidem ϕ in ortu matutino plerumque quatuor mensibus immoratur in vespertino vero nunquam plus triginta diebus. Verum tamen visus eius quam occultatoes 19 mensibus restaurantur. Nam π sive martium sydus ultra solem mearis etiam ipse circum telluris ecentron meat annis // (129v) prope duobus In latitudine quinque partes excurrit. Cui licet cum duobus superpositis ortus occasus stationesque ac reditur videantur esse communes tamen et altitudinem propriam at stationem primam et absidem suam exceptum ceteris novit. Nam eius altitudo id est ubi se eius circulis a terra altius tollit sub signi leonis regione consurgit. Statio vero specialis eius prima nan ut pote soli coniunctus de proximo etiam in quadratam eius positus radios sent'it quipe in nonagesima parte ex utroque eius latere remoratur \emptyset absidem etiam habet recessumque sublumine in capricorni confinio hoc est sub eius 49^a parte. Stella vero Iovis salutaris ad omnia ut pote superior 12 annis longitudinem proprie circum actionis excurrit. per latitudinem vero quinque partium spatiatur. Altitudo eius circuli in virgine reperitur Absis vero in cancri quintadecima portione qui ascensus descensusque ecentron esse terram ipsum quoque circulum contestantur. Saturnus autem

prelatius omnibus sydus modico minus annis 30 circum per longitudinem // (130r)
circumcurrit In latitudine vero tres tantum aut etiam duabus partibus pervagatur. Altitudo
quidem eius circuli in scorpionis signum grandescit. Verum i (crossed out) absis ipsius in
libre vicesima portione.

Ortus tamen ei quam duabus inferioribus sunt similes cum eos ultra duodecim matutini
radius solis non precesserit tunc quippe matutinum ortum facere perhibentur. occasum
autem cum sole dimenso remote tot scilicet duodecim partibus poterunt apparere. Est
etiam alius qui arphôroÿc perhibetur cum sole intra orizontem, demergente de orientis
facie clarum planete nascentis sydus eremgit. Occultiones vero eorum cum radios sequente
proprij luminis vibratum amittant. Denique a partibus 120 stationes matutinas efficiunt mox
quem contrario in 180 exortis faciunt vespertinos Itaque in alio latere in 120 partibus
vicinantes stationes faciunt vespertinas quas etiam secundas dicunt qui superiores primas
esse dixerunt. (i doubly crossed through)

Consecutus autem radius inter 12 partes eas opprimit et occultat. Sed cursus diversitate
altitudinis que causas consis// (130v) tendi retrogradiendique atque incedendi omnibus
supradictis importat radius solis adfulgens qui eas percurrens aut in sublime tollit aut in
profundum deprimit aut in latitudinem declinare aut retrogradari facit. Sequitur. De polis.
(in red)

Comparison of the pictorial details supplied by ps-Eratosthenes and in Book II of Hyginus, *De astronomia*

1. **URSA MAIOR:** Both authors merely describe the constellation as a Bear.²⁵¹ In the description of Ursa Minor, Hyginus notes that the Latins also call this constellation *Septentriones* ('seven oxen').²⁵² He also adds that many say that Ursa Maior resembles a wagon, and that is the name that is used by the Greeks (*haxama*). He mentions that some astronomers give the constellation 25 stars.
2. **URSA MINOR:** Both authors describe the constellation as a Bear, with ps-Eratosthenes mentioning that it is 'smaller'.²⁵³
3. **DRACO:** According to ps-Eratosthenes, this is the Dragon that guarded the golden apples of the Hesperides.²⁵⁴ In addition to this, Hyginus mentions that it stretches its huge body between the two Bears. In a second option, Hyginus says it might be the serpent that the Giants threw at Minerva. She threw its coiled body into the stars, where it remained.²⁵⁵
4. **BOOTES:** ps-Eratosthenes mentions that he was raised as a shepherd.²⁵⁶ Hyginus describes him as a hunter and describes him as 'following' the Bear (Ursa Maior). He offers the alternate identity of the constellation as Icarus, a master vintner, who killed a goat and made its skin into a bag, around which he and his friends would dance. Or, he is in a cart, driven by oxen, which is filled with wine sacks. In this

²⁵¹ ps-Eratosthenes, *Catasterismi*, 1 (ROBERT 1878, pp. 50-55) and Hyginus, *De astronomia*, II, 1 (VIRÉ 1992, pp. 15-16).

²⁵² Hyginus, *De astronomia*, II, 2 (VIRÉ 1992, pp. 17-19).

²⁵³ ps-Eratosthenes, *Catasterismi*, 2 (ROBERT 1878, p. 56) and Hyginus, *De astronomia*, II, 2 (VIRÉ 1992, pp. 17-19).

²⁵⁴ ps-Eratosthenes, *Catasterismi*, 3 (ROBERT 1878, p. 60-65).

²⁵⁵ Hyginus, *De astronomia*, II, 3 (VIRÉ 1992, pp. 19-20).

²⁵⁶ ps-Eratosthenes, *Catasterismi*, 8 (ROBERT 1878, p. 74-80).

latter version of the story, he is murdered and buried beneath a tree. Otherwise, he might be Plutus, inventor of the plow.²⁵⁷

5. **CORONA BOREALIS:** ps-Eratosthenes describes the Crown as made of 'fiery gold' and decorated with 'Indian gems'.²⁵⁸ Hyginus describes it as a bridal crown and also mentions the gold and Indian gems.²⁵⁹
6. **HERCULES:** Ps-Eratosthenes describes Hercules as standing on the Dragon (Draco). He is wrapped in a lion's skin and raises his club. He also mentions the fable of the Garden of Hesperides and is quite specific in how the figures are depicted: 'The serpent's head is raised high; Hercules is astride the Serpent and holds it pinned with one knee while he steps on the head with the other foot. His right hand, which holds the club, is extended as if he were about to strike; he wears a lion's skin over his left arm'.²⁶⁰ Hyginus is similarly prescriptive, saying that he is prepared for a struggle and holds the lion's skin in his left hand and his club in his right. The Dragon's head is erect, Hercules is on his right knee and attempts to stand on the right side of Draco's head with his left foot. His right arm is extended as if he is about to strike. His left arm is outstretched and holds the Lion's skin. Hyginus also mentions that some people believe the kneeling figure of 'Engonasin' is not Hercules, but is Thamrys, who was blinded by the Muses and is supplicating on his knees. He also cites Aeschylus, who says it is Hercules fighting with the Ligurians and that he is on his knees because he is exhausted after the battle. Finally, he mentions that some say the figure is Ixion and others say it is the bound Prometheus.²⁶¹
7. **LYRA:** ps-Eratosthenes mentions the origin of the Lyre in a tortoise-shell and the horns of the cattle of Apollo. He also says it has 7 strings.²⁶² Hyginus mentions the shell and the strings, but not the horns.²⁶³

²⁵⁷ Hyginus, *De astronomia*, II, 4 (VIRÉ 1992, pp. 20-25).

²⁵⁸ ps-Eratosthenes, *Catasterismi*, 5 (ROBERT 1878, pp. 66-68). He also mentions 'Ariadne's lock' placed beneath the tail of Leo in this section.

²⁵⁹ Hyginus, *De astronomia*, II, 5 (VIRÉ 1992, pp. 26-29).

²⁶⁰ ps-Eratosthenes, *Catasterismi*, 4 (ROBERT 1878, p. 62-66 and CONDOS 1997, p. 115).

²⁶¹ Hyginus, *De astronomia*, II, 6 (VIRÉ 1992, pp. 29-31).

²⁶² ps-Eratosthenes, *Catasterismi*, 24 (ROBERT 1878, p. 138-42).

8. **CYGNUS:** ps-Eratosthenes mentions the Swan, who laid a great egg, which hatched-out Helen (later of Troy).²⁶⁴ Hyginus also mentions that it is a swan and that her egg hatched into Helen.²⁶⁵
9. **CEPHEUS:** The description in ps-Eratosthenes is unique in that it mentions the placement of the constellation relative to the celestial circles, saying that from his feet to his chest, Cepheus lies within the Arctic Circle and the rest of his body lies between the Arctic Circle and the Tropic of Cancer. He is named as the king of the Ethiopians and the father of Andromeda.²⁶⁶ Hyginus cites his Ethiopian heritage, but deletes the section about the placement of the figure in the sky.²⁶⁷
10. **CASSIOPEIA:** ps-Eratosthenes describes her as seated in a chair, whereas Hyginus describes the seat as a ‘throne’ and adds that she is placed with her head downwards.²⁶⁸
11. **ANDROMEDA:** In his description, ps-Eratosthenes describes the constellation as having her arms outstretched, as she was when she lay exposed to the sea monster.²⁶⁹ Hyginus drops this detail.²⁷⁰
12. **PERSEUS:** ps-Eratosthenes mentions that Perseus can fly because he has the helmet and sandals of Hermes, and that he carries the golden wallet of Hephaestus. He holds the head of the Gorgon, Medusa.²⁷¹ Hyginus is slightly more specific, saying that the sandals are winged and that he has both a cap and a helmet. He also has an adamantine knife (.. *falcem ... ex adamant factam*), a gift from Vulcan.²⁷²

²⁶³ Hyginus, *De astronomia*, II, 7 (VIRÉ 1992, pp. 31-34).

²⁶⁴ ps-Eratosthenes, *Catasterismi*, 25 (ROBERT 1878, pp.142- 44).

²⁶⁵ Hyginus, *De astronomia*, II, 8 (VIRÉ 1992, pp. 35-36).

²⁶⁶ ps-Eratosthenes, *Catasterismi*, 15 (ROBERT 1878, p. 114).

²⁶⁷ Hyginus, *De astronomia*, II, 9 (VIRÉ 1992, p. 36).

²⁶⁸ ps-Eratosthenes, *Catasterismi*, 16 (ROBERT 1878, p. 116) and Hyginus, *De astronomia*, II, 10 (VIRÉ 1992, pp. 36-37).

²⁶⁹ ps-Eratosthenes, *Catasterismi*, 17 (ROBERT 1878, p. 118).

²⁷⁰ Hyginus, *De astronomia*, II, 11 (VIRÉ 1992, pp. 37).

²⁷¹ ps-Eratosthenes, *Catasterismi*, 22 (ROBERT 1878, pp.130-33).

²⁷² Hyginus, *De astronomia*, II, 12 (VIRÉ 1992, pp. 37-39).

13. **AURIGA:** ps-Eratosthenes mentions that Erichthonius was the first man to harness four (white) horses to a chariot. He later mentions that Erichthonius invented the chariot and is shown driving a chariot with a rider beside him, who carried a small spear and wore a helmet. ps-Eratosthenes also mention the Goat and the Kids.²⁷³ Hyginus calls Erichthonius the inventor of the *quadriga*. He says that his body is in the form of a serpent or, perhaps, just his ‘lower members’ (legs?) are serpentine. He describes the Goat on his left shoulder and the Kids on his left hand.²⁷⁴
14. **OPHIUCHUS:** ps-Eratosthenes says Ophiuchus stands close to Scorpio, but does not provide any further iconographic information.²⁷⁵ Hyginus describes him specifically as *Anguitenens*, or the ‘Snake-holder’, and says he holds a serpent in his hands, which winds around his body. He says that the man stands ‘above’ Scorpio. In one myth, he is named as ‘Carnabon’, who is depicted trying to strangle a dragon with his hands. Or, he is Tripoas, who is being strangled by a serpent; or Phorbas, who gained fame slaying serpents on the island of Rhodes; or Aeslepius, depicted holding a serpent in his hands. Finally, Hyginus suggests he might be Hercules, but offers no explanation for the presence of the Serpent.²⁷⁶
15. **SAGITTA:** Neither author offers details on the Arrow’s appearance.²⁷⁷
16. **AQUILA:** Eratosthenes describes Aquila with his wings outspread as if in downward flight.²⁷⁸ Hyginus offers the less clear description of the eagle flying ‘against the rays of the Sun’. In addition to suggesting that the figure might be the eagle that carried Ganymede, he mentions the myth of Merops, whose wife was shot by arrows. He also mentions a myth in which the eagle carries the sandal of Venus to Mercury.²⁷⁹

²⁷³ ps-Eratosthenes, *Catasterismi*, 13 (ROBERT 1878, pp. 100-04).

²⁷⁴ Hyginus, *De astronomia*, II, 13 (VIRÉ 1992, pp. 39-42).

²⁷⁵ ps-Eratosthenes, *Catasterismi*, 6 (ROBERT 1878, pp. 68-70).

²⁷⁶ Hyginus, *De astronomia*, II, 14 (VIRÉ 1992, pp. 43-46).

²⁷⁷ ps-Eratosthenes, *Catasterismi*, 29 (ROBERT 1878, p.154) and Hyginus, *De astronomia*, II, 15 (VIRÉ 1992, pp. 47-51).

²⁷⁸ ps-Eratosthenes, *Catasterismi*, 30 (ROBERT 1878, p. 156).

²⁷⁹ Hyginus, *De astronomia*, II, 16 (VIRÉ 1992, pp. 51-53).

17. **DELPHINUS:** Neither author has much to say, beyond that the figure represents a dolphin. Amongst his possible identities, Hyginus does mention that it might be the dolphin that carried Arion, the citheroode.²⁸⁰
18. **PEGASUS:** ps-Eratosthenes says only the front part of the Horse (as far as the navel) is visible. He queries the Horse's identification as Pegasus, because the constellation has no wings and suggests it may be Chiron's daughter, Hippe.²⁸¹ Hyginus lists a number of possible identities for the Horse, but only mentions that it is half-a-horse in his final line, as part of the story of Hippe. In his recounting of the myth of Bellerophon, he mentions a flying horse, but not any wings.²⁸²
19. **TRIANGULUM:** Both authors place this constellation above the head of Aries and describe it as resembling the Greek letter 'Δ', as well as the *delta*-shaped mouth of the Nile River. Hyginus adds that it also resembles the triangular island of Sicily.²⁸³
20. **ARIES:** Eratosthenes mentions the golden fleece of the Ram and that it lost a horn when it was carrying Helle across the Hellespont.²⁸⁴ Hyginus also mentions the fleece, but not the lost horn.²⁸⁵
21. **TAURUS:** ps-Eratosthenes says the Bull is either the one who carries Europa or is a transformation of Io. He mentions that the **Hyades** are placed on its forehead and the **Pleiades** are towards the rump. In a separate section on the Pleiades, he says that they are placed on the nape of the Bull's neck and, citing Hipparchus, claims they are formed in the shape of a triangle. He does not describe the form of the Bull.²⁸⁶ Hyginus repeats the myths and describes the front part of the constellation as resembling a bull. He notes that the rear quarters are fainter, but does not say they are invisible or that the creature is cut-off. He also mentions that it faces the rising

²⁸⁰ ps-Eratosthenes, *Catasterismi*, 31 (ROBERT 1878, pp.158-60) and Hyginus, *De astronomia*, II, 17 (VIRÉ 1992, pp. 53-56).

²⁸¹ ps-Eratosthenes, *Catasterismi*, 18 (ROBERT 1878, pp. 120-22).

²⁸² Hyginus, *De astronomia*, II, 18 (VIRÉ 1992, pp. 56-58).

²⁸³ ps-Eratosthenes, *Catasterismi*, 20 (ROBERT 1878, p. 126) and Hyginus, *De astronomia*, II 19 (VIRÉ 1992, pp. 58-59).

²⁸⁴ ps-Eratosthenes, *Catasterismi* 19 (ROBERT 1878, p. 124).

²⁸⁵ Hyginus, *De astronomia*, II, 20 (VIRÉ 1992, pp. 59-63).

²⁸⁶ ps-Eratosthenes, *Catasterismi*, 14 and 23 (ROBERT 1878, pp. 106-12 and 134-36).

- Sun. He describes the **Hyades** as being on the face of the Bull. As for the **Pleiades**, he places their stars ‘outside the constellation’ and notes that they are called ‘the Bull’s tail’ by many astronomers. He says they are *cometes*, or ‘long-haired.’²⁸⁷
22. **GEMINI**: Both authors describe these as the Dioscuri, and mention that they were loving brothers. Hyginus mentions their horses. He also offers alternate identifications as Hercules and Apollo or Triptolemus and Iasion.²⁸⁸
23. **CANCER**: ps-Eratosthenes describes Cancer as a fresh-water crab. He is slightly contradictory in his description of the Asses: first saying that they are placed ‘on the western side of Cancer’, and then citing the nebula of the Manger and the two-bright stars of the Asses, standing beside the Manger on Cancer’s shell.²⁸⁹ Hyginus says the Crab came from a swamp and seized the foot of Hercules ‘with its teeth’. He places the Asses on the shell.²⁹⁰
24. **LEO**: Neither author has anything to say about the shape of the beast, but ps-Eratosthenes does mention the 7 faint stars in the shape of a triangle (the lock of Berenice Euergetis’s hair) above his tail.²⁹¹ Hyginus says the triangle is on the tail of the Lion, near Virgo.²⁹²
25. **VIRGO**: ps-Eratosthenes says Virgo is either Dike (‘Justice’), or Demeter (because she holds a sheaf of grain) or Isis. Those who believe she is Tyche (‘Fortune’) depict her without a head.²⁹³ Hyginus relates how some believe she is Iustitia (‘Justice’) and relates how she flew up to heaven (though he doesn’t actually mention her wings). He also offers other possible identifications as Ceres, a headless Fortuna or Erigone.²⁹⁴

²⁸⁷ Hyginus, *De astronomia*, II, 21 (VIRÉ 1992, pp. 63-66).

²⁸⁸ ps-Eratosthenes, *Catasterismi*, 10 (ROBERT 1878, pp. 86-88) and Hyginus, *De astronomia*, II, 22 (VIRÉ 1992, pp. 66-67).

²⁸⁹ ps-Eratosthenes, *Catasterismi*, 11 (ROBERT 1878, pp. 88-94).

²⁹⁰ Hyginus, *De astronomia*, II, 23 (VIRÉ 1992, pp. 67-69).

²⁹¹ ps-Eratosthenes, *Catasterismi*, 12 (ROBERT 1878, pp.96-98).

²⁹² Hyginus, *De astronomia*, II, 24 (VIRÉ 1992, pp. 69-71).

²⁹³ ps-Eratosthenes, *Catasterismi*, 9 (ROBERT 1878, p. 82).

²⁹⁴ Hyginus, *De astronomia*, II, 25 (VIRÉ 1992, pp. 71-72).

26. **SCORPIO:** ps-Eratosthenes describes a giant Scorpion that covers two-twelfths of the zodiac.²⁹⁵ Hyginus adds that one of this sign's constituent parts is called **Libra**, but does not explain how the constellations are formed either combined or separately.²⁹⁶
27. **SAGITTARIUS:** ps-Eratosthenes clearly describes 'the Archer' as a two-legged satyr, although he does mention that some think it might be a centaur, but concludes that they are wrong.²⁹⁷ Hyginus says he is represented with a horse's limbs, but with a satyr's tail. Hyginus also mentions a circular wreath at his feet (**Corona Austrinus**).²⁹⁸
28. **CAPRICORN:** ps-Eratosthenes says that Capricorn resembles Aegipan, with his lower members being those of a wild animal and he has horns on his head. To this extent, the beast would seem to be a satyr; but, in a subsequent sentence, he describes the beast as having a fish's tail.²⁹⁹ Hyginus says that his upper body is a goat and lower body is shaped like a fish.³⁰⁰
29. **AQUARIUS:** Eratosthenes says that Aquarius is so-named because this is the action he represents ('water-pourer'). He holds a wine jar, from which he pours liquid, and he may be Ganymede.³⁰¹ Hyginus mentions that he is pouring water *into* some object, but does not describe the vessel. He also says that the figure may be Ganymede or Deucalion.³⁰²
30. **PISCES:** ps-Eratosthenes merely says that the fish 'do not lie close together' and that they are 'connected as far as the front foot of the Ram'.³⁰³ Hyginus does not offer a description.³⁰⁴
31. **CETUS:** Neither author offers a description of the 'sea-monster'.³⁰⁵

²⁹⁵ ps-Eratosthenes, *Catasterismi*, 7 (ROBERT 1878, pp. 72-74).

²⁹⁶ Hyginus, *De astronomia*, II, 26 (VIRÉ 1992, pp. 72-73).

²⁹⁷ ps-Eratosthenes, *Catasterismi*, 28 (ROBERT 1878, pp. 150-52).

²⁹⁸ Hyginus, *De astronomia*, II, 27 (VIRÉ 1992, pp. 73-74).

²⁹⁹ ps-Eratosthenes, *Catasterismi*, 27 (ROBERT 1878, pp. 148-50).

³⁰⁰ Hyginus, *De astronomia*, II, 28 (VIRÉ 1992, pp. 74-75).

³⁰¹ ps-Eratosthenes, *Catasterismi*, 26 (ROBERT 1878, pp. 150-52).

³⁰² Hyginus, *De astronomia*, II, 29 (VIRÉ 1992, pp. 75-76).

³⁰³ ps-Eratosthenes, *Catasterismi*, 21 (ROBERT 1878, p. 128). English transl. by Condos, *Star Myths* 1997, p. 161.

³⁰⁴ Hyginus, *De astronomia*, II, 30 (VIRÉ 1992, pp. 76-77).

32. **ERIDANUS:** ps-Eratosthenes first mentions that the River emanates from the left foot of Orion. It is probably the Nile and has a large star named 'Canopus' beneath it, which touches the steering oar of Argo.³⁰⁶ Hyginus says it may be the Nile or Oceanus and mentions the star beneath it called 'Canopus'.³⁰⁷
33. **LEPUS:** Hyginus says the hare is 'fleeing'.³⁰⁸
34. **ORION:** ps-Eratosthenes only mentions Orion's ability to walk on water and his death by Scorpion sting.³⁰⁹ Hyginus repeats the water and the sting stories, but adds a second interpretation of Orion as a hunter, who was killed (in some version purposefully and, in others, accidentally) by Diana's arrows, and is depicted in the skies in the act of hunting.³¹⁰
35. **CANIS MAIOR:** Neither author offers any significant details, though Hyginus does mention in his mythological section (that is, in Book II) that it has a star on its tongue, which is called 'Canis' and a very bright star on its head, called 'Sirius'.³¹¹
36. **CANIS MINOR:** Neither author offers any significant details.
37. **NAVIS:** Eratosthenes mentions that the ship is visible from the stern to the mast and that the steering oars are visible.³¹² Hyginus follows the description of only half the ship being visible, but does not mention the steering oars.³¹³
38. **CENTAURUS:** The figure is named as Chiron, the centaur, by ps-Eratosthenes and the story is related of how the Centaur was killed by one of Hercules's arrows accidentally hitting his foot. The 'wild beast' is described as a 'wolf', which is about to be sacrificed.³¹⁴ Hyginus calls him Chiron and mentions the arrow. He also

³⁰⁵ ps-Eratosthenes, *Catasterismi*, 36 (ROBERT 1878, p. 176) and Hyginus, *De astronomia*, II, 31 (VIRÉ 1992, pp. 77).

³⁰⁶ ps-Eratosthenes, *Catasterismi*, 37 (ROBERT 1878, pp. 176-178)

³⁰⁷ Hyginus, *De astronomia*, II, 32 (VIRÉ 1992, pp. 77-78).

³⁰⁸ Hyginus, *De astronomia*, II, 33 (VIRÉ 1992, pp. 78-80).

³⁰⁹ ps-Eratosthenes, *Catasterismi*, 32 (ROBERT 1878, pp. 162-64)

³¹⁰ Hyginus, *De astronomia*, II, 34 (VIRÉ 1992, pp. 80-82).

³¹¹ Hyginus, *De astronomia*, II, 35 (VIRÉ 1992, pp. 83-84).

³¹² ps-Eratosthenes, *Catasterismi*, 35 (ROBERT 1878, p. 174).

³¹³ Hyginus, *De astronomia*, II, 29 (VIRÉ 1992, pp. 84-85).

³¹⁴ ps-Eratosthenes, *Catasterismi*, 40 (ROBERT 1878, pp. 184-85).

mentions the centaur, Pholos. Both are depicted coming towards Ara to offer a sacrifice.³¹⁵

39. **ARA:** Neither description is sufficiently detailed to affect the picture.
40. **HYDRA with CRATER and CORVUS:** ps-Eratosthenes tells the tale of a crow, that carried a water snake and a water-cup in its beak, as part of an attempt to deceive Apollo. He says that the constellation depicts the water snake preventing the Crow from drinking as a punishment.³¹⁶ In Hyginus's version, the Crow carries only the water cup. The constellation is described as the Crow appearing to shake Hydra's tail with its beak in order to reach the water-cup. In another version, Hyginus describes Crater as a wine-jar.³¹⁷
41. **PISCIS AUSTRINUS:** Both ps-Eratosthenes and Hyginus describe the 'Great Fish' as swallowing the water poured forth by Aquarius.³¹⁸

³¹⁵ Hyginus, *De astronomia*, II, 38 (VIRÉ 1992, pp. 85-86).

³¹⁶ ps-Eratosthenes, *Catasterismi*, 41 (ROBERT 1878, p. 188).

³¹⁷ Hyginus, *De astronomia*, II, 40 (VIRÉ 1992, pp. 86-90).

³¹⁸ ps-Eratosthenes, *Catasterismi*, 38 (ROBERT 1878, p. 180) and Hyginus, *De astronomia*, II, 41 (VIRÉ 1992, pp. 90-91).

APPENDIX IV

Where the illustrations appear in the early manuscripts

GROUP I.a	S Paul im Lavanttal, Benediktuskabinett, Ms 16/1(XXV. 4. 20)	Book II 11th century
	Florence, Biblioteca Laurenziana, Ms Plut. 29.30	Book II 12th century
	Leiden, Universiteitsbiblotheek, Voss lat 8° 18	Book II 15th century
GROUP I.b	Wolfenbüttel, Herzog August Bibliothek, Ms 18. 16. Aug 4°	Book II 12th century
	London, British Library, Arundel 339	Book II/III excerpts 13th century
GROUP I.c	Vienna, ÖNB, Vindob 51	Book II 12th century
GROUP II	Leiden, Universiteitsbiblotheek, Voss. Lat. 4° 92	Book III 12th century
GROUP III	Leiden, Universieitsbiblotheek, Voss lat 8° 15	Book III 11th century
	Vatican, Biblioteca Apostolica, Reg. Lat 123	Books II/III excerpts 11th century

GROUP IV	Oxford, Bodleian Library, Bodley 614	Book II excerpts 12th century
	Oxford, Bodleian Library, Digby 83(S.C. 1684)	Book II/III excerpts 12th century
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GROUP V	Baltimore, Walters Art Gallery, Ms 734	Book III excerpts 12th century
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GROUP VI	Berlin, Staatsbibliothek, Ms 8° 44	Book III excerpts 15th century
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GROUP VII	London, British Library, Roy Ms 13. A. XI	Book III excerpts 12th century
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GROUP VIII	Munich, Staatsbibliothek, clm 10270	Books II/III excerpts 11th century
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RENAISSANCE MANUSCRIPTS

GROUP IXa	Cambridge, Fitzwilliam Museum, Ms 260	Book III 15th century
	Florence, BNC, Magliabecchiana XI. 141	Book III 15th century
	Milan, Biblioteca Ambrosiana , T. 47 sup	Book III 15th century
	Oxford, Bodleian Library, Can class lat 179	Book III 15th century
	Siena, Biblioteca comunale, Ms L. VI. 25	Book III 15th century
	Vatican, Biblioteca Apostolica, Vat lat 3109	Book III 15th century
	Verona, Biblioteca capitolare, Ms CCLXI	Book III 15th century

GROUP IXb (pair 1)	Oxford, Bodleian Library, Can miscentury46	Book III 15th century
	Milan, Biblioteca Trivulziana, N. 690 (E. 83)	Book III 15th century

GROUP IXc (pair 2)	Vatican, Biblioteca Apostolica, Vat lat 3110	Book III 15th century
	Florence, BNC, Magliabecchiana XI. 114,1	Book III 15th century

GROUP IXc (distant)	Florence, Biblioteca Laurenziana, Ashburnam 1148	Book III 15th century
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GROUP IXd (pair 3)	Pavia, Biblioteca Universitaria, Aldini 490	Book III 15th century
	Vatican, Biblioteca Apostolica, Urb. Lat 1358	Book III 15th century

GROUP IXe	New York, Public Library, Spencer Ms 28	Book III 15th century
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GROUP IXf	Florence, Biblioteca Laurenziana, Plut. 89. sup 43	Book III 15th century-
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GROUP X	Vatican, Biblioteca Apostolica, Chigi H.IV.20	Book III 15th century
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GROUP XI	Cortona, Libreria del Comune, Ms 184 (256)	Book III 15th century
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TO BE CHECKED !!!

Cambrai Bib Mun 993 - 15th century

Paris ex-Phillips 26,235 - 12 th c

Vienna 3111 - 15th c

