

# Apuleius on the Heaven A Question of Authority

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# Apuleius on the Heaven

## A Question of Authority

by

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## Abstract

Apuleius' *De mundo* pr. 1–3.4 is a loose paraphrase in Latin of the Περὶ κόσμου 391a1–392b14, a treatise once thought to be by Aristotle. By focusing on differences between these two works, I aim to develop some working hypotheses that situate the *De mundo* in relation to critical disagreements in the second century AD about the heaven, what constitutes knowledge of it, and how this knowledge is to be gained.

### About the Author

ALAN C. BOWEN is a historian of ancient and early medieval science and philosophy, whose primary focus is on the science of astronomy. His current research focuses on Ptolemy's implicit claim to be a philosopher in *Alm.* 1.1 and how this impacted the reception of his work in the philosophical schools. His most recent book is *Hellenistic Astronomy: The Science in Its Contexts* (Brill, 2020, with Francesca Rochberg).

**Keywords** Apuleius, *De mundo*, [Aristotle], Περὶ κόσμου, history of astronomy

## INTRODUCTION

The Latin version of the *Περὶ κόσμου* by Apuleius (b. AD 123/5) is not a translation; it is a paraphrase, and a loose one at that, given its numerous elisions and additions. As Jean Beaujeu observes in his edition of Apuleius' text, "Dans tout l'ouvrage, on compte à peine une dizaine de phrases traduites mot à mot" [1973, 113]. To understand Apuleius' adaptation of the *Περὶ κόσμου*, which he likely thought was by Aristotle [cf. [pr. 10](#)],<sup>1</sup> it is important to understand that it was prepared for Latin readers of his own time, the second century AD.<sup>2</sup> From this, I infer two stages in interpreting the departures from the original Greek text that signal Apuleius' transformative appropriation of the *Περὶ κόσμου*. The first is comparative and simply involves identifying and characterizing these differences. The second stage is more analytic; it involves locating Apuleius' contribution, so far as one can, in the intellectual *milieu* of his own times.

The warrant for this second stage is that Apuleius' offering to his contemporaries a version of a work at least one century after its original composition<sup>3</sup> is

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<sup>1</sup> Given Jill Kraye's account of the mentions of the *Περὶ κόσμου* in Greek antiquity up to the sixth century AD, it would seem that there was no doubt in this interval that the work was by Aristotle. Indeed, as Kraye maintains, the argument about the authenticity of the *Περὶ κόσμου* only began to take shape in the 15th and 16th centuries, and it was essentially over by the close of the 19th century, when most scholars agreed that it was not by Aristotle. The earliest clear denial on record that Aristotle is the author would seem to come in Maimonides' letter of 1199 to Samuel ibn Tibbon. See [Kraye 2014](#).

<sup>2</sup> For a concise account of Apuleius' practices as a translator and his intended readership, see [Beaujeu 1973](#), 113–116.

<sup>3</sup> The question of when the *Περὶ κόσμου* was composed is contested. For my part, I would put its date somewhere in the interval ranging from the death of Alexander the Great to the close of the first century, given what it conveys regarding the planets and their motions. For argument in light of its didactic and literary character that the *Περὶ κόσμου* was perhaps written in the decade following Alexander's death, see [Sider 2015](#).

not a neutral or a context-free act and that the original work translated does not by itself exhaust the intellectual context of the Latin rendition. Likewise, while noting the sources which Apuleius draws on tacitly in presenting his version of the Περὶ κόσμου is useful, it too fails to establish by itself the full context in which he does this. The upshot is that one will fall short in interpreting the *De mundo* if one does not also ask, Why does Apuleius offer to his contemporaries this so extensively adapted version in Latin of a Greek text? Obviously, the two-staged inquiry just described will reach well beyond the proper ambit of a single article if its object is the *De mundo* as a whole. Accordingly, I will limit the focus of my remarks to the differences between Περὶ κόσμου 391a1–392b14 and Apuleius’ version of these lines in *De mundo* pr. 1–3.4. Further, I will attend primarily to substantive matters of philosophical doctrine in this selection but, again, only so far as they bear on the nature and constitution of the celestial domain and the kind of knowledge by which it is known. I will not consider Apuleius’ position *vis-à-vis* the more general philosophical issues of his day. Nor will I address his intrusion of the numerous, diverse devices by which he endeavors to impress his readers and to situate himself in the literary culture of his times.

But first, the reader unfamiliar with Apuleius might wish to consult the annotated translation of the opening chapters of his *De mundo* in Appendix 1 [pp. 21–28 below] along with translation of the Greek text that he was translating, [Aristotle], Περὶ κόσμου, in Appendix 2 [pp. 29–32 below], both of which I offer now as an aid to the reader and as an initial record of my understanding of Apuleius’ source and his version of it.

## ANALYSIS

### A Focused comparison of the *De mundo* and Περὶ κόσμου<sup>4</sup>

A.1 *De mundo* pr. 1–10 and Περὶ κόσμου 391a1–b8 In their prefaces, both treatises establish Philosophy as a supreme, personified discipline by which alone inquiry about the divine cosmos as a whole and about the heaven in particular can secure knowledge. The *De mundo* alone explains that this is why Philosophy discovers virtue, banishes vice, and, consequently, has moral authority. Both also use visual metaphors to describe the acquisition

<sup>4</sup> In writing this section, I have been greatly aided by the insightful remarks on Περὶ κόσμου 391a1–392a31 in [Karamanolis 2021](#) and [Thein 2021](#).

of this knowledge and both maintain the superiority of philosophy to other intellectual undertakings (represented by geography or writings on isolated places on Earth) by virtue of its focus on the cosmos. The cosmos itself is presented in each as a subject of divine, all-inclusive immensity separated from us on Earth by prodigious distance. The *De mundo* alone indicates that, in accounting for the cosmos, Philosophy will focus on those things by virtue of which the cosmos has become what it is now [see *ad pr. 6*].

Yet, whereas the *Περὶ κόσμου*, in language recalling earlier views of philosophy as involving the mental effort of dialectic, has the soul grasping things divine, the *De mundo* says only that it recognizes or identifies them.<sup>5</sup> Further, while the *Περὶ κόσμου* confirms the need for such effort by adding that the soul interprets (*προφητεύουσα*) these divine things for mankind and shares (*μεταδοῦναι*) its interpretations of them unstintingly as best it can [391a16–18], the *De mundo* likens the soul's handing on to others its vision (called *scientia* earlier in *pr. 6*) to the prophets' relaying to others what they alone see by divine grace or favor.<sup>6</sup> For the *Περὶ κόσμου*, then, philosophy is apparently understood in the context of a school with its teachers and students, some of whom are presumably capable of mastering what is taught. In the *De mundo*, however, the context seems to be a public forum or, better, a (quasi-)religious assembly, where the speaker has the authority of divine favor and the listeners do not grasp dialectically what the speaker has seen but can only gain it on the basis of this authority—much as Faustinus (and the reader) will presumably gain what he learns from Apuleius and is unable to see on his own.

There is also an important difference in how these treatises state their aim. The language of the *Περὶ κόσμου* is emphatically protreptic—note the hortatory subjunctive with personal pronoun «λέγωμεν ἡμεῖς»—and explicitly directed to a single person, the addressee, Alexander. Moreover, the statement of its aim is vague: they are to theologize (*θεολογεῖν*) about all these things together, how each has its nature (*φύσις*), position, and motion [391b3–8].<sup>7</sup> In contrast, while the *De mundo* too will address the entire,

<sup>5</sup> 391a15 *θείῳ ψυχῆς ὄμματι τὰ θεῖα καταλαβοῦσα*; *pr. 6 anima divinis suis oculis aspexit, agnoscit*.

<sup>6</sup> *pr. 6 veluti prophetae quidam deorum maiestate completi effantur ceteris quae divino beneficio soli vident*.

<sup>7</sup> As Karamanolis points out, this means the philosophical talk enjoined about “all these things together” is to explain them by recourse to the divine cause [2021, 29–30].

divine system that is the cosmos, its stated aim is only descriptive and, moreover, clearer. Thus, while the aim of the *De mundo* has the same general focus, that is, the cosmos as a whole, in the course of covering its elemental bodies (*naturae*) and their functions, it will explain not only how but why these bodies move as they do. It also affirms that in doing this it will follow Aristotle and Theophrastus [pr. 10].

**A.2 *De mundo* 1.1–7 and Περὶ κόσμου 391b9–392a9** The first definitions of the cosmos are essentially the same: both define the cosmos (*mundus*, κόσμος) as the cohesive structure (*societas*, σύστημα) of the heaven and Earth, along with the elemental bodies (*naturae*, φύσεις) or, more simply, along with what belongs to each [391b9–10, 1.1]. In effect, each divides the cosmos into its celestial and terrestrial realms and focuses on the elemental bodies in each. Their second definitions show a subtle divergence: whereas in the Περὶ κόσμου the cosmos is an orderly arrangement (διακόσμησις) preserved by God and for the sake of God (διὰ θεόν),<sup>8</sup> in the *De mundo*, this orderly arrangement (*ordinatio*) is adorned by the grace of God and is in the direct care of the gods [1.1].<sup>9</sup> Thus, while the Περὶ κόσμου posits a single God by whose agency and for whose sake the cosmos is preserved, the *De mundo* emphasizes that the cosmos is an order adorned by God’s grace, in part because the Latin “mundus” does not connote the aesthetic qualities associated with the Greek «κόσμος» and thus raises the possibility that God is actually a creator and not just a preserver.<sup>10</sup> Additionally, in delegating the safekeeping or care (*custodia*) of this ornament to numerous gods and thereby departing from the Περὶ κόσμου, the *De mundo* gives a nod perhaps to the gods of traditional religion or perhaps to the unmoved movers of Aristotle’s *Meta.* 12.8, though Apuleius would seem to allow only

<sup>8</sup> 391b10–12 ἡ τῶν ὅλων τάξις τε καὶ διακόσμησις, ὑπὸ θεοῦ τε καὶ διὰ θεὸν φυλαττομένη. The mss vary: either «θεοῦ» or «θέον» or both may be in the plural forms «θεῶν». One does not find «διὰ θεούς», however.

In each of its occurrences, «τε καὶ» conjoins two similar items and puts emphasis on the second [Smyth 1956, §2974]. In the first occurrence, there is a transition in importance from the notion of order to that of a global, orderly arrangement. In the second, the transition is from agency undefined to final causation; that is, the διακόσμησις (global, orderly arrangement) is preserved or maintained by God as its final cause. Cf. Thein 2021, 44.

<sup>9</sup> Magnaldi [2020, 91] does not record any variants of “ornata ordinatio dei munere, deorum recta custodia”.

<sup>10</sup> See 1.4, where this God is implicitly likened to a craftsman.

seven of them [see 2.1, 2.3]. Still, more likely, I expect, is that they are the planetary gods listed in 2.4–2.5 [cf. 1.3, 1.7]. If so, Apuleius has established one of what I take to be the two fundamental tenets of astrology, namely, that the planetary gods are responsible for the management of the cosmos. All that remains would be the additional, distinct tenet that cosmic order as it should hold in human affairs is decipherable on the basis of signs from the planetary gods, a tenet which Apuleius would likely decline to endorse. As pr. 1 makes clear, the true guide to doing what is good or virtuous and avoiding what is evil and vicious is Philosophy.

Both treatises begin their account of the cosmos by starting from Earth, its immobile center, the *De mundo* adding that the Earth is covered by air [1.2, 391b12–14]. Beyond Earth or the region of air, each sets the home of the gods, the heaven (*caelum*, οὐρανός). The Περὶ κόσμου then states that the heaven is filled with divine bodies called stars (ἄστρα) and that the heaven rotates eternally in a choral dance with all these stars [391b16–19]. This focus on the diurnal rotation of all celestial bodies, a focus leading nicely into the simile of the craftsman and lathe, is refined in the *De mundo*, which mentions the planets and treats them separately before introducing the fixed stars [1.2].

The accounts of the celestial poles and axis in these treatises are essentially the same. The only notable difference is the *De mundo*'s irrelevant remark that the antarctic pole is moist and mild because of (sublunary) exhalations [1.6], an assertion that does not sit well with the pole's being on the surface of the cosmos in the aetherial domain [cf. 1.7].<sup>11</sup>

Again, both treatises agree in describing the material of heaven and the celestial bodies as aether, a name that each derives from its going round in a circle eternally. Both also say that aether is different from the other four elemental bodies (i.e., earth, air, fire, water) and divine [1.7, 392a5–9]. In the *De mundo*, however, aether is not just different from the other elemental bodies, it is first in order and indestructible.

**A.3 De mundo 2.1–3.1 and Περὶ κόσμου 392a9–b13** The accounts of the celestial sphere differ too. For its part, the Περὶ κόσμου introduces the zodiacal κύκλος, which runs obliquely between the tropic circles and is divided into the 12 χῶραι of the zodiacal signs (ζῳδία) [292a9–13]. Whether this κύκλος is a circle or a band is unclear; thus, the 12 χῶραι are either arcs of the circle or segments of the band. Either would be correct, given the history of earlier divisions of the zodiacal κύκλος. The *De mundo*, however,

<sup>11</sup> Perhaps “umidus...mollis” is a marginal gloss that has made its way into the text.



describes the zodiacal *circulus* as illuminated by 12 *signa* [2.1]. Again, it is unclear whether this *circulus* is a circle or a band. But, in any case, here the 12 *signa* must be constellations since they cast light. In effect, the *De mundo* retreats to a very old definition of the zodiacal *circulus* in terms of the 12 zodiacal constellations through which the Sun was held to move in its annual course.

Furthermore, the *De mundo* recognizes more complexity in the celestial motions. In Περὶ κόσμου 392a13–15, the focus is solely on the periodic return of the planets to the same position in the heaven, because the differences in their periods (which are not specified as in the *De mundo*) serves to explain why they move on circles with different radii from Earth [292a13–16]. For its part, the *De mundo* not only appears to admit a distinction between forced and proper planetary motion,<sup>12</sup> it also affirms, but does not spell out (until 29.1–3), that the planets have different periods and that their motions are not smooth [2.1]. The remark that the daily progress of the planets is not smooth implies in the case of the five planets that they have phases, that is, that they make stations and retrogradations, since each change in the sequence of phases (direct motion, first station, retrogradation, second station, direct motion) is preceded by a decrease in daily progress and followed by an increase. In the case of the Sun and Moon, the time taken for a complete circuit of the zodiacal circle is not constant, and their daily progress along this circle is not uniform.

This detail about the planets in the *De mundo* is new and even more striking because it comes with the assertion that such disorder nevertheless preserves order. None of this is in the Περὶ κόσμου. At the very least, Apuleius is granting that the observed planetary motions with their anomalies are actually periodic. That is, though it typifies disorder that the planetary bodies do not have the same period or return to the same position and so maintain different distances to one another and to the fixed stars at different times, and even more so that their motions exhibit anomalies, the basic claim is that all these variations and anomalies are themselves recurrent and periodic. The assertion in the *De mundo* that the planetary spheres are at different distances from Earth then follows with no discernible connection to what precedes [2.1], unlike what one finds in the Περὶ κόσμου [392a18–23]. In the latter, the underlying argument seems to be that since the planetary bodies are all composed of aether, and since each moves on a single, homocentric circle about Earth, their speeds, that is, their *linear* velocities, must be the

<sup>12</sup> See *ad 2.1 quae neque priorum motus habent*, p. 25 and *Appendix 1*, p. 21.

same, which means that the apparent differences in their speeds must be differences in their *angular* velocity. But differences in angular velocity are possible only if the planets are at different distances from Earth.

Finally, one should note that the *De mundo* also goes beyond the Περὶ κόσμου in presenting aether not only as divine but also as the sacred food of the divine, the immortal life-force of each planet, a fuel dissolved and restored in the course of the planet's motion [2.5].

## B Contextualizing the *De mundo*

Before undertaking to locate the differences just noted in an intellectual context of the second century AD, I should caution the reader that what follows now can at best amount to a series of working hypotheses, and that for many reasons. The fundamental problem, beyond the limitations of the present inquiry, is that, as of yet, there is no evidence of any explicit documentary link between Apuleius and any contemporaries debating why and how the celestial bodies move as they do, as well as the nature and status of astronomy as a body of knowledge. In short, the most I can do is to take something that Apuleius introduces in his version of the Περὶ κόσμου for his contemporaries and point to related ideas and arguments demonstrably in play at the same time.

**B.1 The zodiacal sign** In 3.1, Apuleius' departure from the Περὶ κόσμου in dividing the zodiacal κύκλος into 12 equal, light-giving constellations (called signs) involves an error that goes back to Aratus. The problem is that the constellations through which the Sun passes annually do not divide the solar path or circle equally and that there are in fact 13 such constellations.<sup>13</sup> Still, what the 12 constellations have done historically is to lend their names to equal segments of the zodiacal band as well as to the 30° arcs of the zodiacal circle that these segments delimit.

For his part, Aratus does not write of signs (σήματα, σημεῖα) in describing the zodiac or zodiacal band. Instead, he writes «τῶν ζωδίων κύκλος», meaning the circle or band of the ζώδια [*Phaen.* v. 544], where these ζώδια must be constellations [cf. v. 543 ἄστρα]<sup>14</sup> since they are declared liable to

<sup>13</sup> These constellations are the familiar 12 (Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius, and Pisces) and Ophiuchus, which reaches down across the zodiacal circle and comes between Scorpio and Sagittarius.

<sup>14</sup> Constellations erroneously construed as equal 1/12th parts (μοῖραι) [*Phaen.* v. 560: cf. vv. 550, 555] of this circle/band.

concealment by clouds and mountains [cf. v. 565].<sup>15</sup> This notion of the zodiacal *signa* is perpetuated in the translation by Cicero (106–43 BC) of Aratus’ *Phaenomena*.<sup>16</sup> Likewise, Germanicus (16 BC–AD 19) follows suit in his own translation of Aratus’ poem.<sup>17</sup>

Finally, there is Hyginus, who, though his dates are unknown,<sup>18</sup> might well belong to Apuleius’ intellectual context. Hyginus, in fact, differs from Apuleius in advancing an account of the zodiacal *circulus* that is more in accord with technical astronomy as found, for example, in *Intro. ast.* 1.1–3 by Geminus (first century BC)<sup>19</sup> and in the *Almagest* by Ptolemy, Apuleius’ contemporary. Thus, Hyginus describes it not as a band but as a circle defined by a certain *dimensio*, the point being, I suggest, that it is a circle marked off in a way that allows measurement.<sup>20</sup> Moreover, he not only quantifies the placement of the significant parallel circles in the heaven sexagesimally [1.38–75],<sup>21</sup> he also divides each celestial circle into 12 arcs, which he calls *signa* [1.80–84]. Accordingly, in his account, the zodiacal *circulus* is a circle divided into 12 signs, that is, arcs of 30° each.

Curiously enough, in Hyginus’ description of the Sun’s course along the zodiacal circle, one would expect him to present these signs using the names that they have from the eponymous zodiacal constellations. Instead, he writes:

<sup>15</sup> Stars and constellations are visible entities; the equal zodiacal segments and arcs, however, are theoretical constructs and they are not susceptible to obscuration of this sort. Kidd’s translation of *Phaen.* 535–569 is, from a technical standpoint, far too interpretative [1997, 113, 115].

<sup>16</sup> See *Carmina Aratea* v. 319 *ardentia signa* and vv. 320–333, which identify these *signa* as light-giving *sidera* with shape and limbs. Cf. Soubiran 2002, 220 n4. See also Le Boeuffle 1977, 23–29 on “signum”.

<sup>17</sup> See Aratus, *Phaen.* vv. 511–571, esp. vv. 511–512, 526–531, 568–569.

<sup>18</sup> See Cusset and Thibodeau 2008 for a weak argument that Hyginus belongs to the Augustan period, specifically to the period *ca* 30 BC–*ca* AD 10.

<sup>19</sup> On Geminus’ date, see Bowen 2006, 199 n4: cf. Evans and Berggren 2006, 15–22. On his philosophical allegiance, see Bowen and Rochberg 2020, 79 n22.

<sup>20</sup> *De ast.* 1.36–37 *qui quod non ut ceteri circuli certa dimensione finitur....* Hyginus indicates how this is done in 1.80–84. But see Soubiran 1983, 8: “Celui-ci, à la différence des autres cercles, est tracé avec une certaine épaisseur....”

<sup>21</sup> Each of Hyginus’ parts (*partes*) is 6°.

*sed iam capitibus Geminorum circulum aestivum tangere videtur....* [1.98–99]

But, at this point, [the Sun] appears to touch the summer (solstitial) circle at the heads of the Gemini....

which makes one wonder whether the other names (“Aries”, “Taurus”, “Cancer”, and so on) signify constellations too and, thus, whether Hyginus is mixing traditions.

In sum, it would appear that Apuleius’ account of the Sun’s path through the heaven acknowledges a tradition of rendering Aratus’ *Phaenomena* into Latin that was likely alive and well in the schools of his own time.<sup>22</sup> This tradition, however, is distinct from that of the contemporary, more technical astronomy also taught in schools of the second century AD.<sup>23</sup>

**B.2 *Celestial disorder ordered*** Around two centuries after Aristotle, the understanding of the motions of the planetary bodies underwent radical change due, most likely, to the embrace in the Greco-Roman world of Babylonian astrology.<sup>24</sup> This process began with the reception of Babylonian arithmetical schemes enabling the determination of the locations of planets at any time and included the development of new schemes of the same sort in Greek as well as the development of geometrical hypotheses to capture these schemes, such as one finds in Pliny, *Nat. hist.* book 2 [see [Bowen 2018](#)]. It was recast in turn in Ptolemy’s arithmetized geometrical hypotheses. In any case, the first centuries BC and AD saw new introductions to astronomy in works by Diodorus Siculus,<sup>25</sup> Vitruvius,<sup>26</sup> Geminus,<sup>27</sup> and Pliny<sup>28</sup> [see [Bowen 2018](#)]. Through these writers and in the course of making Babylonian horoscopic astrology their own, intellectuals of this time quickly became aware that Aristotle’s homocentric hypotheses could not by themselves account for

<sup>22</sup> On the remains of the numerous commentaries on Aratus’ *Phaenomena* written from the third century BC to the Byzantine era, see [Maass 1898](#).

<sup>23</sup> Cleomedes’ *Caelestia*, e.g., is a series of lectures on astronomy for students of Stoicism [see [Bowen and Todd 2004](#)]. Cleomedes lived in the interval from 50 BC to AD 200 [cf. [Bowen 2008](#)]. Ptolemy too mentions his teaching in a school in *Alm.* 1.1 [[Heiberg 1898–1903](#), 1.4.18–5.7; [Bowen 2023a ad loc](#)].

<sup>24</sup> See, e.g., [Rochberg 1998](#), [Neugebauer and Van Hoesen 1987](#), and [Jones 1999](#).

<sup>25</sup> *Bib. hist.* books 1–2. Diodorus was active in the interval from 80 to 20 BC. For a reconstruction of Diodorus’ dates and life, see [Sacks 1990](#), 190–203.

<sup>26</sup> *De arch.* book 9. On Vitruvius’ name and dates, see [Rowland, Howe, and Dewar 1999](#), 2–7.

<sup>27</sup> *Intro. ast.* c. 1.

<sup>28</sup> *Nat. hist.* book 2. Pliny lived in the interval AD 23/24–79.

what is observed in the heaven. Thus, one question in the first century BC was, What should one make of the planetary motions observed during the course of a year?<sup>29</sup> For those wanting to develop hypotheses (ὑποθέσεις) that actually could account for the observed planetary motions, this involved abandoning Aristotle's homocentrism and drawing on the mathematics of eccentric and epicyclic circles and spheres [see Bowen 2020a, 2020b]. For others such as the Stoic Posidonius (ca 135–51 BC) as reported by Geminus, this led in turn to the question, Which of the various competing astronomical hypotheses was actually the case, that is, which could be justified on philosophical grounds? Specifically, which one of them had starting points (hypotheses) that could be derived ultimately from first principles in φυσική θεωρία (physical theory)? This is the *status quaestionis* as it was made known by Alexander of Aphrodisias (second century AD) to his contemporaries, presumably in his lost commentary on Aristotle's *De caelo*.<sup>30</sup>

Not everyone in antiquity, however, agreed about the question raised. Some Stoics, like Strabo (ca 64 BC – after AD 21) [*Geog.* 2.3.8] and Seneca (d. AD 41), thought it an issue that one ought to put aside as too Aristotelian or because there were vastly numerous and weightier philosophical questions facing them [see Bowen 2009]. Others, yet again, rejected the question entirely for

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<sup>29</sup> There remains, one must say, a scholarly tradition that holds that these planetary phenomena or phases were known to Aristotle, and sets itself the task of accounting for *Meta.* 12.8 (1073a17–1074a14) in a way that makes this “evident”. No attempt so far has really succeeded, mainly because Aristotle's text is so underdetermined for this purpose: it is, e.g., by no means evident that Aristotle even has in mind the planetary phases of station and retrogradation. But, more to the point, this tradition begins with a “corrected” reading of Simplicius' commentary, which is itself a sustained misrepresentation of what Aristotle wrote. The problem is that this tradition is heedless of the fact that Simplicius' remarks are driven by his aim to defend his school of interpretation in the face of an attack mounted by the renegade Philoponus in support of the Book of Genesis with its Christian story of creation. In short, Simplicius interprets Aristotle (and other sources) in order to defend Aristotle's account of aether, the eternity of the cosmos, and the celestial motions against the specific criticism that, in accepting Ptolemaic astronomical theory, the school contradicts Aristotle, whom it takes to be the true disciple of the divine Plato. Thus, the roots of this anachronistic tradition lie in Christian vs non-Christian polemic, hardly a secure basis for serious, that is, reflective and critical, historiography of ancient astronomy or even philosophy, for that matter. Cf. Bowen 2013.

<sup>30</sup> See Kidd 1989, F18.1–4 ≈ Diels 1882–1895, 291.21–23; cf. F18.42–52 ≈ Diels 1882–1895, 292.23–31.

its assumption that the astronomer's planetary hypotheses were actually real.

This was apparently the view of Cicero, an Academic, who also seems to have shared the view that deriving the observed planetary motions from the *realia* was not a task of proper philosophical interest or concern. At least, in his own writings, while it is clear that he was indeed aware of the planetary motions, he was content simply to present the real motions without comment on the question of how they might serve to explain or explain away what was observed.

Thus, in the final book of his *Respublica*, which has come down to us as the *Somnium Scipionis*, Cicero presents the supralunary domain as the eternal, divine precinct of the gods, each identified as either a celestial sphere or as the owner of a celestial sphere. One of these gods/spheres, the Sun, is said to govern the other gods and the sublunary domain as well [*Somn.* 17.1]. Moreover, it is to the celestial precinct that the souls of those who have in their lives imitated the celestial harmony in their music or who have cultivated studies of the cosmos return [c. 18].<sup>31</sup> The only remark that Cicero directs to those who worry about accounting for the planetary motions is that, while their observed motions are amazing, describing those celestial stars as wandering or planetary is simply wrong:

Especially wondrous are the motions of those five stars that are wrongly called wandering: for nothing wanders which maintains constant and fixed for all eternity its advances, its retreats, and its other motions. This is even more wondrous in the case of these stars which we have mentioned because sometimes they are hidden and at other times they come into view, sometimes they approach and at other times they withdraw, sometimes they go in advance but at other times they follow, sometimes they move more quickly and at other times more slowly, and sometimes they do not move at all but stand still for a certain time. [Cicero, *De nat. deor.* 2.51]

This tempers the remark in Plato, *Legg.* 821b3–822d1 that imputing any such motions to these celestial bodies is blasphemous.

So, what does Apuleius mean when, like Cicero, he affirms that the planets each move on a single sphere that is homocentric to the Earth?

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<sup>31</sup> In the *Somn.* 17.5, souls are given to humankind (*hominum genus*) by the grace of the gods.

This brings us to the most striking of Apuleius' departures from the Περὶ κόσμου listed above:

- (a) his characterization of philosophy and its primacy as a field of knowledge,
- (b) his aim as expressed in [pr. 10](#), along with
- (c) his avowal of allegiance to Aristotle and Theophrastus.

**B.3 *Following Aristotle and Theophrastus*** In the proem to his *De mundo*, Apuleius states:

This is why we, who follow Aristotle, the wisest and most learned of philosophers, and Theophrastus, the writer, insofar as we can touch on their thought, will speak of this entire, divine system and, in comprehending its elemental bodies (*naturae*) and their functions (*officia*), explain both why and in what way they move. [pr. 10]

The aim itself is clear: he will talk of the cosmos, and, in paying attention to its five elemental bodies [[1.7](#)] and how they structure the cosmos, he will explain how and why they move as they do. The question is what does he mean by claiming that he will follow Aristotle and Theophrastus? Plainly, in allowing that there is a fifth elemental body, aether, he is following Aristotle.<sup>32</sup> There are other passages in subsequent chapters in which Apuleius adduces Aristotle, but there is no need to review them at this juncture. For us, the problem is that Apuleius also claims to be a Platonist [see [Vallette 1960](#), 77, 149, 164]. Indeed, in his *De Platone* 2.1.1, he even proposes to present to Faustinus what Plato perceived (*sentire*) about moral philosophy, specifically, the principles by which one can attain a blessed life [[Magnaldi 2020](#), 57–58]. So how does this Platonist of the second century AD “follow” anyone, especially one who is not a Platonist?

According to Richard Fletcher [[2014](#), ch. 3], Apuleius' Platonism is developed in writings that take a Platonic theme and develop it by introducing the thoughts of others and his own, as though the outcome is a seamless whole detailing the reaches of Plato's own thought.<sup>33</sup> This is evident in the second part of the *De mundo*, albeit in reversed order, when Apuleius stops his description of the cosmic structures [19.2] and turns to his own thoughts about the cosmos, starting with its harmonious unity as afforded by elemental bodies that are in fact at war with one another [19.3–4], and then introduces Heraclitus [20.5–21.1]. This brings him to the theme of his

<sup>32</sup> Cf. *De caelo*, book 1 and Περὶ κόσμου 392a5–9, which Apuleius presumably thought to be a work by Aristotle.

<sup>33</sup> Calling this syncretism, as many are wont to do, actually misses the point.

presentation (*sermo*) to Faustinus, the God whose power pervades the cosmos and gives it unity, the Cosmic Ruler (*rector mundi*) [24.1–2]. Though, as he says, the subject is difficult, Apuleius makes the effort and starts out by adducing examples to show how the Cosmic Ruler actually accomplishes this without being in any way a part of the processes set in motion. Thus, Apuleius introduces Empedocles [32.2], Phidias' construction of Athena's shield [32.3–4], Homer [33.2–3], Ennius [33.4], popular opinion [33.5], and Heraclitus again [36.3]. Apuleius draws this to a close with an account of the names given to the divine Cosmic Ruler [37.1] that cites Orpheus [37.6] and the myth of Er in Plato's *Republica* [38.2–3]. He then concludes with a summation that explicitly mentions Plato, alludes to *Phaedr.* 246e4–5, and conflates *Legg.* 715e7–716a3 with 730c2–3 [38.4–5]:

He will not be deceived who hears these words of Plato. Indeed, God, as the ancient account has it, permeates the beginnings, the ends, and the middles of all things and is borne above them in his luminous swift chariot. Avenging Necessity accompanies this same God always and everywhere, the future punisher of those who depart from sacred law. He offers clemency to anyone who discerns [this law] from a tender age and even from the cradle itself, who stands in awe and gives himself and surrenders to it entirely. [Magnaldi 2020, 130]

This summation not only echoes remarks made in the proem, it also restates effectively the theme of Apuleius' remarks about the Cosmic Ruler [cf. 24.1–2].<sup>34</sup>

It is in this way, then, that Apuleius' *De mundo* is a Platonic text which follows Aristotle.

**B.4 *The primacy of philosophy*** For Apuleius, the primacy of philosophy over other intellectual disciplines is guaranteed by its superiority as a means of determining virtue and vice [see 1.1–1.3] as well as by its universality, that is, its complete, all-inclusive embrace of its subject, the cosmos or universe. At no point, however, does Apuleius actually declare philosophy superior to astronomy because it validates the starting points of the latter. So how might his Platonism address the remark that what Philosophy declares in the *De mundo* to be the true state of the heaven and its motions must somehow still account for the recognition of anomalies in the motions of the celestial bodies, e.g., the stations and retrogradations of the five planets? After all, absent such an explanation of the unsmoothness and inequality in

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<sup>34</sup> On the rhetorical structure of the second part of the *De mundo*, see Fletcher 2014, 136–145.



the celestial motions, the *De mundo* will fail in its promise to explain how and why the elemental bodies move as they do [pr. 10].

To extricate this account, one must first recall that Apuleius was a member of the elite class in Africa Proconsularis and that his education, which involved learning and developing expertise in Greek, was aimed at the production of orators. He did travel to Athens, where, he tells us [*Flor.* 20.4–6], he studied poetry, geometry, music, dialectic, and universal philosophy before deciding to become a Platonist.<sup>35</sup> There is no mention of astronomy or any science other than geometry. So Apuleius' education did not include all the mathematical or technical disciplines propaedeutic to philosophy, as Plato outlined them in *Resp.* book 6 or as was codified in the educational program of the trivium and the quadrivium a few centuries after Apuleius. Next, in the *De mundo* itself, Apuleius says of aether only that it is by nature sacred or divine and immutable [3.1], hence, that it is eternal. He says nothing about aether's natural motion, only that it moves eternally in circular courses. There is neither acknowledgment nor construction of any argument that attempts to link the existence of aether, its circular motion, and its immutability such as one finds in Aristotle's *De caelo*. What we learn is that aether is the material of celestial entities which are in fact gods.<sup>36</sup> This, together with the lengthy account in the second part of the *De mundo* of how the Cosmic Rule (God in the first part) empowers the celestial gods to move and the claim that these gods each move on their own circle [*ad* 2.1, 2.3], suggests that *if* Apuleius was actually aware of contemporary planetary theory, his own view was that, as the planetary gods advance in their periodic motions westward [see 29.1–3], it is out of obedience to the Cosmic Ruler or by virtue of its empowerment that they also make the various anomalies observed on Earth, including periodic stations and retrogradations. In short, Apuleius may well have held that the motions which Posidonius and others were trying to explain away as apparent were in fact real and that the astronomers' hypotheses are not a proper guide to them except as a geometrization using several circles of a simple, volitional action backward and forward along arcs of a single circle.<sup>37</sup>

<sup>35</sup> See the note on Apuleius' education in Goulet 1994, 314. On Apuleius' education and the literary culture in which he was raised and worked, see Fantham 1996, 252–263.

<sup>36</sup> See pr. 2, pr. 10, 1.1, 1.3, 1.7, 2.3, and 2.5.

<sup>37</sup> In contrast, Geminus, *Intro. ast.* 1.20–21 maintains that the motion seemingly ascribed to the gods by Apuleius would not even be attributed to a decent, orderly

If a Platonic inspiration for this view were needed for this, Apuleius could always cite the idea that the planets are endowed with a natural power (*δύναμις*) by virtue of which they vary their direct motion westward. Granted, in the race metaphor of Plato, *Tim.* 38c7–d6, the planets Mercury and Venus have power only to speed up and slow down, which presumably is meant to account for their periods being the same as the Sun's and for their appearances as morning and evening stars. Yet, by the second century AD, when the complexity of planetary motion was understood better, it would be only a small adjustment to suppose that all the planets are gods who preserve order in moving as ordained by the Cosmic Ruler. There is certainly precedent in Vitruvius, *De arch.* 9.1.9, 11–13, which introduces physical, non-mathematical hypotheses to account for the circular motion of each outer planet. The primary difference is that, for Vitruvius, the motivating power is astrological and derives from the position of the planet in relation to the Sun.<sup>38</sup>

If this is how the planetary motions are conceived, it would follow that Apuleius and like-minded Platonists of his age would stand in sharp disagreement with any philosophers who construed the competing astronomical hypotheses as claims about the *realia* and who held that astronomy is subordinate to philosophy, that is, in need of validation of its hypotheses by philosophical argument deriving from its first principles. For Apuleius, there would be no legitimate philosophical challenge or need to determine which of the competing hypotheses is correct. Whatever astronomers claim about the reality of what they discover would not be relevant: philosophy alone brings true knowledge in disclosing how and why the planets move as they do. In short, while the philosopher and the astronomer may talk of the same things, the philosopher alone grasps the *realia* themselves in thought while the astronomer grasps the *realia* as perceived by the senses by way of arithmetic and geometry.

**B.5 The place of astronomy** So, where does this leave astronomy? It certainly would not affect its standing as a body of scientific knowledge. After

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man, though the needs of life are often causes of slowness and speed; whereas, in the case of the immortal nature of the stars, no cause of speed and slowness can be adduced. Apuleius, however, would dispute this on the ground that the motions ascribed by the gods are not only periodic, they are also made at the command of the Cosmic Ruler. Cf. Cicero's view on p. 13.

<sup>38</sup> Vitruvius may be building on the sort of interpretation of Chaldean genethliology found in Cicero's *De div.* 2.89.

all, to the extent that astronomy aims to develop hypotheses that will serve in the computation of tables enabling the production of horoscopes showing where the celestial bodies are at the time of a native's birth and constituting what is to be interpreted for their clients, astronomy is a coherent body of knowledge.<sup>39</sup> For Ptolemy, as the *Almagest* makes clear, astral science begins with scientific philosophy, in which one develops hypotheses and generates tables from them. But, once that is done, as the *Tetrabiblos* also makes clear, one is to continue with the use of these tables in making predictions regarding matters on Earth.<sup>40</sup> Indeed, the *Tetrabiblos* is a theoretical manual for making such predictions. Moreover, as his *Canones manuales* suggests, Ptolemy's astral science also includes the simplification of the tables produced in works like the *Almagest* to aid less technically minded users.

From this standpoint, Apuleius' taking technical debates about the astronomers' hypotheses as issues for philosophy would be grievously misguided. After all, why should a Platonist such as he be concerned with them if Philosophy alone shows the cosmos as it really is? But, once astronomy loses claim to the *realia* insofar as it is a productive undertaking based on a creatively misleading geometrical representation of the real planetary motions, albeit ones that may be true to the regularity of when and where their phases occur, worrying about the astronomers' hypotheses would make no sense for a philosopher, especially a Platonic philosopher with no interest in horoscopy and, consequently, in the unified predictive science or ἀστρονομία that Ptolemy announces in his *Almagest* and *Tetrabiblos* [cf. *Tetr.* 1.1].

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<sup>39</sup> Though “horoscope” in English nowadays commonly means “the forecast of a person's life based on the configuration of the planets and stars at the time of the person's birth”, its more precise sense in ordinary usage is “the table or diagram giving the time of a person's birth and the relative positions of the planets in the zodiacal circle”. I adopt the latter usage because, as Francesca Rochberg demonstrates in her study of Babylonian horoscopes [1998, 1–4], limiting its meaning to the data recorded in a table or diagram provides the best means of bringing Babylonian and Greco-Roman horoscopic astrology into fruitful comparison. See Greenbaum 2020, 443–444, who points out that “horoscope” also means the point of the zodiacal circle that is rising at the time of birth (*scil.* the Ascendant), a sense not found in the Babylonian context.

<sup>40</sup> Ptolemy's predictive astral science would seem to acknowledge the formation of astrology as an intellectual discipline and profession in which practitioners used tables constructed by others to define a horoscope which they then interpreted. See, e.g., the *Anthologia* by Vettius Valens (*fl.* AD 152–162).

**B.6 The opposition: Ptolemy's astronomy** Against the assumption common to Plato, Aristotle, Posidonius/Geminus, and Apuleius that philosophy is the primary intellectual discipline constituting knowledge stood Ptolemy. In book 1 of the *Almagest*, he argues that the kind of argument in physical theory offered or required by his opponents (e.g., Aristotle, Posidonius/Geminus)<sup>41</sup> to validate astronomical theorizing does not constitute real knowledge at all. To the contrary, he maintains, it amounts at best to mere conjecture (εἰκασία) both, for example, when it posits the ultimate causes of (celestial) motion such as a divine, unmoved mover, and when it attends to the constitution of the bodies in the universe. For Ptolemy, the only discipline that attains real knowledge is scientific philosophy (τὸ μαθηματικὸν γένος τῆς φιλοσοφίας), the chief branch of which is devoted to the study of the celestial bodies (*scil.* astronomy).<sup>42</sup> Coincidentally, Ptolemy's argument for this also obliterates the conception of philosophy offered in the *De mundo* and retailed in book 1 of the *De Platone et eius dogmate*.

However, in co-opting the title of “philosopher”, Ptolemy has to show how astronomy is a truly independent discipline constituting knowledge of what is real. He begins by asserting that whatever is real has form and matter, and is subject to change. In other words, he limits reality to the domain of what is perceptible by sense. His initial task, then, is to show how the hypotheses of astronomy are founded on observation. In doing this, he also shows that the observations underlying hypotheses formed at a given time are by their very nature subject to change in the passage of time, as further observation sometimes makes clear—and this is important, given that the periods of celestial phenomena can be very long indeed.<sup>43</sup> In this sense, Ptolemy's *Almagest* proposes a heuristic, empirical science in which the only *realia* are observable.<sup>44</sup>

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<sup>41</sup> For the thesis that all the scientific disciplines which advance by means of arithmetic and geometry depend on philosophy for their legitimacy, see Aristotle, *Phys.* 2.2 and *Meta.* 6.1: cf. [Bowen 2020a](#), 72–78.

<sup>42</sup> For a detailed account of Ptolemy's argument, see [Bowen 2023c](#).

<sup>43</sup> According to Ptolemy's calculations, stellar precession occurred at rate of  $1^\circ$  in 100 years, thus making its period 36,000 years. The actual rate is more like  $1^\circ$  in 71 years, with a period of 25,560 years. Still, the point is that detecting precession could take an entire lifetime and would be more useful if observations were taken over several centuries.

<sup>44</sup> For a discussion of how this impacts Ptolemy's talk about heaven, e.g., his use of “aether”, see [Bowen 2023c](#).

## Conclusion

The aim of this article was to establish some working hypotheses to aid in situating Apuleius in the intellectual context of the second century AD. The general contention is that the opening chapters of Apuleius' version of the *Περὶ κόσμου* depart from the original at points showing his concern with contemporary thinking about the cosmos and how one is to gain knowledge of it. At issue in his time was astronomy and its place in this enterprise. The critical point for Apuleius was, apparently, the nature, scope, and authority of philosophy. In rendering the *Περὶ κόσμου*, he presents a view of philosophy that effectively denies astronomy any standing in the acquiring of knowledge of how the cosmos really is and, by extension, any role for astrology in deliberations about what is right or wrong or, more generally, in becoming virtuous [pr. 1]. For him, philosophy does not validate astronomy. Moreover, the touchstone of any knowledge of the cosmos is not Ptolemy's heuristic observation of the stars and planets but the philosopher's vision of the heaven with its planetary gods and the Cosmic Ruler, as conveyed to lesser mortals in declarations like those of a prophet. This alone is authoritative.

## APPENDIX 1

TRANSLATION OF APULEIUS, *DE MUNDO* PR. 1–3.4\*

## [Preface]

[pr. 1] When[ever] I reflect and consider [it] (and often other [professions]) more carefully, it seems true to me, Faustinus, my son, that Philosophy, as a participant in matters divine, is a thing that tracks down virtue and drives out vices, and, now especially because it claims by right for itself the exposition of Nature and the investigation of things far from our eyes.

[pr. 2] Certainly, while the others are terrified by the magnitude of the subject and deem work of this sort difficult and abstruse (*profundum*), Philosophy alone does not look down on its natural ability and deem itself unworthy of its being granted arbitration of matters divine and human. [pr. 3] What is more (*sed*), [Philosophy] believes that pursuits so virtuous and work of this type befit the nobility of its profession (*professio*) and that devotion (*cura*) of this kind to studies and practices of this sort is appropriate.

[pr. 4] Now, since people (*homines*) cannot visit the cosmos and its recesses in body so as to inspect those regions away from their earthly home, they acquired Philosophy as their guide (*dux*) and, steeped in its discoveries, they dared to travel in thought through the tracts of the heaven by means of those paths which, in their thoughts alone, they saw by means of their own shrewd inquiry as thoroughfares of knowledge. [pr. 5] Consequently, although Nature wanted us to be separated from proximity to the cosmos by

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\* For the Latin text, see [Magnaldi 2020](#).

[pr. 1] *Faustine mihi*: whether Apuleius (a) actually had a son, Faustinus, (b) was addressing a real person not his son and using “filius” as we now often use the word “son”, or (c) was merely employing a literary device in dedicating his treatise [so [Beaujeu 1973](#), 310], the effect in any case is to cast the author as older and wiser than Faustinus and, by extension, the reader.

For this translation of “interpretatio” (exposition), see below on Apuleius’ likening of philosophers to prophets.

*remotarum ab oculis rerum*: in [pr. 4](#), the exposition of Nature requires consideration of the cosmos, an object that is indeed remote from our eyes.

[pr. 2] *ceteri*: What others? Apuleius apparently has in mind the other intellectual professions [cf. [pr. 3](#)], thus preserving a contrast that is clear in Περὶ κόσμου 291a4–5.

provision of this distance, nevertheless, the swiftness of our thoughts (*cogitationes*) makes us familiar with its great size and its rapid circuit. [pr. 6] What is more, with its divine eyes, the soul (*anima*) saw and identified very easily those things from which [the cosmos] has its origin, and also handed on its knowledge (*scientia*) to others, just as certain prophets (*prophetae*) who being filled with the majesty of the gods declare to others what they alone see by virtue of divine grace (*divinum beneficium*). [pr. 7] This is why a good many eagerly read even those who describe to us the features and qualities of a single place, the walls of a city, the courses of some river, or the charms and sizes of mountains, [and] the many other things described by them: they praise the heights of Nysa, the caves of Corycus, the temples of Olympus, and the steep mountain slopes of Ossa—different things of this type on their own only and one at a time.

[p. 8a] I would feel sorry for these [writers], since with such great effort they are seized in insatiable wonder by things that are neither of great size nor utterly tiny. [pr. 8b] That this really does happen to them is not remarkable since they suspect nothing greater nor attend to anything that should be studied with greater care (*diligentia*). [pr. 9] If at any time they could study in the same way the rest of our world as well as the cosmos as a whole, they would suppose the tiny, isolated parts by which the universe (*universitas*) is apprehended less worthy of praise.

[pr. 10] This is why we, who follow Aristotle, the wisest and most learned of philosophers, and Theophrastus, the writer, insofar as we can touch on their thought, will speak of this entire, divine system and, in comprehending its

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[pr. 5] *volucrique curriculo* (rapid circuit): *scil.* the daily rotation.

[pr. 6] The implication is not that Philosophy is cosmogony but that it is a determination of those principles generative of the cosmos and still governing it. The term “agnovit” (identified) suggests that the soul’s engagement with the objects that it beholds may be a matter of recognizing them for what they are and may not involve argument.

[pr. 7] *Nysa*: the birthplace of Bacchus.

[pr. 8a] *magnis et oppido paucis*: i.e., the cosmos and the stars [see pr. 5].

[pr. 9] *ceterum...terrarum orbis*: *scil.* the rest of the inhabited world (οἰκουμένη).

[pr. 10] *omni hac caelesti ratione*: *scil.* the cosmos as a whole understood as a body organized according to some principle or system (*ratio*).

elemental bodies (*naturae*) and their functions (*officia*), explain both why and in what way they move.

### 1 [The cosmos as a whole: aether]

[1.1] The cosmos as a whole consists in the affinity (*societas*) of the heaven, the Earth, and the nature of those things that belong to each; or [to put it] this way, the cosmos is an orderly arrangement (*ordinatio*) adorned by God's favor in the just safekeeping of the gods.

[1.2] Its turning-point (*cardo*)—I would translate «κέντρον» in this way—is occupied by Earth, the firm and immobile mother and nurse of all living things, with its upper regions as a whole enclosed and covered, as can be seen by the easy flow (*liquiditas*) of air, like a vault. [1.3] Beyond is the home of the gods, which we call the heaven (*caelum*). This we see laden in fact with divine bodies, that is, with the most beautiful and radiant luminous bodies (*ignes*) of the Sun, Moon, and the other stars (*sidera*). With the circuits (*curricula*) of these [stars], [the heaven] moves through its cycle (*orbis*) of

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In openly declaring his philosophical allegiance, Apuleius would have the reader understand that he will be drawing on the works of Aristotle and Theophrastus [Beaujeu 1973, 310]. It is important to bear in mind that following Aristotle and Theophrastus need not entail agreeing with everything that they held or interpreting their texts as they were originally meant.

[1.1] *dei munere* (by God's favor): cf. pr. 6 *divino beneficio*. This God is the Cosmic Ruler [24.1].

*ornata ordinatio*: unlike «κόσμος», the Latin “mundus” does not by itself connote order and beauty [Fletcher 2014, 131]: cf. 29.3.

*deorum recta custodia*: as Apuleius explains in the second part of the *De mundo*, the God/Cosmic Ruler issues commands or establishes laws empowering the divine celestial bodies to move as they do, and it is their motions, especially those of the Sun and Moon, that maintain the unity and coherence of the cosmos. Cf. 32.1 where the Cosmic Ruler is responsible for the guardianship (*tutela*) of the cosmos.

[1.2] *cardinem...κέντρον*: the pivotal point here is the cosmic center.

[1.3] *ignibus*: as Apuleius states later, the stars are made of aether, not fire. Presumably, “ignis” serves here in the sense of “a body giving light”, since in 1.7 he accepts that aether is a fifth elemental body and not a rarified form of the elemental fire posited by the Stoics, for example. But see *De Plat.* 203, where, in expounding Platonic doctrine, he mentions only four elemental bodies (fire, air, water, earth) and Plato's view that the celestial bodies are made of fire [cf. Plato, *Tim.* 40a2–3].

*reliquorum siderum*: “sidus” is here used generically for both fixed and planetary stars.



days and nights as it also sets into motion the chorus of stars (*stellae*) in unceasing, gliding flight (*lapsus*), with no exhaustion of time about to make an end [of it].

[1.4] But though the heaven as a whole rotates as a sphere (*sphaera*), it is nevertheless fitting that it be held at the extremities (*radices*), which divine contrivance (*machinatio*) has made fast by means of turning-points (*vertices*), just as on a lathe a craftsman typically makes wood held by pinchers (*forceps*) round in a looping motion (*volumen*) back and forth. [1.5] These [turning-points] we call poles (*poli*). The particular straight line drawn from them just as from the pivotal points (*cardines*) [on a lathe] is called the axis, being the divider or separator of the cosmos that locates the sphere (*orbis*) of the Earth in its central point. [1.6] Indeed, these vertices, which we say are immobile, are disposed so that one, which is called northern (*septemtrionalis*), appears over head in the northern direction; the other [vertex], the antarctic, is concealed by earth (*humus*), being moist and mild by virtue of exhalations from the south.

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*quibus...curriculis*: while the planetary stars make their circuits in one direction, the cosmos as a whole takes them and the fixed stars daily in the opposite direction as it brings about the sequence of daytime and nighttime.

*stellarum choros*: “stella” now serves as a generic term for celestial bodies.

*nulla aevi defectione* (no exhaustion of time): that is, forever without end.

[1.4] Apuleius is perhaps imagining the creation of some item—the Περὶ κόσμου says a ball [391b21–22]—on a lathe as the chisel moves back and forth on the wood, effectively describing a loop with each rotation of the wood. In this simile, the vertices are likened not to tongs but to pinchers, that is, the devices that fix the axis of the wood’s rotation. On the modern lathe, these are the spindle with chuck of the headstock assembly and the dead center of the tailstock assembly. Cf. [Beaujeu 1973](#), 310–311.

[1.6] The fixity of the axis of the daily rotation is consistent with the evidence of precession provided that it is interpreted as evidence of the precession of the fixed stars, as Ptolemy would have it, and not of the equinoxes.

*humo tegitur*: it lies beneath the horizon for observers north of the equator.

*umidus...vaporibus mollis*: a qualification that is both irrelevant as well as inconsistent with the southern pole’s being in the aetherial domain on the surface of the cosmos [cf. 1.7]. It is perhaps a marginal annotation that has wrongly crept into the text.

[1.7] But the heaven itself—both the stars heaven-born and the entire starry structure—is called aether, not, as some think, because it is on fire and burning, but because it always goes round in a circle with swift, onward motions, being an elemental body (*elementum*) that is not one of the four which are known to all but a different thing by far, the fifth in number [but] first in order, divine in kind, and indestructible.

## 2 [The aetherial realm]

[2.1] Now, in part, the innumerable host of celestial bodies (*astra*) glides forward effortlessly in concert with a region (*regio*) of the fixed sphere about which there goes a sign-bearing band (*circulus*) that is placed round in an oblique encirclement and illuminated by 12 signs. In part, [it also moves] in concert with the wandering stars (*errantes stellae*), which neither have the

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[1.7] *stellae caeligenae* (stars heaven-born): see 2.4 and Beaujeu 1973, 311.

*siderea compago* (starry structure): for “siderea”, see 1.3.

*ignitus sit et incensus* (on fire and burning): here “aether” is taken to derive from «ἀἴθεω» (to burn).

*cursibus rapidis semper rotetur* (it always goes round in a circle with swift, onward motions): “aether” is now taken to derive from «ἀεὶ θεῖν» (ever to run swiftly). Note: the fixed stars have the diurnal rotation, while each planet also has its own proper motion in revolution in the other direction; hence, the plural “cursibus” in describing how the cosmos moves.

[2.1] *innumerabis multitudo* (innumerable host): it is unstated whether the celestial bodies are uncountable to the philosopher in principle, a claim that would be philosophically problematic, or uncountable either because all observers at latitudes other than 0° are hindered from seeing the heaven in its entirety by their horizon, which cuts off stars that are ever invisible, or because they are too remote. Then, again, perhaps Apuleius’ mention of their innumerability may only be a rhetorical flourish. Cf. 2.2.

*astrorum* (of celestial bodies): Apuleius now uses “astrum” as a generic term synonymous with “stella” and “sidus”.

*orbis inerrantis* (fixed sphere): *scil.* the sphere of the fixed stars, often called simply the fixed sphere.

*signis duodecim* (by 12 signs): the 12 zodiacal signs, specifically, the 12 zodiacal constellations, which, as a matter of fact, do not divide the zodiacal circle into 12 equal arcs (also called zodiacal signs). Note too that there is a 13th constellation, Ophiuchus, that straddles the zodiacal circle.

motions of the former nor [motions] very alike or smooth among themselves. But, while they are fastened to different spheres (*globi*) in disorder, they do preserve order, as I would say. Some are farther away; some, closer.

[2.2] The constellations (*stellae*), which on account of their nature, are credited with no deviations of this kind of wandering, are in command

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*quae neque priorum motus habent* (which neither have the motions of the former). The fixed stars/constellations have but one motion, the diurnal rotation; and this motion is shared by all the planets. So, either Apuleius has missed the mark or he is assuming a distinction between proper and forced motion, that is, he may be thinking that diurnal motion is not natural to the planets but imposed on them by the rotation of the celestial sphere. Charity would have us assume the latter, even though it is still incorrect.

*neque sane inter se similes et aequales* (nor [motions] very alike or smooth): this is a correct account of the motions proper to the planets as they appear to us, motions which are mostly in the direction contrary to the daily rotation. If “et” is not exegetical, the claim is that the proper motions of the planets are not the same as one another (in duration) and that they are not smooth (*aequales*, i.e., constant and unabating). In other words, Apuleius would be affirming that the planets each have their own periods *and* that the proper motion of each is interrupted by (periodic) station and retrogradation. But if “et” is exegetical, Apuleius would be affirming only that the direct or proper motions of each planet are not smooth, that each is marked by station and retrogradation.

*inordinatum* (in disorder): the disorder was initially taken to be one of irregular configuration: these stars, unlike the fixed stars, do not maintain the same distances to one another or to the fixed stars. Hence, their original designation as wandering or planetary. The disorder here, however, is more likely that of planetary motion itself.

There is no warrant in 2.1 for reading in the theory of nested homocentric spheres found in Aristotle, *Meta.* 12.8. The text certainly makes sense on its own without it: see *ad* 2.3 *septem...affixae* below. (But see Beaujeu 1973, 311, for the claim that such allusion is unequivocal.) The same is true of the Περὶ κόσμου: see Appendix 1, p. 21.

*ordinem servant* (they do preserve order): the planetary motions preserve order by virtue of their periodicities: see Appendix 2, p. 29.

[2.2] *eiusmodi nullis ...erroribus vagae* (no deviations of this kind of wandering): *scil.* the stars/constellations affixed to the celestial sphere share the diurnal rotation, a simple motion.

of multitudes endless in number, and encircle the plain back of aether with the bountiful and revered charm of their light. [2.3] But seven [stars] known widely by the names of the gods, are fastened on the same number of spheres; and while they are carried above one another in stages, so that an upper one is larger than a lower one, and linked by bonds to one another back and forth, they are contained in the embrace of that sphere (*orbis*) which is called fixed (*inerrabilis*).

[2.4] Here is the sphere (*globus*) of Phaethon, which we call Saturn. After this, Phaenon [Shiner], which we name Jupiter (*Iovis*), is second. In third place, is Pyroeis, which many call [the star] of Hercules and a greater number call the star (*stella*) of Mars. Stilbo, to whom certain people have given the name of Apollo and others the name of Mercury, follows this. Fifth, Phosphorus, is thought [to be] the star of Juno or, rather, of Venus. [2.5] Next is the sphere (*orbis*) of the Sun and last of all, the Moon, which marks off the starting-points (*principia*) of the heights of aether, which feeds the life-force (*vivacitates*), divine and immortal, of the luminous bodies, and is dissolved and restored in their regular and ever invariable movements.

### 3 [The terrestrial realm: fire and air]

[3.1] After this part, which is closed off by the limits of holy aether (*sancta aether*), of which the distinguishing feature is its being exactly measured out

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*infinitos numero greges* (multitudes endless in number): see [ad 2.1, p. 25](#).

*simplex aetheris dorsum* (plain back of aether): *scil.* the celestial sphere viewed as free of complication, with the fixed stars fastened to it just as the planetary stars are affixed to their own spheres (*affixae diversis globis*).

[2.3] *septem...affixae* (seven...fastened): *scil.* the planetary stars.

*totidem orbis* (he same number of spheres): see [ad 2.1, p. 25](#).

*gradatim* (in stages): perhaps hinting that these stages form a numerical pattern.

*mutuis adhaesionibus nexae* (linked by bonds to one another): perhaps foreshadowing the concerted motion of the planets at the command of the Cosmic Ruler.

[2.5] *ignium* (of the luminous bodies): see [ad 1.3 \*pulcherrimis ignibus\*, p. 23](#).

In 29.1–3, Apuleius lists the periods of the planets and introduces additional names for some: see [Appendix 2, p. 29](#).

*ordinatis ac semper aequalibus invectionibus* (in their regular and ever invariable movements): *scil.* the regularity and constancy in their motions. Here “*aequales*” signifies the constant periodicity of the planetary motions: cf. [2.1](#), [2.2–3](#).

[3.1] *mensa pensaque* (being exactly measured out): lit. its having been measured and weighed. Since the motion of weighing the celestial domain is absurd, I take

and its being unchangeable by virtue of its nature, is the region [that is] subject to death and all but terrestrial besides. The first parts of this [region] are quite rarified and heated because they touch the conflagration at the boundary of aether (inasmuch as small things can touch things that are very great and rather sluggish things can touch things that are swift). [3.2] But from that part which is scorched by the circuits of the Sun nearby, certain flames, which, when displayed to our eyes, appear to project themselves, light up suddenly and blaze. The Greeks call them hairy stars (*cometai*, comets), beams (*docides*), and trenches (*bothyni*); and we often see them slipping by fluidly, shining forth readily, and being extinguished more readily.

[3.3] After that is spread the cloudier quality of the lower air. With it is thoroughly mixed an icy cold. But it shines by virtue of the nearness of the brightness above and the exhalation of heat nearby, and is dressed now and then with a rather pure light. [3.4] The changeable appearance (*species*) of this [air] shifts often, as is the nature in what is corruptible. Indeed, it is compressed into clouds, broken open by gusts of wind to and fro, and burst in violent downpours. In addition, it becomes thick with snowfalls and ice, and is beaten down by hail hurtling downward from above. It can be stormy at the blasts of tornadoes and the impact of whirlwinds, but can become fiery at the bolts of lightning and the projections of celestial missiles.

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the phrase as a hendiadys meaning that aether is measured out exactly, i.e., that it has determinate boundaries, namely, the sphere of the fixed stars and the sphere to which the Moon is affixed.

*labi et fluere* (slipping by fluidly): another hendiadys.

[3.4] *missilium caelestium iaculis* (projections of celestial missiles): these missiles do not originate materially in the celestial domain; rather, they are sublunary phenomena created ultimately in accordance with the will of the Cosmic Ruler.

## APPENDIX 2

TRANSLATION OF [ARISTOTLE], Περὶ κόσμου 391A1–392B13<sup>1</sup>

1 [391a1] I have often thought, Alexander, that philosophy has the air of a subject nearly divine and is a really extraordinary concern, especially in those instances when unassisted it raises itself to the vision of wholes and does its best to know the truth in them; and, while the other [bodies of learning] have shunned this [a5] [vision] because of its sublimity and scope, [philosophy] has not feared the undertaking nor has it deemed itself unworthy of the finest things, but it has even thought the learning of these things most akin to itself and especially fitting. That is to say, in that it was not able to reach [a10] that heavenly region in body, that is, by leaving the Earth to observe that heavenly domain (just as the witless Aloadae once planned), the soul in taking the mind as its guide through philosophy has completed the journey and emigrated by discovering a quite unwearying path, and, [a15] by recognizing things akin to it, has easily, I think, comprehended things that are for the most part separated from one another in place, grasping divine things with the soul's divine eye and interpreting them for humanity. It endured this because it wished to share its own privileges unstintingly with everyone to the extent possible. 391a

This is in fact why one should pity for their small-mindedness those who have carefully described for us the nature of a single place, the layout of a single city, [a20] the size of a river, or the beauty of a mountain, such as some have done already, some telling us of Ossa, some of Nyssa, and others of the Corcyrian cave—whatever [feature] there happens to be of individual things—since they are awestruck by random things and intend great things in petty observation. They suffer this because they [a25] lack vision of things that are better, I mean the cosmos and the most important features in the cosmos. Indeed, if they genuinely paid attention to these things, they would never [391b1] marvel at any other; but everything else would seem petty to them and worthless in comparison to the superiority of these. 391b

<sup>1</sup> For the Greek text, I have used Bekker 1831 with minor changes noted in Furley 1978 (which also gives a translation into English).

391a3 πρὸς τῶν ὅλων θέαν: as will become clear, the wholes in question are massive structures, which include not only the heaven and Earth but also large structures on Earth such as oceans and mountains [see Karamanolis 2021, 17–18].

391a10–11 καθάπερ οἱ...Ἀλωαδαί: (just as the...Aloadae): see Homer, *Od.* 11.305–320 [Allen 1917].

Let us speak, then, and to the extent within reach, let us theologize about all things together, that is, about their [b5] nature, position, and motion, how each is disposed. It is fitting, I think, even for you, the best of rulers, to pursue the study (ἱστορία) of the most important things, and for philosophy to consider nothing of little importance but to welcome the noblest men with gifts of the same sort.

- 2 The *cosmos*, then, is the system (σύστημα) composed of heaven and Earth and the elements (φύσεις) [b10] in them. In a different sense, the orderly arrangement of the wholes, one that is preserved by God and for God, is also called the *cosmos*.

At the center of this, immoveable and fixed, is assigned “life-bearing Earth”, the home and mother of living-beings of all sorts. What is above [Earth], [b15] a totality limited in every direction at its farthest [from Earth], the dwelling-place of the gods, is called the *heaven* (οὐρανός). It is full of divine bodies that we usually call *stars* (ἄστρα) and, as it performs its eternal motion, it dances together with all these stars in a single, circular rotation unceasingly for all time.

Since the heaven as a whole as well as the *cosmos* is [b20] sphere-shaped and in motion incessantly, as I have said, there are necessarily two fixed points opposite one another, just as, when a sphere is turned round on a lathe, there are [points] that remain firmly fixed and enclose the sphere, [points] about which the entire mass turns in a circle. These [b25] are called *poles*. If we think of a line connecting through them—a line which some call the *axis*—it will be a diameter of the *cosmos* [392a1] with the Earth at its center and the two poles as its endpoints. One of these motionless poles is ever visible overhead since it is to the north. It is called the *arctic pole*. The

392a

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391b4–5 θεολογοῦμεν...κινήσεως (let us theologize...disposed): as will become clear, the focus will be on the fundamental divisions of the *cosmos* (all things together). But the ensuing discussion, as «θεολογοῦμεν» hints, is ultimately about God, the Cosmic Ruler, who is explicitly introduced in ch. 6 of the *Περὶ κόσμου*.

391b11 τάξις τε καὶ διακόσμησις (the orderly arrangement): a hendiadys.

391b11–12 ὑπὸ θεοῦ τε καὶ διὰ θεόν (by God and for God): cf. [Thein 2021](#), 44.

391b12 ταύτης (of this): fem. by attraction to «γῆ»; *scil.* of the *cosmos*.

391b13 ἡ φερέσβιος...μήτηρ (“life-bearing Earth”): see Hesiod, *Theog.* 693 [[Solmsen 1970](#)].

391b18 περιαγωγή καὶ κύκλω (circular rotation): a hendiadys.

other [pole] is ever hidden below the Earth in the south. [a5] It is called the *antarctic pole*.

We call the substance of the heaven and the stars *aether*, not, as some [say], because of its burning (αἴθεσθαι) in that it is fire-like—they are mistaken about its quality (δύναμις), which differs to a very great degree from fire—but because of its ever running (ἀεὶ θεῖν) as it goes in a circle. It is an element different from the four, being pure and divine.

Now, of [a10] the stars (ἄστρα) encompassed [in aether], some, the ones that are fixed, turn round with the heaven as a whole always keeping the same place. In the middle of these [stars], the *zodiacal band*, as it is called, wraps around [the heaven] aslant through the tropic points (τροπικά), and is divided in parts into the regions of the 12 zodiacal signs (ζῳδία). But the others, the ones that are planetary, by their nature do not move at the same speed either as the former stars [a15] or as one another. Rather, each moves on its own circle with the result that the one is closer to Earth and the other is higher.

The great number of fixed stars cannot be counted by men though they move on one surface, that of the heaven in its entirety. But [the number] of the planets, which is summarily accounted for in seven units, [a20] are in just as many circles lying one after another with the result that a higher [circle] is larger than a lower one, and that the seven [circles] are encompassed by one another. Nevertheless, all are encircled by the sphere of the fixed [stars]. The [circle] of Phaenon [Fulgent], which at the same time is also called Cronus [Saturn], always has the position next to this [sphere]. Next is the

392a8–9 *scil.* fire, air, water, and earth.

392a10 ἀπλανῆ (fixed): lit. unwandering.

392a11–12 ὁ ζωοφόρος κύκλος (zodiacal band): lit. the belt or band with the representations of living creatures.

392a12 *scil.* the (cardinal) points in the Sun's course through the heaven that mark the changes from one (astronomical) season to the next.

392a13–14 πλανητά (planetary): lit. wandering.

392a13–15 τὰ δὲ πλανητὰ ὄντα...ἀλλήλοις (the ones that are planetary...as one another): the only planetary motion here recognized is the (periodic) return to the same position in the heaven.

392a15 ἐν ἑτέροις καὶ ἑτέροις κύκλοις (each...on its own circle).

392a15–16 ὅστε αὐτῶν...ἀνώτερον (with the result that...higher): the argument is assumed in 392a16–23. See [Appendix 3, p. 33](#).



[circle] [a25] of Phaethon [Shiner], which is also called Zeus [Jupiter]; then, Pyroeis [Fiery], which is named Heracles and Ares [Mars]. Next is Stilbon [Glitterer], which some call the temple of Hermes [Mercury] and some, [the temple] of Apollo. After this is the [circle] of Phosphorus [Light-Bringer], that is, the [circle] of Aphrodite [Venus], which some name [the circle] of Hera. Then, there is the [circle] of the Sun; and, finally, the [circle] of the Moon delimits [the sphere extending] all the way to the Earth. [In other words,] [a30] aether encompasses the divine bodies and the disposition (τάξις) of their motion.

After the aetherial or divine element, the sort which we assert is ordered and, further, unchangeable, unalterable, and impassive, there is next the [element] that is entirely liable to change and mutation, that is, in sum, destructible and mortal. The first of this [a35] very [element] is the fine and flame-like substance (φλογώδης οὐσία) set afire [392b1] by the aetherial element because of its size and the swiftness of its motion. In this [part], described as fire-like and chaotic, meteorites (σέλα) burst forth, flames (φλόγες) shoot ahead, and beams (δοκίδες), trenches (βόθυνοι), and hairy stars (κομήται, comets), as they are called, are often [b5] stationary and extinguished.

392b

Next to this streams the air, which is cloudy and icy-cold in nature. But, when it glows and is inflamed at the same time by motion, it becomes bright and warm. In [the air], which has also on its own the power to undergo change and is altered in all manner of ways, clouds [b10] are formed and torrential rains descend; there are snowfalls, frosts, and hail-storms, the blowing of winds and hurricanes, and, further, thunder-storms and lightning, as well as the fall of countless thunderbolts and the crashing together of dark [clouds].

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392a29 καὶ τελευταῖος ὁ τῆς σελήνης μέχρι τῆς γῆς ὀρίζεται: the point is that the circle of the Moon is the lower limit of the aetherial sphere and the upper limit of the terrestrial sphere.

392a31 ἥν τινα (the sort which): Bekker's text.

392a34–b2 ταύτης δὲ...κινήσεως (of this...its motion): the author describes the first or outermost sphere in the sublunary sphere, the sphere assigned to the element fire. But note that he does not say this explicitly, only that it is fire-like. On the problem here, see [Hahm 1977](#), 91–103.

## APPENDIX 3

There is, I maintain, no reference to the theory of homocentric spheres developed in *Meta.* 12.8 in the *Περὶ κόσμου* 292a13–15 either.

In the first place, in «τὰ δέ, πλανητὰ ὄντα, οὔτε τοῖς προτέροις ὁμοταχῶς κινεῖσθαι πέφυκε οὔτε ἀλλήλοις» (The other celestial bodies [ἄστρα], which are planetary, do not move by nature at the same speed as [the fixed stars] or as one another), there is no distinction between forced and proper motion as there likely is in the *De mundo* [cf. *ad* 2.1 *quae neque priorum motus habent p. 26*], and no distinction of direction. Rather, the point is simply that the (linear) speeds of the planets are neither the same as that of (points on) the celestial sphere nor the same as one another.

Next, the addition of «ἐν ἑτέροις καὶ ἑτέροις κύκλοις» [392a15] means that, unlike the fixed stars, each planet travels on its own proper circle. It is on this basis that the *Περὶ κόσμου* draws the consequence that the planets are set at different distances from Earth [292a15–16]. The argument, which is only indicated in 392a16–23, follows readily from what has been asserted thus far about aether:

Since the planets are each made of aether, they must each by nature have the same motion in a circle. Motion along a circle is both linear (as assessed along the circumference) and angular (as seen from the center of the circle). Now, the planetary angular motions and, hence, their periods, are observed to be different. So it is the planet's motion or speed along the circumference of its circle that is the same. Accordingly, the planets must move on circles that differ in circumference, which means that their radii or distances to Earth must be different.

This argument does not extend to the fixed stars and celestial sphere. But that problem is literally baked into Aristotle's account of the fifth element and heaven in the *De caelo*, an account which is not salvaged until book 8 of the *Physics* and book 12 of the *Metaphysics*, which propound a theory of unmoved movers that are the final causes of motion.

See [Thein 2021](#), 53–54 for the same conclusion about reference to the theory of homocentric spheres in the *Περὶ κόσμου*, but one reached by a nuanced argument marred only by conceding that *Meta.* 12.8 entails recognition of planetary station and retrogradation, a contention predicated on a misunderstanding of Simplicius' testimony [see [Bowen 2013](#)].

## APPENDIX 4

	<i>De mundo</i> 2.4–5	<i>De mundo</i> 29.1–3	
Saturn	Phaethon		30 years
Jupiter	Phaenon		6 years
Mars	Pyroeis Hercules	Mavortius	2 years
Mercury	Stilbo Apollo	Cyllenius	1 year
Venus	Phosphorus Juno	Lucifer	1 year
Sun			1 year
Moon			—

The Planets, Their Names, and Their Periods according to Apuleius

Apuleius lists the planets in the same order at *De Plat.* 203.

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