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Saved by the Phenomena
Law and Nature in Cicero and the (Pseudo?) Platonic *Epinomis*

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What does it mean to say that nature is lawlike? Surely at least part of the idea is that nature exhibits regularities, that it is predictable, and (part and parcel) that some or all of those regularities can be formulated or modelled mathematically.¹

This is all well and good, but there is another, odder and less obvious side to the claim that nature is lawlike, which is the question of why we call nature’s regularities *laws.* If we take law in its original, socio-political, sense, we find that law is at its core both always changing and always breakable. There may be consequences to breaking human laws, but not one single judicial law—ever—is or has been fundamentally unbreakable.² The things we call laws of nature, on the other hand, are exactly the kinds of regularities we think of as obtaining, normatively, always and everywhere.

It is, I submit, a little odd that we came to think of nature’s regularities in terms of law, and there is some historical debate about when, how, and why we came to do so. Up until fairly recently, there was a consensus that ‘laws of nature’ as a concept dated to no earlier than about AD 1600, and thus was a product (and perhaps a defining feature) of what is called the scientific revolution. Like so much else that gets credited to the scientific revolution, it turns out that the earlier historical picture is much more complicated than it at first looks, and antecedents, hints, feints, or full-blown articulations are often hiding in plain sight in antiquity or in the Arabic and European Middle Ages.

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¹ See for example Ott and Patton (2018); Kedar and Hon (2017); Baron, (forthcoming); Chakravartty (2007); Bird (2007); Lange (2000); Giere (1999).

² I suppose I should make an exception for laws made by people who believe(d) that impossible things, like witchcraft, were possible. The impossibility of breaking that kind of human law stems only from the impossibility of breaking the laws of nature. Such an ‘exception’ clearly proves the rule.
In the case of the conception of nature as lawlike, I argued at length in *What Did the Romans Know?* that legalistic thinking was a defining feature of Roman approaches to the natural world, and that recourse to legal metaphors for nature was both pervasive and multivalent in Roman sources. What I propose to do in what follows is to develop this idea further in relation to one Roman source in particular, Cicero, and then to look back into the earlier Greek tradition to show that there is an important and overlooked Greek antecedent to this way of thinking in the (pseudo?) Platonic *Epinomis*. I should note that this paper does not claim that Cicero himself was working from the *Epinomis*—that argument is a job for another paper. Nevertheless I will argue that the earlier Greek source is a hitherto unrecognized landmark in the historically very important conception of nature as obeying laws, and that the context in which it emerges, the quest to epistemically ground human laws, shares much with Cicero's later project.

**Roman Law, Roman Nature**

It is important to note that law and nature come together along two distinct axes in Roman sources. These two lines may be related, but we will do well to keep them distinct. One prominent project undertaken by a number of Hellenistic philosophers sought to underpin ancient theories of ethics by an appeal to conceptions of nature and to what is considered ‘natural’. Such theories of ethics are called ‘natural-law’ theories, and their aim is primarily ethical: to determine what is right and wrong by an appeal to nature, to what is natural, or to what is *according to nature*, whatever that is taken to mean (and here I am conceiving of legal philosophy as a branch of ethics more broadly). The second axis along which law and nature interact—and this one is conceptually and importantly distinct from the first—points in the contrary direction, attempting to understand nature (physics, astronomy,

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3 Lehoux (2012).
4 Although I will suggest that there are good reasons to suspect that there is a line of transmission at work in this instance, the point is not necessary for the current argument.
biology, cosmology) by appeals to law, jurisprudence, rules of evidence, and other legalistic
terminology or metaphor. Sometimes nature’s regularities are explicitly called ‘laws of nature’ (either
leges or foedera naturae in the Latin), but more often such regularities are treated in broader legalistic or
forensic frameworks. In fact it is hard to overstate the degree to which legal thinking intersected
with thinking on nature in Roman sources. True, there are important aspects of pre-Roman ideas
about nature that also use legalistic terminology or structures, but the fullest development of this line
of thinking is Roman, and this important Roman contribution to the history of the sciences has until
recently been disregarded or unfairly downplayed. In what follows I will distinguish between the
two distinct (ethical vs. physical) axes by calling ethical theories that are rooted in what is natural
‘natural-law’ theories, and physical theories that invoke legalistic terminology ‘laws-of-nature’
thories. It is the latter that are the real focus of this paper, even if the former will, inevitably, never
be very far away.

Significant talk of the laws of nature can be found in the first century BC at the latest, with
the pioneering philosophical works of Lucretius and Cicero. Both men grew up at a very turbulent
time in the Roman republic, when its constitution, institutions, political norms, and social order were
being severely challenged. Indeed, the years in which Cicero was at his most philosophically
productive were precisely the years that saw the end of the old republican system of government, the
power grabs by Julius Caesar, and the civil wars that followed. Much of Cicero’s philosophical work
was dedicated to defending that tottering republican system of government, and the strategy he
repeatedly deployed to this end was to tie politics to ethics, and ethics to nature:

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5 My use of the term forensic follows common translations for the branch of rhetoric called dikaiotike in Aristotle’s Rhetoric.
6 For the story in Babylonian sources, see e.g., Rochberg (2016), (2004); Ritter (2005); Jeyes (1989). For Greece, see
Of all the things that are worked and reworked in the disputations of learned people, surely nothing is as important as knowing clearly that we are born for justice, and that justice is constituted by nature, not by opinion.\(^7\)

A little later he continues:

What follows, then, is that we are constituted by nature for sharing justice with each other and giving it to all people .... And if people used their judgment in accordance with nature ... justice would be nurtured equally by all. For whoever is given reason by nature, is also given right reason, and therefore also law (which is right reason enacted in direction and prohibition) and if law, then also justice.\(^8\)

The final move, for Cicero, is theological: right reason gets defined as the mind of god (and at the same time, through a clever set of rhetorical moves, tied to the core of Roman self-image). As he prepares to bring Jupiter into the mix, Cicero recounts two tales of courage and virtue from the foundation-myth of the Roman republic: the legendary single-handed defense of the Sublician bridge against the Etruscan hordes by Horatius Cocles, and the final dissolution of the monarchy after Prince Tarquin’s rape of Lucretia. The laws that made the one action worthy of universal approval and the other of universal approbation have, Cicero says, nothing to do with what was written down at the time. Those laws were instead situated in reason itself:

For reason existed [already], effected by the nature of the cosmos, driving men to do good and calling them away from wrong, and reason did not finally become law when it was written, but when it was created. Moreover its origin is coeval with that of the divine mind. For this reason the first and true law ... is the right reason of Highest Jupiter.\(^9\)

In that we have the fullest expression of the foundation of the ideal state for Cicero.

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\(^7\) Cicero, \textit{Leg.} 1.28: \textit{omnium quae in hominum doctorum disputatione versantur, nihil est propter praebelabilium quam plane intelligi nos ad institutum esse natos, neque opinione sed natura constitutum esse ius.}

\(^8\) Cicero, \textit{Leg.} 1.33: \textit{sequitur igitur ad participandum alium cum alio communicandumque inter omnes in nos natura esse factus ... quodsi quomodo est natura, sic judicio homines ... coloreris inaequ ac omnis. quis enim ratio natura data est, idem etiam recta ratio data est, ergo et lex, quae est recta ratio in ibendo et vetando; si lex, ipsis quoque.}

\(^9\) Cicero, \textit{Leg.} 2.10: \textit{erat enim ratio, profecta a rerum natura, et ad recte faciendum impellens et a delicto avocans, quae non tum denique incepit lex esse quom scripta est, sed tum quom orta est. orta autem est simul cum mente divina. quam ob rem lex vera atque princeps ... ratio est recta summi Iovis.}
True law just is right reason equated with the mind of (the philosophers’) god, and nature—the world around us in all its beauty and order—is the embodiment or product of that mind. This gives us a two-way grounding for law and nature: the order and beauty of the cosmos emerge as products of right reason, of right law, and at the same time we model human laws on nature, because nature is itself the instantiation of divine law: “law is the highest reason, grafted into nature.”

This, then, I observe to have been the opinion of the wisest: law is not a contrivance by the minds of people, nor is it some decree made by assemblies. Instead, it is something eternal, which rules the entire cosmos with the wisdom of its commands and prohibitions.

Law rules the cosmos. Here we have the frame, but not yet the full picture of a claim that nature obeys laws. An important point to note for our present purposes is that it is astronomical phenomena in particular that stand as a kind of metonym for this entire divine order in Cicero. The point is emphasized repeatedly in his philosophical works. It is particularly clear in the companion dialogue to Cicero’s Laws, the Republic, where the long philosophical discussion of politics is conspicuously bookended with astronomy: it opens with a description of an Antikythera-type planetarium (made by Archimedes), and closes with the famous Dream of Scipio, where the protagonist is carried up into the whirling planetary spheres by his grandfather. Unfortunately for us, Cicero’s Republic is incompletely preserved. With the exception of the Dream of Scipio which survived as an excerpted shorter work in its own right, what we have of the Republic is preserved in a single manuscript palimpsest, discovered in 1820, incompletely erased and overwritten with a copy of Augustine’s commentary on the Psalms. It contains a good number of lacunae, and Cicero’s treatment of the planetarium in the Republic is unfortunately incomplete, if still suggestive, but we can supplement the

10 Cicero, Leg. 1.18: lex est ratio summam insita in natura.
11 Cicero, Leg. 2.8: hanc igitur video sapientissimorum fuisse sententiam, legemque hominum ingenii esset gignitam, nec situm aliquod esse populum, sed aeternum quiddam, quod universum mundum reget imperandi prohibendique sapientia.
12 For the details, see Ziegler (1955).
philosophical connections that are lost with a second discussion he has about the same Archimedean planetarium in the *Tusculan Disputations*. There the planetarium is remarked on again as a wonder in itself. And again, we are told that it tracks each of the planetary motions perfectly. But there is more. Cicero adds to the *Tusculan* description that not only is the planetarium a model of the cosmos, but also that the maker of the planetarium is a model of the maker of the cosmos:

> When Archimedes attached the motions of the moon, the sun, and the five planets to a sphere, he did the same thing as Plato’s god who constructed the world in the *Timaeus*: he made one turn [of the handle] lead their [individual] movements, so that they were independent in their slowing down and speeding up. If in the cosmos this cannot be accomplished without god, neither can Archimedes have imitated the same motions on a sphere without a divine nature.\(^\text{13}\)

This ‘divine nature’, *divinum ingenium*, is just the immortal human soul, as Cicero goes on to argue in the *Tusculan Disputations*, which makes us all, literally, divine. He also uses this same idea to close the *Republic* (‘know then that you are a god’), which brings us full circle from the broken discussion of the first Archimedean planetarium in that text.

The motions of an ancient planetarium are, to be sure, incredibly impressive, as anyone who has seen a reconstruction or an animation of the Antikythera mechanism can attest, but this then raises some interesting questions for the Platonic works that served as Cicero’s models for the *Republic* and the *Laws*, as we shall see. The cosmologies alluded to in those two Platonic works, together with Plato’s *Timaeus*, deeply inform what we find in Cicero’s political works, but the earlier texts never go quite so far as to explicitly treat nature itself as being lawlike in the ways that Cicero’s works will. Instead we must look to a possibly spurious (and therefore often overlooked) work of the Platonic corpus for a more explicit instance of that claim.

\(^{13}\) Cicero, *Tusc.* 63: *nam cum Archimedes lunae, solis, quinque errantium motus in sphæræm illigavit, effecit idem quod ille qui in Timæo mundum aedificavit Platonis deus, ut tarditate et celeritate dissimilimus motus una regeret conversio. quod si in hoc mundo fieri non potest, ne in sphæra quidem eodem motus Archimedes sine divino ingenio potuisset imitari.*
Laws in the (Pseudo?)-Platonic Epinomis

Cicero’s Republic and Laws were consciously written, as the titles may imply, as rethinkings of, and tributes to, Plato’s earlier dialogues of the same name. Cicero was, of course, not merely trying to update or re-write the Platonic works, but what he offers is very much inspired by, and influenced by, those earlier works. In both texts, and in the Laws in particular, Plato had similarly connected reason to the divine, and the pursuit of human law to the understanding of divine law. He also has the motions in the heavens driven by a rational soul. But there is an understudied and quite interesting appendage to Plato’s Laws that speaks to Cicero’s later developments in ways that I find both surprising and interesting. That ‘appendage’ is a dialogue now called the Epinomis that was thought by many in antiquity to have been an authentic work of Plato’s (‘book 13 of the Laws’) even if many (but not all) modern scholars disagree. I am not so bothered by the question of the dialogue’s authorship; what matters to me more is how thoroughly Platonic the dialogue is. Yes, some of the arguments don’t line up with points made in Plato’s Laws, which immediately precede the Epinomis, but it fits quite squarely with the tradition of cosmology and theology that we find in Plato’s work generally, and as a work of philosophy it is as interesting in its own right as much else in the Platonic corpus. We might say of it what Cicero said of the existence of the legendary lawmaker Zaleucus, sive fuit sive non fuit nihil ad rem; loquimur quod traditum est, which we could loosely translate as ‘whether he existed or not, it is nothing to the matter; let’s talk about what has been handed down’.

14 See, e.g., Plato, Leg. 897c f. Here verbs for ‘caring’ and ‘driving’ rather than ‘governing’ seem more pastoral than legislative.

15 We know that the Laws were left unfinished at Plato’s death. Diogenes Laertius tells us (3.37) that Plato’s draft was transcribed from the wax tablets by Plato’s student, Phillip of Opus, and that “they say the Epinomis is his.” But given what the Epinomis has to say about what counts as true astronomy, I find it hard to believe that Phillip was the author of the Epinomis, since we know that he worked on exactly the kinds of astronomy that the Epinomis rules out as true. On the authorship question and its extensive literature, see Brisson (2005); Taran (1975). Taran there argues that it is ‘probable’ that the author was Phillip. For perhaps the best arguments in favour of Plato’s own authorship, see Taylor (1929) (contra Muller (1927), and Young’s (1989) analysis of stylometric work on Plato personally, I find the stylometrics fairly persuasive). The title of the Epinomis translates as something like The After-Laws, and indeed, it takes up questions from the Laws and serves as a kind of appendix to that work.
translate as “whether it is genuine or not is beside the point; we are talking about what people believed.”\textsuperscript{16} In particular, the \textit{Epinomis} captures a marvellous—and paradoxically ambitious, as we shall see—snapshot of what would come to be a very influential approach to understanding regularity and order in the cosmos, one that is very tightly intertwined with concepts of human law. Moreover, the fact that the dialogue was taken by many in antiquity as authentic—Cicero prominent among them—gives it an authority within the ancient philosophical tradition that is significant, whatever our final adjudication of its authenticity today.

David Sedley, in a review of \textit{What Did the Romans Know?} pointed out a tantalizing possibility that I myself had missed. I had argued in the book that the idea of nature as lawlike, of physical processes as playing out \textit{according to laws} seemed to be a novel conception in Roman sources (Cicero and Lucretius in the first instance) and I could find very little in earlier Greek sources espousing the same idea as explicitly or as fruitfully. What Sedley speculated was that maybe this was a Roman original because of “the pivotal role of codified law in Roman life and culture.”\textsuperscript{17} I was immediately struck with how right this seemed. Nevertheless, I have since come to see that, as I hope to show, this overlooks an important pre-Roman attempt at establishing something very like this same idea. The \textit{Epinomis}, it seems, offers at least hints in this same direction, more than any other Greek source I know, and so it will be worth having a look at how it handles law and nature in particular. I want to emphasize, though, that I am not here making a claim that significant parts of the Roman project in general, or of Cicero’s in particular, are unoriginal or that they owe direct debts to the \textit{Epinomis} specifically (although I am suggesting that this will be a fruitful line for future inquiry). I simply want to acknowledge a text that, for all its philosophical interest, has been unfortunately understudied (perhaps largely because of its uncertain provenance).

\textsuperscript{16} Cicero, \textit{Leg. 2.15}. On the influence of the \textit{Epinomis} on Cicero and the Stoics, see Alesse (2012). On its perceived authenticity in the Platonic tradition, see Gioe (2012); Giradina (2012); Linguiti (2012); Tarán (1975).

\textsuperscript{17} Sedley (2012).
In this regard, it will be well to say a few words about methodology in the history of philosophy, particularly with respect to two common practices: Quellenforschung (a “technique that has never been deemed worthy of an English name”, as Jed Atkins so humourously put it)\textsuperscript{18} and doxography. Here I am seeking to engage in neither the doxographic search for the fragments of a lost Plato, Chrysippus, or Zeno of Elea in the interplay between Cicero and the Epinomis, nor am I really trying to prove that Cicero’s ideas were lifted or quoted from the Epinomis. Instead it is that the idea of nature as lawlike is an important, productive, and deeply influential one in the history of the sciences, and its origins are, it seems, messier than I first suspected.

Readers of Cicero’s political and ethical philosophy will be immediately struck by my jump back to the Epinomis without taking into account the deep (and widely demonstrated) debt that Cicero’s ethics owes to Stoicism, the most influential philosophical school in the centuries between Cicero and Plato. It is, I acknowledge, well established that Cicero’s natural-law ethics, the idea that what is ethically or politically virtuous is ‘what is according to nature’, owes its fullest initial formulation to the Stoics.\textsuperscript{19} What is less clear, though, is the earlier history of that other idea in Cicero, the one that runs in the opposite direction: that nature herself obeys laws. This, I will argue, is not nearly so well formulated in Stoic sources, and I hope to show that in fact it is the Epinomis that offers us our earliest attempt at an articulation of this idea.

Here the well-known Stoic conception of the cosmos as a city may appear to belie my claim, but close attention to the context shows, perhaps surprisingly, that the Stoic cosmic city is never really (and never primarily) a claim that natural regularities obey laws. It is instead a much more specific political claim about the consociety of people and gods and their mutual responsibilities to each other (hence the oft-cited Stoic definition of a city as an “organization of people living together

\textsuperscript{18} Atkins (2013, 161).
\textsuperscript{19} On Stoic natural law the literature is vast. See e.g., Atkins (2013); Vogt (2008); Betegh (2003); Schofield (2003); Striker (1986).
according to law.” But it is one thing to say that people and gods make up a single community and something else entirely to say that natural processes are regular because they follow laws. Indeed, Dio Chrysostom even says explicitly that the idea of the cosmos as a city is not to be read literally for the very reason that it is the interaction between humans that is definitional of what a city is. The Stoics liken the cosmos to a city, πόλει προσεικάξουσι, but this is said to be merely a metaphor to highlight a definition of law as, to quote Malcolm Schofield, “prescriptive reason instructing [people and gods] how to treat each other as social animals.” The cosmos is a city insofar as the primary occupants thereof share in right reason, which is law. The point is about who the relevant actors are and what their relationship is to each other, and it is not about how physics may or may not work.

The Epinomis is, at its core, a political dialogue about how we should educate the future leaders of an ideal state if they are to gain the true wisdom that they would need in order to compose the just laws that will govern that ideal state. Considering its date, the answer that the dialogue provides is more than a little surprising: the future leaders should study astronomy, of all things. To anyone familiar with the history of Greek astronomy in the fourth century BC, this is a surprising answer prima facie—there is really very little Greek material that can be called by the name astronomy in Plato’s time. Having said that, however, a historian might (rightly) object that in fact there was some very good work being done on luni-solar (i.e., calendric) cycles as well as observation...

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22 Occasionally it is added that the things in the universe—animals, plants, stones—are “part of” the cosmic city for the Stoics (see e.g., Cicero, ND 2.154), but this is not to say that their growth and action are guided by laws. It is instead to say that the things in the universe are part of the cosmic city in the same way as the streets of Athens are part of that city: they are the property of the citizens and are to be used for the enjoyment of those citizens. Again, the cosmic city of the Stoics is a consociety of rational agents together with specific available resources rather than a description of natural processes as lawlike. See also Cicero, ND 2.3, where he says the Stoics believe the gods ‘administer’ the world. Again, this seems to be directed at their care for people rather than their ordinance of decrees that inert matter itself must follow. Compare the fragments of Aristocles and Arius Didymus in Eusebius Prap. ev. 15 (=S/V F 1.98, 2.528) which make essentially the same point.
23 On the astronomy of the Epinomis, see Repellini (2012).
and collation of fixed-star phases in this period, but the author of the *Epinomis* explicitly rules many of these practices out of what he means by ‘true astronomy.’ As he puts it:

[By] the true astronomer [I mean] not someone doing ‘astronomy’ in the manner of Hesiod and all those like him, observing risings and settings [of the fixed stars], but instead someone observing the seven periods of the eight circuits, each of them passing through the circle of the others in such a way that not every kind [of person] is fit to easily contemplate, unless they have a share of an excellent nature.

This passage is famously difficult to translate, in particular with regard to what one should do with the repeated ‘periods’ (the seven of the eight of them) at the beginning and the similarly repeated ‘nature’ at the end. My own reading follows Tarán’s to suppose that for each word the repetition signals a change in the precise meaning. This gets reflected in my translation, in the first instance taking “period” as variously meaning “period” or “circuit.” As for the slightly trickier repetition of “nature”, I follow Tarán and Novotný in thinking that the first φύσις is the personified φύσις of the *Republic* (see 359c, for example, which repeats the phrase πᾶσα φύσις exactly and which is elaborated in detail as a personified φύσις at *Epin.* 989b-d), and that the second φύσις is a reference to nature-as-character a little more directly pointed at a specific individual astronomer. I have therefore translated the first as referring to people generally (“every kind of person”) and the second as the ‘nature’ of a more specific person.

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24 Stellar phases are the appearances and disappearances of fixed stars over the course of the year. Their usefulness lies in the fact that the stellar phases track the solar year quite faithfully over long periods of time. In the absence of a good solar calendar like the Gregorian, Greeks relied on stellar phases for the timing of a wide range of agricultural activities, among other things. On early Greek astronomy of this sort, see Lehoux (2007); Hannah (2005); Bowen and Goldstein (1988).

25 Given what we know of Phillip’s work in astrometeorology (see Lehoux (2007), Appendix I), perhaps this fact weighs against him as the potential author of the dialogue.

26 *Epin.*990a-b: τὸν ἀληθῶς ἀστρονόμον ... μὴ τὸν καθ᾽ Ἰσιόδον ἀστρονομοῦντα καὶ πάντας τούς τουτούς, οίνον δυσμάς τε καὶ ἀνατολίων ἐπεσκεμένον, ἀλλὰ τὸν τῶν ὀκτὼ περιόδων τὰς ἐπτὰ περίοδους, διεξιούσης τὸν αὐτῶν κύκλον ἐκάστης οὕτως ὡς οὐκ ἀν ῥαδίως ποτὲ πᾶσα φύσις ἰκανή γένοιτο θεωρῆσαι, μὴ θυμιστὶς μετέχουσα φύσεως.

27 On these doublings, See Tarán’s (1975) comments especially on 990a 2-8, 990a 7-8, 990b 1-2, and 992a 4. Taylor (1929, 68-9), by contrast, speculated that the doublings were artefacts of dictation.

28 Tarán (1975); Novotný (1960).
Now, in the astronomy of Plato’s academy, what might a phrase like “the seven periods of the eight circuits” mean? We know that within a generation of Plato, possibly during Plato’s own lifetime but at any rate before Aristotle came to write his *Metaphysics*, Eudoxus of Cnidus (one of Plato’s students) came up with a clever cosmological model. This model tried to at least minimally imitate the forward-for-a-while, backward-for-a-while, then forward-for-a-while motion of the planets (direct and retrograde motions) using spheres nested inside each other. Although it also captured some variation in planetary latitude, each of its repetitions of retrogradation was identical in size, timing, latitude, and shape. It was, in short, merely a ‘proof-in-principle’ that something like the very complex phenomena exhibited by the planets could be captured by circular motions nested inside circular motions.\(^{29}\) It was a small step, qualitatively, in the right direction, but offered (and perhaps benefited from) not even approximate quantification.

By Plato’s day, we also know that the idea of the zodiac had come to Greece from the much more advanced astronomy of Mesopotamia,\(^{30}\) and the Greek planet names appear for the first time as a set in the *Epinomis* itself (although Mercury had been said to be “sacred to Hermes” in the earlier *Timaeus*).\(^{31}\) In the *Epinomis* account, in fact, the planets are explicitly said not to have names yet, as though they were being coined before our very eyes. The author says that the sun moves along with two other planets, one called ἑωσφόρος, ‘the Dawn-bearer’ (a name attested in both Homer and Hesiod for Venus), and the other “it is not possible to indicate with a name since it is not

\(^{29}\) Neugebauer’s judgment sums it up: “Though it is quite obvious that [the Eudoxan system] can produce paths reminiscent of the apparent motion of a planet it is equally obvious that serious discrepancies with easily observable facts must remain.” Neugebauer (1975, 679).

\(^{30}\) In the *Timaeus* (55c), Plato assigns the twelve-sided dodecahedron to the cosmos as a whole, which is a quiet hint that he is aware of the twelve signs of the zodiac, but see also Evans (1998, 58); Neugebauer (1975, 593); van der Waerden (1953).

\(^{31}\) *Tim.* 38d. Cf. 39c: “people have not given [the planets] names nor do they measure them carefully against each other using numbers.”
known.”

This is, he says, because knowledge of the planets came to Greece from Syria and Egypt, where the skies are apparently much clearer. He continues:

This, at any rate, must be said [to be] the reason they do not have names. Instead, they have taken the names of gods. Thus the Dawn-bearer, itself also the evening star, is Aphrodite’s [star] (i.e., Venus), which seems an especially appropriate name to receive from a Syrian lawmaker. The star that more-or-less travels with that one and the sun is [that] of Hermes ... Three stars remain, of which one is distinct from the others with respect to its slowness. Some call it by the name of Cronus (Saturn). The next slowest after this must be called Zeus (Jupiter), [the star of] Ares (Mars) is the one after this, and it has the reddest color of them all.

Here again, some hints of Babylonian (the author calls it “Syrian”) influence: the stars are given the names of the Greek gods that correspond with those of the Babylonians: Ninurta (an agricultural deity) thus becomes Cronus, Marduk (the head of the Babylonian pantheon) becomes Zeus, Nergal (god of war) becomes Ares, Ištar (goddess of love and sex) becomes Aphrodite, and (perhaps a little less obviously) Nabu becomes Hermes.

And that about exhausts the knowledge of planetary astronomy in Plato’s day. If we allow the author of the *Epinomis* his distinction between calendrics and astrometeorology on the one hand, and true astronomy on the other, then what falls under the umbrella of ‘astronomy’ is in fact very little: the zodiacal signs, the obliquity of the ecliptic, the names of the planets, the number of the planets (Plato’s older contemporary Democritus is supposed to have said that he did not even know how many there were), and perhaps—and this is the big question—some kind of (Eudoxan or

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32 *Epin.* 986c: ὄνοματα φράζειν οὐκ ἔστιν διὰ τὸ μὴ γνώσκεσθαι. On this passage and on Greek planet names, see Cumont, (1935).

33 Cf. *Tim.* 38d, where Mercury “is said to be sacred to” Hermes, τὸν ἵππον Ἑρμοῦ λεγόμενον.

34 *Epin.* 987b-d: ὅτι δὲ οὐκ ὄνοματα ἔσχηκεν, τὴν γε αἰτίαν χρῆ λέγεσθαι ταῦτην. ἄλλα γὰρ ἐπωνυμίαν εἰλήφασιν θεόν· ὁ μὲν γὰρ ἑωσφόρος ἑσπερός τε ἐστιν, ὁ δὲ ἐρυθρώτατος ἔχει λόγον καὶ μᾶλλον ἴδιον νομοθέτην πρέπον, ὃς ὁ Ἱερὸν Ἑρµοῦ λεγόµενον.

35 On the Babylonian planetary names (and their variants), see Kügler (1907).

36 Seneca, *NQ* 7.3.2: *Democritus quoque, subtilissimus antiquorum omnium, suspicari se ait plures stellas esse quae currant, sed nec numerum illarum posuit nec nomina, “Democritus, the sharpest of all the ancients, says that he believes that there are more stars that wander but he gives neither their number nor their names.”
proto-Eudoxan) spherical model for retrograde motion. This is not, to be sure, a lot. And to put an even finer point on it, the author has the character called the Athenian stranger add, as though it were something worth remarking on, that the stranger himself has observed the planets: “I have observed them myself, and it was nothing great that I did—it is also easy for someone else.” There is something about the wording here that makes it sound like the author is hoping to encourage others to try something new (and new it must have been if the planets took until now to get names).

Indeed, the author of the *Epinomis* makes clear that he recognizes that there is still much work to be done and that the study of astronomy is still in its infancy. After telling us that the Greeks were slower than their eastern neighbors in discovering astronomy because of the poor sky conditions in Greece in the summer, he says that this is not a terminal disadvantage, for whatever the Greeks receive from foreigners, they improve upon. He continues:

> And it is necessary to keep this last point in mind with respect to the things we are now discussing; it is difficult to figure out all matters of this sort with full certainty, but there is much hope—and it is a beautiful hope—that even though the reports and worship of all these gods came from the barbarians, the Greeks are going to [accomplish this] truly better and more justly with the help of their education system, the oracles at Delphi, and all their religious practice inscribed in law.

Again, the *Epinomis* is clear in its optimism that important discoveries about the planets are still waiting to be found: the Greeks, it says, are going to find out about them.

So the question then becomes: what is it about this true astronomy that the author of the *Epinomis* thinks makes it suitable as the subject for the lawgivers of the perfect state to learn? Why is he so confident that astronomy and wisdom, and therefore the ability to legislate justly, are co-definition?
The answer is number. Astronomy teaches number. This statement will be of no surprise in a Platonic context, as this is precisely the account given also in the *Timaeus*, where it is used to explain why the demiurge gave senses, and eyeballs in particular, to humans.

Now, the observations of the day and the night, and months and the cycles of years and the equinoxes and the solstices have contrived for us number, and that has given us the conception of time and the inquiry into the nature of all things from which we get the discipline of philosophy.\(^\text{40}\)

Or, as Plato says in the *Republic*: “it seems to me clear that [astronomy] makes the soul look upwards and leads it from the things down here to the things up there.”\(^\text{41}\) (And it is worth noting here that this leading of the soul from the things down here to the things up there is precisely the physical journey that Scipio takes in Cicero’s *Dream.*) The gift of number, says the author of the *Epinomis*, is so significant that “I believe it is god himself, and not some stroke of good luck, that gives it to us *in order to save us.*”\(^\text{42}\)

The idea that the observation of the stars brings us number is very interesting in this context, insofar as the distinction that the *Epinomis* offers between true astronomy and the other sort would seem to be precisely a distinction between qualitative and quantitative approaches. This is to say that it is all well and good to say things like “the planets only appear to wander but are in fact in fixed orbits” (*Laws* 822a), but the idea that planetary motions offer us *numbers*—in Greece, in the fourth century BC—seems more than a little optimistic. And on this note it appears that the author of the *Epinomis* has in effect slipped a little in defining the boundaries of his ‘true astronomy’, for if we look again at the above list of astronomical phenomena that give us number in the *Timaeus*, we note that the planets are not mentioned at all, nor does the author of the *Epinomis* tell us how they are

\(^{40}\) Plato, *Tim.* 47a-b: νῦν δ’ ἡµέρα τε καὶ νύξ ὀφθεῖσαι μὴνες τε καὶ ἕνωσιν χρόνου καὶ ἑσσερία καὶ τροπαὶ μεταχείρησαν μὲν ἄριθμον, χρόνου δὲ ἐννοοῦσαν πρὸς τὸν παντὸς φύσεις ἔχεισαν ἔξω δὲ ἐπιστομάθητα 

\(^{41}\) Plato, *Rep.* 529a: παντὶ γὰρ μοι δοκεῖ δὴλον ὡς ἄρα ἡ αὐτὴ ἡ ἀναγκάζησθαι ψυχὴν εἰς τὸ ἄνω ὅραν καὶ ἀπὸ τὸν ἐνθένθε ἐκάστον ἤματι.

\(^{42}\) *Epin.* 976e: θέλον δ’ αὐτὸν μᾶλλον ἢ τὴν τύχην ἠγοῦμαι ὅτα ἡμὰς σῴζειν ἡμᾶς.
supposed to generate number. Instead, he simply talks about the motions of the sun and moon
generating the numbers one, two (day and day-plus-night), and fifteen (half a lunar cycle) and then
waves his hands at the rest of the planets.

However it is derived, the idea that number stands in for is that of order, and that is clear
enough to see: “to those with attentive minds the bond of all these things, a singularity in its nature,
will shine forth.” And that order is divine, rational, and effectively creationist. Moreover, as we saw
in Cicero, it is structured by law, although the Epinomis account is a little more indirect. In the first
instance, the order of the cosmos is dictated by *logos*: reason, proportion, rule, principle, or,
ocasionally, law. And, says the author, the ordered motions of the planets give strong proof that the
planets themselves bear rational souls. They each have a *nous*, a mind—and recall on this count that
it was Anaxagoras’ idea that all things were directed by *nous* (he uses a verb meaning ordered, ruled,
or marshalled) that Socrates tells us first attracted him to philosophy. This mind, responsible for
the eternal and, we are told, invariant motions of the planets, is in turn said to be *ἄρχουσα ἄλλ᾽ οὐκ
ἄρχοµένη νοµοθετεῖ*, “a ruler rather than a subject, and it legislates” (the legal metaphor is hard to
miss). Just to be certain, though, the author has flagged the legislative action of the stars with the
conspicuous verb *νοµοθετεῖ* (*nomothetei*), which reverberates as a central theme throughout the *Laws*
and the *Epinomis*: the whole point of the latter dialogue, after all, was to determine what education to
give to the humans who will write the laws of the philosophers’ city, and this person is repeatedly
called the *nomothetēs* in both dialogues, as is the (apocryphal) Syrian who is said to have first given the
planets their names at Epinomis 987b.

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43 *Epin.* 992a: δεσµὸς γὰρ πεφυκὼς πάντων τούτων εἷς ἀναφανήσεται διανοούµένος.
44 *Epin.* 986c, 982a-b.
45 Plato, *Phaedo* 97b.
46 *Epin.* 982b.
In order to legislate justly, in the *Epinomis* as in Cicero’s *Republic* and *Laws*, this lawmaker must look to the order of the cosmos (natural-law ethics), which itself is ordered by law (laws of nature). For Cicero, this cosmic order was instantiated in his description of the wondrous Antikythera-type machine that he ascribed to Archimedes, whereas in the *Epinomis* we see gestures to astronomical regularities, but in the *Epinomis* it rings more as a kind of promissory note to learn more rather than a confident expression of what was possible to know in the early fourth century in Athens. Perhaps the author of the *Epinomis* knew or had heard stories about Babylonians who were able (as they indeed were) to predict accurate planetary cycles. Perhaps he had seen (prototypes of?) Eudoxus’ nested-spheres model and was sufficiently impressed at the prospect of further development. In the end we cannot say, but we can say that he expresses every confidence that the problem of planetary motion is soluble, and it is soluble because it is lawlike. Given the rational and law-governed cosmos that the author of the *Epinomis* clearly believed himself to live in, why wouldn’t it be?

Law and nature, then, become a two-way street, where the cosmos is ordered by divine law, and where justice is defined as the derivation of human law through the observation and rational understanding of the order in the cosmos. Natural-law ethics works because the cosmos itself is lawlike.

This idea, which would become central to much of Roman and later philosophy, thus finds its first full articulation in the *Epinomis*, in the context of astronomy as lawlike. This is, to be sure, rather curious given what we know about the state of Greek astronomy when the *Epinomis* was written. The confidence betrayed by the author that the complex motions of the planets were actually underpinned by regular and lawlike motions underpinned by number may be overzealous in hindsight, but the fact remains. One is left strongly suspecting that Cicero’s later, more thorough formulation of a similar worldview owes something, and perhaps something considerable, to the
Epinomis, which we know he had read. In any case, we find that (human) law and nature’s regularities, domains that share little resemblance on the face of it, are seen from the time of Plato or just afterwards to have important interconnections, in that human laws were seen to be modelled on the divine ones in an ideal state, and the cosmos to be governed by those divine laws. The laws themselves may not have been articulable with any precision in fourth century Athens, so far as we know, but the author of the Epinomis promises us that they are there all the same.
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Highlights:

Shows the concept of ‘laws of nature’ to have an older providence than previously known.

Highlights the importance of the Pseudo-Platonic *Epinomis* to the philosophy of ancient science.

Examines the foundation and epistemic standing of Plato’s emphasis on astronomy in the *Timaeus* and other works.