

Philoponus on the nature of the heavens

Revisiting some old debates

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Introduction

What are the heavens made of? The question seems obsolete, or at least no longer of interest to philosophers. In late antiquity, however, it was the subject of lively debate. Even more surprisingly, the problem did not stem so much from differences in observations, as the main participants in said debate agreed on the phenomena, but from a divergence between their authorities. Since Plato and Aristotle held opposite positions, the latter explicitly criticizing the former, who was right? In a context where the tendency to harmonize doctrines prevailed, their disagreement posed a real difficulty.¹

It was in this context that John Philoponus attempted to define the nature of the heavens. His case was, however, particular. A Platonic philosopher trained in Alexandria, a disciple and editor of Ammonius, he was also an adherent of the Christian faith.² He wavers between the philosophical heritage of his master, who maintained that there existed a strong harmony between Plato and Aristotle,³ and the idea of the Bible as a privileged source of truth. Concerning the nature of the heavens, his being of two minds leads him to adopt an original position, *partially* heterodox vis-à-vis the Platonic tradition. I say partially insofar as he agrees with most of his predecessors (Taurus, Plotinus, Porphyry or Proclus) on the composition of the heavens. He only disagrees with the consequences to be drawn from it. As a Christian, he uses it to defend the generation of the heavens, and their future destruction, against the supporters of its eternity.

In this article, I should like to pin down Philoponus' main arguments on the nature of the heavens. I will show that he does not maintain a definitive thesis on this point but sometimes takes incompatible positions, depending on the texts. I believe these variations are not signs of doctrinal evolution, whatever its direction.⁴ Instead, they indicate a form of intellectual flexibility: Philoponus claims to save celestial phenomena, that is, to make his scientific account converge with the observations, but this framework does not exclude holding several positions in parallel. It remains

to be seen whether this attitude is a form of prudence, exegetical fidelity, indecision or scepticism.

I will start with the authorities, Plato and Aristotle, to situate the debate. I will then look at the passages where Philoponus deals with the nature of the heavens, first as a commentator of Aristotle, then as an opponent. Finally, I will conclude with his final statement on the subject, the *De officio mundi*, to show how it nuances the previous conclusions.

The source texts: Plato and Aristotle

As far as Plato is concerned, the authoritative text is the *Timaeus*, and, on the question at hand, two passages will receive the lion's share of the Neoplatonists' attention. In the first one (31b–c), Plato posits that the heavens are unique and composed of the four elements, particularly fire and earth, which give them visibility and solidity (or tangibility). Then, invoking the role of intermediaries, Plato concludes that the heavens are composed of four elements since, in order to link the two extremes (fire ensuring its visibility, earth its solidity) and at the same time establish its three-dimensionality, it is necessary to introduce not *one*, but *two* mediate elements to establish a relationship of analogy between them (32b–c).⁵

Then, in a passage where he describes the four kinds of living beings composing the universe, Plato states that the first, the celestial race of the gods, is 'for the most part (τὴν πλείστην ἰδέαν) made of fire' and has primarily the character of fire (39e–40a). Thus, he does not limit the nature of the celestial gods to a single element, fire, but instead holds that, although they are predominantly made of fire, they, like the world, are made of all four elements. The difficulty for the Platonists will lie in the meaning to give to the formula τὴν πλείστην ἰδέαν and in determining what it means to say that the heavens are predominantly igneous.

However, let us turn to Aristotle, who is to play the dual role of original theorist and critic of Plato. His theory is found in Book 1 of *On the Heavens*. Based on observing a difference between rectilinear movements here below and circular movements in the heavens, Aristotle deduced the existence of a fifth element, of which the heavens are exclusively made up. In this way, he establishes a difference in nature between the sublunary world, composed of the four elements, and the superlunary world, made solely of this first body.⁶ In so doing, he takes a stand against Plato.

Aristotle returns to this body in the *Meteorology*. There he argues that his predecessors (in particular Anaxagoras) gave it the name *aithēr* and he traces its etymology back to *aei thein*, in reference to its ceaseless, and therefore eternal, course.⁷ He thus claims the dual authority of tradition and language while challenging the idea that the heavens consist of pure fire (καθαρὸν πῦρ). He also echoes *Timaeus'* hypothesis without explicitly referring to it, especially the mathematical justification of the intermediate elements. Nevertheless, in the end, it does not matter that he targets Plato directly. What matters is that later Platonists believe him, Philoponus among them, and believe that he is challenging Plato's description of the heavens. They are thus eager to discuss this point.

In short, the Neoplatonists have two incompatible theories about the nature of the heavens, one (Plato) that it is composed of the four elements, but mainly of fire; the other (Aristotle) that it is composed of a different element. Strategies of dealing them will vary. Most will recognize the superiority of Plato's theory that the heavens are made of fire (Taurus, Plotinus, Proclus and Damascius). But others will seek to harmonize them (Simplicius). Philoponus belongs resolutely to the first group. However, he will take some distance from the consequences of the igneous composition of the heavens.

Commentaries: *On the Heavens and Meteorology*

If Philoponus wrote a commentary on the *De caelo*, we have lost all trace of it. The passage alleged by Gudeman to support its existence is not very convincing, as Étienne Évrard has shown.⁸ We cannot, therefore, reconstruct his position as a commentator on the point that interests us. On the other hand, we have his commentary on Book 1 of Aristotle's *Meteorology*, which has the particularity of starting from a course of Ammonius but constituting a work in its own right.⁹ Philoponus shows himself to be freer and, at the same time, more critical of Aristotle, as is evident from his commentary on *Meteorologica* I, 3, 339b21–7:

[Aristotle] also approves of Anaxagoras for calling it by that name, but criticises him for thinking that aether (αἰθέρα) derives from aithein (αἶθειν), i.e. burning; for Anaxagoras says that the upper, that is, the celestial, regions are full of fire. Yet not only he, but Plato too is of this opinion, saying that the stars are made of fire, and the whole heaven mostly of fire, with a little of the other elements. Heraclitus, too, was of this opinion, and it appears that no one before Aristotle said that heaven was made of another corporeal substance. He is therefore without any ground ascribing his own newfangled doctrine (τὴν αὐτῷ οὖν καινοτομηθεῖσαν δόξαν) to his predecessors. Let us grant that it is not derived from aithein, though this etymology is closer; yet how does this prove it different from things in our region, since the name imposed on it does not come from its substance, but from its everlasting motion? Thus there is no cogency in his proof, based on the name, that people think that the heaven is different from the elements in our region.¹⁰

As a commentator, Philoponus' strategy is not to oppose his own thesis on the nature of the heavens to that of Aristotle, but to evaluate his arguments in favour of the first element, namely authority and etymology.¹¹ On the first point, he points out that no Greek ever argued Aristotle's thesis before him, and certainly not Plato.¹² From Philoponus' point of view, Aristotle's attitude falls under the heading of *kaitonomia*. In other words, according to the sense in which the Neoplatonists use the expression, he shows a misplaced originality and an unbounded claim to innovate¹³ insofar as no one (neither Anaxagoras, Heraclitus, nor Plato) has admitted this first element and tradition attributes to the heavens an igneous nature, which they share with other bodies. Hence, the argument of authority does not hold. Neither does the one derived from the infinite recurrence of Aristotle's opinion since, as Philoponus shows,

it opposes its contrary (there are only four elements) in an equally infinite way – if the world is infinite.¹⁴ Philoponus develops here a sceptical strategy, which consists in refuting an argument by opposing its opposite under the principle of *isostheneia*¹⁵ and the mode of the *diaphōnia*.¹⁶

As for the etymology, assuming that it refers to eternal motion rather than to the (igneous) substance of the heavens (*αἰθεῖν* means to burn), this would in no way prove that it has a nature of its own. According to Philoponus, Aristotle's argument by etymology operates a *silentio* since it consists in supposing that initially, the word *aithēr* evoked the eternal movement (*ἀεὶ θεῖν*) and divinity (θεῖον) of the heavens: the ancients would have formed, for this body, a word referring to two characteristics that no sublunary body possesses. This meaning was later lost, so the word came to be associated with fire. Philoponus considers this argument null since it has no historical basis and is pure speculation. He, therefore, offers an alternative account from the *Cratylus*, although he takes some liberties with it.¹⁷ He couples the etymology of 410b6–8 (ἀεὶ θεῖ ῥέων) with a passage (397c3–d6) where the name of the gods is associated with their race (because of the proximity between θεῖν and θεός), as ***well as with elements taken from the *Critias* (109d–110a) on the conditions of survival following the flood. On this basis, he formulates the hypothesis that the Greeks coined the words *aithēr* and *theion* because they saw in the eternal movement of the stars (sun, moon and heavens) the cause of celestial phenomena and the movements of bodies before they realized that there was an incorporeal and invisible cause, to which they would have transferred the name of the divine: only an incorporeal power can be infinite and eternally maintain phenomena because it alone can eternally cause the celestial phenomena. At first sight, Philoponus' argument seems as fragile as Aristotle's, since it also relies on an *a posteriori* reconstruction. However, insofar as it does not postulate a collective forgetting (and therefore a golden age of knowledge) but the displacement of the original meaning according to a deeper understanding of the phenomena, it is much less questionable. It thus contributes to deconstructing the authority that Aristotle built up to affirm the existence of the first element.

The rest of the chapter confronts Philoponus with objections by which Aristotle intends to invalidate the thesis that the heavens consist of the four elements. Two, in particular, attract his attention. The first one concerns the disproportion in the masses of the elements. If air and fire occupied a much larger area than earth and water, their imbalance would invalidate the possibility of their mutual transformation and, thus, their very existence.¹⁸ The second one concerns the heat emanating from the sun, whose source Aristotle locates in the movement, both rapid (as opposed to the moon) and close (as opposed to the stars). Under these conditions, it is useless to attribute a hot and igneous nature to the upper region.¹⁹ Without going into the details of these physical discussions, we observe that Philoponus adopts the following strategy: while he sets out to clarify Aristotle's arguments, which constitute so many obstacles to the thesis according to which the celestial bodies would have a nature similar to the sublunary bodies, he is led to test their validity, and sometimes to contest them. For example, insofar as Aristotle admits that to give off heat, the sun must be solid (both to exert friction and resist motion), Philoponus deduces that it is partly composed of earth, whose solidity is a property. In contrast, its heat emanates from the

quality proper to the fire from which it is mainly formed. It follows that the celestial bodies have the same elemental nature as the others. In so doing, Philoponus does not directly state his thesis – that of Plato. He even postpones proffering his positions.²⁰ As a commentator, he does not argue anything but examines the limits of the text he is commenting on. In the end, his strategy consists less in contesting the arguments in favour of Aristotle than in refuting the latter's objections to the opposing thesis. In this way, his position is not that obvious: to take our example, based on premises accepted by Aristotle, he shows that the sun is mainly, but not exclusively, fire. In conclusion, in the context of the commentary, by proving that Aristotle's thesis fails to prevail and that his objections turn against him based on his own premises, Philoponus indirectly argues in favour of the Platonic thesis.

The polemical texts: *Contra Proclum* and *Contra Aristotelem*

While working on the *Meteorology*, Philoponus wrote two polemical treatises on the eternity of the world. In them, he adopts an even freer tone, which partly meets the standards of commentary, but also considers the statements in discussion in order to refute them.²¹ In both cases, against Proclus and Aristotle, he is led to examine their positions on the heavens while keeping, in the background, a resolutely Platonic thesis: the heavens have the same nature as the sublunary world, in the sense that they are made up of the same four elements; they differ from them in the sense that, in this mixture, fire dominates and gives them a particular nature.

Insofar as the two texts present similar arguments, I will study them in parallel, though not in detail. After a short presentation, I will identify the position Philoponus takes on the nature of the heavens.

The contexts

Contra Proclum dates from 529 and consists of eighteen books, each responding to an argument from Proclus' (lost) treatise asserting the world's eternity.²² The question of the nature of the heavens arises especially in Book 13, where Philoponus discusses the thesis that if the world is made up of ungenerated and indestructible elements, it will also be ungenerated and indestructible. Between the two authors, the opposition is not total in that they agree on the presuppositions of Plato's cosmology on which they rely: the heavens are composed of the four elements, and, among them, fire dominates. However, Philoponus deviates from Proclus (412–485) on the nature of the four elements and to what point fire dominates. To do so, he broadens his opponent's position to better distance himself from it and proves that the heavens have a corruptible nature. Then, taking up Proclus' arguments, he develops a refutation in three stages:

1. He proves that the heavens can move circularly without possessing a different nature from the sublunary elements (ch. 1–7);

2. He shows that if the parts are generated and destructible, so is the whole (ch. 8–12);
3. He justifies his thesis by invoking Plato, who affirms that the world is made exclusively of the four elements, although the heavens are mainly composed of fire (ch. 13–18).

If we have lost Proclus' text, we can refer to his commentary on the *Timaeus* to find his original thesis. In it, he refers to an internal debate within Platonism between Platonists who, under the influence of Aristotle, postulate a fifth body and others who, closer to Plato, attribute to the heavens a different, simple and eternal mode of being.²³ For his part, Proclus claims an intermediate position, according to which the heavens are made of the four elements but are nevertheless of a different substance:

The nature of the problem cases being such as this, the better option is to say that *the whole heaven is composed predominantly of fire* (ἐκ πυρός ἐστιν ἐπικρατοῦντος), but it includes in a preparatory way (κατ' αἰτίαν) the powers of the other elements (τὰς τῶν ἄλλων στοιχειῶν δυνάμεις) – for instance, the solidity and stability of earth; the adhesive and unifying quality of water; the tenuousness and transparency of air – and just as the earth encompasses everything in a terrestrial fashion (χθονίως), so too the heavens encompass everything in a fiery way (πυρίως). As a result, the one dominant [element] includes the others within itself in a preparatory way (κατ' αἰτίαν). One should consider that the fire there is not the same as the fire here below the moon, but rather up there is divine fire which is an imitation of intellectual fire that has been woven together with life. The fire down here, however, is genuinely enmattered and generated and destructible (ἔνυλον καὶ γενητὸν καὶ φθαρτὸν). So the pure fire is in the heavens and up there fire exists as a whole. But earth is up there in a preparatory way (κατ' αἰτίαν), being another form of earth such as would be expected if it is connascent with the divine fire, having only abstract solidity (αὐτὸ τὸ στερεόν) as fire has luminosity [alone]. And as the [celestial] fire does not burn, so the earth there is not dense – it is the highest kind of each (ἐκατέρου τὸ ἀκρότατον). As the fire there is pure and really real (τὸ εἰλικρινὲς πῦρ καὶ ὄντως), so too here below is the really real earth and the wholeness of earth, but the fire here is enmattered (ὕλικώς) and exists through participation (κατὰ μέθεξις) just as the earth is up there in a preliminary way (πρώτως).²⁴

This solution, which is authoritative in late Neoplatonism,²⁵ is based on the principle that 'everything is in everything, each in its own mode'.²⁶ From this perspective, all the elements are present in the heavens, although only fire is really in its place. As for the other three, they remain there in their cause (κατ' αἰτίαν), that is, in a preparatory and potential mode, in the form of their respective qualities. The distinction allows Proclus to preserve the eternity of the heavens insofar as, if he takes it to be composite, he frees it from the constraint that normally weighs on any composite reality, that is, being generated and destructible. By locating its composite nature in the causal mode, by holding that at its level, the other elements have not yet really materialized and

have not yet entirely proceeded, and by holding, in short, that it is indeed made up of the four elements but not composed or mixed in the way things here below are, he recognizes it as a type of composition more potential than actual, radically different from what happens under the moon.

This separation between celestial fire and the other three elements also allows him to conclude that there is a difference between celestial fire and the fire here below, which is well mixed with the other three. It is not material and destructive but intellectual and vital. Proclus takes this idea from a passage in the *Timaeus* where Plato speaks of sight and mentions a perfectly pure fire (τὸ εἰλικρινὲς πῦρ, 45b7). This fire makes up the heavens, a fire that is pure light, vision, life and even intellection: a fire that is the source of life and knowledge. These are the main arguments that Philoponus discusses on this point in the *Contra Proclum*, before proposing an alternative reading of Plato.

As for *Contra Aristotelem* (c. 532), which closes this temporal sequence in Philoponus' work, it survives in fragments mainly transmitted by Simplicius (c. 480–560) in his commentaries on the *On the Heavens* and on the *Physics*.²⁷ According to Évrard's and Wildberg's reconstructions, it is in Book 3 that the bulk of the arguments against Aristotle's thesis on the nature of the heavens was found.

Circular motion without any particular substance

Philoponus' first objective is to prove that it is possible to explain the circular motion of the heavens without attributing to it any particular nature, different from the sublunary bodies, as Aristotle and Proclus do, drawing a parallel between the first body and the summit of the four elements.²⁸ Against them, he invokes Plato's authority, borrowing the idea that the heavens are composed of the elements in their most elementary, purest and least mixed form to maintain that the matter of the heavens is identical to the rest of the world.²⁹ The reasoning of the first part of Book 13 on celestial movement thus leads him to specify the nature of the heavens. Here are the main points of his demonstration:

1. Philoponus takes up Plato's thesis that the heavens are composed of the four elements, even though they 'participate more in fire' (πλείονος μοίρας μετέχειν πυρός).³⁰ In passing, he slightly modifies the original formula (τὴν πλείστην ἰδέαν ἐκ πυρός ἀπηργάζετο) to emphasize the material character of this constitution and to express the peculiarity of the heavens in terms of quantity, rather than quality (XIII, 1).
2. Following Plato, he distinguishes inanimate and animate bodies from the point of view of motion: the former naturally possess rectilinear motion towards their proper (for the simple) or preponderant (for the compound) place; the latter possess a motion imparted to them by the soul. The heavens are an animated body whose soul naturally imitates the (circular) movement of the intellect, as Plotinus³¹ reminds us (XIII, 2).
3. Philoponus confronts Proclus with an impasse: according to him, being inanimate, a body in its proper place either remains at rest or moves circularly. Under these conditions, the heavens necessarily move circularly, either insofar

as they are animate (if, by themselves, they are at rest) or insofar as they are principally constituted of the purest fire (insofar as they move in their proper place). In both cases, they have circular motion (XIII, 3).

4. Philoponus eliminates a final possibility: the heavens cannot move in a straight line because fire is, in the heavens, in its proper place. However, no body in its proper place moves in a straight line (XIII, 4 and 5).
5. He returns to the movement of fire: phenomena, such as comets, prove that the whole of fire, which Aristotle calls *hupekkauma*, moves circularly (XIII, 6).
6. From this demonstration, it is evident that it is unnecessary to attribute to the heavens a different nature from other bodies since their circular motion finds a satisfactory explanation in the four elements. Therefore, if the heavens are materially identical to the sublunary bodies, they are formally distinct from them:

For if, in fact, a single kind of matter (I mean the four elements) *underlies all composite bodies*, but then, since one form is better than another (ἄλλο εἶδος ἄλλου εἶδους ἐστὶν κρεῖττον) (e.g. take the form of gold or of iron, and the form of composite man or dog), and the nature selects by reference to the superiority of the forms the purer portion of the elements for the generation of composites (τῆς τῶν εἰδῶν ὑπεροχῆς ἢ φύσις καὶ τὴν τῶν στοιχείων καθαρωτέραν μοῖραν), and if the form of the celestial body transcends all the other bodies, then it is presumably necessary that the most unmixed form of the elements (τῶν στοιχείων αὐτὸ τὸ εἰλικρινέστατον), their effervescence (ἀπάνθισμα) as it were, *underlies as matter the form of celestial body*. Since, then, the celestial body is better than all the interior bodies in both matter and form and is thus the most long-lived and as impassive as possible, it is reasonable that it partakes in circular motion in a more primary manner than the interior bodies (I mean the ensemble of fire and the air over the mountain peaks). And because of that neither the interior nor even the exterior things would be of a fifth nature on account of their circular motion, and neither is the heaven.³²

Assuming that the heavens are also composed of the four elements, this conclusion proceeds *a fortiori*. If to materialize a form in a body, nature uses the purest part of the available elements, all the more so must the heavens, which corresponds to the highest form, be made of the best possible part of the elements. To use Philoponus' expression, it must possess as matter the 'flower' (ἀπάνθισμα) of the elements,³³ that is, their purest portion, the portion capable, in particular, of accommodating the world soul and of being moved by a higher cause. However, how does this solution differ from that of Proclus, who already spoke of the pure fire (τὸ εἰλικρινές πῦρ) and the apex of each element (ἐκατέρου τὸ ἀκρότατον)? The term *apanthisma*, admittedly rare, seems to be reduced to a lexical variation to denote the top of the elements.³⁴ At this point, Philoponus does not seem to depart from Proclus in terms of the composition of the heavens. It is as if, according to his reasoning, he uses his opponent's premises to put his interpretation through Ockham's razor. The result is that there is no need to postulate a first body or a special status of the elements (which would then be present

only in their cause) to explain the circular motion of the heavens since it is derived from Platonic principles admitted by Proclus and can even be understood within the limits of his hypothesis. First, as Plato intended, the heavens are composed of the four elements in their purest form but with a predominance of fire.

If the *Contra Aristotelem* presents a similar position on this theme, it adds two points. First, for reasons of context, Philoponus treats the problem differently. In the *On the Heavens*, and in particular, in the first chapters to which Philoponus devotes the first two books of his polemical treatise, circular motion provided Aristotle with his main reason for admitting the first body. It is, therefore, not surprising that, in such a context, Philoponus was led to treat celestial motion in more detail. More than an evolution, as Évrard thought,³⁵ I see in it a renewed precision due to the framework of the discussion: where, against Proclus, he had to prove that circular motion was possible without an incorruptible body, against Aristotle, he must prove not only that this motion is possible, but that it is also natural for the celestial body. There is no contradiction between the two theses. The second simply goes further than the first, while insisting less, for the same reason, on the nature of the celestial compound.³⁶

Secondly, but this is mainly the testimony of Simplicius, the *Contra Aristotelem* seems to say more clearly that the heavens are endowed with a soul, an argument that Philoponus used in the service of the particular nature of this body, but which, according to the quoter, goes against what the Christians think.³⁷ By attributing such a nature to the heavens, Philoponus would betray both Platonism and Christianity.

The identity between the parts

The second part of the argument aims at proving that the identity of their elementary nature forbids us from imagining a difference of temporality between the heavens and the sublunar bodies. Philoponus analyses the problem in mereological terms, following a three-step reasoning.³⁸ First, he shows that sublunary bodies form the parts of the world in the same way as the heavens. Secondly, he observes that all sublunary bodies are both generated and corruptible. Thirdly, he concludes, by analogy, that the heavens necessarily possess the exact corruptible nature as the other parts of the world: insofar as they are composed of the same elements, they obey the rules that are imposed on all bodies, as well as on their totality (the cosmos). Therefore, the nature of the heavens justifies that they are also subject to time, generation and destruction.

Such reasoning aims to bring the Platonic premises into line with the Christian doctrine, which both Proclus and Aristotle oppose. It thus implies a departure from late Platonic orthodoxy, to which Simplicius belongs, as the critical interventions of our primary source of the *Contra Aristotelem* indicate. It also entails a somewhat more unexpected consequence regarding the nature of the heavens. When explaining its difference from the sublunary bodies, Simplicius writes:

In order to refute, as he believes, this objection, the Grammarian (i.e. Philoponus) says that the more important and principal parts in living beings are less affected, like the heart, and nevertheless they consist of the same elements. And as he agrees that the heavens are more important than the other bodies inside the world he says

that above all they are affected to the least <degree> of all, and because of this its parts evidently do not suffer the same as the parts of the elements.³⁹

As a hylomorphic compound, the heavens are not distinguished from other bodies by their matter, as they are made up of the same elements, but by their form. However, the difference is less ontological than axiological to the extent that their form has a higher dignity, not a different nature. The longevity of the heavens is thus the result of the selection of their constituent elements governed by their form. In other words, the particular form of the heavens is sufficient to justify its difference from other parts of the universe without implying any ontological difference within matter. Nevertheless, the heavens remain a compound, with all the consequences that this status implies.

Caustic fire versus vital fire

In the *Contra Proclum*, the last part of the argument consists of a lengthy exegesis supported by quotations.⁴⁰ Philoponus claims to draw from Plato⁴¹ all while relying on the authority of the Platonists (Taurus, Plotinus, Porphyry and Proclus) to answer Aristotle's objections,⁴² in particular, the one according to which fire would possess a destructive nature that would prevent it from being the dominant element of the heavens. He intends to defend Plato's thesis without falling into Proclus' solution, who, to establish the purity of fire, ended up changing its nature. Commenting on the *Meteorology*, he took up the difference in nature, stressing that the fire here was an excess of heat (ὑπερβολὴ θερμῶς), in contrast to the igneous sphere.⁴³ His strategy here does not differ radically. He draws from Proclus a distinction between two properties of fire, causticity and heat, to distinguish two kinds of fire, one destructive and the other vital.⁴⁴ This solution will allow him to distance himself from both Proclus and Aristotle, showing that they are both inconsistent:

And I should add a further, fourth objection, namely that *the nature of that fire is extremely pure and rare. And we see that even flame itself – which is an excess of fire (ὑπερβολὴ πυρῆς) and not the vital and natural fire (τὸ ζωτικὸν τε καὶ φυσικὸν πῦρ) – when it exists in a rarer form does not partake of the caustic at all or at worst very little (lightning is of this sort). And the fire around us, since it takes hold of more solid matter and is denser, is more caustic (καυστικὸν μᾶλλον). (. . .)* So if denser fire burns more, and if celestial fire is as rare and pure as possible and is neither an excess of fire nor flame but the elemental and vital fire itself, how could it not fall far short of burning and destroying? The ethereal fire should rather be vitalizing and of the same sort as the so-called inborn heat in living things.⁴⁵

Philoponus remains succinct, compared to Simplicius or Proclus. Celestial fire is a fire, but simply less dense than terrestrial fire: insofar as it escapes contact with dense realities, that is, realities more broadly constituted of the other elements, and of the earth in particular, it has less to burn and is consequently less caustic. Celestial fire is limited to its elemental property, heat, which is not destructive but life-giving to things here below.⁴⁶ It is pure and total heat, which it propagates by capillary action, without the devastating

excess that characterizes fire here below. Philoponus no longer describes the flame, the fire of this world, as ‘excess of heat’, like Aristotle, but as ‘excess of fire’, in the sense that it has gone beyond its purity. It nevertheless remains in contact with the other elements: if it is purer, it keeps a part of density, a sign of its mixed nature, which allows it to act on the rest.⁴⁷ That is how, according to Philoponus, one should read the thesis that the heavens are composed of the flower or summit of the elements: not in the sense that the elements there would have a different nature – as Proclus sometimes says – but in the sense that fire there is in its purest and least mixed form, the least dense and least caustic, while fire here rubs shoulders with the ‘thick part’ (τρυγώδης μοῖρα) of the other elements.⁴⁸

From the polemical treatises, it emerges that Philoponus holds that, according to Plato,

1. The heavens are a compound body;
2. They are made of a mixture of the four elements in which fire dominates;
3. This fire is the purest of fires, characterized by its proper quality (heat);
4. It is also a solid body, seeing that it is composed of all the elements;
5. Consequently, heaven is generated and destructible;
6. It is useless to postulate a fifth body or to reduce the other elements to their quality;
7. there are no properties up there that are not found down here (brilliance, transparency, circularity).⁴⁹

A dogmatic text: The *De opificio mundi*

Philoponus finally returns to the nature of the heavens in the *De opificio mundi*, his commentary on the first chapters of *Genesis*, and more precisely in Book 3, when he examines the verses on the creation of the heavens (1:6–7).⁵⁰ These verses show the agreement between Plato and Moses, as well as their shared opposition to Aristotle:⁵¹

Concerning the substance of the firmament (περὶ δὲ τῆς οὐσίας τοῦ στερεώματος), Plato constitutes it from the four elements, the sun, the moon, and the other stars mainly from fire (ἐκ πλείστου πυρός); Aristotle, in assuming a fifth corporeal essence for the heavens, has received from us a sufficient refutation;⁵² Moses, in the utterances in which he makes the heavens exist in the midst of the waters, leads us to believe that he means to bring its essence principally nearer to water (ἐκ πλείστου τὴν οὐσίαν αὐτοῦ ὕδατος). For the latter is transparent (διαφανές) as is especially (μάλιστα) the celestial body; the character of transparency belongs only to the elements of water and air; thus air is a kind of dry fuel, for flame, like earth also, is its opposite.⁵³

Philoponus’ strategy is to separate Plato from Aristotle to bring him closer to Scripture. He thus reserves for Plato and Moses the word firmament (στερέωμα), which he also calls the ‘second’ heavens, as opposed to the ‘first’ – the starless heavens of the

astronomers.⁵⁴ It is the firmament that Plato and these verses of *Genesis* deal with. For Aristotle, on the other hand, he uses only the word 'heavens', to distinguish the object of their discourse. A problem arises, however. While Plato and Moses agree that the heavens are composed of the same elements, they differ on which element should take precedence: fire for Plato, or air and water for Moses. Philoponus will try to show that the disagreement is only apparent.

Just as Plato, on account of the illuminating power of the sun, moon and other stars, said that they participate essentially in the element of fire (πλείστου πυρὸς μετέχειν) – the illuminating power belongs to no simple element apart from fire – so Moses, in my opinion (οἶμαι), because of the transparency of the heavens, which they share essentially with water and air, to which alone transparency and moisture belong, each of these two being transformed into a more solid substance (εἰς στερεωτέραν δὲ οὐσίαν) in the genesis of the heavens, as appears in the translucent stones – in like manner, therefore, Moses says in all probability that the heavens were created in the midst of the waters, and characterises it from the air and water which abound in it. Therefore, he named it 'firmament' (στερέωμα) from the fact that being derived from a moist essence, it is transformed into a more solid substance. I believe (οἶμαι), moreover, that the use of the plural 'in the midst of the waters' accords with this idea. As for Plato, having heard, I believe (οἶμαι), of the cosmogony of Moses, he said that the heavens are a solid body which partakes of the earth. 'Among the elements,' he said, 'the earth is a solid (στερεόν) and resistant (ἀντίτυπον) body.'⁵⁵

The divergence between Plato and Moses on the predominant element does not stem from a disagreement on the nature of the heavens but instead on the property they wish to emphasize: luminosity (Plato) or transparency (Moses). Fire produces light, while air and water are translucent, water being the most solid transparent element and air being the one without a body. The disagreement is superficial, however, in that both aim to show that the heavens make vision possible. Then, to reinforce their agreement, Philoponus reminds us that they both attribute solidity to the heavens: Moses speaks of the firmament (στερέωμα),⁵⁶ Plato makes the heavens part of the earth (*Timaeus* 31b–c). Note, however, his relative exegetical caution, which is sharper towards Moses than towards Proclus or Aristotle, repeating (οἶμαι) three times. However, the apparent caution conceals a tour de force, as the concluding sentence of the passage attests. Although he presents it as a literal quotation, it is not found as such in the *Timaeus* but constitutes a reconstruction from 31b and 62b–c. Philoponus allows himself in order to bring his authorities in accord with one another.

How, then, can we explain the difference in the choice of the main element? In line with the purpose he attributes to Moses in the *De officio mundi*, Philoponus emphasizes that he holds a position that accords with phenomena (καὶ τοῖς φαινόμενοις συμφώνως)⁵⁷ because he is addressing uneducated people, not philosophers or astronomers. His point appears to be closer to everyday experience. The difference between Moses and Plato is thus justified as follows: where Plato is interested in the origin of the luminous phenomenon and seeks to explain how the celestial bodies

can give off light, Moses endeavours to explain why vision is possible, thanks to the transparency of the celestial place. The question of the predominance of the elements is thus referred to as a matter of the intended audience of the exposition, which ultimately precludes deciding on the nature of the heavens. All we can say with certainty is that the heavens are composed of the four elements, the same as here on earth and that this composition accords with everyday experience. As to which element predominates, Philoponus remains cautious.

Conclusion

Philoponus' criticism of Aristotle and, more generally, of the proponents of the particular nature of the heavens is not new. It is in line with Xenarchus and, as Simplicius mischievously notes, its only originality is to attack the world's eternity.⁵⁸ Philoponus finds in Plato a definition of the substance of the heavens that he considers compatible with the Christian faith: the heavens are composed of the four elements, with a predominance of fire. Moreover, the fact that it is a mixture of these four elements proves that the heavens have a destructible nature and, at the same time, that they are generated. He thus develops a thesis against Aristotle and Proclus, which seems well established and largely deduced from his objections.

However, there is a reason to qualify the claim. When arguing against Aristotle and Proclus, Philoponus often uses the conditional tense, using Plato against his opponents, to underline their interpretative errors. He dissects their arguments and draws from their premises the conclusions that he believes will result. Rarely, however, does he clearly state his own position. That is even more apparent in the *De opificio mundi* where, despite the disagreement between Plato and Moses, Philoponus refuses to take sides and gives a sufficient reason for their respective theses. It is as if he refuses to provide a definitive solution, contenting himself with a form of non-contestation.⁵⁹ As they account for phenomena while staying true to experience, competing explanations can remain, especially if they concern only secondary issues. The only thing that matters therefore is proving that the heavens are composed of the elements to justify their temporal nature and the necessity of their creation because this alone is sufficient to prove that the Scriptures agree with experience.

Notes

- 1 On the harmony between Plato and Aristotle in Platonism until Porphyry, see Karamanolis (2006), then from Porphyry till the end of antiquity, see Hadot (2015).
- 2 For a synthesis of Philoponus' biography, see Giardina (2012).
- 3 On the harmony of doctrines in Ammonius, see Verrycken (1990b) and Golitsis (2017: 247–52).
- 4 In a seminal article, Évrard (1953, republished as Évrard 2020b) challenges the chronology of Gudeman (1916), according to whom Philoponus was a pagan philosopher, editor of Ammonius and commentator on Aristotle, before he

converted to Christianity and wrote his polemical treatises (*Contra Proclum* and *Contra Aristotelem*), then his theological treatises (*De opificio mundi*). His demonstration relies on two cases, the movement and the nature of the heavens. Évrard reveals a proximity between *Contra Proclum*, in *Meteorologica*, *Contra Aristotelem* and, finally, *De opificio mundi*. He places them in the same period and avoids the hypothesis of a rupture. If his thesis is now widely accepted, some issues have nevertheless been challenged by Verrycken (1990a), then by Golitsis (2008: 26–37) and Golitsis (2019). While admitting the proximity, the former challenges the idea of evolution and returns to that of rupture. Rejecting Verrycken's objection, Golitsis prefers to date all of the commentaries before the other treatises.

- 5 On this difficult passage, see Cornford (1937: 44–52) and Brisson (1998: 367–88).
- 6 Aristotle, *De caelo* I, 2, 269b13–17.
- 7 Aristotle, *Meteorologica* I, 3, 339b24–340a3; see *De caelo* I, 3, 270b16–25.
- 8 Gudeman (1916: 1779) refers to Philoponus, in *Meteorologica* 16.30–2: 'We will elsewhere discuss (ἐν ἑτέροις διελευσόμεθα) Aristotle's arguments in the First Book of *On the Heavens* set up to prove on the ground of the circular movement that the heaven is made of a fifth corporeal substance.' Évrard (2020b, 55–6) underscores that this passage is in the future tense and that Philoponus is unlikely to have commented on the *On the Heavens* after the *Meteorology*, according to what he says about the reading order of Aristotle's works (in *Meteorologica*, 2.17–22; in *Physicam*, 1.22–2.2). He is probably referring to the *Contra Aristotelem*, which he was already planning to write.
- 9 Golitsis (2008: 23 and 2019: 181) takes this as an indication that he does not use double exegesis. See Kupreeva (2012).
- 10 Philoponus, in *Meteorologica*, 16.17–30 (translation by Kupreeva [2011: 45; italics are mine]).
- 11 On Philoponus' method, see Papachristou (2021: 20–2). 'First element' is the name that Aristotle gives to this body in *Meteorologica* I, 3, 339b18. With his contemporaries, Philoponus will call it 'fifth essence' (οὐσία).
- 12 See Philoponus, in *Meteorologica*, 17.20–36. He relates that, as people say, the hypothesis of a different celestial body was formulated by the Indians or the Babylonians, but he refuses to decide if these sayings are true, since they do not change anything regarding Aristotle's isolation among the Greeks.
- 13 For explanations and references, see Saffrey and Westerink (1974: 94–5, n. 7). Christians will take up this theme to denounce heresies.
- 14 Philoponus, in *Meteorologica*, 16.36–17.20. He adds that, if the opinion has already been repeated *ad infinitum* in the past, it is impossible to repeat it again, because it cannot be increased *ad infinitum*. He therefore deduces that Aristotle initiated it. If the argument seems sophistic, Philoponus intends above all to use Aristotle's premises (*De caelo* I, 5–7).
- 15 Sextus Empiricus, *Pyrrhoniae Hypotyposes* I, 8; I, 10; I, 12.
- 16 *Ibid.*, I, 164–5.
- 17 Philoponus, in *Meteorologica*, 17.36–18.16: κατανοήσαντες δὲ τὰ οὐράνια καὶ αἱ ταῦτα κινούμενα βλέποντες αἰθέρα καὶ θεὸν αὐτὰ ὠνόμασαν, τὸ μὲν παρὰ τὸ αἶθειν, τὸ δὲ παρὰ τὸ αἰεὶ θεῖν (l. 4–6).
- 18 Aristotle, *Meteorologica* I, 3, 339b30–340a18. For Philoponus' commentary, see in *Meteorologica*, 18.23–25.27; for his refutation, in *Meteorologica*, 22.36–24.10. On this argument and the following, see Évrard (2020b: 42–51).

- 19 See *Meteorologica* I, 3, 341a12–36. For Philoponus' commentary, see in *Meteorologica*, 39.24–53.27; for his refutation, see *ibid.*, 41.23–43.33; 46.11–27 and 51.16–27.
- 20 Philoponus, in *Meteorologica*, 24.38–25.2.
- 21 I refer to Gavray (2023a: 9–11).
- 22 On Proclus' lost treatise, see further Baffioni's contribution to this volume.
- 23 Proclus, in *Timaeum* II, 42.9–43.20 Diehl (= 58.3–59.21 Van Riel), on *Timaeus* 32b4–8.
- 24 Proclus, in *Timaeum* II, 43.20–44.8 Diehl = III, 60.1–19 Van Riel (translation by Baltzly [2007: 91–2; italics are mine]).
- 25 On his becoming in Simplicius, see Hoffmann (1987: 210–21 and 2010: 117–23).
- 26 Proclus, *Elementatio theologica*, prop. 103. On this principle, see Delcomminette (2020).
- 27 According to the date on which Évrard (2020b); Wildberg (1988) and Golitsis (2019) agree.
- 28 Philoponus, *Contra Proclum* XIII, 1, 482.21–483.9.
- 29 Philoponus (*Contra Proclum* XIII, 6, 497.14) takes the adjective *εἰλικρινές* from *Timaeus* 45b7, in the superlative form. It was already in Proclus and Porphyry (fr. 58 Sodano), quoted by Philoponus (522.7) who also attributes it to Plotinus (526.18), but in a context where it is absent (*Enneads* II, 1 [40] 6.2.16).
- 30 The formula first appears in *Contra Proclum* XIII, 1, 482.12–13 and returns in a similar form in XIII, 2, 485.4.
- 31 Plotinus, *Enneads* II, 2 [14] 1.1. Cf. Plato, *Timaeus* 34a2.
- 32 Philoponus, *Contra Proclum* XIII, 6, 493.5–24 (translated by Wilberding [2006: 31–2; italics are mine]).
- 33 I have dealt with the form of the heavens in late Neoplatonism in Gavray (2023b).
- 34 As confirmed by the only other Neoplatonic occurrence of this word, Olympiodorus, in *Alcibiadem* 225.29–226. 1: *ὁ τοιοῦτος ἑαυτὸν οἶδεν, διότι τὸ ἀκρότατον οἶδεν τῆς ψυχῆς καὶ τὸ ἀπάνθισμα* (where *καὶ* clearly has an epidegetic value). On the ἀκρότης in Proclus, see Hoffmann (1987: 214, n. 135).
- 35 See Évrard (2020b: 28–42). On natural movement, see Vimercati's contribution to the present volume.
- 36 Some elements on the nature of the heavens can be found in frs. 9 Wildberg (14 Évrard), 11* W (16 E), 33 W (41 E), 38 W (47a E), 40* W (47b E). On these fragments, see Évrard (2020a) and Wildberg (1988: 103–65).
- 37 See Philoponus, *Contra Aristotelem*, frs. 49 W (56 E), 60* W, 61 W.
- 38 See Philoponus, *Contra Proclum* XIII, 8–12.
- 39 Simplicius, in *De caelo*, 73.9–15 (= Philoponus, *Contra Aristotelem*, fr. 45* W, fr. 53 E; translated by Wildberg [1987: 62]).
- 40 He quotes 31b–32c and 39e–40a in XIII, 13; 32b–33b, 53d–e and 55c–d in XIII, 16–18.
- 41 Philoponus, *Contra Proclum* XIII, 13, 514.13–21 and 516.20–4; *Contra Aristotelem* 50 E (= Simplicius, in *De caelo*, 67.20–25) and 56 W. *Contra Aristotelem* is here more accurate than *Contra Proclum* (see Évrard [2020b: 53–4] and Wildberg [1988: 173–5]).
- 42 Respectively in XIII, 15 and XIII, 14.
- 43 Philoponus, in *Meteorologica*, 23.14–24. The idea of 'excess of heat' comes from Aristotle, *Meteorologica* I, 3, 340b23.
- 44 Philoponus quotes Proclus' words in *Contra Proclum* XIII, 15, 522.23–524.19.

- 45 Philoponus, *Contra Proclum* XIII, 14, 518.18–519.17 (translated by Wilberding [2006: 43–4]).
- 46 *Contra Proclum* XIII, 16, 528.10–27. Cf. *Contra Aristotelem*, frs. 52 W (59 E) and 54 W (60 E).
- 47 In line with the analogy of Plato, *Timaeus* 32b–c (see above, note 5).
- 48 *Contra Aristotelem*, fr. 56 E, and *Contra Proclum* XIII, 15, 524.9–19.
- 49 *Contra Aristotelem*, fr. 59 W.
- 50 For a study of this question from the perspective of biblical exegesis, see Mueller-Jourdan (2023).
- 51 According to Duhem (1954: 494–5), Philoponus is the first to harmonize Plato's cosmology with the *Genesis*.
- 52 Philoponus alludes to *Contra Aristotelem*.
- 53 Philoponus, *De opificio mundi* III, 5, 117.28–118.12 Reichardt = 288.17–290.9 Scholten.
- 54 *Ibid.*, I, 7, 15.17–16.8 R (= 102.4–17 S). Cf. III, 1 (on the polysemy of *οὐρανός*) et III, 3 (on the division of the heavens into spheres by astronomers to save the phenomena). In *in Meteorologica* 3.30–2, Philoponus acknowledges that Plato, in the *Timaeus*, gives the meaning of 'world' or 'universe' to the word *οὐρανός*. Here he insists obviously on the heavens.
- 55 Philoponus, *De opificio mundi* III, 5, 118.13–119.5 R = 290.10–26 S.
- 56 *Ibid.*, III, 5, 119.7–14 R (= 292.2–14 S).
- 57 *Ibid.*, III, 5, 119.6–7 R (= 292.1 S).
- 58 Simplicius, *in De caelo*, 59.6–15; see Hoffmann (1987: 211, n. 131).
- 59 Cf. the Epicurean thesis of *ἀντιμαθηματικὸς* in Long–Sedley 18A (= Sextus Empiricus, *Adversus Mathematicos* VII, 211).

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