

THE COMMENTARY ON ARISTOTLE'S TREATISE  
ON THE HEAVENS IN MARCIANUS GR. 211  
AND BESSARION'S AUTOGRAPH *PARISINUS GR.* 2042

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**1. Bessarion's excerpts from Aristotle's treatise *On the Heavens* in *Parisinus gr.* 2042**

In a previous article devoted to Bessarion's contributions to the study of Aristotle's treatise *On the Heavens*, among other manuscripts belonging to the Library of the Cardinal, we considered the Paris *Graecus* 2042.<sup>1</sup> This manuscript was written by Bessarion himself and contains excerpts from the treatises of the *Corpus Aristotelicum*. In Bessarion's manuscript, the excerpts appear under the names of Aristotle's works from which they are taken. The criterion by which they are ordered is the sequence of the texts. One may therefore assume with confidence that Bessarion transcribed the passages on specific topics that had aroused his interest while reading through Aristotle's treatises.

In order to make the manuscript easier to navigate, Bessarion created two registers. In *Parisinus gr.* 2042, they are on ff. 6r-32r and 285r-292v, respectively. We already laid out the difference between those two registers in greater detail in the previous paper.<sup>2</sup> Thus, suffice it to provide some general explanatory remarks about the manuscript. In the register on ff. 6r-32r, the excerpts are sorted by key-words and for the most part arranged alphabetically. For instance, on f. 12r Bessarion listed all excerpts related to key-words

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1 CH. BROCKMANN – V. LORUSSO, Zu Bessarions philologisch-hermeneutischer Arbeit in seinen *De caelo*-Manuskripten, in: CH. BROCKMANN – D. DECKERS – L. KOCH – S. VALENTE (eds.), *Handschriften- und Textforschung heute: Zur Überlieferung der griechischen Literatur. Festschrift für Dieter Harlfinger aus Anlass seines 70. Geburtstages. Serta Graeca*, 30. Wiesbaden 2014, 85-111.

2 BROCKMANN – LORUSSO, Zu Bessarions philologisch-hermeneutischer Arbeit (as in note 1), 87-88.

beginning with the letter ζ (zeta) such as ζῆν (“live”), ζῶον (“animal”), ζωή (“life”), etc. The first six lines of that page have the following entries:

τὸ ζῆν πλεοναχῶς·	φύ(λλον) οε΄
ζῶον διὰ τὴν αἴσθησιν·	φύ(λλα) οε΄· ζε΄· ρμθ΄
ζῆ διὰ τὸ τρέφεσθαι·	φύ(λλον) οε΄
ζῶμεν καὶ αἰσθανόμεθα διχῶς·	φύ(λλον) οε΄
τὸ ζῶου σῶμα οὐχ ἀπλοῦν·	φύ(λλον) πγ΄
ζωὴ θάνατος·	φύ(λλα) πδ΄· ρλβ΄

With the combination of φύλλον or φύλλα and the Greek numeral letters, Bessarion refers to the leaves in the manuscript where those excerpts can be found. Bessarion himself added the foliation according to the Greek number system to the Paris manuscript.

In the register on ff. 285r-292v, the excerpts are ordered not by work, but following more generic headlines. For instance, on f. 286rv, under the heading Περὶ κινουῦντος καὶ κινουμένου, κινήσεως καὶ στάσεως, ποιούντων καὶ ποιουμένων καὶ ποιήσεως (*On the entity that moves and on the entity that is subject to movement, on motion and immobility, on the entities that produce, on the entities that are produced and on the production*), Bessarion lists the passages from Aristotle’s works dealing with these topics that he collected in the Paris manuscript.

The excerpts that Bessarion took from Aristotle’s treatise *On the Heavens* (Cael.) are to be found on ff. 69r-80r of *Parisinus gr.* 2042. Those from the first book of the treatise are collected on ff. 69r-72v under the heading ἐκ τοῦ πρώτου τῶν περὶ οὐρανοῦ, the excerpts from the remaining three books are on ff. 72v-77r, 77r-78v, and 78v-80r, respectively, under the headings ἐκ τοῦ δευτέρου τῶν περὶ οὐρανοῦ, ἐκ τοῦ τρίτου τῶν περὶ οὐρανοῦ, and ἐκ τοῦ τετάρτου τῶν περὶ οὐρανοῦ. As has already been demonstrated in the previous paper, Bessarion transcribed the excerpts directly from *Marcianus gr.* 211, a manuscript on oriental paper probably written in Constantinople around 1300.<sup>3</sup> This manuscript is assumed to be a descendant of *Marcianus gr.* 210 written in the 13th century as confirmed by Dieter Harlfinger.<sup>4</sup> As a

3 BROCKMANN – LORUSSO, Zu Bessarions philologisch-hermeneutischer Arbeit (as in note 1), 92-94.

4 See E. MIONI, *Aristotelis codices Graeci qui in bibliothecis Venetis adservantur*. Padova 1958, 34. *Marcianus gr.* 210 has been dated to the 13th century (see MIONI, *Aristotelis codices*, 125) or to the middle of the 13th century (see E. MIONI, *Bibliothecae Divi Marci Venetiarum codices Graeci manuscripti*. Volumen I. Thesaurus antiquus. Codices 1-299. Roma 1981, 323). According to Marwan Rashed, the manuscript was produced in the 12th century, see M. RASHED, *Die Überlieferungsgeschichte der aristotelischen Schrift De generatione et corruptione*. Wiesbaden 2001, 30.

follow-up to our previous paper, we will present some further arguments to help reconstruct the affiliation.

*Marcianus gr. 210* (F<sup>m</sup>), *Marcianus gr. 211* (E<sup>b</sup>), and Bessarion's manuscript *Parisinus gr. 2042* form one group of manuscripts. The two common errors below are cited as further evidence to this fact:

310a31 εἰ οὖν εἰς] εἰς οὖν F<sup>m</sup>E<sup>b</sup> Par. gr. 2042

310a32 τὸ κουφιστικόν] κουφιστικόν F<sup>m</sup>E<sup>b</sup> Par. gr. 2042.

Besides the common errors and readings of the group, there are further errors found only in *Marcianus gr. 211* and in *Parisinus gr. 2042*, i.e. not shared by *Marcianus gr. 210*. This confirms the deduction that *Marcianus gr. 211* was actually the manuscript used by Bessarion while transcribing the excerpts from Aristotle's *Cael.* in *Parisinus gr. 2042*:

297a21 γε] *om.* F<sup>m</sup> τὸ E<sup>b</sup> Par. gr. 2042

297a22 φερομένων] φερομένων F<sup>m</sup> φερόμενον E<sup>b</sup> Par. gr. 2042

297a22 ἔν] ἔν F<sup>m</sup> τὸ E<sup>b</sup> Par. gr. 2042

310a25 τήν] *habet* F<sup>m</sup> *om.* E<sup>b</sup> Par. gr. 2042

310a25 γινομένην] γινομένην F<sup>m</sup> ἐγγινομένην E<sup>b</sup> Par. gr. 2042

310a29 τὸ ἀλλοιωτικὸν καὶ τὸ αὐξητικὸν] τὸ ἀλλοιωτικὸν καὶ τὸ αὐξητικὸν F<sup>m</sup> ἀλλοιωτικὸν καὶ αὐξητικὸν E<sup>b</sup> Par. gr. 2042.

To illustrate the relationship between *Marcianus gr. 211* and *Parisinus gr. 2042*, we have chosen three particular examples. They show in detail how Bessarion worked with the manuscript in the process of creating his collection of excerpts.

Example no. 1. On f. 70r of *Parisinus gr. 2042*, from line 12 Bessarion treats the topic discussed by Aristotle at the beginning of *Cael.* I 8, whether the universe is unique or if there is more than one universe. To highlight the main thesis, Bessarion wrote a short summary heading on the right margin of the page: οὐ πλείους κόσμοι ("no more than one universe"). Moreover, before transcribing two passages from *Cael.* I 8, namely 276a22-26 and 276a26-27, Bessarion inserted the following as an introduction:

ὅτι οὐ πλείους ἑνὸς οὐρανοὶ ἢ κόσμοι· πρὸς τὴν τούτου δεῖξιν προλαμβάνει τινὰ ἀξιώματα δύο

«that there is no more than one heaven or universe. To demonstrate this, Aristotle assumes two propositions.»

Bessarion's remark above was probably inspired by the short comment added between the lines 6 and 7 of the main text on f. 13r by the scribe of *Marcianus gr. 211* (Plate 1). This comment refers to the passage *Cael.* I 8, 276a22-27 and reads as follows:

λαμβάνει δύο αξιώματα συντελοῦντα αὐτῷ εἰς τὸ δεῖξαι ὅτι εἷς ἐστὶν ὁ κόσμος

«(Aristotle) assumes two propositions helping him to demonstrate that the universe is unique.»

The “propositions” are clearly indicated by the scribe himself. For he added the following remark in the small space between the main text and the commentaries on the right margin of f. 13r, directed downwards in a vertical line from above:

ἀξιώματα ταῦτα α' β'

«these are the propositions: 1<sup>st</sup> proposition, 2<sup>nd</sup> proposition.»

This refers to Aristotle's *Cael.* 276a22-26 and 276a26-27, respectively. The use of the term ἀξίωμα (“proposition”) is confirmation that the corpus of scholia to Aristotle's *Cael.* in *Marcianus gr.* 211 is strongly inspired by the commentary on this treatise written by Simplicius (around 490-560 CE).<sup>5</sup> In his Commentary, Simplicius, too, refers to 276a22-26 and 276a26-27 as ἀξιώματα.<sup>6</sup>

The two sentences 276a22-26 and 276a26-27 serve as premises for the whole line of reasoning in *Cael.* I 8. Generally speaking, in this chapter Aristotle tries to demonstrate why there is no further universe outside ours. As a starting point for the investigation, Aristotle points out the difference between natural motion and motion by constraint. (1) Basically, motions happen naturally when things move to a place in which they rest without constraint. By contrast, things move by constraint to a place in which they rest by constraint. (2) For each motion due to constraint, one can indicate also a motion that happens naturally, namely the motion in the opposite direction.<sup>7</sup>

In his Paris autograph, after transcribing the lines 276a22-27 from Aristotle's treatise, Bessarion summarizes the main arguments discussed in the subsequent passage of *Cael.*, namely 276a27-277a12. There, Aristotle proves that it is impossible for more than one universe to exist. As elsewhere in the Paris manuscript, Bessarion marks the excerpts from Aristotle's works

5 As has been already indicated by BROCKMANN – LORUSSO, *Zu Bessarions philologisch-hermeneutischer Arbeit* (as in note 1), 96-101.

6 Simplicius, in *Cael.* 247,30-248,11 HEIBERG: δύο ἀξιώματα τῶν δειχθησομένων προλαμβάνει ὡς ἐναργῆ, ἐν μὲν, ὅτι πάντα τὰ φυσικὰ σώματα καὶ μένει καὶ κινεῖται καὶ κατὰ φύσιν καὶ βία... δεῦτερον δὲ ἀξίωμα εἰ βία ἢδε ἡ φορά, ἢ ἐναντία αὐτῇ κατὰ φύσιν (J. L. HEIBERG, *Simplicii in Aristotelis De caelo commentaria*. Berlin 1894).

7 *Cael.* I 8, 276a22-27: ἅπαντα γὰρ καὶ μένει καὶ κινεῖται καὶ κατὰ φύσιν καὶ βία, καὶ κατὰ φύσιν μὲν, ἐν ᾧ μένει μὴ βία, καὶ φέρεται, καὶ εἰς ὃν φέρεται, καὶ μένει· ἐν ᾧ δὲ βία, καὶ φέρεται βία, καὶ εἰς ὃν βία φέρεται, βία καὶ μένει. ἔτι εἰ βία ἢδε ἡ φορά, ἢ ἐναντία κατὰ φύσιν (P. MORAUX, *Aristote, Du ciel*. Paris 1965).

by adding a special sign not dissimilar from a comma to the left of the text. By contrast, the lines containing no excerpt but only summaries written by Bessarion are not marked with this sign (Plate 2).

Bessarion's summary of Cael. 276a27-277a12 on f. 70r of *Parisinus gr.* 2042 touches upon the following points:

- Assuming that there is more than one universe, two hypotheses are equally possible: the universes are either synonymous or homonymous.<sup>8</sup> Thus, either the universes are indeed similar to each other (synonymous) if the same bodies are present in each of them, e.g. the natural elements earth, water, air, and fire. If, on the other hand, these bodies are homonymous, i.e. if the elements existing in other universes are not similar to ours, the universes are homonymous as well. But if the universes are homonymous, of necessity only one among them can be the universe in the proper sense. In this case, then, all the others represent different entities.<sup>9</sup>
- Elements from synonymous universes are themselves synonymous. Therefore, those elements will move to the same place. But this means that elements existing in other universes would have to move in the opposite direction to that of their natural movement in order to reach the same place. For instance, if the element earth in another synonymous universe had to move to the centre of our universe, that motion would run contrary to the direction of the centre of its proper universe.<sup>10</sup>
- Finally, one might say that elements belonging to synonymous universes are of the same kind, but separated and distinct from each other. In the same way, the natural places to which they move would be of the same kind, but separated and distinct from each other. Therefore,

8 According to Aristotle (*Categoriae* 1, 1a1-6), the difference between “homonymy” and “synonymy” is as follows. Things/entities that have the same name, but different definitions are homonym, whereas entities with the same name and the same definition are synonym. See generally CH. HORN, Homōnymos / homonym, in: O. HÖFFE (ed.), *Aristoteles-Lexikon*. Stuttgart 2005, 259-260: 259.

9 See the relevant passage of *De caelo* I 8, 276a30-b4: ἔτι ἀνάγκη πάντας τοὺς κόσμους ἐκ τῶν αὐτῶν εἶναι σωματίων, ὁμοίους γ' ὄντας τὴν φύσιν. ἀλλὰ μὴν καὶ τῶν σωματίων ἕκαστον ἀναγκαῖον τὴν αὐτὴν ἔχειν δύναμιν, οἷον λέγω πῦρ καὶ γῆν καὶ τὰ μεταξὺ τούτων· εἰ γὰρ ὁμώνυμα ταῦτα καὶ μὴ κατὰ τὴν αὐτὴν ιδέαν λέγονται τάκει τοῖς παρ' ἡμῖν, καὶ τὸ πᾶν ὁμωνύμως ἂν λέγοιτο κόσμος.

10 See Cael. I 8, 276b11-18: πέφυκεν ἄρα φέρεσθαι καὶ ἐπὶ τὸδε τὸ μέσον τὰ ἐν ἄλλω κόσμῳ τῆς γῆς μόρια, καὶ πρὸς τὸδε τὸ ἔσχατον τὸ ἐκεῖ πῦρ. ἀλλ' ἀδύνατον· τούτου γὰρ συμβαίνοντος ἀνάγκη φέρεσθαι ἄνω μὲν τὴν γῆν ἐν τῷ οικείῳ κόσμῳ, τὸ δὲ πῦρ ἐπὶ τὸ μέσον, ὁμοίως δὲ καὶ τὴν ἐντεῦθεν γῆν ἀπὸ τοῦ μέσου φέρεσθαι κατὰ φύσιν πρὸς τὸ ἐκεῖ φερομένην μέσον, διὰ τὸ τοὺς κόσμους οὕτω κείσθαι πρὸς ἀλλήλους.

synonymous elements would move to synonymous natural places in synonymous universes. This is being refuted as follows: From the fact that each single clod of earth in a universe moves to the centre, one can infer that also synonymous clods of earth would move to one and the same centre.<sup>11</sup>

This is Bessarion's summary of Cael. 276a27-277a12 from *Parisinus gr.* 2042 (f. 70r):

τούτων ὑποκειμένων, εἴ εἰσι πολλοὶ κόσμοι, ἢ ὁμώνυμοι ἢ συνώνυμοι. εἰ ὁμώνυμοι, οὐ πολλοὶ ἄρα· εἰς γὰρ ὁ κυρίως. εἰ δὲ συνώνυμοι, καὶ τὰ μέρη αὐτῶν συνώνυμα· εἰς τὸ αὐτὸ ἄρα καὶ ὁμοίως κινηθήσονται τὰ ἐν πᾶσι τοῖς κόσμοις στοιχεῖα· καὶ ἡ ἑτέρου κόσμου γῆ εἰς τὸ ἐνταῦθα μέσον κινηθήσεται καὶ ἡ τούτου εἰς τὸ ἐκεῖ καὶ τὸ πῦρ καὶ τᾶλλα ὡσαύτως· ταῦτα δὲ ἀδύνατα καὶ ἄτοπα. ἡ γὰρ ἐνταῦθα γῆ ἐκεῖ κινουμένη ἢ κατὰ φύσιν ἢ βία φέρεται· εἰ βία, ἄρα<sup>12</sup> βία μενεῖ εἰς τὸ μέσον· ἀλλὰ μὴν φύσει ἐστὶν ἡ ἐν τῷ μέσῳ μονὴ αὐτῆς· εἰ δὲ φύσει, ἐπειπερ εἰς τὸ ἐκεῖ μέσον ἀπιούσα, πρῶτον εἰς τὸ ἐν τούτῳ τῷ κόσμῳ ἄνω ἀναγκαῖον ἐλθεῖν· ἴν' ἐκεῖ γένηται, ἢ εἰς τὸ ἄνω κίνησις αὐτῆς κατὰ φύσιν ἂν εἴη, ἀλλ' ὑπέκειτο εἶναι βία. ὁμοίως καὶ ἐπὶ τῶν ἄλλων· τὸ γὰρ πῦρ κάτω γενέσθαι πρῶτον ἀναγκαῖον εἰς τὸ ἐκεῖ ἄνω ἰόν. εἰ δὲ τις εἴποι, φησί, ὡς οὐδὲν κωλύει, τῶν στοιχείων ὄντων ὁμοειδῶν μὲν, ἑτέρων δὲ τῷ ἀριθμῷ, κινεῖσθαι αὐτὰ εἰς διαφόρους τόπους, ὁμοειδεῖς μὲν, ἑτέροους δὲ ἀριθμῷ οἷον ἕκαστα τῶν ἐν διαφοροῖς κόσμοις εἰς τὸ ἐν ἐκάστῳ ἄνω καὶ κάτω, οὐδὲν λέγει· ὡσπερ γὰρ ἡ ἐν ἐκάστῳ κόσμῳ γῆ εἰ εἰς πλείω μέρη κατακερματισθεῖ, τὰ μέρη ταῦτα ὁμοειδῆ ὄντα, διαφέροντα δὲ τᾶριθμῷ, ὅμως εἰς ἓν μέσον πάντα κινοῖντο, οὕτω καὶ αἱ πλείους γαῖ εἰς τὸ αὐτὸ μέσον κινοῖντο ἂν. ἐπεὶ δὲ ταῦτ' ἀδύνατα, ἀδύνατον καὶ πλείους κόσμους εἶναι.

Example no. 2. While copying the sentence Cael. II 14, 297a24 ἴσον ἀνάγκη ἀπέχειν τοῦ μέσου τὸ ἔσχατον in *Parisinus gr.* 2042 (f. 76v, lines 19-20), Bessarion wrote as follows: ἴσον ἀνάγκη γίνεσθαι ἀπέχειν τοῦ μέσου τὸ ἔσχατον (Plate 3). When we look at f. 43r in *Marcianus gr.* 211, we can understand the reason why Bessarion at first inserted the word γίνεσθαι after ἀνάγκη in his excerpt. In fact, in the Venice manuscript the word γίνεσθαι, written on the third line of the text, has almost the same position as the words ἴσον ἀνάγκη in the subsequent line. Therefore, while copying ἴσον ἀνάγκη from

11 See Cael. I 8, 276b29-32: εἰ τοίνυν ἐστὶ τις κίνησις αὐτῶν κατὰ φύσιν, ἀνάγκη τῶν ὁμοειδῶν καὶ τῶν καθ' ἕκαστον πρὸς ἓνα ἀριθμῷ τόπον ὑπάρχειν τὴν κίνησιν, οἷον πρὸς τὸδε τι μέσον καὶ πρὸς τὸδε τι ἔσχατον.

12 ἄρα ex ἔργῳ *supra lin. correctum*.

this manuscript Bessarion obviously jumped from one line to the other (Plate 4). However, he later realized his mistake and accordingly struck out the word γίνεσθαι from his own excerpt.

Example no. 3. Bessarion's short excerpt from Cael. IV 5, 312b9-10 about water and its unnatural upward movement on f. 79v, lines 16-17 of *Parisinus gr.* 2042 reads as follows:

τὸ ὕδωρ σπάται, ἐπὶ τῶν σιφώνων δηλονότι καὶ τῶν σικυῶν, ὅταν γένηται τὸ ἐπίπεδον, τοῦ σίφωνος δηλονότι καὶ τοῦ ὕδατος, ἐν καὶ θάπτον σπάση τις ἄνω τῆς φορᾶς ἣν φέρεται τὸ ὕδωρ κάτω  
 «the water is drawn up as clearly happens when you use siphons and cupping-instruments, as soon as the surface, namely the surface both of the siphon and of the water, becomes one and the same and when someone draws it upwards swifter than the movement that brings the water downward.»

In the Paris manuscript, Bessarion himself underlined the words ἐπὶ τῶν σιφώνων κτλ. and τοῦ σίφωνος κτλ. (Plate 5). These do not belong to the text of Cael. Actually they are written by the scribe of *Marcianus gr.* 211 as interlinear glosses on f. 62r. There, one finds the remarks ὡς ἐπὶ τῶν σιφώνων καὶ τῶν σικυῶν δι' ὧν σπάται τὸ ὕδωρ καὶ τὸ αἶμα and τοῦ τε σπῶντος ἀέρος καὶ τοῦ σπωμένου ὕδατος as commentaries respectively to Cael. 312b9 and Cael. 312b10. The source for both remarks is Simplicius' Commentary.<sup>13</sup> The fact that Bessarion's excerpt combines Aristotle's original wording with two glosses from the Venice manuscript constitutes further proof that *Parisinus gr.* 2042 directly depends on *Marcianus gr.* 211.

Flicking through the leaves of *Marcianus gr.* 211, one comes across several interlinear glosses such as the two mentioned above. Generally, these glosses are in the same handwriting as the main text. Moreover, variant readings and corrections frequently occur between the main lines of text. In this case, they are written by a further scribe using a bright ink. Therefore, these *variae lectiones* and corrections can be regarded as resulting from the activity of a later user of the manuscript.

Examples for this are found on f. 43rv. Let us start by considering some emendations in *Marcianus gr.* 211 (E<sup>b</sup>). In the following cases, the text transmitted by this manuscript is incorrect, whereas *Marcianus gr.* 210 (F<sup>m</sup>) and other manuscripts have superior readings:

297a22 ὁμοιον] ὁμοιον F<sup>m</sup> ὁμοίως E<sup>b</sup>

13 Simplicius, in Cael. 723,19-25 HEIBERG.

297b19 ὁμοίας γωνίας, ἀλλ' ἴσας<sup>14</sup> γωνίας, ἀλλ' F<sup>m</sup> ὁμοίας ἀλλ' E<sup>b</sup>

The later corrector of *Marcianus gr.* 211 improved the text of the manuscript as follows:

297a22 ὁμοιον] ὁμοίως E<sup>b</sup> *supra lin. add.* -ον *manus alt.* E<sup>b</sup>

297b19 ὁμοίας γωνίας, ἀλλ' ὁμοίας ἀλλ' E<sup>b</sup> *post ὁμοίας supra lin. add.*  
γωνίας *manus alt.* E<sup>b</sup>

One thing to note is that in both of these cases, Bessarion's Paris manuscript shares the readings of the corrector of the Venice manuscript.

Besides, there is a further false reading of *Marcianus gr.* 210, whereas *Marcianus gr.* 211 preserves the correct text. This case is extremely significant because it provides further support for the thesis that *Marcianus gr.* 211 is not a direct copy of *Marcianus gr.* 210:

297a26 συνέθει] συνήχθη F<sup>m</sup> συνέθει E<sup>b</sup>

Here the reading of *Marcianus gr.* 211, although correct, was nevertheless modified by the annotator as follows:

297a26 συνέθει] συνέθει E<sup>b</sup> *mutavit in συνέλθοι manus alt.* E<sup>b</sup>

Bessarion did not excerpt that passage in the Paris manuscript.

While considering the corrections and modifications written between the lines of *Marcianus gr.* 211, one might ask who was responsible for them. From a palaeographical point of view, the first thing to note is that the word σφαιροειδές written by Bessarion, e.g. on f. 76v, line 15 in *Parisinus gr.* 2042, looks very similar to σφαιροειδές written by the corrector of *Marcianus gr.* 211 on f. 43r as an interlinear gloss to Cael. II 14, 297a24-25: τοῦτο δὲ τὸ σχῆμα σφαίρας ἐστίν (Plates 3 and 4). Was Bessarion really responsible for these additions between the lines in the Venice manuscript? This remains unclear, but as has already been noted in two out of the three cases considered above, while transcribing Cael. from *Marcianus gr.* 211 into *Parisinus gr.* 2042, Bessarion followed the corrector of the Venice manuscript. So if the corrections are not by Bessarion himself, they have evidently been made before he studied Aristotle's treatise *De caelo* in *Marcianus gr.* 211. Nevertheless, there are cases in which Bessarion did not consider the corrections of *Marcianus gr.* 211.

Furthermore, at Cael. 310a23 *Marcianus gr.* 211 reads ἐκινήσεις instead of αἰ κινήσεις (f. 59v).<sup>15</sup> In this case, the misspelling is obviously due to the

14 Here the scribe of *Marcianus gr.* 210 wrote above ἴσας the word ὁμοίας too.

15 By the way, at Cael. 310a23 *Marcianus gr.* 210 reads κινήσεις instead of αἰ κινήσεις. In other words, we have here a further example that allows us to regard at *Marcianus gr.* 211 as no direct copy of *Marcianus gr.* 210.



Byzantine pronunciation. The correct form αἱ κινήσεις was restored by the corrector of the Venice manuscript. However, in contrast to the corrections/modifications on f. 43rv that are written with a bright ink, the ink used for the correction on f. 59v is black. It cannot be excluded that the correctors on ff. 43rv and 59v are two different persons. When we look at the passage Cael. 310a23-b1 as transmitted by *Parisinus gr. 2042* (f. 78v, line 32 ff.), we can observe that initially Bessarion incorporated the text of *Marcianus gr. 211* as it reads before correction (of course without the misspelled form ἐκινήσεις): ἐπεὶ εἰσι τρεῖς κινήσεις κτλ. This is an initially comprehensible text in the sense that one can translate the sentence in the following way: “since there are three movements etc.” The article αἱ before the word κινήσεις was placed by Bessarion above the line in a second step.

## 2. Aristotle's scientific works in *Marcianus gr. 211* and Bessarion's commentaries

*Marcianus gr. 211* (ff. 1r-132v) contains three of Aristotle's works devoted to natural philosophy, i.e. *On the Heavens* (ff. 1r-63r, Cael.), *On Generation and Corruption* (ff. 63r-87v, Gen. Corr.), and *Meteorology* (ff. 87v-131v, Mete.). Since these works represent a homogeneous corpus on celestial, physical and meteorological phenomena, they are frequently transmitted together in manuscripts. In the catalogue of the Greek manuscripts of Aristotle's treatise *On Generation and Corruption*, Marwan Rashed lists 31 codices containing this corpus. In these 31 manuscripts, the three works *On the Heavens*, *On Generation and Corruption*, and *Meteorology* do not necessarily appear in the same order in which they are transmitted in *Marcianus gr. 211*.<sup>16</sup> Five of the manuscripts listed by Rashed belonged to Cardinal Bessarion's library. In Bessarion's manuscripts, the corpus of these three Aristotelian treatises is arranged according to the order outlined by Aristotle himself at the beginning of *Meteorology*, i.e. [Phys.], Cael., Gen. Corr., Mete.:<sup>17</sup>

<i>Marcianus gr. 200</i>	1457	Cael., Gen. Corr., Mete.
<i>Marcianus gr. 206</i>	1467	Cael., Gen. Corr., Mete.
<i>Marcianus gr. 210</i>	13th c.	Cael., Gen. Corr., Mete.
<i>Marcianus gr. 211</i>	ca. 1300	Cael., Gen. Corr., Mete.

<sup>16</sup> RASHED, Die Überlieferungsgeschichte (as in note 4), 17-32.

<sup>17</sup> Mete. I 1, 338a20-26: περὶ μὲν οὖν τῶν πρώτων αἰτίων τῆς φύσεως καὶ περὶ πάσης κινήσεως φυσικῆς, ἔτι δὲ περὶ τῶν κατὰ τὴν ἄνω φορὰν διακεκοσμημένων ἀστρων καὶ περὶ τῶν στοιχείων τῶν σωματικῶν, πόσα τε καὶ ποῖα, καὶ τῆς εἰς ἄλληλα μεταβολῆς καὶ περὶ γενέσεως καὶ φθορᾶς τῆς κοινῆς εἴρηται πρότερον. λοιπὸν δ' ἐστὶ μέρος τῆς μεθόδου ταύτης ἔτι θεωρητέον, ὃ πάντες οἱ πρότερον μετεωρολογίαν ἐκάλουν.

*Marcianus gr. 212* 2nd half of the 15th c. Cael., Gen. Corr., Mete. Two paratexts in *Marcianus gr. 211* (ff. 63r and 131v), at the beginning of *On Generation and Corruption* and at the end of *Meteorology*, respectively, point out that the manuscript provides a coherent set of Aristotle's writings focused on physical studies. Apart from *Marcianus gr. 211*, no other manuscript from Bessarion's collection contains the two paratexts.

The paratext on f. 131r at the end of *Meteorology* represents the final title or "subscription" for the whole physical corpus collected on the preceding pages. The subscription is from the hand of the manuscript's scribe and reads as follows:

Ἀριστοτέλους φυσικῶν βιβλίου τέλος  
«end of Aristotle's book devoted to physics.»

The same hand repeats the title on a subsequent line, this time in the following way (Plate 6):

Ἀριστοτέλους οὐρανοῦ βιβλίων τέλος  
«end of Aristotle's books devoted to the celestial phenomena.»

The paratext on f. 63r was also written by the main scribe. Before the text of the treatise *On Generation and Corruption* starts on f. 63v, this paratext provides us with some information about the way in which Aristotle's *On the Heavens* and *On Generation and Corruption* are organized in the manuscript. The principal source for the paratext is the Commentary on Aristotle's *On Generation and Corruption* of the Greek philosopher John Philoponus (ca. 490-575 CE). As far as the content is concerned, the paratext focuses on these main points:

- It is not without reason that Aristotle's treatise *On Generation and Corruption* follows *On the Heavens*. In *Physics* Aristotle generally deals with the principles of natural philosophy, i.e. "matter", "form", "movement", and the fact that the entities existing in the world are localizable both in space and time. By contrast, in the treatise *On the Heavens* Aristotle's main focus is on the fixed stars (books 1 and 2) as well as on the elements existing in the sublunar world (books 3 and 4). In the treatise *On Generation and Corruption*, Aristotle addresses more specific questions concerning how the entities existing in the sublunar world come to be or pass away. Therefore, to read Aristotle's works on natural philosophy as profitably as possible, one should start with the general principles discussed in *Physics* and continue with the specific topics presented in *On the Heavens* and *On Generation and Corruption*.
- Basically, the last two books of *On the Heavens* and of *On Generation and Corruption* deal with the same topics, namely coming to be and

passing away of the elements with eternal entities and corruptible entities. However, with regard to the process of “coming to be”, the main difference between the two treatises is that the former focuses on the natural agents such as the elements earth, water, air, and fire that take part in the process, whereas the latter specifically looks at the way in which the process occurs.

This is a brief edition of the paratext from f. 63r in *Marcianus gr.* 211. Passages from Philoponus' Commentary where one can observe a strong similarity between the two texts are indicated in the apparatus:

Μετὰ τὴν τῶν φυσικῶν ἀρχῶν παράδοσιν καὶ τῶν κοινῇ πᾶσι τοῖς φυσικοῖς ὑπαρχόντων ἦν ἐν τῇ Φυσικῇ ἀκροάσει ἐποιήσατο<sup>a</sup> καὶ μετὰ τὴν τῶν ἀπλανῶν ἐν τῷ παντὶ σωμαίων θεωρίαν ἦν ἐν τῷ Περὶ οὐρανοῦ παραδέδωκε, νῦν περὶ τῆς κοινῆς τῶν γενητῶν καὶ φθαρτῶν πάντων γενέσεως καὶ φθορᾶς διδάσκειν προτίθεται καὶ ἔστιν ἀκόλουθον τοῦτο τὸ βιβλίον τῇ Περὶ οὐρανοῦ πραγματείᾳ· ἐπειδὴ γὰρ τὰ ἀπλᾶ σώματα τὰ μὲν εἰσὶν κατ' αὐτὸν αἰδία καὶ οὔτε καθόλου οὔτε κατὰ μέρος γενητὰ καὶ φθαρτὰ, τὰ δὲ κατὰ μὲν τὰς ὀλότητας αἰδία, κατὰ δὲ τὰ μέρη γινόμενα καὶ φθειρόμενα<sup>b</sup> καὶ περὶ μὲν τοῦ αἰδίου καὶ ἀπλοῦ σώματος ἐν τοῖ<ς> δυσὶ βιβλίοις τοῖς Περὶ οὐρανοῦ ἐδίδαξε, περὶ δὲ τῶν γενητῶν καὶ φθαρτῶν σωμαίων ἐν τοῖς ἐτέροις δυσὶ βιβλίοις διδάσκων<sup>c</sup> ἐν οἷς καὶ γένεσις καὶ φθορὰ θεωρεῖται, τὰ μὲν ἐν ἐκείνοις ἐδίδαξε, τὰ δὲ λοιπὰ ἐνταῦθα· τὸ μὲν γὰρ ὅτι ἔστι καὶ γένεσις καὶ φθορὰ καὶ οὔτε πάντα γενητὰ καὶ φθαρτὰ οὔτε πάντα ἀγένητα καὶ ἀφθαρτα, ἐδίδαξεν ἐν ἐκείνοις καὶ ὅτι ἡ γένεσις οὔτε ἐξ ἀσωμάτου οὔτε ἐκ τινος ἐτέρου παρὰ τὰ τέτταρα ταῦτα σώματα<sup>d</sup>, ἀλλ' ἐξ ἀλλήλων γίνονται καὶ φθείρονται τὰ γινόμενα καὶ φθειρόμενα· πῶς δὲ ἡ γένεσις αὕτη καὶ ἡ φθορὰ τῶν γενητῶν τούτων καὶ φθαρτῶν συμβαίνει, ἐνταῦθα διδάσκει· ὅτι δρώντων εἰς ἄλληλα τῶν ἀπλῶν σωμαίων καὶ πασχόντων ὑπ' ἀλλήλων κατὰ τὰς δραστικὰς καὶ παθητικὰς ποιότητες· παραδίδωσι δὲ καὶ ταύτας· τίνες ποτέ εἰσιν αἱ πρῶται καὶ στοιχειώδεις ποιότητες ἐν τῷ δευτέρῳ βιβλίῳ· τέως δὲ νῦν διδάσκει περὶ τῆς κοινῆς γενέσεως καὶ φθορᾶς καθ' ἣν πάντα τὰ γενητὰ καὶ φθαρτὰ γίνεται καὶ φθείρεται· καὶ οὐχὶ τάδε ἢ τάδε τινά· διδάξει δὲ καὶ περὶ αὐξήσεως καὶ ἀφῆς καὶ περὶ ἀλλοιώσεως καὶ περὶ τοῦ ποιεῖν καὶ πάσχειν καὶ περὶ ἄλλων τινῶν οἰκείων τῷ Περὶ γενέσεως καὶ φθορᾶς λόγῳ.

<sup>a</sup> μετὰ τὴν τῶν φυσικῶν... ἐποιήσατο] cf. Phil. in Gen. Corr. 1,5-8 Vitelli || <sup>b</sup> ἐπειδὴ γὰρ τὰ ἀπλᾶ... φθειρόμενα] cf. Phil. in Gen. Corr. 1,10-13 Vitelli || <sup>c</sup> καὶ περὶ μὲν τοῦ αἰδίου... διδάσκων] cf. Phil. in Gen. Corr. 1,13-16 et 2,32-33 Vitelli || <sup>d</sup> τὸ μὲν γὰρ ὅτι ἔστι καὶ γένεσις... τέτταρα ταῦτα σώματα] cf. Phil. in Gen. Corr. 4,7-15 Vitelli

As previously stated, *Marcianus gr.* 211, ff. 63r-87v contain Aristotle's treatise *On Generation and Corruption* (Gen. Corr.). In the margins, we can read some commentaries that were probably written by Bessarion.<sup>18</sup> Examples are found on ff. 63v, 65r, 65v, 70r, 73v, 76v, 78v, 79r, 83v, 84v, and 87r. Generally, these annotations are inspired by the Commentary of John Philoponus:<sup>19</sup>

Bessarion's commentary on f. 63v ≈ Philoponus, in Gen. Corr. 12,30-13,15 Vitelli;

Bessarion's commentary on f. 65r ≈ Philoponus, in Gen. Corr. 22,23-27 Vitelli;

Bessarion's commentary on f. 65v ≈ Philoponus, in Gen. Corr. 26,8-11 Vitelli;

Bessarion's commentary on f. 70r ≈ Philoponus, in Gen. Corr. 69,15-17 Vitelli;

Bessarion's commentary on f. 73v ≈ Philoponus, in Gen. Corr. 135,8-11 Vitelli;

Bessarion's commentary on f. 78v ≈ Philoponus, in Gen. Corr. 193,34-194,2 Vitelli;

Bessarion's commentary on f. 79r ≈ Philoponus, in Gen. Corr. 192,29 Vitelli;

Bessarion's commentary on f. 87r ≈ Philoponus, in Gen. Corr. 304,35-305,3 Vitelli.

In this paper, there is room to analyze only one of these commentaries in depth. On the bottom of f. 70r, Bessarion copied the following passage from Philoponus' Commentary (69,15-17 VITELLI):

ὅταν δὲ μηδὲν ὑπομένη αἰσθητὸν οὐ πάθος ἢ συμβεβηκός τί ἐστι καθ' ὃ ἢ μεταβολὴ γέγονε (τοῦτο γὰρ θάτερον τὸ καθ' ὃ ἢ μεταβολὴ γίνεται σημαίνει), τότε γένεσις ἐστι καὶ φθορά.

This sentence of Philoponus represents a paraphrase of Aristotle's *On Generation and Corruption* I 4, 319b34-320a2: ὅταν δὲ μηδὲν ὑπομένη οὐ θάτερον πάθος ἢ συμβεβηκός ὅλως, γένεσις, τὸ δὲ φθορά. The focus in Aristotle's text is on the difference between "coming-to-be" (γένεσις) and "alteration" (ἀλλοίωσις). The umbrella term used by Aristotle to cover both these cases is "change" (μεταβολή).<sup>20</sup> Basically, change affects both the substratum (τὸ ὑποκείμενον) and its characteristics (the property/properties, or τὸ πάθος using Aristotelian terminology).<sup>21</sup> On the one hand, if the change exclusively regards

18 Marwan Rashed already recognized one of these commentaries as a product of Bessarion's philological activity (RASHED, *Die Überlieferungsgeschichte* [as in note 4], Plate 43).

19 In this context, it also has to be mentioned that Bessarion refers directly to his source at the end of the annotation on f. 70r as follows: οὕτως περὶ τούτου διέξεισιν ὁ Φιλόπονος.

20 Gen. Corr. I 4, 319b6-8: περὶ δὲ γενέσεως καὶ ἀλλοιώσεως λέγωμεν τί διαφέρουσιν· φάμεν γὰρ ἑτέρας εἶναι ταύτας τὰς μεταβολὰς ἀλλήλων.

21 Aristotle uses the word ὑποκείμενον in a two-fold way: on the one hand, to indicate the subject of a sentence as different from the predicate, on the other, to refer to the holder of a property in opposition to the property itself. For the general concept cf. PH. BRÜLLMANN –

the substratum, but the substratum itself is still perceptible and continues to exist, then this change is an “alteration”. To explain this more clearly, Aristotle provides a couple of examples. E.g., while one is producing bronze objects, the bronze of course remains the same bronze, even if its form changes. In fact, bronze objects can be spherical or sharp-cornered/angular. On the other hand, in some cases no perceptible part of the substratum remains after the change. In such a case, the final result is two-fold: on the one hand, there is “coming-to-be” of a new substratum – on the other hand, “passing-away” of a previously existing substratum. This happens e.g. when the seed in its entirety changes into blood, or water into air and vice versa air into water.<sup>22</sup> Finally, “coming-to-be” and “passing away” usually take place only when the result of the change does not represent a property of the substratum, but is instead something that has not previously existed.<sup>23</sup>

Moreover, there are three parameters whereby to discern changes affecting the properties of something that continues to exist: quantity (change κατὰ τὸ ποσόν), space (change κατὰ τόπον), and quality (change κατὰ τὸ ποιόν). Consequently, changes can be depicted respectively as growth and diminution (αὔξη καὶ φθίσις), as motion (φορά) and as alteration in the proper sense (ἀλλοίωσις).<sup>24</sup> In all these cases, the result of the change represents a property of the substratum. This point is elucidated by Philoponus in his Commentary. The commentator presents changes regarding the mass, the space and the quality of the substrata as attributes (συμβεβηκότα) of the substrata themselves.<sup>25</sup>

But why did Bessarion add the sentence of Philoponus' at the bottom of f. 70r of the Venice manuscript, where the scholiast had left some blank space? Probably because in the context of Gen. Corr. I 4, 319b26-320a2, Philoponus' remark (69,15-17 VITELLI) explains the difference between “coming-to-be” and “alteration” more clearly than the scholiast of *Marcianus gr.* 211 had done in his marginal remark on the same page. In fact, this remark points out only the difference between alterations *per se* and alterations not *per se*. In this context, however, it is also worth noting that the scholium in *Marcianus gr.*

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K. FISCHER, Hypokeimenon / zugrundeliegend, Subjekt, Substrat, in: O. HÖFFE (ed.), *Aristoteles-Lexikon*. Stuttgart 2005, 280-283: 280.

22 Gen. Corr. I 4, 319b8-21.

23 Gen. Corr. I 4, 319b33-320a2.

24 Gen. Corr. I 4, 319b31-33.

25 Philoponus, in Gen. Corr. 69,13-15 VITELLI: ταῦτα (i.e. growth and diminution, motion, and alteration) μὲν οὖν τὰ καθ' ἃ γέγονεν ἢ μεταβολή, ὑπομενούσης τῆς αἰσθητῆς οὐσίας ἡστινοσοῦν, συμβεβηκότα ὑπάρχει (G. VITELLI, *Ioannis Philoponi in Aristotelis libros De generatione et corruptione commentaria*. Berlin 1897).

211 does not correspond to any passage in the Commentary of Philoponus:

καθ' αὐτὸ πάθος τοῦ ἀνθρώπου ἢ μουσικῆ ὡς ἡ σιμότης τῆς ῥίνος· ὡσπερ γὰρ ἡ σιμότης μόνη τῇ ῥινὶ ὑπάρχει οὕτω καὶ ἡ μουσικὴ μόνω τῷ ἀνθρώπῳ· καὶ ὡσπερ εἰς τὸν ὀρισμὸν τῆς σιμότητος παραλαμβάνεται ἡ ῥίς οὕτως καὶ εἰς τὸν ὀρισμὸν τῆς μουσικῆς ὁ ἄνθρωπος· ἐρεῖς γὰρ τὴν μουσικὴν εἶναι ἕξις ἐν ἀνθρώπου ψυχῇ· καὶ ἄλλως δὲ καθ' αὐτὸ ὀνομάζει πάθος τὸ ἀντιδιαστελλόμενον πρὸς τὸ κατὰ σχέσιν· τὸ μὲν γὰρ λευκὸν καθ' αὐτὸ ὅτι οὐ πρὸς ἄλλο· τὸ δὲ λευκὸν οὐ καθ' αὐτὸ ὅτι ἐν τῇ πρὸς ἕτερον σχέσει.

### 3. Exegetical materials to Aristotle's treatise *On the Heavens* in *Marcianus gr. 211*

*Marcianus gr. 211* was written around 1300 by two scribes who use very different writing styles. On the one hand, ff. 1-150 are written in the so-called "blob of fat style" ("Fettaugenstil").<sup>26</sup> The main feature of this style is the contrast between the over-sized letters *beta*, *gamma*, *epsilon*, *omicron*, *sigma*, and *omega*, and very small letters such as *eta*, *my*, and *rho*. On the other hand, the second scribe (ff. 151-279) writes in an archaic style imitating that of the early calligraphic minuscule.<sup>27</sup>

Aristotle's treatise *On the Heavens* contained on ff. 1r-63r of the manuscript is enriched with conspicuous scholia written on the margins by the scribe of the main text. Among them some are direct quotations from Simplicius' Commentary with only minimal modifications of the original wording, whereas others (re-)use Simplicius' ideas in order to produce new comments on Aristotle's text.

The scholiastic corpus on Aristotle's *On the Heavens* transmitted by *Marcianus gr. 211* definitely deserves more thorough consideration. For it is not peculiar only to *Marcianus gr. 211*, but can be found also in other Greek manuscripts, namely *Marcianus gr. 210* and *Parisinus gr. 1853*, as has already been shown in the previous article.<sup>28</sup> In *Marcianus gr. 210*, the marginal scho-

26 See H. HUNGER, Die sogenannte Fettaugen-Mode in griechischen Handschriften des 13. und 14. Jahrhunderts. *BF* 4 (1972) 105-113 (= ID., Byzantinistische Grundlagenforschung. London 1973, II).

27 See G. PRATO, Scritture librerie arcaizzanti della prima età dei Paleologi e loro modelli. *Scrittura e civiltà* 3 (1979) 151-193 (= ID., Studi di Paleografia greca. Centro Italiano di studi sull'alto medioevo. *Collectanea*, 4. Spoleto 1994, 73-114) and G. DE GREGORIO – G. PRATO, Scrittura arcaizzante in codici profani e sacri della prima età paleologa. *Römische Historische Mitteilungen* 45 (2003) 59-101.

28 BROCKMANN – LORUSSO, Zu Bessarions philologisch-hermeneutischer Arbeit (as in note 1), 94-95.

lia to Aristotle's *On the Heavens* are written down by the main scribe. It is worth pointing out that this manuscript has suffered badly from the ravages of time. More specifically, it is both faded and damaged by water, with the result that most of the paratexts that were written on the margins are no longer visible to the bare eye. In *Parisinus gr.* 1853, the famous *codex vetustissimus* containing several of Aristotle's treatises, the scholia are by a later hand. This hand undoubtedly dates back to the second half of the 13th century or to the beginning of the 14th century, whereas the main text of the Paris manuscript was written in the middle of the 10th century.<sup>29</sup>

In the following, I present three more examples of the scholia on Aristotle's *On the Heavens* as preserved in *Marcianus gr.* 211. We can read the first two notes also in *Parisinus gr.* 1853. By contrast, *Marcianus gr.* 210 cannot be taken into consideration here, since the first leaf where these three scholia would probably have been contained is not the original one anymore, but has been replaced in the 14th century.<sup>30</sup> This means that we are not able to verify the hypothesis formulated in the previous article concerning *Marcianus gr.* 210 as a probable common source for the scholiastic corpus both in *Marcianus gr.* 211 and in *Parisinus gr.* 1853.<sup>31</sup>

Example no. 1. The main topic in Cael. I 1 is the perfection of the universe. Specifically, Aristotle considers it an obvious fact that body – being three-dimensional – represents a complete and perfect magnitude. For one cannot pass from body to a further kind by adding a new dimension in the same way as from length to surface or from surface to body. The latter changes are due in fact respectively to the incompleteness of length and surface, neither of which possesses all existing dimensions. By nature, however, bodies are not incomplete, since they are three-dimensional objects.<sup>32</sup>

With regard to Cael. I 1, 268a30-b5 both *Marcianus gr.* 211 (f. 1v, on the

29 The later annotator of the Paris manuscript has been indicated with the *siglum* E<sup>4</sup> by Paul Moraux in his edition of Aristotle's *On the Heavens* (MORAUX, Aristote [as in note 7], CLXXVI). On this point, see also BROCKMANN – LORUSSO, Zu Bessarions philologisch-hermeneutischer Arbeit (as in note 1), 95.

30 See also BROCKMANN – LORUSSO, Zu Bessarions philologisch-hermeneutischer Arbeit (as in note 1), 94-95.

31 BROCKMANN – LORUSSO, Zu Bessarions philologisch-hermeneutischer Arbeit (as in note 1), 96.

32 Cael. 268a30-b5: ἀλλ' ἐκεῖνο μὲν δῆλον, ὡς οὐκ ἔστιν εἰς ἄλλο γένος μετάβασις, ὥσπερ ἐκ μήκους εἰς ἐπιφάνειαν, εἰς δὲ σῶμα ἐξ ἐπιφανείας· οὐ γὰρ ἂν ἔτι τὸ τοιοῦτον τέλειον εἶη μέγεθος· ἀνάγκη γὰρ γίνεσθαι τὴν ἔκβασις κατὰ τὴν ἔλλειψιν, οὐχ οἶόν τε δὲ τὸ τέλειον ἐλλείπειν· πάντη γὰρ ἔστιν.

left margin of the page) and *Parisinus gr.* 1853 (f. 69r, bottom of the page) transmit the following remark:

ἀλλ' ἐκεῖνο, φησί, δῆλον<sup>a</sup> ὅτι τὸ σῶμα τριχῆ ὄν διαστατὸν καὶ τέλειον καὶ ἀνελλιπὲς οὐ δύναται εἰς ἄλλο γένος μεταβῆναι ἢ ὡς καὶ ἐτέραν δέξασθαι διάστασιν· εἰ γὰρ<sup>b</sup> ἐδέχετο καὶ ἐτέραν διάστασιν, ἐποίει<sup>c</sup> ἂν καὶ τέταρτον μέγεθος καὶ οὐκ ἂν ἦν τέλειον· τέλειον γὰρ ἐστὶ τὸ μὴ τινος προσθήκης δεόμενον καὶ μὴ δυνάμενον μεταβῆναι εἰς ἕτερον· τὸ γὰρ μεταβαῖνον καὶ κινούμενον εἰς ἐκεῖνο μεταβαίνει καὶ κινεῖται οὐ ἔλλείπεται ὡς ἡ γραμμὴ εἰς ἐπιφάνειαν καὶ αὕτη εἰς σῶμα.

<sup>a</sup> δῆλον *om.* Par. gr. 1853 || <sup>b</sup> γὰρ Marc. gr. 211 : δὲ Par. gr. 1853 || <sup>c</sup> ἐποίει Par. gr. 1853 : ἐπόνει *ut videtur* Marc. gr. 211

In this scholium, the focus is on the demonstration that three-dimensional objects cannot change into yet another kind. Furthermore, the commentary aims at explaining the reason why Aristotle regards this as an obvious fact. The scholium is also somewhat related to the discussion of the differences between the terms “every” (τὰ πάντα), “all” (τὸ πᾶν), and “complete” (τὸ τέλειον), which represents the main topic of another scholium transmitted both by the Venice and the Paris manuscript, on f. 1r and f. 69r, respectively.<sup>33</sup>

The starting point of the scholium under examination is that bodies cannot receive a further dimension beyond length, width, and depth. Contrary to lines and surfaces, bodies, as being three-dimensional objects, do not lack any dimension at all. The demonstration continues in a way that ultimately represents a proof by contradiction or *reductio ad impossibilem*. For if any three-dimensional object received a further dimension, one would have to conclude that such an object was not complete, since only things that do not require any kind of supplement are complete. Almost in the same way, i.e. on the basis of the fact that body is extended in three dimensions and accordingly divisible in three dimensions, Aristotle demonstrates that body (*a*) is divisible and (*b*) forms a continuum. This is also pointed out by Simplicius in his commentary (8,17-19 HEIBERG):

πάντη δὲ διαιρετὸν καὶ πάντη συνεχές καὶ διαστατὸν τὸ σῶμα δείκνυσιν ἐκ τοῦ τριχῆ διαστατὸν καὶ τριχῆ διαιρετὸν εἶναι· τὰ γὰρ τρία πάντα ἐστὶ καὶ τὸ τρις πάντη.

Example no. 2. Both in *Marcianus gr.* 211 (f. 1v) and in *Parisinus gr.* 1853 (f. 69r), the scholium we have just presented is followed by another dealing with

33 We have already covered this scholium in the previous article BROCKMANN – LORUSSO, *Zu Bessarions philologisch-hermeneutischer Arbeit* (as in note 1), 95-97.



the term “cosmos”. This latter scholium ends abruptly in the Paris manuscript with the word μετά. As transmitted by *Marcianus gr.* 211, it reads as follows:

μόρια τοῦ κόσμου εἰσὶν ὁ οὐρανὸς καὶ ἡ γῆ καὶ τὰ μεταξὺ· κόσμος γάρ ἐστι ἢ τούτων πάντων<sup>a</sup> συνδρομή·<sup>34</sup> μετὰ<sup>b</sup> γοῦν τὸ δεῖξαι ὅτι τὸ σῶμα τέλειόν ἐστι καθὸ τριχῆ διαστατόν, φησὶ ὅτι καὶ ἕκαστον τῶν μορίων τοῦ κόσμου κατὰ τὸν λόγον τοῦτον ἢ ὡς καθὸ τριχῆ διαστατόν, τέλειόν ἐστι· πάσας γὰρ ἔχει τὰς διαστάσεις καθὸ τριχῆ διαστατόν καὶ ὁ οὐρανὸς καὶ ἡ γῆ καὶ τὰ λοιπά. ἀτελῆ δέ εἰσι καθόσον ὑπ’ ἀλλήλων τῆ ἀφῆ περιορίζονται· πᾶν γὰρ τὸ ἀπτόμενόν τινοσ καθόσον αὐτοῦ ἄπτεται, περιορίζει αὐτὸ ὡς τὸ πῦρ τὸν ἀέρα καὶ ὁ ἀῆρ τὸ ὕδωρ καὶ ἐπὶ τῶν λοιπῶν ὁμοίως· ἀλλὰ καὶ ἕκαστον τούτων σχεδὸν πολλὰ ἐστὶ καθὸ πολλῶν ἄπτεται ἄλλου κατ’ ἄλλην ἐπαφὴν οἷον τὸ ὕδωρ κατὰ μὲν τόδε τὸ πέρασ αὐτῆς τῆς γῆς ἄπτεται, κατὰ δὲ τόδε συνεξομοιοῦται σχεδὸν αὐτῷ· διὸ παχύτερόν ἐστι κατὰ τόδε τὸ μέρος, κατὰ δὲ τόδε ἄπτεται τοῦ ἀέρος καὶ οἷον συνεξομοιοῦται· διὸ καὶ λεπτότερόν ἐστι· τοῦτο δὲ καὶ ἐπὶ τοῦ ἀέρος ἐστὶν εἰπεῖν.

<sup>a</sup> τούτων πάντων Par. gr. 1853 : τῶν πάντων Marc. gr. 211 || <sup>b</sup> μετὰ *suprascripto* ἐν. *Hic desinit* Par. gr. 1853

The scholium starts listing the parts which form the “cosmos”, namely the heaven, the earth and all natural substances between them. Furthermore, it provides a definition of “cosmos” as the encompassing connection of all these elements. A similar definition also occurs at the very beginning of Cleomedes’ astronomical manual, as well as in the treatise *On the Universe* written by an unknown author probably between the 1st century BCE and the 1st century CE, usually attributed to Aristotle.<sup>35</sup> Both Cleomedes and the author of *On the Universe* define “cosmos” in the same way:

κόσμος ἐστὶ σύστημα ἐξ οὐρανοῦ καὶ γῆς καὶ τῶν ἐν τούτοις φύσεων (Cleomedes)

κόσμος μὲν οὖν ἐστὶ σύστημα ἐξ οὐρανοῦ καὶ γῆς καὶ τῶν ἐν τούτοις περιεχομένων φύσεων (Ps.-Aristoteles).<sup>36</sup>

34 I prefer the reading of the Paris manuscript to that of the Venice manuscript. The former describes “cosmos” as the combination of all the things listed immediately before, namely heaven, earth and the remaining substances between them, whereas the latter presents the universe in a very general way as the combination of all things – cf. the *apparatus criticus* to this scholium. In this case, *Marcianus gr.* 210 could have been decisive, but as pointed out above, that manuscript does not contain this scholium.

35 On the pseudo-Aristotelian treatise *On the Universe* see generally CH. WILDBERG, *Kosmologie*, in: CH. RAPP – K. CORCILIUS (eds.), *Aristoteles-Handbuch: Leben, Werk, Wirkung*. Stuttgart – Weimar 2011, 84-87: 87.

36 Cleomedes, *Caelestia* 1,4-5 TODD (R. B. TODD, *Cleomedis Caelestia*. Leipzig 1990; Id.,

In the scholium from *Marcianus gr.* 211 and *Parisinus gr.* 1853, “cosmos” is defined as a connection (συνδρομή, Latin *concursum*) of heaven, earth, and the remaining natural substances, instead of as a construct (σύστημα) formed from the same elements, as Cleomedes and Pseudo-Aristotle maintain. Thereafter, in the lines that are preserved only in the Venice manuscript, namely from μετὰ γοῦν τὸ δεῖξαι onwards, the scholium continues describing the structure of this “cosmos”. First of all, every single part of it is three-dimensional, and thus perfect. At the same time, each of the natural elements forming the “cosmos”, i.e. earth, water, air, fire, and the heaven, is respectively placed in one of the five natural places that share the same centre. The boundaries of these places are marked by the elements themselves where they touch each other. So the place occupied by fire is distinct from that occupied by air and this again from that occupied by water, and so on.

The source of the scholium is Simplicius’ Commentary.<sup>37</sup> Simplicius points out (a) that the five natural elements forming the “cosmos” are perfect as being three-dimensional bodies and (b) that each of these elements is to be considered as a constitutive part of the “cosmos” (τῶν σωμάτων τὰ μὲν μέρη ἐστὶ καὶ κεκράτηται τῷ εἶδει τῷ τοῦ μέρους, οἷον οὐρανός, πῦρ, ἀήρ, ὕδωρ, γῆ, τὸ δὲ ἐστὶν ὅλον, οὗ ταῦτα μέρη<sup>38</sup>). In this respect, looking at the elements as parts (μέρη) of a structured assemblage, i.e. the “cosmos”, one can apply the terms “all” (τὸ πᾶν) and “complete” (τὸ τέλειον) to each of these parts. In fact, the elements are natural bodies. As a result, one can speak of such bodies in terms of “all-ness” (παντότης) and “completeness” (τελειότης). But if one is looking at every single element of the “cosmos” as a constitutive element (μερικόν) separated from the other elements, one can never apply the terms “all” and “complete” to such an element. In this sense, only the “cosmos” in its entirety is perfect. For it is a body formed by the single natural elements. Moreover, it contains all things that exist, and nothing exists outside the “cosmos”. This last point concerning the perfection of the “cosmos”, however, is not found in the scholium in *Marcianus gr.* 211.

Example no. 3. Another scholium to be read on f. 1v of *Marcianus gr.* 211 deals with the Peripatetic philosopher Xenarchus. It begins with the words ἔλεγεν ὁ Ξέναρχος ὅτι ἀπλή. The scholium refers to a passage from Cael. I 2, 268b18-19 (ἀπλαῖ γὰρ αὐταὶ δύο μόναι) as clearly indicated by the sign

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Cleomedes’ Lectures on Astronomy. Berkeley Calif. and other places 2004). Ps. Aristoteles, *De mundo* 391b9-10 (W. L. LORIMER, *Aristotelis qui fertur libellus De mundo*. Paris 1933).

37 Simplicius, in Cael. 10,10-25 HEIBERG.

38 Simplicius, in Cael. 10,13-15 HEIBERG.

(a shape like that of a letter X with a peak on the upper part) occurring in the beginning both of the scholium and of the commented text. The latter is written down on f. 2r. Not infrequently in *Marcianus gr.* 211, main text and marginal commentaries are placed on different pages. In this way, the scribe probably intended to optimize use of the space at his disposal. Therefore, one often has to navigate through the leaves of the manuscript in order to read both a scholium and the text it is explaining. In this, the reader is helped by a set of special signs guiding him through the main text as well as the marginal commentaries.

The exegesis of Aristotle's text contained in the scholium that I am going to analyze is based on Simplicius' Commentary.<sup>39</sup> I intend to show how the scholiast of *Marcianus gr.* 211 has adapted the complex ideas expressed by Simplicius to his own goals. To this end, I will deal both with Aristotle's text and with Simplicius' commentary. More specifically, I will touch upon the dispute regarding the interpretation of Aristotle's passage between the Peripatetic philosopher Xenarchus (1st century BCE)<sup>40</sup> and the most distinguished of the Ancient Greek commentators on the works of Aristotle, i.e. Alexander of Aphrodisias (3rd century CE), for Simplicius gives a careful account of this dispute in his commentary.

In *Cael.* I 2, 268b14-20, Aristotle assumes that all natural entities are *per se* able to change their position in space.<sup>41</sup> In other words, he affirms that for such entities "nature" is the principle of origin for the change.<sup>42</sup> Furthermore, as far as the motion of natural entities is concerned, Aristotle generally distinguishes three possible kinds: motion along a straight line, circular motion, and motion resulting from the combination of rectilinear and circular motion.<sup>43</sup> With

39 Simplicius, in *Cael.* 13,22-14,29 HEIBERG.

40 On Xenarchus see generally A. FALCON, Xenarchos, in: H. CANKIK – H. SCHNEIDER (eds.), *Der Neue Pauly: Enzyklopädie der Antike. Altertum. Band 12/2 (Ven-Z): Nachträge.* Stuttgart – Weimar 2003, 608-609 as well as ID., *Aristotelianism in the First Century BC: Xenarchus of Seleucia.* Cambridge – New York 2012.

41 Change is Aristotle's notorious umbrella term to catch phenomena such as motion, increase, decrease, and alteration. In fact, all the phenomena mentioned above are to be regarded as changes in space, quantity, and quality, respectively. The assumption in *Cael.* I 2, 268b14-16 is based on Aristotle's further assumption in *Physics* I 2, 185a12-13 that natural objects, all or some of them, are subject to change: ἡμῖν δ' ὑποκείσθω τὰ φύσει ἢ πάντα ἢ ἕνια κινούμενα εἶναι.

42 In a very similar way, Aristotle considers the term "nature" in *Physics* II 1, 192b8-15.

43 *Cael.* I 2, 268b16-18: πάντα γὰρ τὰ φυσικὰ σώματα καὶ μεγέθη καθ' αὐτὰ κινητὰ λέγομεν εἶναι κατὰ τόπον· τὴν γὰρ φύσιν κινήσεως ἀρχὴν εἶναι φαμεν αὐτοῖς. πᾶσα δὲ κίνησις ὅση κατὰ τόπον, ἢν καλοῦμεν φοράν, ἢ εὐθεία ἢ κύκλῳ ἢ ἐκ τούτων μικτή.

regard to this last point, Simplicius focuses on the fact that Aristotle divides natural motions into two main categories: simple motions and motions that are not simple. Then Simplicius points out Aristotle's general assumption that simple motions are features of simple bodies and that simple bodies move in a simple way.<sup>44</sup> But how many simple motions do exist? According to Aristotle, who is followed by Simplicius, there are only two, i.e. linear motion and circular motion.<sup>45</sup> In the framework of *Cael. I 2*, this conclusion represents one of the main arguments in proving that the heaven moves circularly. On the margins both of *Marcianus gr.* 211 (f. 2r) and of *Parisinus gr.* 1853 (f. 69v), we read the following remark:

λήμμα πρῶτον· ὅτι δύο αἰ ἀπλαῖ κινήσεις· ἡ ἐπ' εὐθεΐαν καὶ ἡ κύκλω (*Marcianus gr.* 211, f. 2r)

λήμμα πρῶτον, ὅτι δύο αἰ ἀπλαῖ κινήσεις (*Parisinus gr.* 1853, f. 69v).

The reason why linear motion and circular motion are considered to be the only simple motions is only hinted at by Aristotle. Simplicius explains it by stating that linear and circular motions do not consist of any other different motion.<sup>46</sup> That is to say, they are the only ones that cannot be divided into any other motions that are more simple. Moreover, drawing on Aristotle, Simplicius goes on explaining this point as follows. Motions usually happen along lines. But if there are only two simple lines, i.e. the straight line and the circle, the simple motions will also be just two.<sup>47</sup>

Furthermore, with regard to *Cael. I 2*, 268b19-20 («the reason for this [i.e. for the fact that the only simple movements are either linear or circular] is that these two, the straight and the circular line, are the only simple magnitudes»), Simplicius explains in what sense Aristotle looks at magnitudes as causes of motion. In this respect, Simplicius' reasoning presupposes Aristotle's theory of causation. For he states that magnitudes are not efficient, but only material causes of movements, and he adds that according to Alexander of Aphrodisias, the magnitudes play the role of “that without which”, since the

44 Simplicius, in *Cael.* 13,8-10 HEIBERG: διαρῶν δὲ τὰς φυσικὰς κινήσεις τὰς μὲν ἀπλαῖς φησι, τὰς δὲ οὐχ ἀπλαῖς. δείξας δὲ, ὅτι εἰσὶν ἀπλαῖ, ἔξει προχειρῶς, ὅτι ἀπλῶν εἰσι σωματίων, καὶ ὅτι τῶν ἀπλῶν σωματίων ἀπλαῖ αἰ κινήσεις.

45 *Cael.* I 2, 268b18-20: ἀπλαῖ γὰρ αὐταὶ δύο μόναι. αἴτιον δ' ὅτι καὶ τὰ μεγέθη ταῦτα ἀπλᾶ μόνον, ἢ τ' εὐθεΐα καὶ ἡ περιφερής.

46 Simplicius, in *Cael.* 13,11-12 HEIBERG: καὶ ὅτι μὲν ἀπλαῖ ἢ τε κύκλω καὶ ἡ ἐπ' εὐθείας, πρόδηλον· οὐδετέρα γὰρ αὐτῶν ἐκ διαφόρων σύγκειται.

47 Simplicius, in *Cael.* 13,12-15 HEIBERG: ὅτι δὲ μόναι αὐταὶ ἀπλαῖ, τοῦτο δείκνυσιν διὰ τῆς τῶν γραμμῶν παραθέσεως· πᾶσα γὰρ κίνησις ἐπὶ τινος γίνεται γραμμικοῦ διαστήματος· εἰ οὖν αἰ ἀπλαῖ γραμμαὶ δύο μόναι, καὶ αἰ ἀπλαῖ κινήσεις δύο.

existence of a magnitude is obviously a *conditio sine qua non* of motions. Yet, if a magnitude exists, it does not necessarily follow that there will be motion.<sup>48</sup>

Simplicius' arguments up to this point are not taken into account or summarized in the scholium of *Marcianus gr.* 211. It starts rather abruptly with the dispute between the philosopher Xenarchus and Alexander of Aphrodisias regarding Aristotle's thesis about the two simple motions.<sup>49</sup> In his lost work *Against the Fifth Substance* (Πρὸς τὴν πέμπτην οὐσίαν), Xenarchus raised objections to the idea that linear motion and circular motion are the only two simple motions.<sup>50</sup> The detail reported by Simplicius concerning the title of the work from which Xenarchus' objections are taken is left out by the scholiast of the Venice manuscript. Xenarchus' thesis can be summarized as follows: In addition to the straight line and the circular line he further considers the cylindrical line as a simple line. Consequently, there should be another simple motion that takes place along this line as well as another simple body that moves cylindrically.

As we further learn from Simplicius, Alexander of Aphrodisias criticized Xenarchus' thesis with two arguments. Simplicius refers to both arguments respectively with the *termini technici* "counterargument" (ἀντιπαράστασις) and "refutation" (ἔνστασις).<sup>51</sup> Counterarguments presuppose that during the debate one party accept the premise of their opponent, but then go on to show that the conclusion which has been argued for by the opponent does not follow. So while debating κατὰ ἀντιπαράστασιν against Xenarchus, Alexander initially assumes (for the sake of argument) that the cylindrical helix is simple, but then uses the premise that according to Aristotle, simple magnitudes are not *causae efficientes* of movement, i.e. causes that produce motion. Alexander's counterargument runs as follows: «if it is true that a simple body moves with a simple motion along a simple line, it is not thereby true that [...] for any simple line there is a simple natural body which moves with a simple

48 Simplicius, in Cael. 13,15-18 HEIBERG: οὐχ ὡς ποιητικά δὲ τῶν κινήσεων αἴτια παρέθετο τὰ μεγέθη, ἀλλ' ὡς ὑλικά· καὶ τὸν τῶν, ὧν οὐκ ἄνευ, λόγον ἔχοντα, ὡς φησιν Ἀλέξανδρος· καὶ γὰρ κινήσεως μὲν οὐσης ἀδύνατον μὴ εἶναι μέγεθος, μεγέθους δὲ ὄντος οὐκ ἀνάγκη κίνησιν εἶναι, ὅπερ τῇ ὕλῃ προσήκει.

49 Simplicius, in Cael. 13,23-14,29 HEIBERG.

50 There is no extant Greek manuscript containing the text of Xenarchus' treatise. Fragments are preserved only in Simplicius' Commentary on Aristotle's *On the Heavens*. In his work, Xenarchus aimed at refuting Aristotle's theory about the existence of a fifth element as constitutive substance of the heaven.

51 See generally T. WAGNER, *Enstasis / Einwand*, in: O. HÖFFE (ed.), *Aristoteles-Lexikon*. Stuttgart 2005, 186.

motion along it.»<sup>52</sup> In other words, even assuming the existence of further simple lines, for instance the cylindrical helix, in addition to the straight line and the circle, it does not follow necessarily that there is actually a simple body moving along that line.

In his second argument, Alexander rejects Xenarchus' thesis and shows it to be completely wrong. In contrast to Xenarchus, Alexander affirms that the cylindrical helix is not a simple line, but the product of two dissimilar motions, one circular, one along a straight line. In fact, from a geometrical point of view the helix is a curve in three-dimensional space. In the course of the argument, Simplicius cites an interesting passage of Xenarchus' treatise, in which the author tries to show how we can geometrically construct an evenly balanced helical line. The method that Xenarchus envisages is as follows: By rotating a rectangle around one of the sides or axes, a circular cylinder will be created. Now, if during this rotation a single point is being moved along the side parallel to the axis, the final result of such a double or twofold motion will be a helix. As a matter of fact, the point generating the helix moves uniformly. Therefore, every single part that forms the helix is equal to each other. In other words, the helix is homoimerous. Assuming that things that are homoimerous are *ipso facto* also simple, Xenarchus concludes that the helix is a simple line. But Simplicius (probably following Alexander) firmly rejects this idea of Xenarchus'. He says expressly: «For although a simple line is always also homoimerous, a homoimerous line is not always simple.»<sup>53</sup>

In support of his refutation, Simplicius also refers to Alexander's observations about the helix or ecliptic generated by the sun in the course of its motion on the celestial sphere. To a certain extent, what Alexander really means when dealing with the ecliptic remains fairly unclear. However, since the sun apparently moves both on the zodiac and on the sphere of the fixed stars, and these two motions occur around different poles, one has to conclude that the helix is not a simple line, but has a mixed nature.

In view of the fact that Simplicius presents Alexander's second argument as "better" (καλλίωv) in comparison to the first, it should be noted that the scholiast of *Marcianus gr.* 211 does not even mention Alexander's first argument and uses only the second one in his marginal commentary. It would seem that he agrees with Simplicius and follows his judgment. To visualize the dependence of the scholium in *Marcianus gr.* 211 on Simplicius' Commentary, and to show the extent to which the scholium cites or paraphrases

52 Translation by I. MUELLER, *On Aristotle. On the Heavens* 1. 2-3. London 2011, 46.

53 Translation by MUELLER, *On Aristotle* (as in note 52), 47.

his exegetic model, I provide a synoptic version of the two texts.

*Marcianus gr.* 211 (f. 1v)

ἔλεγεν ὁ Ξέναρχος ὅτι

ἀπλῆ ἔστι γραμμὴ καὶ ἡ ἐπὶ τοῦ κυλίνδρου ἔλιξ, διότι πᾶν μόριον αὐτῆς παντὶ ἴσῳ ἐφαρμόζει· εἰ δὲ ἔστι μέγεθος ἀπλοῦν παρὰ τὰ δύο, εἴη ἂν καὶ κίνησις ἀπλῆ παρὰ τὰς δύο καὶ σῶμα ἀπλοῦν ἄλλο παρὰ τὰ πέντε τὸ τὴν κίνησιν ἐκείνην κινούμενον.

πρὸς ὃν κατὰ ἔνστασιν καλῶς ὑπαντᾷ ὁ Ἀλέξανδρος ὅτι οὐκ ἔστι ἀπλῆ γραμμὴ ἢ ἐπὶ τοῦ κυλίνδρου

Simplicius, *in Cael.*, p. 13,23-14,29 HEIBERG

Ὁ δὲ Ξέναρχος πρὸς πολλὰ τῶν ἐνταῦθα λεγομένων ἀντειπῶν ἐν τοῖς Πρὸς τὴν πέμπτην οὐσίαν αὐτῷ γεγραμμένοις ἀντεῖπε καὶ πρὸς τὸ αἴτιον δέ, ὅτι καὶ τὰ μεγέθη ταῦτα ἀπλᾶ μόνον, ἢ τε εὐθειᾶ καὶ ἡ περιφερῆς.<sup>54</sup> «ἀπλῆ γάρ ἐστι, φησί, γραμμὴ καὶ ἡ ἐπὶ τοῦ κυλίνδρου ἔλιξ, διότι πᾶν μόριον αὐτῆς παντὶ ἴσῳ ἐφαρμόζει· εἰ δὲ ἔστι μέγεθος ἀπλοῦν παρὰ τὰ δύο, εἴη ἂν καὶ κίνησις ἀπλῆ παρὰ τὰς δύο καὶ σῶμα ἀπλοῦν ἄλλο παρὰ τὰ πέντε τὸ τὴν κίνησιν ἐκείνην κινούμενον.» πρὸς δὲ τὸν Ξέναρχον ὁ Ἀλέξανδρος ὑπαντᾷ διχῶς, ποτὲ μὲν κατὰ ἀντιπαράστασιν· συγχωρῶν γὰρ ἀπλῆν εἶναι τὴν κυλινδρικήν ἔλικα λέγει, ὅτι οὐχ ὡς ποιητικὰ αἴτια τῶν κινήσεων τὰ μεγέθη παρέθετο ὁ Ἀριστοτέλης· οὐ γάρ, εἰ τὸ ἀπλοῦν σῶμα ἀπλῆν κίνησιν κινεῖται κατὰ ἀπλῆς γραμμῆς, ἤδη καὶ κατὰ πάσης ἀπλῆς γραμμῆς ἀπλοῦν σῶμα φυσικὸν ἀπλῆν κινεῖται κίνησιν, ὅπερ ὁ Ξέναρχος ἀξιοῖ· οὐ γὰρ τοῦτο τίθησιν Ἀριστοτέλης, μήποτε δὲ βιαιότερα ἐστὶν ἢ ὑπάντησις τοῦ Ἀριστοτέλους σαφῶς εἰπόντος, ὅτι αἰτιὸν ἐστὶν τὸ καὶ τὰ μεγέθη ταῦτα ἀπλᾶ μόνον εἶναι τὴν τε εὐθειᾶν καὶ τὴν περιφέρειαν· κἂν γὰρ ὡς ὑλικά αἰτία φησι καὶ κατ' αὐτὸ τοῦτο οὐκ ἀνάγκη καὶ ἄλλου μεγέθους ὄντος ἀπλοῦ εἶναι καὶ ἄλλην ἀπλῆν κίνησιν, ἀλλὰ τό γε μόνα ταῦτα ἀπλᾶ εἶναι μεγέθη σαφῶς εἰρημένον ἀνατρέπεται, εἴπερ ἔστι καὶ ἄλλο. καλλίων οὖν ἢ κατὰ ἔνστασιν ὑπάντησις τοῦ Ἀλεξάνδρου λέγοντος, ὅτι οὐδὲ ἀπλῆ

54 Cf. Aristotle, *Cael.* I 2, 268b19-20.

ἔλιξ εἵπερ ἐκ δύο κινήσεων ἀνομοίων γεννᾶται, κυκλικῆς τε καὶ ἐπ' εὐθείας· εὐθείας γὰρ κύκλω περὶ τὴν ἐπιφάνειαν τοῦ κυλίνδρου περιεργασμένης καὶ σημείου τινὸς ἐπὶ τῆς<sup>α</sup> εὐθείας ὁμαλῶς κινουμένου γεννᾶται ἢ κυλινδρική ἔλιξ ὡς καὶ αὐτὸς ὁμολογεῖ ὁ Ξέναρχος·

ἔφασκε δὲ τὴν ἔλικα ἀπλῆν ὡς ὁμοιομερῆ· ἀλλ' ἢ μὲν ἀπλῆ γραμμὴ πάντως καὶ ὁμοιομερῆς, ἢ δὲ ὁμοιομερῆς οὐ πάντως ἀπλῆ εἰ μὴ καὶ μονοειδῆς εἶη<sup>β</sup>· καὶ εἰ ἀπὸ κινήσεως γίνοιτο, μονοειδῆς ἐστὶ καὶ αὕτη, μᾶλλον δὲ μία. καὶ γὰρ ἢ τῆς ἡλιακῆς κινήσεως ἔλιξ ὑπὸ δύο κυκλικῶν γινομένη τῆς τε τοῦ μονοειδοῦς<sup>γ</sup> ἐπὶ τοῦ ζωδιακοῦ καὶ τῆς ἀπλανοῦς, ἐπεὶ περὶ διαφόρους πόλους ἐκάτερα γίνεται, καὶ ἢ ἔλιξ μικτὴν ἔσχε φύσιν. ἔτι δέ, φησὶν ὁ Ἀλέξανδρος, αἰ ἀπλαῖ κινήσεις κατὰ τὴν πρὸς τοῦ παντὸς μέσον σχέσιν τὸ ἀπλαῖ εἶναι ἔχουσιν. ἢ μὲν γὰρ περὶ τὸ μέσον, αἰ δὲ ἀπὸ τοῦ μέσου καὶ πρὸς τὸ μέσον· ἢ δὲ ἔλιξ οὐ τοιαύτη.

γραμμὴ ἐστὶν ἢ ἐπὶ τοῦ κυλίνδρου ἔλιξ, εἵπερ ἐκ δύο κινήσεων ἀνομοίων γεννᾶται κυκλικῆς τε καὶ ἐπ' εὐθείας· εὐθείας γὰρ κύκλω περὶ τὴν ἐπιφάνειαν τοῦ κυλίνδρου περιεργασμένης καὶ σημείου τινὸς ἐπὶ τῆς εὐθείας ὁμαλῶς κινουμένου γεννᾶται ἢ κυλινδρική ἔλιξ, ὡς καὶ αὐτὸς ὁ Ξέναρχος ὁμολογεῖ γράφων οὕτως· «ἔστω τι τετράγωνον καὶ τοῦτο περιεργασθὼ κύκλω μενούσης μιᾶς πλευρᾶς, ἥτις ἄξων τοῦ κυλίνδρου· ἐπὶ δὲ τῆς ταύτης παραλλήλου τῆς καὶ περιστρεφομένης φερέσθω τι σημεῖον, καὶ ἐν ἴσῳ χρόνῳ τοῦτο τὸ σημεῖον ταύτην διεξίτω τὴν γραμμὴν καὶ τὸ παραλλήλογραμμον εἰς τὸ αὐτὸ ἀποκαθιστάσθω πάλιν, ὅθεν ἤρξατο φέρεσθαι· ποιεῖ γὰρ οὕτως τὸ μὲν παραλλήλογραμμον κύλινδρον, τὸ δὲ φερόμενον σημεῖον ἐπὶ τῆς εὐθείας ἔλικα καὶ ταύτην, ὡς φησιν, ἀπλῆν, διότι ὁμοιομερῆς.» ἀλλὰ κἂν ὁμοιομερῆς ἐστὶν, οὐκ ἔστιν ἀπλῆ· ἢ μὲν γὰρ ἀπλῆ γραμμὴ πάντως καὶ ὁμοιομερῆς, ἢ δὲ ὁμοιομερῆς οὐ πάντως ἀπλῆ, ἐὰν μὴ καὶ μονοειδῆς ἦ, καί, εἰ ἀπὸ κινήσεως γίνοιτο, μονοειδῆς ὑπάρχει καὶ αὕτη, μᾶλλον δὲ μία. καὶ γὰρ ἢ τῆς ἡλιακῆς κινήσεως ἔλιξ ὑπὸ δύο κυκλικῶν γινομένη τῆς τε τοῦ ἡλίου ἐπὶ τοῦ ζωδιακοῦ καὶ τῆς <τῆς> ἀπλανοῦς, ἐπειδὴ περὶ διαφόρους πόλους ἐκάτερα γίνεται, καὶ ἢ ἔλιξ μικτὴν ἔσχε φύσιν. ἔτι δέ, φησὶν ὁ Ἀλέξανδρος, αἰ ἀπλαῖ κινήσεις κατὰ τὴν πρὸς τὸ τοῦ παντὸς μέσον σχέσιν τὸ ἀπλαῖ εἶναι ἔχουσιν· ἢ μὲν γὰρ περὶ τὸ μέσον, αἰ δὲ ἀπὸ τοῦ μέσου καὶ πρὸς τὸ μέσον· ἢ δὲ ἔλιξ οὐ τοιαύτη.

<sup>α</sup> τῆς scripsi coll. Simpl. in Cael. 14,12 Heiberg: τοῦ codex || <sup>β</sup> εἶη scripsi : ἢ codex || <sup>γ</sup> τοῦ μονοειδοῦς codex: τοῦ ἡλίου Simplificius; τοῦ ἡλίου scripserim



To summarize: In this article, I considered further examples that confirm some of the results reached in BROCKMANN – LORUSSO 2014. In particular, looking at the excerpts from Aristotle's *On the Heavens* that Bessarion collected in his Paris autograph, the dependency of *Parisinus gr.* 2042 from *Marcianus gr.* 211 has been demonstrated once again beyond reasonable doubt. Furthermore, I considered the annotations inserted by Bessarion on the margin of Aristotle's treatise *On Generation and Corruption* in the Venice manuscript. Although Bessarion's annotations depend mostly on Philoponus' exegesis, they illustrate how deeply he studied both Aristotle and his commentator in order to make the treatise *On Generation and Corruption* more understandable and useful as a source for further literary production. Finally, I touched upon three new examples from the corpus of scholia on Aristotle's *On the Heavens* preserved in *Marcianus gr.* 211 as well as in two other Greek manuscripts. As far as the reception of Aristotle's cosmological and astronomical ideas in Byzantium during the 13th century is concerned, this scholiastic corpus represents a witness of primary importance. For the scholia combine materials taken from well known commentators of Aristotle from Late Antiquity, especially Philoponus and Simplicius, with additional ideas not based on otherwise known sources. This fascinating corpus definitely deserves more thorough investigation in order to highlight further aspects of the transmission of Aristotle's scientific works in the Byzantine manuscript culture. Beyond that, careful investigation might also shed light on the connections between the manuscripts containing the scholia and Bessarion's philological work on the manuscript texts themselves.

## ABSTRACT

This article deals with Bessarion's excerpts from Aristotle's treatise *On the Heavens* in *Parisinus gr. 2042* as well as with *Marcianus gr. 211* that Bessarion used as model. A further topic is the exploration of the commentaries to Aristotle's treatise *On Generation and Corruption* written down by Bessarion on the edges of *Marcianus gr. 211*. Finally, the article touches upon three commentaries to Aristotle's *On the Heavens* contained in *Marcianus gr. 211* in order to study their sources as well as their transmission in other Greek manuscripts.

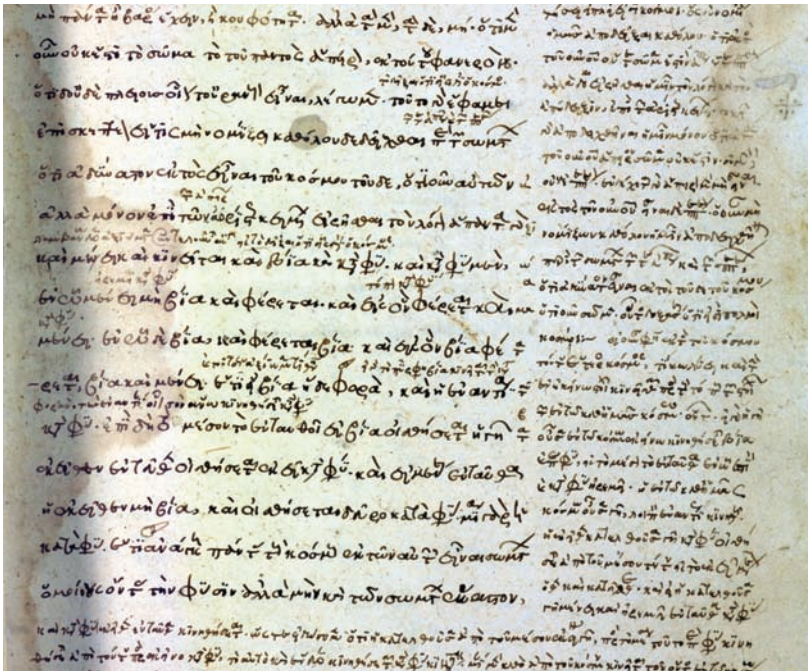


Plate 1: *Marcianus gr. 211, f. 13r*  
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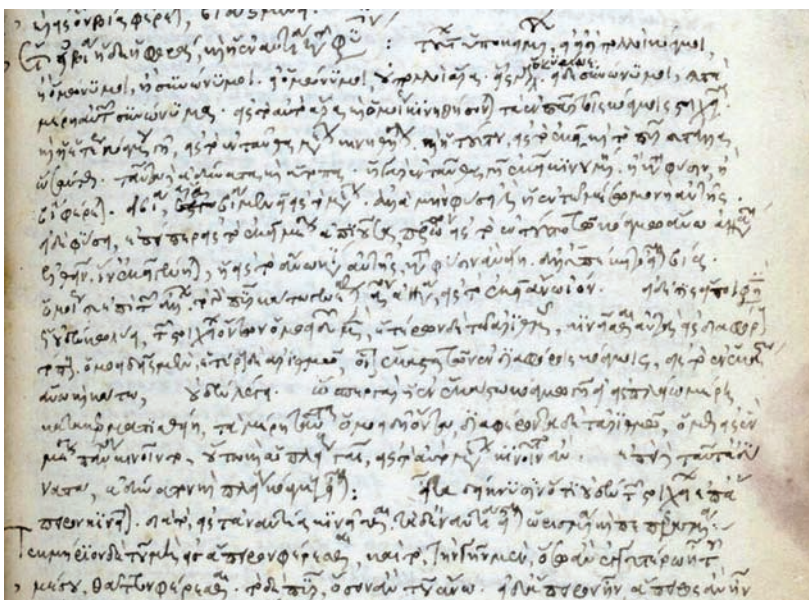


Plate 2: Parisinus gr. 2042, f. 70r (Detail), © BnF

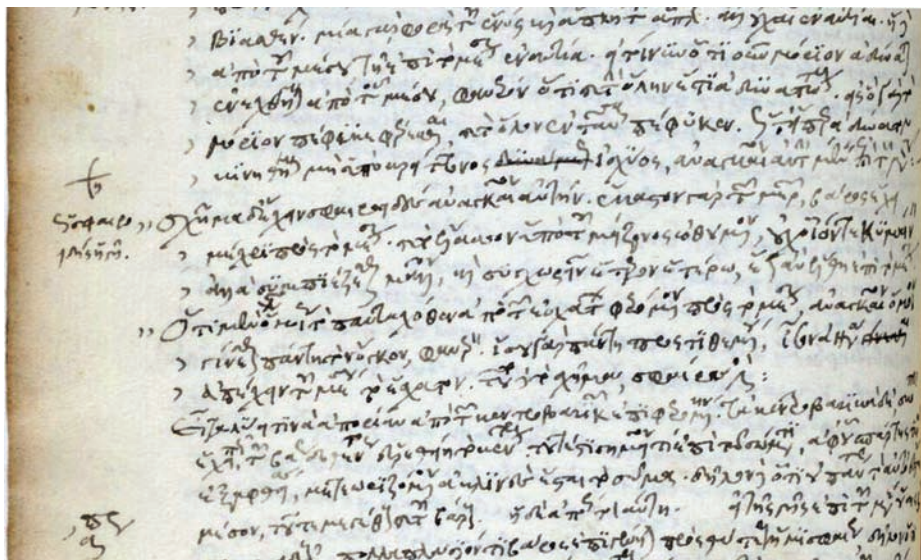


Plate 3: Parisinus gr. 2042, f. 76v (Detail), © BnF

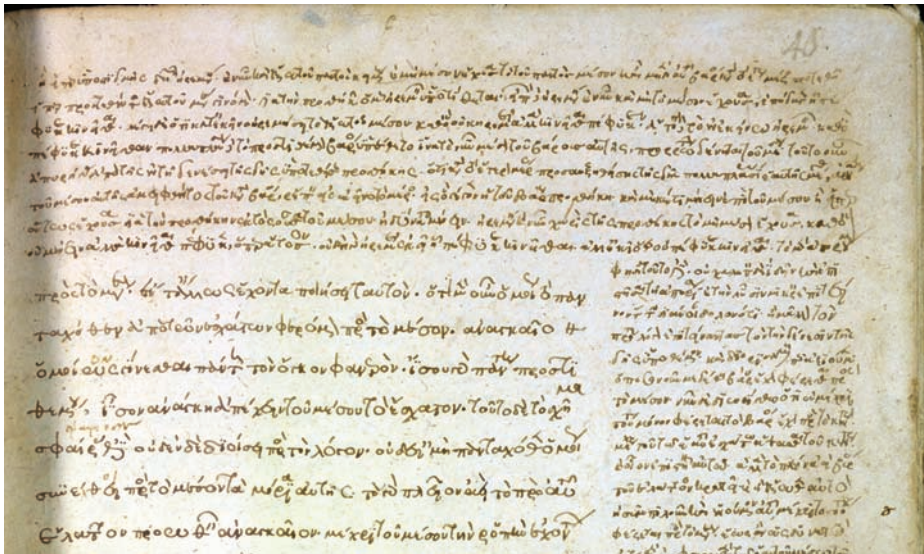


Plate 4: Marcianus gr. 211, f. 43r (Detail)

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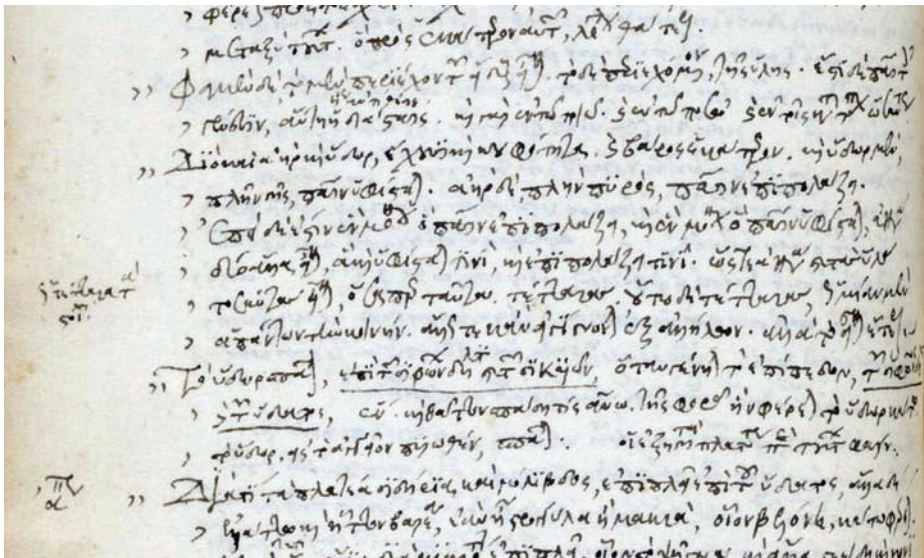


Plate 5: Parisinus gr. 2042, f. 79v (Detail), © BnF

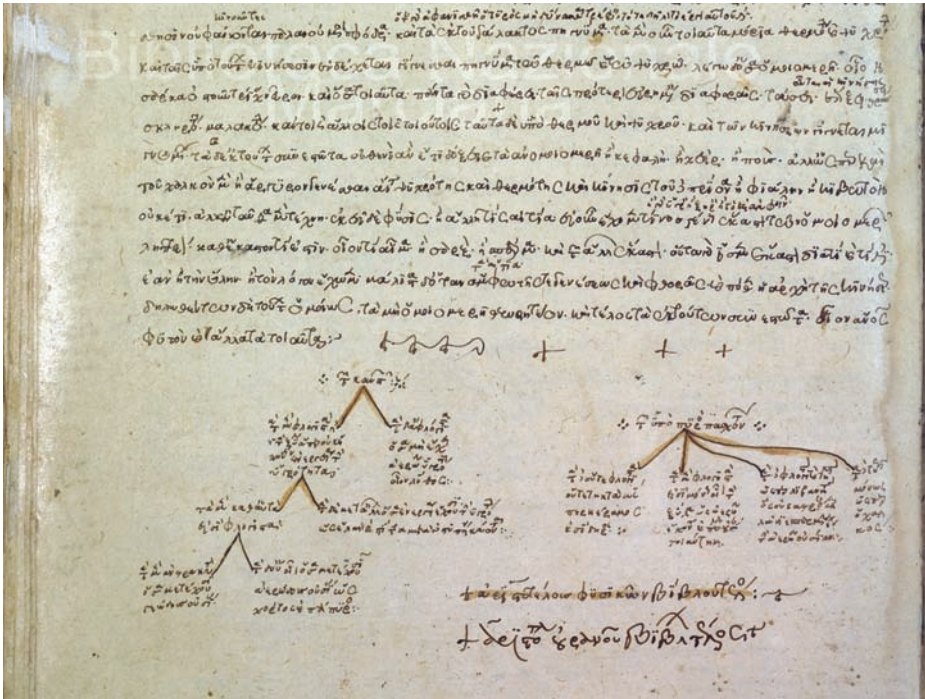


Plate 6: Marcianus gr. 211, f. 131v (Detail)  
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