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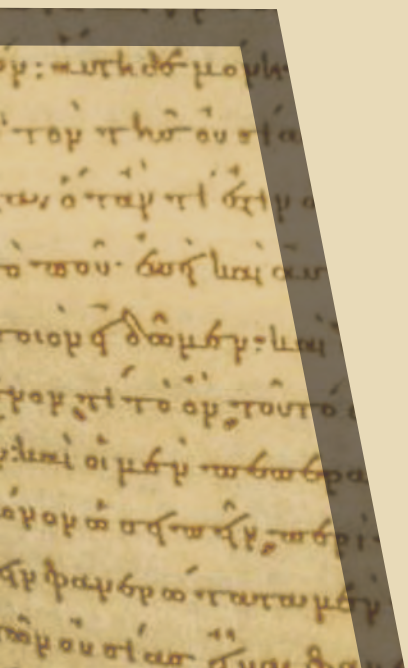

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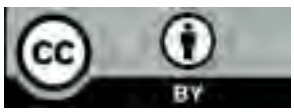

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ARISTOTELICA

Aristotelica is a peer-reviewed journal devoted to Aristotle and Aristotelianism through the centuries with a special focus on the texts and textual traditions of Aristotle as a common intellectual background for European and Mediterranean cultures. Filling a substantial gap in existing academic journals, *Aristotelica* covers the works of Aristotle, with particular attention to his theoretical treatises, their textual constitution, and the entire exegetical tradition, and with an emphasis on philology as an appropriate scholarly approach to philosophical texts. The time span is from Aristotle's contemporaries and Greek philosophical literature in Roman times, through the medieval period (Byzantine, Arabic, Latin) and Renaissance, going up to the twentieth century. The journal also considers submissions on the relevance of Aristotelianism to theoretical, epistemological, and ethical debates, as well as to fundamental questions about the establishment, definition, and development of ancient philosophy and science.

Submissions, which can be very short or long (there is no word limit), and written in any of the main European languages, must meet the highest scholarly standards and be based on sound methodology. They should contribute significantly to the field by asking innovative questions and reaching well-argued and ground-breaking conclusions.

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EDITORIAL

by Silvia Fazzo and Jill Kraye

Aristotelica 5 (2024) begins with two articles, one dealing with mathematical physics, the other with biology, illustrating the journal's commitment to covering technical and scientific issues as these relate to Aristotelianism. Both the articles of Sergey Trostyanskiy on 'Pseudo-Archytas on Time's Existence' and of Maria Varlamova on 'Alexander of Aphrodisias on the Causes of Animal Generation' in fact highlight the importance of evaluating Aristotelianism in light of other schools of philosophical thought, such as the Neopythagoreanism of Late Hellenistic and Imperial age, and of the commentary tradition, as represented most notably by Alexander of Aphrodisias.

The core of the remaining part of the issue is made up of a dossier of three further articles, in the 'Notes and Discussions' section. Once more, special attention is paid to textual constitution and transmission as a factual basis for further cutting-edge research. The new dossier is a follow-up to a previous one in *Aristotelica* 3 (2023), consisting of two articles on *Physics* VIII 1. Evidence was provided there for a previously neglected *lectio difficilior* at 250b13.

Given the theoretical relevance of the reading of ms. J at 250b13, it is especially welcome that the dossier includes, first of all, a highly critical response by Pieter Hasper and Rüdiger Arnzen; then, Wians' response to Hasper and Arnzen; and, finally, Silvia's new contribution. As well as taking into account the comments and remarks from Monica Ugaglia, Laura Folli and Maria Varlamova, Silvia responds in detail to Hasper and Arnzen; but she also praises them for a detail they discovered concerning the passage in ms. E, Par. gr. 1853, one to which she gives special weight in her contribution.

The main textual data at stake are found in ms. J, the oldest codex of Aristotle's *Metaphysics* and his *corpus physicum* (i.e., the *Physics*, *De caelo*, *De generatione et corruptione* and *Meteorologica*). An image of this manuscript can be seen on the journal's cover.

The exploration of ms. J is in line with our first *Editorial*, which appeared in *Aristotelica* 1. There we announced our programme of focusing on textual issues, including, among other matters, the readings of the earliest manuscripts of Aristotle's works, especially those which have so far been neglected. The dossier provides a model of the kind of lively debate which the journal actively seeks to promote.

Sergey Trostyanskiy

PSEUDO-ARCHYTAS ON TIME'S EXISTENCE: ARISTOTLE AND NEOPYTHAGOREAN THOUGHT

Abstract

This article aims to explain the reception and reassessment of Aristotle's philosophy of time during the first century BCE by Pseudo-Archytas, a thinker who exercised great influence over and laid the groundwork for Neopythagorean and Neoplatonist philosophies of nature. The article scrutinizes Pseudo-Archytas' theory by examining his solution to the paradox of time's existence. Through a comparative analysis of Aristotle's and Pseudo-Archytas' discourse, it seeks to demonstrate that their theories, despite apparent similarities (associated with their overall approach to the subject matter, the terms utilized in discourse, etc.), exhibit different philosophical underpinnings and are in many ways antithetical.

Keywords

Pseudo-Archytas, Aristotle, *Physics*, Time, Time's Existence

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Introduction

As we learn from Aristotle's report, the idea of time's existence was regarded as problematic during his time. Indeed, some illustrious thinkers of the classical period argued that concepts such as time and becoming were unthinkable.[1] In general, their discourse aimed to demonstrate that the subject of natural studies was compromised, having been contaminated by paradoxes and aporias. These were the marks of an illegitimate extension of thought which sought to extend its proper domain so as to lay hold of the ineffable object and which turned out to be self-contradictory.[2] Aristotle took this challenge seriously and structured his discourse around paradoxes, using them as heuristic tools to foster discovery. A resolution of paradoxes, consequently, was assumed by Aristotle to be the path to knowledge. He then aimed to purge the study of nature from paradoxes to save the phenomena. By doing this he intended to match experience with thought so as to make the phenomenon intelligible and to ground the intellect in the observable and experiential.[3] Posterity took the same approach of identifying paradoxes and solving them. If a paradox or a dilemma was found to be unsolvable, thus making thought self-contradictory, the reality of a phenomenon associated with it would be jeopardized, and existence would consequently be denied to it. A successful resolution of a paradox, on the other hand, would grant existence to a phenomenon and restore its knowability. The aporetic aspects associated with time were its existence, its generation and its ubiquity.

Moreover, some thinkers (e.g., Heraclitus and Cratylus, among others) fully endorsed the proposition about the impermanence of becoming and made it an axiom. They entertained the thesis of instability and pushed it to extremes, arguing that there is nothing unitive and permanent in a changing

[1] The Eleatics argued in this context that becoming is different from being and hence from what is thinkable, i.e., from what can be apprehended by the mind. Parmenides, *Fr*. 3.7: τὸ γὰρ αὐτὸ νοεῖν ἐστίν τε καὶ εἶναι. Time is linked with becoming. Hence, it must be nonexistent and unthinkable. Thus, "time is not nor will be another thing alongside Being, since this was bound fast by fate to be entire and changeless." (Parm. *Fr*. 8.36-6, translated by McKirahan). A more general inference appears to be that the phenomena of becoming and of time, therefore, cannot be saved and that no science of nature is possible.

[2] Aristotle, *Phys*. 239b5-9.

[3] See Owen (1986a) pp. 295-314.

thing that the mind may lay hold of.[4] The Pythagorean way of approaching nature, on the other hand, was via setting out limits to becoming, so as to make it limited and knowable *qua* ordered in respect to number, i.e., a limited plurality. This epistemic approach was attractive to many philosophers since it promised a cohesive theory of becoming and of time. It was premised on Philolaus's epistemic thesis that nothing is known apart from number and that whatever is known is known through number.[5] Aristotle's approach to the subject of time was firmly grounded in Pythagorean thought insofar as he understood time as a number of some kind.[6] However, Aristotle's ontology of number was not Pythagorean. This inconsistency, in the eyes of certain philosophers of Pythagorean extraction, was the sign of Aristotle's departure from truth. Consequently, they understood Aristotle's solutions to the paradoxes of time as either incomplete or misleading. They therefore sought to correct his 'errors'. Pseudo-Archytas's treatises represented one such attempt. They aimed to indicate silently that Aristotle's thought was subsequent to, and misleading in comparison with, that of Archytas, one of the original Pythagorean philosophers of the classical period.

Indeed, at first glance, it appears that Aristotle and Pseudo-Archytas philosophized about the same things, utilizing the same approach to the subject and the same terms. Pseudo-Archytas accepted Aristotle's approach to the subject[7] and the agenda of using paradoxes as heuristic tools to foster

[4] Plato, *Theat*. 160d8-9: ῥεύματα κινεῖσθαι τὰ πάντα.

[5] Philolaus, *Fr*. 3.1-3: "For, there will not be anything that is going to know at all, if everything is unlimited according to Philolaus" (translated by Huffman). Also see Huffman's excellent commentary on the fragment.

[6] As Goldin (2016) p. 695 rightly pointed out, "Aristotle would agree with Philolaus' assertion in fragment 4, that numbers are principles of our knowledge of things." This, indeed, can rise someone's eyebrows in respect to whether Aristotle here committed the error of genera-crossing (μετάβασις), i.e., whether the axioms and proofs from a mathematical science were used to prove something in a different and not subordinate subject genus. Arist. *An. Post*. 75a35-b10. The reason is that the use of number and of numerical relations in *Physics* IV here apparently goes beyond that which is merely analogical. The problem, as I see it, lies in Aristotle's unsettled classification of the sciences and the indeterminate role of mathematics, including in constructing the science of nature. Cf. Hussey (1991) p. 132.

[7] Simplicius, *In Cat*. 8.68.22-25: "Archytas [i.e., Pseudo-Archytas], attempting [to demonstrate] the principles Pythagorically [...] says that all art and knowledge is something ordered (*ti tetagmenon*), and a definite object (*hôrismenon pragma*), but that a thing of this sort (*toiouton* [*ti*]) is determined in number." Translated by Horky (2016).

discovery. However, his theory differed in various respects because it was premised on differing theoretical foundations. The paradox of time's existence, which is the point of interest of this article, was also solved or left unsolved differently by Aristotle and Pseudo-Archytas. A brief review of Aristotle's discussion of the paradox and a careful analysis of Pseudo-Archytas's solution will help us better understand Pseudo-Archytas's interpretative effort in respect to Aristotle's theory and his approach to the subject of time in general.

I should make a few comments on the identity or, rather, pseudo-identity of the character whom we know as Archytas or Pseudo-Archytas. This author wrote multiple treatises, some of which are partially extant.[8] Moreover, we possess various testimonies or doxographical accounts of his thought.[9] Yet his precise identity remains mysterious.[10] The texts preserved in the Doric dialect claim to come from someone who was, perhaps, the contemporary of Plato and whom Aristotle allegedly plagiarized.[11] Some eminent philosophical authorities of late antique thought, however, maintained that he was the authentic historical Archytas. Such great minds as Iamblichus, Damascius and Simplicius, among others, fully endorsed the authenticity of the texts attributed to him and believed him to be the historical Archytas. Others questioned his identity and did not accept his authenticity.[12] Modern scholars classify Archytas's or Pseudo-Archytas's treatises as belonging to the Doric Pythagorean pseudepigrapha.[13] In this article I assume the latter viewpoint without making any further historical claims. I do not, however, deny at the outset the possibility that the treatises attributed to him and the reports about him may contain various traits of the historical Archytas, perhaps in an edited and modified form. However, I also recognize that the Pythagorean thought presented in the fragments is Platonizing. In

[8] Edited by Thesleff (1965) and Szlezák (1972).
[9] The fragments that concern us here were mainly preserved by Simplicius in his Commentaries on Aristotle's *Categories* and *Physics*.
[10] See Horky (2021).
[11] As Ulacco (2016) p. 202 argued, it was "an artificial Doric Greek employed with the intention of imitating the ancient dialect as it was used in Magna Graecia at the time of the ancient Pythagoreans." Cf. Chiaradonna (2019) p. 225.
[12] E.g., Themistius. See Horky (2021) p. 140.
[13] See Ulacco (2016) p. 203. Cf. Centrone (2014) pp. 319-20.

any case, for the sake of clarity, let us assume that this thinker is of the Pythagorean extraction and that he offers accounts of time, number, etc. which are in various ways antithetical to those of Aristotle. In this article I use Holger Thesleff's edition of Pseudo-Archytas's fragments.

1. The Paradox of Time's Existence in Physics *IV 10*

Let us now look at the paradox of time's non-existence. Aristotle stated it in the beginning of his *Phys.* IV 10. He starts by making an important remark on the issue at hand:

> the following considerations would make one suspect that it [time] either does not exist at all or barely, and in the obscure way. One part of it has been and is not, while the other is going to be and is not yet. Yet time – both infinite time and any time you like to take – is made up of these. One would naturally suppose that what is made up of things which do not exist could have no share in reality.[14]

Here the status of what makes up time, i.e., the parts or chunks of time, compromises it. However, this is simply not enough to set conditions for the denial of time's existence. What this passage tells us is that the being of time is transient. Aristotle then further develops this thread and sets out conditions for existence. He assumes that the being of time is quantitative and that quantity is defined as that which is divisible.[15] Now:

> if a divisible thing is to exist, it is necessary that, when it exists, all or some of its parts must exist. But of time some parts have been, while others are going to be, and no part of it is, though it is divisible. For the now is not a part: a part is a measure of the whole, which must be made up of parts. Time, on the other hand, is not held to be made up of nows.[16]

Here we can find a cluster of issues. First of all, the explicit premise is that time is a continuous whole made of parts. Yet a whole is defined as that from which no part is missing.[17] Hence, it is a complete whole.[18] Here, however,

[14] Arist. *Phys*. 217b32-218a3.
[15] Arist. *Metaph*. 1020a6-7.
[16] Arist. *Phys*. 218a6-8.
[17] Arist. *Metaph*. Δ 26.
[18] *Ibid*., 1021b12-13.

we have a whole with missing parts. Consequently, by definition it cannot be a whole. Indeed, a whole, according to Aristotle, can be mutilated.[19] It can thus still exist as a mutilated whole without certain parts, taking it for granted that the other parts remain intact. Yet, of time we learn that no part of it is in existence. We must bear in mind that for Aristotle a whole is a container of parts; therefore, it cannot exist apart from its parts.[20] Thus, time does not seem to be merely mutilated but utterly lacking parts and hence existence.

Perhaps a more reasonable suggestion will be that time is a sum or total of some kind. A total is defined as a quantity whose chunks have a position that does not make a difference for the being of that quantity.[21] In general, position is attributed to quantities (i.e., their parts and attributes).[22] Moreover, position entails permanence. Thus, only what is one and continuous and not transient but abiding within the boundaries of a unified whole can have parts whose position makes a difference for the being of that unified whole. Number, on the other hand, is a quantity whose parts/chunks are without position. Yet, numbers, i.e., elements of numerical progressions, have some sort of quasi-position, as they are ordered in a consecutive series. And the ordered quasi-position of a number (say, 9 in a series of 10) seems to make a difference for the being of that series, as we cannot interpose these numbers without disturbing the entirety of a series (of its form, so to speak).[23] The same applies to time, as it is impossible to think of its constitution apart from the quasi-position of its parts (e.g., by reordering what is in the past and moving it to what is coming up).

Aristotle lists number along with some other sums or totals (e.g., fire, water, etc.) and tells us that it does not exist as a unified whole.[24] We also learn from Aristotle that a whole can be mutilated and still exist as a unified whole, whereas a sum cannot. Time is a kind of number. The question to be asked in this context is whether the removal of a part of time will constitute

[19] *Ibid*., 1024a11-12.
[20] *Ibid*., 1023b27-28.
[21] *Ibid*., 1024a1-3.
[22] *Ibid*., 1016b24-26: "That which is indivisible in quantity and *qua* quantity is called a unit (μονάς, monad) if it is not divisible in any dimension and is without position (ἄθετος), a point if it is not divisible in any dimension and has position (θέσις)."
[23] See Katz (2021).
[24] Arist. *Metaph*. 1024a6-7.

a mutilation of a unified whole which in a way must remain a whole. We learn, in fact, from Aristotle that a number, while experiencing addition or subtraction, does not remain the same number. "For two is not mutilated if one of the two ones is taken away [...] the number is no longer the same."[25] This also applies to numerical relations.[26]

Moreover, number is a limited plurality. Hence, it is not one by definition but, rather, many, i.e., the opposite of one. In addition, number is a discrete quantity. It is neither one nor continuous. So, it cannot be a whole. And yet, as we learn from Aristotle, these considerations apply to scientific/abstract numbers alone and not to numbers instantiated in motions. But time is a number which is counted in motion and, therefore, instantiated.[27] It is not an abstract number with which we count. It is what is counted in motions. Motion is continuous and so is the number instantiated in it. So, it must also be one and continuous and hence a whole. Therefore, we cannot think of time as a total.

In general, to think of time as a total of some kind is first and foremost to deprive it of its intrinsic principle of unity, to strip it of its definite character, to make a move toward the indeterminate. This is precisely the opposite of what Aristotle aimed to establish. Moreover, Aristotle seems to suggest silently that thinking of time as a sum is counter-intuitive since we normally tend to think of time and times as unities of some kind, and hence as wholes. Indeed, the unity of time is premised on the unity of motion. Yet Aristotle notes that time is an unusual whole since its parts do not persist. The reason is that the being of time is transient. Its being is in becoming, as Simplicius would later point out.[28]

Another significant issue is associated with a kind of division, i.e., the "greater division" of time (introduced in Plato's *Timaeus*), utilized in the paradox.[29] This kind of division does not even allow us to approach the paradox. Firstly, it does not really identify proper parts but rather attributes

[25] *Ibid.*, 1024a12-14.
[26] *Ibid.*, 1024a21-22: "Again, they [parts] must be continuous; for a musical scale (ἡ γὰρ ἁρμονία) consists of unlike parts and has position, but cannot become mutilated."
[27] Arist. *Phys*. 219b5-7.
[28] Simpl. *In Cat*. 8.354.8: τὰ ἐν τῷ γίνεσθαι τὸ εἶναι ἔχοντα.
[29] Plat. *Tim.* 37e.

qualities to the parts or chunks of time, i.e., the quality of expired-ness and that of not-yet-ness. A part is measure of a whole.[30] A part is also that into which a whole is deconstructed. Now, the whole of time, if, indeed, time is a whole of some kind, is not divided into two simple parts, i.e., the past and the future. Therefore, to deconstruct time into its past and future parts does not really amount to a deconstruction. Moreover, the notion of time's measure becomes blurred under this type of division since neither the past without qualification nor the future can measure time (i.e., contain the unit of measure). Hence, we lose both parts and measure.[31] Arguably, the "lesser" division of time (again offered in Plato's *Timaeus*), can make time immune to the paradox.[32] Yet we also see that Aristotle seems to stick here with the greater division by denying present time the status of a part proper (and thus denying the possibility of hours, minutes, etc. to represent the present continuous wholes). Aristotle, however, reintroduces the lesser division when discussing the issues of time's ubiquity.[33]

Finally, the application of the greater division to time should amount to the assumption that to exist (i.e., to exist as an incomplete actuality, as becoming) is to be in the now, since nothing can be or become in time due to the previously mentioned reasons. Yet, Aristotle explicitly asserts that nothing can move/become in the now and that the now itself is not subject to motion, i.e., incomplete actuality. Things that become, become in time. Nothing can become/move apart from time.[34] Thus, to become is to become in time, and time must accommodate all things that come into being. These are, perhaps, the reasons why Aristotle does not really offer any solution to the paradox. He simply ignores it and silently points out that to deny existence to time is counter-intuitive. His goal is rather to reconcile the phenomenon of time, whose existence is assumed/hypothesized, with thought in order to make it intelligible. His starting point is not to find out whether it

[30] Arist. *Phys*. 226b33: "That which is definitely limited (and is shortest or swiftest, etc.) constitutes measure (μέτρον δὲ τὸ πεπερασμένον)"; 218a6-7: "part is a measure of the whole (μετρεῖ τε γὰρ τὸ μέρος)".
[31] Thus, "the past and the future are no better suited to serve as measures of time than is an instant." Kretzmann (1996) p. 96.
[32] Plat. *Tim.* 37e. See also Cornford (1935) pp. 102-3.
[33] Arist. *Phys.* 220b12-14.
[34] *Ibid*., 241a15-17.

exists in the first place, but to find out what kind of existence time has, i.e., the category under which time falls. So, the proper starting point in our investigation of time is to assume its existence and to inquire into what kind of being time is. Is it a substance, a quantity, a when, etc.? In some ways, the general direction of a possible solution is presupposed by the paradox itself, which asserts that time is divisible, a whole, etc.

This dismissive attitude may be explained by Aristotle's approach to knowledge in the *Posterior Analytics*. That the paradox was not addressed by Aristotle, one may argue, was due to his method, according to which existence claims associated with any subject genus are not subject to proof. The same is true of axioms and definitions.[35] Everything else must be proved. Hence, it would be foolish to try to prove what should be assumed without proof. To prove (to offer direct proof) is to find an explanatory middle term to explain the reason why the extreme terms are connected (one belonging to the other).[36] Yet there is no middle term that can explain 'the why' of existence.[37] Hence, it is impossible to form a proper scientific syllogism and to demonstrate/prove existence. Consequently, the paradoxes associated with existence claims are not worthy of consideration. At best, Aristotle would derive time's existence by inductive reasoning or give indirect proofs of it through *reductio*.[38] For example, how can one pursue the study of nature if one denies existence to motion, time, etc.? This would amount to a complete annihilation of nature (if understood in the narrow sense of being the principle of motion). Hence, the existence of time is derive by inductive

[35] Arist. *An. Post*. 72a14-21. Cf. McKirahan (1992) p. 72: "There are three sorts of principles: axioms, which are principles occurring in more than one science and for that reason frequently called 'common' (*koina*); definitions of the subjects and attributes of the science; and assertions that the subject or subjects of the science exist. The definitions and existence claims are called proper principles (*idia*) in contradistinction to the common axioms."

[36] Arist. *An. Post*. 93a7-8.

[37] Thus, I think we should not take Aristotle's statement in *Metaph*. 1072b10, one that predicates necessity of the first mover ("the first mover, then, of necessity exists"), as the conclusion of a scientific syllogism which proves existence. Rather, we should take it as a clarification of the modality of the first mover's existence, namely that it exists actually and cannot not be.

[38] Arist. *An. Post*. 92a37-b1: οὔθ' ὡς ὁ ἐπάγων διὰ τῶν καθ' ἕκαστα δήλων ὄντων, ὅτι πᾶν οὕτως τῷ μηδὲν ἄλλως· οὐ γὰρ τί ἐστι δείκνυσιν, ἀλλ' ὅτι ἢ ἔστιν ἢ οὐκ ἔστιν.

reasoning and also proved by *reductio*. And, indeed, he tells us that time does not persist as a simultaneous whole.

2. Time's Existence in Pseudo-Archytas's Excerpts

In the fragments of Pseudo-Archytas, the notion of non-existence appears twice in different contexts. Firstly, he speaks of the whole time and asserts that "the whole time either does not exist or it hardly exists and only in a dim way."[39] Here οὐκ ἔστιν apparently designates "what is not" without qualification. "For how could that truly exist whose past is no more and whose future is not yet, while the now is partless and indivisible?"[40] This phrase, at first, gives us the impression that Pseudo-Archytas simply restates the paradox as he found it in Aristotle's *Physics*. Perhaps we may even understand this as a concession to the paradox as genuine and as demonstrating time's non-existence. Pseudo-Archytas also tells us that the reason why time is thought to be non-existent is its impermanence. Hence, time "differs from the other continuous things insofar as the parts of a line, of a figure, and of place do exist (ὑφέστηκεν), whereas those of time, which have become, perish, and those which will become, will perish."[41]

Secondly, Pseudo-Archytas tells us that one of the properties (or one part of a combined property, ἴδιον) of time is the unreal or non-existent. "Time at any moment/when and time on the whole contain as a characteristic property the partless and the unreal."[42] Here the term ἀνυπόστατος also designates that which is not, but with a qualification. It is translated in different ways, e.g., as unreal, non-existent, non-substantial, etc. I will return to the issue of this term's semantic content below. For now, I should say that there is a certain ambiguity associated with the term which opens a range of possibilities in respect to its meaning. What is important is that these statements indicate that the being of time is somehow jeopardized, that it is somehow unreal or non-

[39] Pseudo-Archytas, *Fr*. 30.13-14 : διόπερ ὁ χρόνος ἤτοι τὸ παράπαν οὐκ ἔστιν ἢ ἀμυδρῶς καὶ μόλις ἔστιν.
[40] *Fr*. 30.14-16: οὔ γὰρ τὸ μὲν παρεληλυθὸς οὐκέτι ἔστιν, τὸ δὲ μέλλον οὐδέπω ἔστιν, τὸ δὲ νῦν ἀμερὲς καὶ ἀδιαίρετον, πῶς ἂν ὑπάρχοι τοῦτο κατ' ἀλήθειαν.
[41] *Fr*. 30.10-13.
[42] *Fr*. 29.11-12: τὸ δὲ ποκὰ καὶ ὁ χρόνος καθόλου μὲν ἴδιον ἔχει τὸ ἀμερὲς καὶ τὸ ἀνυπόστατον.

existent, etc. This second thread associated with time's non-existence/unreality is unique and is not found in Aristotle (or elsewhere).

Pseudo-Archytas also makes various affirmative statements in respect to the being or existence of time. Firstly, he asserts that "there was never nature when there was no time, nor movement, when the now was not present."[43] Secondly, his definition of time is such that it clearly affirms time's existence. Does Pseudo-Archytas offer a solution to the paradox of existence? Or does he perhaps takes the same route as Aristotle in his *Physics* by simply disregarding the paradox? Let us first analyze the contexts in which the notions/terms for existence/non-existence appear and then let us see if we can find a solution in the fragments. Again, Pseudo-Archytas's strategy may be similar to that of Aristotle in that he simply fails to address the issue, thinking that the paradox is not a genuine one (but, rather, a sophism of some kind, as it aims to prove that which is not subject to proof in the first place), and that it does not deserve consideration because it goes against common intuition. In this article I will argue that Pseudo-Archytas offers to us a very clever solution, one that foreshadowed Iamblichus's theory.

What is typical of Pseudo-Archytas and what constitutes his strategy, which is clearly seen in his solutions to other paradoxes, is that he often (but not always) goes against Aristotle and applies a reversive procedure by showing that the truth of the matter is, rather, the opposite of what Aristotle affirms. For instance, his solution to the paradox of the instant basically reverses Aristotle's solution. Whereas Aristotle argued that the instant is always the same in substratum and ever different in account,[44] Pseudo-Archytas's solution was that it is ever different in substratum (i.e., numerically) and the same in account (specifically).[45] This also applies to Pseudo-Archytas's solution to the paradox of time's ubiquity in which case he simply contradicts Aristotle by implicitly assuming that the number of motion cannot be free-floating (i.e., cannot be above and beyond particular kinds and types of motion, since there are many of those). In the first place, it must be instantiated in some

[43] *Fr.* 30.7-8.

[44] Arist. *Phys*. 219b10-12: ὁ δ' ἅμα πᾶς χρόνος ὁ αὐτός· τὸ γὰρ νῦν τὸ αὐτὸ ὅ ποτ' ἦν – τὸ δ' εἶναι αὐτῷ ἕτερον – τὸ δὲ νῦν τὸν χρόνον ὁρίζει, ᾗ πρότερον καὶ ὕστερον.

[45] Ps.-Archyt. *Fr*. 30.9-10: ἀλλ' ἀεὶ ἦν καὶ ἐσσεῖται καὶ οὐδέποκα ἐπιλείψει τὸ νῦν ἄλλο καὶ ἄλλο γινόμενον καὶ ἀριθμῷ μὲν ἄτερον, εἴδει δὲ τωὐτόν.

particular type or kind of motion, i.e., in prime motion.[46] Hence, in the case of the paradox of time's existence, we may also expect the same or a similar strategy at work. Yet we can also see that, at times, Pseudo-Archytas seems to apply a different technique by making qualifications to Aristotle's account and showing that it does not arrive at truth due to its failure to capture the matter at stake in its fullness.

The paradox from the *Physics* IV 10, restated in a modified form by Pseudo-Archytas, apparently affirms time's non-existence without qualification. What is interesting to note in this context is that when we move on to analyze Pseudo-Archytas's definition of time, it immediately becomes clear that the proposed definition is premised upon the unconditional endorsement of time's existence.

3. Pseudo-Archytas' Platonizing Pythagoreanism and Two World-Orders

Before we move on to analyze Pseudo-Archytas's theory of time's existence, it will be helpful to give a brief survey of its philosophical underpinnings. One thing that becomes obvious when we read Pseudo-Archytas's excerpts is that he seems to synthesize various, e.g., Pythagorean, Platonic, Eleatic, Peripatetic, Stoic, etc. conceptual threads into one unitive theory. Yet, first and foremost, his thought was marked by Platonizing Pythagoreanism.[47] Plato's two-world metaphysics is key in deciphering Pseudo-Archytas's theory. This is clearly seen in the assertions reported by Hippolytus of Rome in which two world-orders are postulated, one intelligible and one sensible, one incorporeal and one corporeal.[48] The intelligible world is primary, and the sensible world is secondary and derivative; the intelligible world is populated by the forms/universals, and the sensible one by sensible particulars. Hence, "to be primary belongs to what is universal, and leave the last [place] to what is partial."[49] The universals are simple, and the particulars are compound. It is important to bear in mind that this taxonomy (of intelligible and sensible)

[46] Simpl. *In Phys*. 9.786.18.
[47] See Centrone (2014) p. 316.
[48] Hippolytus, *Refutatio*, 6.24.
[49] Simpl. *In Cat*. 8.91.24-25: ὅτι τοῖς καθόλου τὸ πρώτως ὑπάρχειν μαρτυροῦσι, τὸ δὲ ἔσχατον ἐν τοῖς μεριστοῖς ἀπολείπουσιν.

does not pertain to knowledge alone but also to being. Simplicius's report testifies to this. "They consider the genera and species to be things that exist, but not things summed up with separate conceptions."[50] Hence, a universal is not something that is merely said; it is not a mere common conception, but a separate thing, a this, etc.[51] The two *kosmoi* are linked through participation. Hence, the pre-existing world of forms/universals is present to sensible things; it orders them in accord with number, makes them definite and knowable. Pseudo-Archytas evokes Philolaus's taxonomy of the limiter and the limited, arguably to explain how the sensibles are ordered by the universals.[52] A universal, again, is self-subsisting, separate, etc. Hence, it is a universal substance. Pseudo-Archytas also called it pre-existing, that is, endowed with being in the strictest sense. "Archytas postulated that what [...] really produces completion in all genera, which is present, without partiality, to all things, and which is participated in by them – that this is pre-existent."[53]

Pseudo-Archytas clearly aims to prioritize the value of the form/species/universal (εἶδος) over that of the particular (καθ' ἕκαστον or ἄτομον). He tells us that species are divided into individuals that are worthless.[54] This radical postulate of the worthless (not merely epistemologically) character of an individual clearly accentuates the value of form/species.[55] For instance, the kind/category of substance includes things incorporeal and corporeal, universal and individual substances. The latter substances are sensible/individual

[50] *Ibid*., 8.91.27-28: καὶ διότι τὰ γένη καὶ εἴδη ὄντα νομίζουσιν, ἀλλ' οὐχὶ συγκεφαλαιούμενα ταῖς χωρισταῖς ἐπινοίαις.

[51] He, as Bonazzi (2013) p. 178 rightly argues, "endorses exactly the same metaphysical two-level doctrine we already found in Eudorus' Pythagorean account." This also concerns Nicomachus and other Neopythagoreans.

[52] Ps.-Archyt. *Fr*. 19.5-11.

[53] Simpl. *In Cat*. 8.121.20-23.

[54] Ps.-Archyt. *Fr*. 5.36-37: τὰ δὲ εἴδη εἰς τὰ καθ' ἕκαστα οὐτιδανά.

[55] These affirmations may, again, betray Pseudo-Archytas' commitment to Platonism in that the formal unity and sameness is placed above the numerical oneness. The ontological priority of a self-subsistent form which is immune of change and the flow of becoming is juxtaposed with the instability of enmattered entities that are subject to the flow of existence. A derivative and participatory being of the material existents makes them inferior to the intelligible entities. They are ordered in respect to that which is above and beyond them. All numerical relations (e.g., ratios, proportions, etc.) which determine their existence are no longer coordinated with their existence. Their being or essence and their existence are now split apart.

and hence worthless in comparison with the incorporeal/universal substances.

We must bear in mind that all such things (that fall under the category of substance) are not homonyms: they belong to the same kind and thus share both the name and the account of substance;[56] yet they are ordered hierarchically in respect to their worth, possibly as prior and posterior, pre-existing and generated, etc., and so, these things exhibit different characteristics. This is the reason why Pseudo-Archytas has to differentiate between that which belongs to the category of substance primarily, e.g., what is "human itself" (αὐτὸς ὁ ἄνθρωπος) and that which belongs secondarily, i.e., "a particular human" (ὁ τὶς ἄνθρωπος).[57] These things are the phases of the same kind/category of being, i.e., higher and lower. One is pre-existing and intelligible, while the other is derivative and sensible.

Yet Pseudo-Archytas was first and foremost Pythagorean. What does this entail? It entails the agenda of upholding the tradition of the early Pythagoreans (e.g., Philolaus, Archytas, etc.) along with that of the Early Academy. This includes the idea that everything (at least everything physical) functions on the premise of number (again, substantial number). In general, the synthetic character of Pseudo-Archytas's thought is perhaps the most vivid sign of his compromised identity. He is clearly a Pythagorean. Yet, whereas the Pythagoreans of whom we learn from Aristotle and from various other sources conceptualized reality as single and forms/universals as inseparable from sensibles, [58] Pseudo-Archytas gave unconditional assent to Plato's two-world metaphysics.

One important observation is necessary in this context. Pseudo-Archytas offers a theory of predicates and predicamenta, in some ways similar to that of Aristotle but differing from it in various respects. This classification of the kinds of being (and of the elements of the universal logos) was framed in the taxonomy of common and peculiar properties of kinds/categories. Pseudo-Archytas's notion of peculiar property was grounded in Aristotle's μάλιστα δὲ ἴδιον, that which is the most

[56] Simplicius tells us that the Pythagoreans rejected homonyms. Simpl. *In Cat*. 8.40.6-9.
[57] Ps.-Archyt. *Fr*. 30.20.
[58] Aetius, *Doxogr*. 39.3-6.

characteristic of a kind.[59] It is my conjecture that, based on the fragments, we may legitimately assume that the taxonomy of common and peculiar of each kind corresponds to the two world-orders and that the properties thus listed aim to describe what is common and peculiar to the objects that fall under the same kind but belong to different world-orders. Hence, the notion of phases is silently introduced, i.e., of a higher and a lower phase of the same kind associated with intelligible and sensible objects. Thus, when Pseudo-Archytas speaks of peculiar properties of a kind, he, first and foremost, has the lower phase of it in mind. This applies to substance (the property of being one in number, which is peculiar to sensible substances), to quantity (the property of existing as an unordered multitude and magnitude and of having a downward thrust), time (the property of being partless and unreal), among other kinds.

Yet it is also clear that those heirs of Pythagoras whom we nowadays call Neopythagoreans (including Pseudo-Archytas himself) did not uphold their commitment to Platonizing Pythagoreanism consistently. We can detect multiple instances of switching back to the original, i.e., one world theory grounded in the idea of number instead of form/universal. Hence, at times we see a vivid example of the implicit tension present in Neopythagorean thought, where its Pythagorean and Platonic underpinnings of discourse may collide in some ways, while in other ways they may be fully harmonized. It is thus not unusual for us to see that, at times, the Neopythagoreans accept Plato's two-world metaphysics and prioritize the value of form over number, whereas, at other times, they do it the other way around.[60] It should be noted that Pseudo-Archytas's thought was at least,

[59] Arist. *Cat*. 4a10.

[60] It is important to point out that the relation between number and form does not seem to be clearly delineated. As a result, as Helmig (2007) p. 130 points out, in modern scholarship of Nicomachus there exist "three different interpretations of the relationship between Forms and numbers. Position one claims that for Nicomachus numbers are superior Forms and that the Forms are derived from numbers. Position two identifies Forms with numbers, while position three would hold that Forms and numbers, or rather Forms of numbers and Forms of other branches of mathematics co-exist in the demiurgic παράδειγμα." Helmig argues that "Nicomachus does not make a clear-cut distinction between Forms and numbers and that he does not anticipate later Neoplatonic discussions on the issue." (*Ibid.*) Helmig's conjecture in respect to the objects of mathematics in Nicomachus is that they are immanent forms (*Ibid*., p. 131).

for the most part, consistent in this respect. It is important to note that we may often see instances where the world splits up into layers of reality and where each predicament is apprehended through phases. This may also be seen in Pseudo-Archytas's theory of time.

4. Pseudo-Archytas's Definition of Time

Pseudo-Archytas defines time as: "a kind of number of movement and the general interval of the nature of the universe."[61] The first half of the definition is arguably indebted to Aristotle, as some scholars have claimed. The reason is that the term number is present in both definitions. Yet, "a kind of number of movement" and "the number of motion of respect of before and after" do not seem to share many features in common. However, as some scholars of late antiquity argued, the second half of the definition is unquestionably Stoic.[62] Indeed, καθόλω διάσταμα τᾶς τῶ παντὸς φύσιος reminds us of the original Stoic and some Stoic-influenced definitions circulating in the philosophical literature of the time.[63]

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[61] Ps.-Archyt. *Fr.* 24.15-16: καὶ ἔστιν ὁ χρόνος κινάσιός τις ἀριθμὸς ἢ καὶ καθόλω διάσταμα τᾶς τῶ παντὸς φύσιος. Cf. Simpl. *In Phys*. 9.786.12-13.

[62] Simplicius tells us about some scholars [e.g., Themistius] who argue that Archytas conflate together the opinions of Aristotle and the Stoics, "because Aristotle says that time is the number of movement [*sc*. without qualification], whereas of the Stoics Zeno said that time is the extension of all movement *simpliciter*, while Chrysippus [called it] the extension of the movement of the world." However, he objects to this view and tells us that Archytas "does not join [these] two definitions but establishes the single one." (Simpl. *In Cat*. 8.350.13-17). Moreover, he points out that Archytas did not talk about the number of all motions but, rather, spoke of the number of a certain movement (κινήσεως τινός). Cf. Sorabji (1983) p. 565.

[63] Stobaeus, *Anthol.* 1.4.40e2-6: Ζήνων ἔφησε χρόνον εἶναι κινήσεως διάστημα, τοῦτο δὲ καὶ μέτρον καὶ κριτήριον τάχους τε καὶ βραδύτητος ὅπως ἔχει "ἕκαστα". Κατὰ τοῦτον δὲ γίγνεσθαι τὰ γινόμενα καὶ τὰ περαινόμενα ἅπαντα καὶ τὰ ὄντα εἶναι. Cf. *SVF* 1. *Fr*. 93.5-6: Τῶν δὲ Στωικῶν Ζήνων μὲν πάσης ἁπλῶς κινήσεως διάστημα τὸν χρόνον εἶναι. *Anthol.* 1.8.42.25-29: Ὁ δὲ Χρύσιππος χρόνον εἶναι κινήσεως διάστημα, καθ᾽ ὅ ποτὲ λέγεται μέτρον τάχους τε καὶ βραδύτητος. ἢ τὸ παρακολουθοῦν διάστημα τῇ τοῦ κόσμου κινήσει, καὶ κατὰ μὲν τὸν χρόνον κινεῖσθαί τε ἕκαστα καὶ εἶναι. We also see various Stoic-influenced definitions where the word διάστημα is present. Thus, Philo, *De opificio* 26, 4: ἐπεὶ γὰρ διάστημα τῆς τοῦ κόσμου κινήσεως ἐστιν ὁ χρόνος. Cf. Basil, *Contra Eun*. PG 29.560, 26-27: Χρόνος δέ ἐστι τὸ συμπαρεκτεινόμενον τῇ συστάσει τοῦ κόσμου διάστημα.

It is tempting to think of Pseudo-Archytas's treatises as spurious compilations from heterogeneous sources. However, there are further considerations that indicate that the definition may not represent a mere compilation. According to Iamblichus, Pseudo-Archytas speaks of "number" to connote the presence of a discrete (i.e., partless, indivisible, etc.) aspect of time. Extension or interval, on the other hand, connote the continuous aspect of time. Simplicius gives us some further details which shed light on the issue at hand:

> He [Iamblichus] says, we have through our interpretation reduced the definitions to two, both of which however should be contracted into one and time made simultaneously continuous and discrete, although the continuous aspect is more fundamental.[64]

Hence, one possible explanation of this combination of an apparently Aristotelian first half of Pseudo-Archytas's definition and of a seemingly Stoic second half is to assure us that time has both discrete and indivisible, along with continuous and divisible, aspects. In the words of Philippe Hoffmann, time, according to Pseudo-Archytas, must be "indissolubly discrete and continuous."[65]

In addition, Iamblichus's rendering reveals some further fascinating details. For instance, that "Archytas in this way accounted for the psychic and physical time."[66] This is, to my knowledge, the first historical instance in which the idea of time's aspects or phases is introduced.[67] This may indicate that one part of Pseudo-Archytas's definition associated with the notion of interval/extension refers to physical time and that the number part to psychic time.

Moreover, Simplicius's report states that Iamblichus, while interpreting Pseudo-Archytas's passages, noted that one aspect of time does not originate as something secondary, i.e., does not supervene upon motion:

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[64] Simpl. *In Phys*. 9.787.1-3: φησίν, ὡς δύο τοὺς ὅρους διωρθωσάμεθα ταῖς ἐξηγήσεσι, δεῖ δὲ εἰς ἓν συνελεῖν ἀμφοτέρους τούτους τοὺς λόγους καὶ ὡς συνεχῆ καὶ διωρισμένον ἅμα τὸν χρόνον ποιεῖν, εἰ καὶ συνεχής ἐστι κυριώτερον.

[65] Hoffmann (1980) p. 315: "Jamblique exégète du pythagoricien Archytas."

[66] Simpl. *In Phys*. 9.797.4-5: τὸν ψυχικὸν καὶ τὸν φυσικὸν χρόνον ὑπὸ τοῦ Αρχύτου παραδεδόσθαι.

[67] Cf. Nicomachus, *Intr. Arith*. 1.1.3.6-7.

Archytas does not believe that time simply exists but believes that it is also antecedent in the beings, well arranged according to its own order to which the earlier and later of our actions are referred; this could not have been the case were time not pre-existent.[68]

This passage can be interpreted in a way as to affirm that, whereas the higher (and pre-existing aspect of) time associated with "a kind of number" contains the pre-existing order linked with the activities/motions of the soul, its secondary aspect finds its instantiation in physical motions.[69] This number, in turn, is associated with prime motion on which all other motions depend. Iamblichus tells us that:

It ranks higher than it [i.e., derivative motion] in the causal order and makes it progress according to suitable measures; for it is an essence and thus makes this essence like activity progress and in a sense brings to birth the self-moving projections of the essential thoughts of the soul.[70]

The higher time is "the first change of the soul growing out of the projection of thoughts; it is justly primary and the cause of all motions."[71] This interpretative comment of Iamblichus also explains Pseudo-Archytas's solution to the paradox of time's ubiquity (introduced by Aristotle in *Physics* IV), which states that time is the number of motion. Motion is distributed among different kinds (quantity, quality, place) and types (i.e., regular, irregular, continuous, interrupted, etc.) of being. Hence, there should be a number of each kind of motion. Yet time, according to Aristotle, is always the same everywhere and in respect to all kinds and types of motion as it embraces all of them simultaneously. Hence, a quantitative change can take place

[68] Simpl. *In Phys*. 9.787.7-10: οὐ τοίνυν μόνον ἀξιοῦντος ὑφεστηκέναι τοῦ Αρχύτου, ἀλλὰ καὶ χρόνον εἶναι προηγούμενον ἐν τοῖς οὖσι κατὰ τὴν ἑαυτοῦ τάξιν εὖ διακείμενον, πρὸς ἣν ἀναφέρεται τὸ πρότερον καὶ δεύτερον τῶν ἡμετέρων πράξεων, ὅπερ οὐκ ἂν ἦν μὴ προϋφεστῶτος τοῦ χρόνου.
[69] Sorabji (2007) p. 565 righty indicated that "by 'number,' he [Simplicius] claims, Archytas did not mean, like Aristotle, number as an inert accidental property, but a number with the power to generate things. The number creates things in the world by a process in which the soul of the cosmos projects the rational principles which it contains, probably in the form of concepts, so that these principles form entities in the world."
[70] Simpl. *In Phys*. 9.786.20-22: προτεταγμένος αὐτῆς ἐν αἰτίας τάξει καὶ προποδίζων αὐτὴν κατὰ μέτρα τὰ πρόσφορα οὐσία ὢν οὐσιώδη οὖσαν ἐνέργειαν οἷον ἐκμαιευομένη τῶν ψυχῆς οὐσιωδῶν λόγων τὰς αὐτοκινήτους προβολάς.
[71] *Ibid*., 9.786.17-18.

simultaneously with alteration, etc. Pseudo-Archytas's rejection of Aristotle's number of motion as uninstantiated and free-floating, i.e., not attached to any particular motion, is supplemented with the alternative and persuasive idea of prime motion, from which all other motions stem, what Iamblichus classified as "a kind of monad of motions" (οἷον μονάδος τῶν κινήσεων).[72] The next generation of philosophers, including Plotinus, seemed to endorse this solution while offering their own modifications in respect to precisely what that prime motion could be.[73]

Pseudo-Archytas's discourse shifts to the physical only when he aims to discuss the secondary aspect of time. Thus, "he speaks of time as 'being the general extension of the nature of the universe,' because he wanted time to be considered mainly in relation to physical phenomena."[74] More important in this context is that Pseudo-Archytas's definition clearly indicates that he does not attribute non-existence *per se* (i.e., sheer non-being) to time. Hence, when Pseudo-Archytas writes διόπερ ὁ χρόνος ἤτοι τὸ παράπαν οὐκ ἔστιν ἢ ἀμυδρῶς καὶ μόλις ἔστιν, this should not be read as the conclusion of a scientific syllogism, offering direct proof of the matter at hand. Once again, it would be quite strange to offer proof of what must be presupposed or taken for granted. Rather, it should be understood as an aporetic conclusion preceded by a stretch of preliminary considerations. This aporetic statement then needs to be resolved by proper scientific reasoning. In Iamblichus's words, Pseudo-Archytas believed that time exists and that it is προηγούμενον, at least as far as one of its phases is concerned. It is then not surprising to hear from Pseudo-Archytas multiple and affirmative statements in respect to time's existence.

In some ways, Pseudo-Archytas's approach may appear to be similar to that of Aristotle. We may indeed read his affirmations in the following way: time exists; its existence is transient (and hence, differs from the other continuous things) and does not persist. It is not a whole whose parts are compresent. The difference so far is in Pseudo-Archytas's definition which combines number and extension, in the newly introduced idea of time's phases

[72] *Ibid*., 9.786.18.
[73] Duhem (1913) p. 232.
[74] Simpl. *In Phys*. 9.788.8-10: διὸ καὶ οὕτως εἶπε 'καὶ καθόλου τὸ διάστημα τῆς τοῦ παντὸς φύσεως' ὡς ἐν τοῖς φυσικοῖς μάλιστα θεωρεῖσθαι τὸν χρόνον βουλόμενος.

and in the apprehension of "the number of motion" or of "a kind of motion" as associated with prime motion.

5. Unreality or Qualified Non-Existence

The qualified notion of non-existence or unreality is quite intriguing and needs to be analyzed here. Let us make a few observations in respect of the terms used. First of all, one may reasonably say that the term ἀνυπόστατος may not contain a highly specific meaning of "non-existent." Yet it is interesting to observe that *TLG* ascribes this meaning to Pseudo-Archytas's ἀνυπόστατος.[75] Urmson's translation of Simplicius's *Corollaries* also attributes the meaning of non-existence to this term.[76] Other modern scholars translate it either as "unreal,"[77] or "transient,"[78] or "insubstantial."[79] Hence, "the anhypostatic" (ἀνυπόστατον) seems to have a range of meanings that are easily discernible. In order to clarify the meaning of the hypostatic/anhypostatic in Pseudo-Archytas's passages, we may need to look at the formative literature of philosophical discourse at the time. In late antique thought, hypostatic could stand for substantial.[80] By contrast, the anhypostatic was that which lacked substantial existence.[81] This may indicate that an anhypostatic being was attached to, or depended on (in respect to its existence) the being of some primary existents (e.g., hypostases or substances). In contrast, that which was hypostatic could subsist in its own right. This meaning roughly corresponds to that of Aristotle's primary substance. However, within the scope of Neopythagorean and Neoplatonic thought, we may also see the term subsistent and its derivatives (e.g., ὑποστατικός) as signifying the reality of higher kinds of things, e.g., of an intellectual substance, etc.

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[75] Ps.-Archyt. *ap.* Simpl. *In Phys*. 785.17: ἀνυπόστᾰτος "nonexistent".
[76] Urmson (1992).
[77] Sambursky (1971) p. 29.
[78] *Ibid*., p. 14.
[79] Gaskin (2000) p. 86.
[80] Thus, Iamblichus used it in his *Comm. Math.* 8 in this sense.
[81] See Syrianus, *In Metaph*. 25.3. This understanding of the term is made manifest in Gaskin's (2013) translation of Simplicius' *On Aristotle Categories* 9-15.

Similar terms in the literature were often used, e.g., αὐθυπόστατος and αὐθύπαρκτος to indicate that which is not generated (ἀγένητος)[82] and thus indestructible (ἄφθαρτος).[83] The latter term appears in Pseudo-Archytas's fragments.[84] These and other characteristics, predicated of the self-constituted, indicate its intellectual origin. The hypostatic and self-constituted transcend things measured by time in respect to their existence.[85] Moreover, the term could also denote a principle productive of other existents. The anhypostatic, by contrast, is generated and destructible, being subject to change, etc. Its existence is not primary but derivative. Thus, the ἀνυπόστατον is either derivative, as its existence depends on that of some primary existents (i.e., substances), or generated and destructible (i.e., the extent of its existence being determined by temporal limits). Finally, another meaning is that which is ontologically unstable and immersed in the flow of becoming. This means that it is not fully real nor fully existent. Hence, time may not lack existence altogether; yet its existence (or the existence of one of its phases) is in some ways compromised.

Indeed, time (at least, in one of its phases) can be classified as ἀνυπόστατος *qua* non-substantial as the principle of time, i.e., the now (at least, as far as its lower phase is concerned) fails to be one in number (and, hence, a substance, as we will soon learn); *qua* quantitative; *qua* derivative (not primary); *qua* being subject to change, and hence destructible, etc. What is important is that *qua* quantitative and as far as its lower phase is concerned, time's peculiar property is associated with the downward procession, the fall into indeterminacy, etc. The peculiar property of quantity is to be equal and unequal (the common property being that it does not admit of more and less). As we learn from Simplicius: "Archytas himself also says that what is equal and unequal are a peculiar feature of 'quantity', and says that this is observed in plurality, magnitude, and downward thrust."[86] Again, the peculiar property of a kind seems to point in the direction of the sensible. We can see

[82] Proclus, *El. Th.* Prop. 45: Πᾶν τὸ αὐθυπόστατον ἀγένητόν ἐστιν.
[83] *Ibid*., Prop. 46.
[84] Ps.-Archyt. *Fr.* 3.13, 15, 16.
[85] Procl. *El. Th.* Prop. 51.
[86] Simpl. *In Cat*. 8.151.32-33: Αρχύτας δὲ καὶ αὐτὸς τὸ ἴσον καὶ ἄνισον ἴδιον τοῦ ποσοῦ λέγων ἐν πλήθει καὶ μεγέθει θεωρεῖσθαί φησιν αὐτὸ καὶ ἐν ῥοπῇ.

that the lower phase of quality is associated with the downward thrust, the fall into multiplicity (πλῆθος), and unordered magnitude (μέγεθος).[87] Hence, time as quantitative (quantity's lower phase) should be unreal.

6. Partless and/Then/or Unreal

One interesting offshoot of Pseudo-Archytas' understanding of the paradox of time's existence is associated with the following move: the property of unreality, coupled with that of partlessness, is presented as qualifying time's existence. Hence, "[t]ime at any moment/when and time on the whole contain as a characteristic property the partless (ἀμερὲς) and the unreal (ἀνυπόστατον)." [88] This thesis appears self-contradictory since time as a whole is presented here as partless. A whole without parts is a very odd notion, indeed. It was discussed by Aristotle in the context of his investigation of the continuum.[89] Although both properties are linked together as time's peculiar property, it is tempting to conceptualize this complex property as offering us the following implication: if partless, then unreal. We can then move on, affirm the antecedent and deduce the conclusion: if partless, then unreal; but partless; so unreal (*qua* partless). This, however, is a false move from the start since it would have been enough for Pseudo-Archytas to list the partless alone (as a peculiar property of time) if it implies the unreal. Yet, interestingly enough, the conjecture about the unreality of partless time makes sense, since a whole without parts is not a whole proper, that is, it is not a real or existing whole, at least from Aristotle's perspective. Thus, it must be unreal.

It is important to note in this context that the partless first and foremost qualifies the being of the now and only derivatively that of time as a

[87] When the magnitude (μέγεθος) and multitude (πλῆθος) receive quantity and number (thus, turning into τὸ πηλίκον and τὸ ποσόν), they come-to-be limited and thus knowable. As Johnson (1916) p. 4 rightly notes, "[w]hile the boundless can be an object of contemplation, it can never be the object of science. Magnitude and multitude are, in a sense, boundless; the former in the direction of continuous subdivision, the latter (Nicomachus has no inkling of negative numbers) in that of continual advance. Hence, if science is to treat them, for 'much' there must be put a 'how much' and for 'many' a 'how many'."

[88] Ps.-Archyt. *Fr*. 29.11-12.

[89] Arist. *Phys*. 227a11-13.

whole. The now is partless because it is indivisible. Time, on the other hand, is partless because the past is no more and the future is not yet (these parts are missing), while the now is partless *per se*. Hence, it is a whole without parts. It is possible to think of time as a collection or progression of the nows that are not preserved numerically but whose form persists (as the now comes to be one after another, "different in number but the same in form").[90] Time's constitution is thus very peculiar. It may be apprehended as consisting of a series of nows, some of which have expired, some are not yet, while the present now is indivisible.

The form is, indeed, partless in the sense that it does not have physical parts. Yet the form *qua* universal should be divided among the many and predicated of the many. On the other hand, the form can also be indivisible. What is the meaning of partless in this context? Does partless refer to the lower phase of time? Perhaps, it does since ἀμερές/ἀδιαίρετον and ἄτομον may be predicated of the same thing (i.e., individual) and hence indicate that which is worthless *qua* particular, the opposite of universal.

An alternative point of view, associated with Iamblichus's interpretation of Pseudo-Archytas, is to claim that partless belongs to the higher phase of a kind, at least, in the place where Pseudo-Archytas speaks of the formal now which is partless and more valuable than the numerically differentiated/material nows. Then the implication (if partless, then unreal) may not hold true of Pseudo-Archytas's theory, since partlessness does not entail unreality.

This aporetic and seemingly contradictory affirmation of Pseudo-Archytas made Iamblichus say that these incompatible properties should not be predicated of the same subject, or of the same aspect or facet of the subject.[91] Thus, if partless, then non-existent/unreal is a false implication, according to Iamblichus. It is, rather, partless or non-existing, as Iamblichus aimed to demonstrate. Hence, either partless or unreal; but not partless; hence, unreal. Perhaps, either ἀμερές/ἀδιαίρετον or ἀνυπόστατον; but not ἀμερές (but, rather, ἄτομον, according to Pseudo-Archytas's taxonomy

[90] Ps.-Archyt. *Fr*. 30.9-10: τὸ νῦν ἄλλο καὶ ἄλλο γινόμενον καὶ ἀριθμῷ μὲν ἄτερον, εἴδει δὲ τωὐτόν.
[91] Simpl. *In Cat*. 8.354.13-17.

mentioned above); therefore, ἀνυπόστατον. However, this disjunction clearly contradicts Pseudo-Archytas's assertion that time must be both partless and unreal. The correct syllogism may be "either partless or unreal; but partless; hence, not unreal." Iamblichus used this disjunction (either partless or unreal) in his interpretive effort to make sense of Pseudo-Archytas. And yet, once again, this is not precisely what we see in Pseudo-Archytas.

According to Iamblichus, Pseudo-Archytas calls time non-existing "because it lacks reality, not remaining numerically the same (ὅτι οὐχ ὑπομένει τὸ αὐτὸ τῷ ἀριθμῷ)."[92] The numerical sameness is not assured for the nows. They keep coming (or, have come, etc.) and going, ceasing-to-be at an instant. This, in turn, indicates their fall into multiplicity and indeterminacy. Having thus been multiplied and filled with the infinite, the now (and, by implication, time as a whole) loses its full reality. Its numerical unity is perhaps split asunder by its contact with becoming/motion. Each now is indivisible/partless and yet – unreal. On the other hand, time as a whole is no longer partless *per se*, as it consists of a series of nows; yet it is partless *per accidens*, as the nows are transient and hence the whole (collection or procession of the nows) is not present to us as a simultaneous whole. Thus, if partless, then unreal should hold true of time *per accidens*. On the other hand, either partless or unreal should hold true of the now which is not the same in number. It is, perhaps, not one but many, not a substance but a mere sum of the nows. I will review the issue of the now's substantial vs. non-substantial being below. What is worth noting here is that Pseudo-Archytas seems to advocate formal sameness as the proper principle of the unity of time. We may then be able to reframe the disjunction in the following way: either the same in number or unreal. An alternative disjunction is either the same in form (εἴδει δὲ τωὐτόν) or unreal.

Does Pseudo-Archytas assert time in all its phases to be both partless and unreal? Again, the higher phase of time seems to be associated with the formal now, whereas the lower phase is associated with the now which is numerically differentiated. The following fragment seems to give Iamblichus's interpretation further credibility. In a different context, he argued, Pseudo-Archytas asserted that "the intellect is partless and indivisible (ἀμερές καὶ ἀδιαίρετον), just

[92] Simpl. *In Phys*. 9.788.21-22.

like a unit or a point, and similarly the intelligible."[93] Hence, the partless cannot be unreal, since one cannot deny reality to the intellect. On the other hand, partlessness in Pseudo-Archytas's thought bifurcates and includes phases, so that we may apprehend the partless as a worthless indivisible individual and also as universal/intelligible. Then both (implication and disjunction) will hold true of the subject matter but not in the same sense.

Let us assume that it is possible to think of Pseudo-Archytas's affirmation in respect to time's constituency as coherent. It may be that the nows, both of the higher and of the lower phase, are such that they are partless and unreal in the sense of non-substantial, derivative, etc. This will contradict Iamblichus's interpretative assumption, according to which the higher now "is not dispersed in those <parts of time> that are not, for it not only holds together in itself those which are not (ἀλλὰ οὐκ ἐν τοῖς μὴ οὖσιν, φαμέν, διαπεφόρηται, ἐν ἑαυτῷ δὲ καὶ τὰ μὴ ὄντα συνέχει)", but has also *per se* some substance of its own (καὶ καθ' ἑαυτό ἐστιν ἔχον τινὰ ἰδίαν οὐσίαν).[94] An important question arises out of this passage: what kind of being is the now (e.g., substantial, quantitative, etc.)?

7. Substantial vs. Unreal

We may assume in this context that Pseudo-Archytas's taxonomy of κατὰ τὸ εἶδος vs. κατ' ἀριθμόν corresponds to his distinction of universal vs. particular. This taxonomy was important for Pseudo-Archytas, as it helped him solve the paradox of the now. The paradox, stated in Aristotle's *Physics* IV 10, goes along the following lines: is the now always the same or ever other and other?[95] Both horns, however, seem to contain impossible implications. Aristotle's solution to the paradox was via the imposition of both sameness and otherness to the now,[96] but not in the same respect. The now, as Aristotle

[93] In Horky (2018) p. 249.
[94] Simpl. *In Cat*. 8.355.23-24.
[95] Arist. *Phys*. 218a8-10: "Again, the now which seems to separate the past and the future (ἔτι δὲ τὸ νῦν, ὃ φαίνεται διορίζειν τὸ παρελθὸν καὶ τὸ μέλλον) – does it always remain one and the same or is it always other and other (πότερον ἓν καὶ ταὐτὸν ἀεὶ διαμένει ἢ ἄλλο καὶ ἄλλο)? It is hard to say."
[96] *Ibid*., 218b12-13: τὸ δὲ νῦν ἔστι μὲν ὡς τὸ αὐτό, ἔστι δ' ὡς οὐ τὸ αὐτό.

argued, is the same,[97] perhaps in substratum, as Philoponus suggested,[98] and other and other in account.[99] Pseudo-Archytas's solution was, arguably, antithetical to that of Aristotle, as he argued that the now is the same κατὰ τὸ εἶδος and always other and other κατ' ἀριθμόν.

It is an open question whether we may think of these taxonomies (κατὰ τὸ εἶδος vs. κατ' ἀριθμόν and ὅ ποτ' ἦν/κατὰ τὸ ὑποκείμενον vs. τὸ δ' εἶναι/ᾗ πρότερον καὶ ὕστερον) as commensurable. Hence, whereas Aristotle's now is the same "by being what it is" or "in substratum" and different in "being" or "account" or "definition," Pseudo-Archytas's now is the same "in form" and different "in number." Here the notions of numerical unity and unity of substratum are commensurable and possibly synonymous. Thus, "some things are one in number, some in form, some in genus, some by analogy; in number those whose matter is one."[100] Numerical and in substratum here are analogous.[101] The same, arguably, holds true of Pseudo-Archytas's κατὰ τὸ εἶδος, as it apparently corresponds to Aristotle's τὸ δ' εἶναι or λόγος.

The now is the same in form but different in number. We may think of form/species as one and indivisible,[102] and yet divided among the many. The now is analogous to that of the unit of number since time is a kind of number. Iamblichus tells us that in its higher phase this unit of number must be substantial and hence real. It is the lower phase that is unreal. Can this hold true of Pseudo-Archytas's nows?

The question that comes to mind in this context is under what category/kind of being do Pseudo-Archytas's nows fall? The question is necessitated by Iamblichus's interpretation of Pseudo-Archytas – that the higher now "has also *per se* some substance of its own" – and by the fact that the notions of numerical oneness and sameness are used in Pseudo-Archytas's description of the now. We learn from Pseudo-Archytas about common and

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[97] *Ibid.*, 219b11: τὸ γὰρ νῦν τὸ αὐτὸ ὅ ποτ' ἦν.

[98] Philoponus, *In Phys.* 17.226.27-28: ὃ δέ ποτε ὄν ἐστι, φησί, τὸ αὐτό, τουτέστι κατὰ τὸ ὑποκείμενον.

[99] Arist. *Phys*. 219b11: τὸ δ' εἶναι αὐτῷ ἕτερον – τὸ δὲ νῦν τὸν χρόνον ὁρίζει, ᾗ πρότερον καὶ ὕστερον.

[100] Arist. *Metaph*. 1016b31-32.

[101] Indeed, Aristotle used appellation in respect to the now καὶ ταὐτὸν καὶ ἓν ἀριθμῷ (*Phys*. 263b13).

[102] Arist. *Metaph*. 1034a8.

peculiar properties of substance. He states that "itself remaining one in number and admitting contraries is the peculiar feature of 'substance'."[103] Μίαν ἀριθμῷ διαμένοισαν, as the peculiar property of substance, we may assume, holds true of the lower phase of substance. Yet we also learn from Pseudo-Archytas that the now, as far as its lower phase is concerned, is not the same in number, but other and other. Indeed, he uses various appellations (e.g., μὲν οὐδέποκα σῴζεται κατ' ἀριθμόν and καὶ ἀριθμῷ μὲν ἄτερον) to indicate that the now is not one in number and hence not a substance.

The notion of numerical unity, if applied to the unit of time, is certainly strange, since number is a limited plurality. Hence, what we have here is unity in respect to limited plurality. Yet it makes sense when applied to the sensibles since they are both one and yet many, wholes made of parts which are unified. Formal unity is also a strange notion, since the form *qua* universal is both divided and yet indivisible, but not in the same sense. Unity and indivisibility proper, under this scenario is the unity of the monad or unit (and, by derivation, of points, moves, nows, etc.). The unit is one and indivisible and not many in any respect. What is important is that Pseudo-Archytas's now (and time, by implication) appear to be distributed among various kinds of being. Such terms as ὑποστατικόν, ἀμερές and κατ' ἀριθμόν seem to indicate a substantial being, whereas Pseudo-Archytas also clearly states that time's being is quantitative. Again, it seems that universal quantity is a substantial being.

Bruno Centrone's assessment of Pseudo-Archytas's theory of categories aims to show that the category of substance alone applies to both the intelligible and the sensible, whereas other categories, including quantity, pertain exclusively to the sensible.[104] This apparently rules out the possibility for other categories to be applicable to both *kosmoi* and hence to have phases. I think this assessment needs to be qualified as it may be potentially misleading.

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[103] Ps.-Archyt. *Fr.* 27.16-17: τᾶς μὲν ὠσίας τὸ τὰν αὐτὰν καὶ μίαν ἀριθμῷ διαμένοισαν τῶν ἐναντίων δεκτικὰν ἦμεν (translation by Horky). Cf. Ulacco (2017).

[104] Thus, Centrone (2014) p. 326 argued that, according to Pseudo-Archytas, "non-substantial categories only apply to the sensible world (30.17-31.5), whereas the first category includes both intelligible and sensible substances: quality, quantity, etc. do not apply to the Form of Man, which is indivisible and unmoved, but only to the individual man as sensible substance. Only the first category (τί ἐστι) applies to intelligible substance." Cf. Griffin (2015) p. 98.

Firstly, Pseudo-Archytas spoke about mixed categories. For instance, the category of "where" arises as the mixture of substance and quantity as seen in place. The category of "when" comes into being as the mixture of substance and quantity as seen in time.[105] Hence, the categories of "where" and "when" appear to be substantial in the first place. Moreover, we learn from Simplicius about Pseudo-Archytas's distinction between the species forms, the number forms and the elements of the universal logos (i.e., categories), as well as about his insistence on their correspondence.[106] We may then infer that the elements of the logos universally signify the kinds/species of beings and that those kinds are among the primary beings.

What is important, however, is that the propriety (οἰκεῖον) of substance is to be/exist *per se* and to be understood by the intellect *per se*.[107] Such things as form numbers, i.e., mathematical objects both exist and are understood by the intellect *per se*.[108] Their existence is both substantial and quantitative. The heirs of Platonizing Pythagorianism could not, in particular, deny substantiality to number nor to quantity in general. A few centuries later, Nicomachus taught that universal kinds (i.e., substance, quantity, quality, etc.) are beings in the strictest sense.[109] The now, as the principle of time, must thus be a being of this kind. Hence, Centrone's assessment is correct with the following qualification: certain entities of this complex world-order represent substantial quantities, qualities, etc. in their higher phase. They turn out to be anhypostatic or non-substantial in their lower phase. They apply to the sensible alone *qua* anhypostatic (i.e., non-substantial).

What Pseudo-Archytas may have had in mind was that the now is the monad of a substantial quantity. It is then legitimate to apply to the now the

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[105] Ps.-Archyt. *Fr*. 4.28-29: ἁ γὰρ οὐσία τᾷ ποσότητι μιγνυμένα ἢ ἐν τόπῳ ὁράεται καὶ τὸν τοῦ ποῦ λόγον ποεῖ ἢ ἐν χρόνῳ.

[106] Simpl. *In Cat*. 8.68.25-28: τὸν δὲ σύμπαντα ἀριθμὸν δεκάδα εἶναι, καὶ εἰκότως ἄρα τὰ πάντα εἰς δέκα διῃρῆσθαι καὶ τὰ εἴδη πάντα δέκα εἶναι καὶ τοὺς εἰδητικοὺς ἀριθμοὺς δέκα ὑπάρχειν, ἔτι δὲ καὶ τὰ ἀκρωτήρια τοῦ σώματος ἔχειν δέκα μέρη· καὶ τὰ στοιχεῖα οὖν τοῦ παντὸς λόγου δέκα εἶναι.

[107] Ps.-Archyt. *Fr*. 26.21-22.

[108] *Fr*. 38.15-16.

[109] Nicom. *Intr. Arith*. 1.1.2.1-4: Αλλ' ἐκεῖνα μὲν ἄυλα καὶ ἀίδια καὶ ἀτελεύτητα καὶ διὰ παντὸς ὅμοιακαὶ ἀπαράλλακτα πέφυκε διατελεῖν, ὡσαύτως τᾗ αὐτῶν οὐσίᾳ ἐπιδιαμένοντα, καὶ ἕκαστον αὐτῶν κυρίως ὂν λέγεται.

terms that pertain to substance. Yet its being is quantitative. However, in its lower phase, this quantity loses its substantial status due to its downward thrust, falls into multiplicity, etc. It becomes non-substantial. As such it is not the same κατ' ἀριθμόν. It is not one but many. It is perhaps not a whole but a sum, etc. Hence, it is unreal.

What Pseudo-Archytas's affirmation aims to convey is that the now in its lower phase is the monad of time which lost its substantial existence. It is no longer a substantial quantity because its unitive substratum has disintegrated and been multiplied. Yet it remains the unit of substantial quantity in its higher phase, i.e., *qua* universal/form/species, κατὰ τὸ εἶδος. Its lower quantitative phase is such that it becomes unlimited/infinite in number due to its downward thrust. Hence, it is anhypostatic or unreal/non-existent. In the words of Iamblichus, "the indivisible and the unreal are distinct due to their different natures, some worthy/honorable and others defect from their higher nature and are therefore called unreal."[110]

Overall, we have seen various examples of Pseudo-Archytas's reversive approach, which aimed to strip the issues at stake of their Aristotelian makeup by taking what was considered uncontroversial by Aristotle and making it controversial, while removing what Aristotle presented as a core issue from the subject. This approach was made manifest in Pseudo-Archytas's assessments of Aristotle's solutions to the paradoxes of the now and of time's ubiquity. Yet, as far as the paradox of time's existence is concerned, Pseudo-Archytas's affirmations seemed to point out that Aristotle's theory did not arrive at truth due to its failure to capture the matter at stake in its fullness. Pseudo-Archytas seemed to follow Aristotle in that existence claims should not be subject to demonstration/proof. Yet he insisted on the necessity for time's existence to be clarified in the light of the presence of different phases of time as they exhibit different characteristics in relation to being, along with different modalities (i.e., actuality and incomplete actuality). Hence, Aristotle's dismissive attitude toward the paradox of time's existence was arguably understood by Pseudo-Archytas as a failure to apprehend time holistically so as to account for various phases of time.

[110] Simpl. *In Cat*. 8.354.4-6.

Conclusion

Pseudo-Archytas took Aristotle's theories as the starting point of his investigation. His approach to Aristotle was for the most part antithetical, aiming to correct mistakes made by Aristotle, who built his theory on Pythagorean premises, but whose thought ultimately parted ways with Pythagoreanism and thus did not succeed in arriving at truth, especially in respect to the ontology of number. Pseudo-Archytas's own thought, first and foremost, was that of Platonizing Pythagoreanism; and his theory of time grew out of it. His approach to the subject matter, however, shared with Aristotle the goal of reconciling the phenomenon with reason by clearing the field of study from paradoxes. The paradox of time's existence was one such stumbling block. Pseudo-Archytas argued that the being of time is complex. My reconstruction of Pseudo-Archytas' solution indicates that he conceptualized the higher phase of time as substantial and real. However, he understood another phase as compromised. It is precisely at its lower phase that time becomes non-existing with qualification, i.e., non-substantial and thus unreal. Yet its unreality is not an obstacle to knowledge. It is a non-substantial quantity distinguished by its downward thrust and its fall into multiplicity. Yet he then argued that it is still a unity in multiplicity, a continuous whole containing order.[111] Hence, it is subject to knowledge.

Iamblichus would later take into account some problematic aspects of Pseudo-Archytas's theory in order to delineate time's phases more clearly, arguing for the necessity of the intellectual principle of order which can first be modified by number so as then to extend its efficacy to the physical.[112] He argued that a full-fledged theory of the intermediary between the formal/intelligible and the sensible is necessary to remove possible loopholes in the conceptualization of time's phases.

Overall, Pseudo-Archytas' theory is a subtle and well thought out offshoot of Platonizing Pythagoreanism. His theory of time was unique and

[111] *Fr*. 29.17-18: "thus, the nows are always continuously linked together, becoming and perishing at every changing moment (καὶ οὕτως ἀεὶ συνάπτει τὸ νῦν συνεχῶς ἄλλο καὶ ἄλλο γινόμενόν τε καὶ φθειρόμενον)."
[112] See Taormina (1999) pp. 57-95.

influential. Arguably, it saved the phenomenon of time by reconciling it with thought, thus laying out the possibility for a science of time.

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MARIA VARLAMOVA

ALEXANDER OF APHRODISIAS ON THE CAUSES OF ANIMAL GENERATION

Abstract

The discussion of the soul as a principle of life in ancient Greek philosophy was not limited to the soul's relation to the body, the capacities of the soul, and the functions of the living organism. The debates about the soul and life also concerned issues of embryogenesis, such as the generation, formation, and animation of an organic body in the womb. The fragments of these debates can be traced in the writings of Alexander of Aphrodisias, particularly in his treatise *On the Soul*. In this paper, I examine Alexander's views on animal reproduction, especially considering the problematic question of the life and animation of the embryo. Analyzing generation among the other capacities of the nutritive soul in *On the Soul*, Alexander considers the causes of embryogenesis. As the first cause, he indicates the nutritive capacity, which is transmitted from the parent through the seed and acts in the embryo. In addition, as Simplicius states in his commentary on Aristotle's *Physics*, Alexander claims that the soul of the parent acts as a *paradeigma* that specifies the order and the goal of the embryo's development. Thus, I explain Alexander's understanding of the causes of the embryo's development and animation in the context of his idea of the soul as a capacity (δύναμις) and state (ἕξις).

Keywords

Alexander of Aphrodisias, Aristotle, Theory of the Soul, Generation of Animals

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Aristotle, as a supporter of the theory of epigenesis, considers the generation of an animal to be a complex process. In it, from the seed, which contains a certain possibility of the soul and the driving power transmitted from the parent, more and more new parts of the living and, therefore, animated body successively arise.[1] These parts of the future animal are not contained in the seed but arise in the womb. Aristotle compares the successive generation of a complex organism from a small amount of matter to the movement of miraculous automata (τὰ αὐτόματα τῶν θαυμάτων), in which the master sets in motion the first part, which, in turn, sets in motion the next, and so on until all parts of the whole successively come into motion (Arist. *GA* 734b6-17).[2] But he also gives another example, comparing generation to the plaiting of a net (*GA* 734a19-20), since in the process of generation there is not only a transfer of movement from one emerging part to another, but also a gradual complication of the organic structure. The organs that have emerged do not merely follow one another; rather, they constitute a single whole in which all the parts function together and each part can only function effectively within the parameters of the whole. The joint action of the organic parts of the nascent animal occurs because the animal, although its generation has not yet been completed, is already animate and alive. Initially, the nutritive soul acts in it; but, after the formation of the corresponding organs, its sensitive soul becomes actual (*GA* 736a22-736b15).

Aristotle's theory of embryogenesis was discussed both in various treatises and in commentaries on the *Physics* and *De Anima*. First of all, the commentators discussed the causes of generation and the order of animation of the living being. In this article, I will consider the views of Alexander of Aphrodisias on the development and animation of the embryo. In the texts that have come down to us, Alexander touches on the issues of

[1] The soul is considered by Aristotle both as a formal and as an effective cause of the development of the embryo after conception. On the soul as the cause of embryogenesis in Aristotle, see Code (1987) pp. 54-5; Gotthelf (1987) p. 217; Whiting (1995) p. 94; Johansen (2012) pp. 129 ff. A. Bos believes that in the seed all parts of the soul inherent in the nature of this species are contained in the possibility (Bos 2009, p. 386). However, the organs and parts of the body necessary for perception and locomotion are generated under the influence of the nutritive soul (cf. Bos 2009, pp. 388-9 and Johansen 2012, pp. 118, 138, 141).

[2] For Aristotelian 'automata' and the embryogenesis in the context of Aristotle's teleology, see De Groot (2008) pp. 58-63.

embryogenesis only occasionally,[3] therefore, the purpose of this article is to compile, present, and interpret these passages within the broader framework of Alexander's beliefs regarding the soul and life. To understand how he interprets the causes and process of generation and animation of the embryo, I rely on two passages from his treatise *On the Soul*,[4] and also on the arguments of Alexander that Simplicius cites in his commentary on Aristotle's *Physics*.[5]

1. The Life of the Embryo in the Womb

The context in which embryogenesis was considered in the commentary tradition, has changed. While Aristotle initially defines the embryo as something alive (he calls even unfertilized wind-eggs alive in some sense, *GA* 741a16-23), the life of the embryo becomes a problematic issue in the later tradition. The embryo is a part of its mother, which means that one incomplete living being lives and grows as part of another complete one. The question is, to what extent is the embryo a part, and to what extent is it a living being? In his commentary on Aristotle's *On the Soul*, Philoponus provides a number of arguments regarding the animation and life of the embryo, and in doing so, he outlines the spectrum of views among ancient philosophers on this matter. I propose to consider Alexander's position as part of the debate described by Philoponus. An overview of these arguments will allow us to understand Alexander's place in this debate and to suggest the premises that may be behind the statements he makes in his *De Anima*.

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[3] Although Alexander generally pays no attention to Aristotle's biological treatises, he does take some ideas from these treatises into consideration in his works. Cf. Falcon (2021) pp. 250-1.

[4] Alexander sets out his views on the generation of animals and the animation of the embryo in the context of a discussion of the activities of the nutritive soul (Alex. *De An*. 31.7-38.11), as well as in the context of a discussion of the faculties of the sensitive soul and its difference from the rational and nutritive soul (*De An*. 74.15-25).

[5] Simplicius analyzes the causes of embryogenesis in his *Commentary* on chapter 3 of the second book of *Physics*, in the context of a discussion of the four causes and nature as an irrational power (δύναμις) that acts for a purpose; and in the same place he sets out the views of Alexander (Simpl. *In Phys*. 310.25-312.1). See also Henry (2005) pp. 21-3 and 27.

So, the opinions reported by Philoponus can be divided into three positions:[6]

1) An embryo is not a living being. Life consists of nourishment and growth, which the body accomplishes through its own organs. An animal that finds its food and feeds through its mouth is alive, while an embryo gets nutrition not from its mouth, but from its mother through the umbilical cord. Therefore, the embryo is neither an animal nor something that possesses life (Philop. *In De An*. 213.8-11).

2) An embryo is a living being, though not an animal. Nutrition is the process not only of consuming but also of digesting and absorbing food. The animal receives food through its mouth and then absorbs it through its own organs. Similar to the way that food travels through an animal's blood to every part of its body, the embryo gets food from its mother through the umbilical cord and then absorbs and distributes it through its blood to every part of its body, just as in living animals (*In De An*. 213.19-23). The mother only prepares food for the embryo, which is not yet able to receive it through its mouth. Since the embryo uses its own organs, its nourishment becomes the cause of its growth, and this growth comes from itself. Its growth also occurs according to the stages and measures of its nature, and not without measure, as in the case of fire. However, the embryo, although alive, is incapable of living an animal life, precisely because it is incapable of self-feeding through its mouth and of moving around locally in search of food.

[6] Philoponus's whole argumentation is given here: Philop. *In De An*. 212.28-214.33. For a detailed discussion of Philoponus's arguments, see Scholten (2005) pp. 382-5, Wilberding (2017) pp. 142-4. Philoponus believes that it is not the nutritive soul as such that is transmitted from the parent through the seed since the seed is not animated, but the *logoi* of natural capacities, which are indivisibly contained in the seed (*In De An*. 268.18-19). C. Scholten interprets Philoponus as follows: natural *logoi* are transmitted from the parent through the seed, and these become the formal cause of embryogenesis, from which the capacities of the plant soul are generated. See Scholten (2005) pp. 393-4. Blumenthal also points out that the faculties of the nutritive soul depend on the immaterial natural *logoi* which are contained in the seed; see Blumenthal (1986) pp. 376-7. Philoponus carries his arguments further and proves that the embryo goes through all the stages of natural generation: at first, it is not alive; then, during the formation of organs, the nutritive soul acts in it; after developing the ability to move certain body parts, it lives as a zoophyte – the middle step between a plant and an animal – but only after birth does it receive a sensitive soul (*In De An*. 214.2-33; 235.30)

The embryo is connected to and dependent on its mother, just as a plant is connected to the earth and receives nourishment from it. So, the embryo does not lead an animal life, but instead a plant life (*In De An*. 213.26-31).

3) An embryo in the womb is a living being and lives, not like a plant, but like an animal. The embryo acts in the womb more like an animal than a plant because it uses its own organs to feed and grow, as well as for locomotion, that is, the arbitrary movements of its bodily parts, of which the plant is incapable (*In De An*. 213.22-25). It is enclosed in the womb and fed by its mother because, it requires assistance, protection, and time to form its body, like the new-born animal. Nevertheless, based on its organic structure and the movement of its body parts, it possesses a sensitive soul in actuality.

Here, the most important point for us is that nutrition through its own organs is the first formal sign of life, and nutrition through its mouth and locomotion turns out to be a formal sign of animal life.

2. The Nutritive Soul as the Efficient Cause of Generation

Discussing the faculties of the nutritive soul – nourishment, growth, and generation – Alexander calls the faculty of generation the most perfect of these. The process of generation is similar to the process of nourishment which includes three parts:

> [...] that which nourishes, that which is nourished, and that with which it is nourished. The soul for nourishing [oneself], or first soul is that which nourishes; that which is nourished is the body whose form is the power just mentioned; and that with which it is nourished is the nourishment (Alex. *De An*. 36.10-12).[7]

The soul causes the movement of nourishment, the body carries out this movement, and the food, being subject to nourishment, changes from unlike to like; food that enters through the mouth becomes blood, which nourishes every part of the body. By analogy with nutrition, Alexander identifies three components of the process of generation: the efficient cause of generation, which is the nutritive soul; the instrumental cause of generation, which is the

[7] [...] τοῦ τρέφοντος, τοῦ τρεφομένου, ᾧ τρέφεται, τὸ μὲν τρέφον ἐστὶν ἡ θρεπτικὴ τε καὶ πρώτη ψυχή, τὸ δὲ τρεφόμενον τὸ σῶμα, οὗ εἶδος ἡ προειρεμένη δύναμις, τὸ δὲ ὧ τρέφεται ἡ τροφή.

body of the parent and the seed; and the subject of generation – a living being similar in nature to the parent. Heat and blood are the instrumental causes of growth, while the seed is the instrumental cause of generation. The seed arises from the final nourishment (ἡ ἐσχάτη τροφή), that is, from the blood,[8] under the influence of the nutritive faculty, and is the most perfect product of the nutritive soul; it is by means of the seed that the soul produces generation (*De An*. 35.26-36.5).[9]

The nutritive soul not only causes the production of the seed but is also present in the seed as a possibility (δύναμις), which, receiving suitable matter (ὕλης ἐπιτηδείου),[10] becomes the cause of the formation of the embryo after conception. It is the nutritive soul that determines the composition of the animal's body: "The soul and power for nourishing [oneself] is the cause responsible for the initial formation of the animal's body as well as for its being, increase, and growth [...]" (*De An*. 36.19-21; cf. 32.1-5; 36.21-37.3; Simpl. *In Phys*. 311.12-14).[11] The nutritive soul shapes the matter of the embryo, so that through nourishment and growth this matter becomes more complex and acquires an organic structure and form similar to that of the parent.[12] Thus, the nutritive soul, which produces the seed and resides in it,

[8] See Alex. *De An.* 35.26-36.5. According to Aristotle, the seed is the excretion of the last food, and the last food is blood in animals with blood or its analogue in animals without blood (Arist. *GA* 726b1-5).

[9] Alexander, following Aristotle, emphasizes the importance of the heavens and the sun as causes of generation, acting together with the father's seed; however, if the seed is the cause of the generation of a particular animal, then the rotation of the celestial sphere, according to Alexander, is the cause of the continuous generation of animals of each species. See Alex. *Quaest*. 1.25, 2.19, 3.5; Sharples (1994) p. 170.

[10] Cf. *De An.* 36.23: ὅταν ὕλης ἐπιτηδείου λάβηται ("once [the soul] receives matter suitable for it").

[11] ἔστι δ' ἡ θρεπτικὴ ψυχή τε καὶ δύναμις αἰτία καὶ τῆς συστάσεως τὴν ἀρχὴν τῷ τοῦ ζῴου σώματι, ὥσπερ οὖν καὶ τοῦ εἶναί τε καὶ τῆς ἐπιδόσεώς τε καὶ αὐξήσεως.

[12] Alexander presumes similarity in nature and not family resemblance. However, the question of similarity to parents in Aristotle's embryology includes the discussion of the causes of family resemblance and leads to the important account of the role of the male and female in embryogenesis. In *GA* II 5, Aristotle discusses the life of wind-eggs and claims that the mother provides not only matter for the generation but also a potential nutritive soul (*GA* 741a6-b6). Peck concludes from this assertion that the female supplies matter and the nutritive soul to the fetus, whereas the male supplies the sensitive soul as a form of the animal (Peck 1942, p. viii). Therefore, other researchers find this interpretation questionable (Gelber 2010, p. 200; Connell 2016, p. 173). It is unlikely that we can divide the possibility

becomes the efficient cause of the nourishment, growth, and formation of the embryo.[13]

Alexander distinguishes between plant and animal life, based on organic structure, nutrition, reproduction, and the function of the soul. While the nutritive soul is present in the whole plant, the sensitive soul is not homogeneous (ὁμοιομέρης). The plant's organic structure is simpler and its soul homogeneous; therefore, the nutritive capacity of the plant is present throughout its entire body. Meanwhile, the animal has a more complex organic structure, and the nourishing capacity of an animal is present only in the organs of nutrition. Therefore, an animal, unlike a plant, requires digestive organs for nutrition "and it cannot form them without the seed that possesses their powers" (Alex. *De An*. 37.11-38.4).[14] So, the seed contains a possibility of a nutritive soul; but when this soul becomes actual, it produces not merely a living being that is capable of nourishing itself, but a being similar to its parents and possessing those organs and parts of the body that

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of a sensitive soul in the semen from the possibility of a nutritive one. The female material supplement is not just passive matter, like wood for a carpenter; rather, it is complex matter, which includes the possibility of all the bodily parts (*GA* 737a 22-24), and along with that, it includes the possibility of a nutritive soul. However, this possibility of a nutritive soul supplied by the female could not become the actual soul of the fetus. What the female supplies needs the efficient and formal principle from the male's semen. The male semen, in turn, includes the possibility of both a nutritive and sensitive soul. Therefore, some researchers prefer to maintain that there is interaction between the male and female in conception, which results in the actuality of the nutritive soul of the fetus as a cause of the gradual development of the embryo (Connell 2016, pp. 173-7; Gelber 2010, pp. 200-2; Henry 2006, pp. 282-4; Bos 2009, pp. 396-7; see also Wilberding 2017, p. 27 n. 17). In *De Anima Liber* Alexander does not discuss the role of the female in the development of the embryo, but I deduce from his words (*De An.* 36.19-37.3; 38.2-4) that he considers the male semen to provide the sensitive soul as a form of the animal, as well as the nutritive soul as a cause of its development and growth.

[13] The activity of the nutritive soul in the embryo allows the generation of the parts and organs of the animal; therefore, the nutritive soul of the animal differs from the nutritive soul of the plant. However, the nutritive souls of animals and plants differ not in their functions, but in their subject – in each living being, these souls perform their functions in different ways, through different organs. See Connell (2016) pp. 148-9; Johansen (2012) p. 118.

[14] [...] οὔτε οἱά τε ταῦτα συστῆναι μὴ τοῦ σπέρματος τὰς δυνάμεις αὐτῶν ἔχοντος (Alex. *De An.* 38.3-4).

are specific to its nature. The question is, why can the nutritive soul in the embryo produce the body of an animal and not of a plant?

The answer is found in Alexander's reading of Aristotle's example of a mechanic puppet.[15] In his commentary on the *Physics*, Simplicius quotes Alexander's explanation of the process of embryogenesis under the influence of the faculty present in the seed (Simpl. *In Phys*. 311.5-25). Alexander, according to Simplicius, understands the process of generation as the movement of a puppet (τὰ νευροσπαστούμενα),[16] in which the movement originating from the seed proceeds to the first part, which in turn causes movement in the next, and so on, until all the puppet's parts are moving. Thus, the δύναμις of the seed, united with suitable matter, successively causes all subsequent changes until it produces an animal similar in kind to the parent. This process of generation takes place according to number and order (κατά τινας ἀριθμοὺς καὶ τάξιν), and not by chance, but for a definite purpose, since nature always works for the sake of something. Both Alexander and Simplicius define the purpose of generation in the same way: the generation of a similar being and participation in the eternal and divine through the extension of the existence of the species (Alex. *De An*. 32.11-14; 36.16-17).[17] So, the nutritive capacity in the seed acts as a trigger for the specific type of motion – ceaseless nutrition and growth, which results in the step-by-step emergence of an animal body. This motion is organized like that of a puppet, i.e. it has a permanent order. The order of the motion is determined by the nature of an animal, present in the parent, and cannot be changed, which means, that every animal of that species emerges in the same way. So, the seed works as a first push, the nutrition and growth of an emerged animal body are caused by the actual nutritive soul of the embryo, whereas the order of that emergence is caused by the nature of the animal, present in the parent.

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[15] For Aristotle's example, see *GA* 734b9-10; for Alexander's reading of the mechanic puppets, see Simpl. *In Phys*. 310.25-312.1.

[16] D. Henry believes that although Simplicius uses the term τὰ νευροσπαστούμενα when discussing Alexander's words, Alexander himself speaks of "automata" (τὰ αὐτόματα), referring to examples from Aristotle's treatises *De generatione animalium* (734b6-17) and *De motu animalium* (701.1-10); see Henry (2005) p. 11 n. 29.

[17] Simplicius speaks of identity in species or genus (*In Phys.* 311.15-17; 31-32), since in the case of mules, which are descended from two different species, it is not possible to speak of identity in species.

3. The Soul and Life of the Embryo

The embryo itself is a puzzling thing: it has the organic structure of an animal but an actual soul of a plant. The question "what is it?" in the case of the embryo turns out to be the question "how does it live?" Discussing the life of the embryo, Alexander separates consuming and digesting food: the embryo receives food from the mother, but digests it through its own organs; therefore, the assimilation of food and growth come from itself (ἐξ αὐτοῦ), that is, according to the activity of its nutritive soul (*De An*. 36.26-37.1). Alexander does not seem to suggest that the embryo after conception is inanimate, just as he does not call it a zoophyte; instead, he says that only the nutritive soul acts in it from conception to birth:

> But even in animals, the nutritive power is inherent in them from the first formation (for the nutrition begins along with the emerging of the animal itself, and while still in the womb, an animal lives, acting only under this capacity alone); whereas the sensitive soul appears in them after they are born. The contractions and extensions of bodily parts that the animal carries out in the womb do not occur according to its own sensitive capacity, but because it is part of an [actually] animate being (*De An*. 74.17-23).[18]

The term "first formation" or "composition" here most likely refers to conception – it is at conception that the form which exists in the seed in its potentiality combines with matter and begins to act as a nutritive soul or faculty. Alexander does not deny that the embryo in the womb behaves to some extent like an animal – that is, it moves the parts of its body; however, he denies that it could have its own sensitive soul. Alexander does not discuss the question in detail, nor does he explain why the sensitive soul appears in the animal only after birth. I believe that, to gain a better understanding of his position, it will be helpful to consider his arguments in light of Philoponus' exposition of different perspectives on the life of the embryo. According to Philoponus, the idea that the nutritive power acts in the

[18] ἀλλὰ καὶ ἐπὶ τῶν ζῴων τὸ μὲν θρεπτικὸν ἀπὸ τῆς πρώτης συστάσεως αὐτοῖς ἐνυπάρχει (τρέφεται γὰρ εὐθὺς γινόμενον ἔτι τὸ ζῷον, καὶ κατὰ γαστρὸς ὂν ζῇ κατὰ μόνην τήνδε τὴν δύναμιν ἐνεργοῦν), ἡ δὲ αἰσθητικὴ ψυχὴ ἐγγίνεται αὐτοῖς ὕστερον ἀποτεχθεῖσιν. Αἱ γὰρ συστολαί τε καὶ αἱ ἐκτάσεις μερῶν τινων, ἅς ποιεῖται κατὰ γαστρὸς ὄν, οὐ γίνονται κατ᾽ οἰκείαν αἴσθησιν αὐτῷ, αλλ᾽ ὡς ἐμψύχου μέρος κατά ταῦτα κινεῖται (my own translation).

embryo until birth is motivated by the following arguments: 1) the sensitive soul appears only when the animal ceases to receive nourishment from its mother; 2) the sensitive soul appears when the animal begins to feed itself through its mouth. Thus, to be an actual animal, the embryo should feed like an actual animal; however, because it feeds like a plant in the womb, it is unable to move like an animal. Therefore, the motion of the embryo's bodily parts does not occur according to its sensitive soul, because the embryo is not an animal.

The efficient cause of an animal's self-motion is its actual sensitive soul. The key part of such motion is sense perception.[19] Without sense perception, animal motion in place cannot exist. An existing animal of whatever kind is already complete and, therefore, it moves by itself, according to its sensitive soul. Whereas the embryo is not yet complete, so it has a sensitive soul only potentially. An incomplete embryo, in Alexander's view, cannot use its sensitive organs and cannot perform perception; consequently, it cannot move on its own like a fully formed animal. Nevertheless, it is in motion: it feeds and grows under the action of its own nutritive soul, and it moves the parts of its body under the action of the actual soul of its parent. So, for Alexander, it moves as a part of its parent, which is animated by a sensitive soul.

Thus, it has its own actual nutritive soul. The nutritive soul is the driving power of generation and operates in the embryo from conception to birth. Does this mean that the embryo is alive and lives like a plant? Alexander claims that the embryo can be considered neither as a self-mover, nor as a self-sufficient living being.

Even though animals are nourished in the womb, it is still as parts of the mother bearing them. For while they are nourished in virtue of the power in them, they receive nourishment

[19] The role of the soul as a mover and the role of sense perception in self-movement is widely discussed. See Corcilius' detailed examination of self-motion under the influence of the soul (Corcilius 2021, pp. 180-7). The scheme described by Corcilius deals exclusively with movement in place. This interpretation of self-motion is supported by other researchers; see Furley (1994) pp. 8-10; Richardson (1995) p. 379; Berryman (2002) p. 90; Gill (1994) p. 17. According to this interpretation of self-motion, the embryo is not a self-mover at all, because it does not move itself in place toward a goal, nor does it use perception as a cause of its movement.

in so far as they are parts [of the mother]. Hence, animals still inside the womb are not yet said to be an animal or alive simply as such and on their own (*De An*. 38.4-8).[20]

Why is the embryo, which has a nutritive soul in actuality, not living by itself? After all, it is the soul that is the principle of life, and nutrition as well as growth are the movements through which life is first determined. The answer to this question may be related to the fact that when an animal comes into being, under the influence of the nutritive faculty, an organic structure arises that should be subject of a soul which is not nutritive, but sensitive.

A plant animated by a nutritive soul is alive by itself: it receives food from the earth, digests it, grows, and reproduces itself according to the plant's organic structure.[21] The embryo, although it digests its food by itself and is attached to its mother like a plant to the earth, cannot live on its own, as a plant does, for it does not exist separately and does not possess a plant body. Since the organs of the embryo intended for nutrition are different from those of the plant, it is not possible to say that it lives on its own, because, in contrast to a plant, autonomous nourishment through its mouth is necessary for the perfection of its organic structure. As long as it does not feed itself through its mouth, not only its sensitive but also its nutritive soul cannot be complete, and it cannot be called a separate living being. Therefore, Alexander argues that because the embryo does not have even a nutritive life by itself, it cannot be regarded as an animal, plant, or zoophyte.

In *De Anima Liber*, Alexander emphatically stresses that the soul, which is responsible for the bodily structure, is an inseparable form of the body.[22]

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[20] διὸ καὶ κατὰ γαστρὸς ὄντα ἔτι ὡς μέρη τῆς φερούσης αὐτὰ τὴν τροφὴν λαμβάνει. Τρέφεται μὲν γὰρ κατὰ τὴν δύναμιν τὴν ἐν αὐτοῖς, δέχεται δὲ τὴν τροφὴν ὡς μέρη. διὸ οὔτε ζῷον ἤδη οὔτε ἁπλῶς ζῆν καὶ καθ' αὑτὰ λέγεται τὰ ἔτι κατὰ γαστρὸς ὄντα.

[21] Alexander emphasizes that plants are alive according to the capacities of their soul. See *De An.* 31.7-8.

[22] Cf. Mittelmann (2013) pp. 552-3 and 555; Moraux (2001) pp. 356-8. Speaking of the composition of the body, some scholars distinguish two different views of the body as the subject of the soul. First, such a body is a mixture of elements, a composite body; and second, a living organism, a functional body (see, e.g., Whiting 1995, pp. 79-84; Cohen 1995). The existence of the composite body depends on the unity of the functional body, and the functional body exists only when it is already animated. Alexander, to a greater extent than Aristotle, emphasizes the significance of the composite body in the question of the emergence of animated beings. He believes that while the organic body is a mixture of elements, the soul, which is the form of this body, is the form of forms and, in a sense, includes the

The embryo possesses the organic structure of an animal, it digests food like an animal, has a beating heart, and blood flows through its body – but only the nutritive soul acts in it. As an animal, it can be complete and capable of independent existence when only the sensitive soul is active in it; the nutritive soul's activity alone is insufficient to allow it to exist as a separate entity rather than as a part. For this reason, even though the embryo develops and nourishes itself – that is, lives – it does so only as a part of its mother; and the embryo's activity is linked not only to the actuality of its nutritive faculty but also to the actuality of the mother's sensitive soul.[23]

dynameis of simpler natural forms that enter into the composition of the organic body (*De An*. 4.4-11; 7.15-9.11. Cf. Accattino 1995, 191-7 and 201). Alexander highlights this context both in *On the Soul* (*De An.* 2.10-11.13) and in *Quaestio* 2.3 of the *Quaestiones*, where he discusses the influence of the divine power on the emergence of physical bodies. In *Quaestio* 2.3 he argues that the divine power not only moves the heavens and all the elements but is also the cause of the difference between the matter of inanimate bodies and that of more perfect animate bodies. Namely, the divine celestial power transforms the matter composed of the elements so that this matter becomes more perfect and suitable to be the subject of the soul (*Quaest*. 48.12-49.4; 49.15-22). The body as the subject of the soul is no longer a composite but a functional body, that is, a body possessing organs and a more complex form. However, whether a body can be the subject of the soul depends not only on its functional structure but also on its elemental composition (see Fazzo 2001, pp. 168-70). By determining the elemental composition of the functional body, the divine power, according to Alexander, can influence the individual properties of the embryo and, in the case of human beings, their character and destiny (cf. Fazzo 1988, pp. 637-41; 634-5). However, in this paper, I am interested in the order of development and animation of the fetus in the womb, which is primarily determined not by the relationship of the celestial powers and elements, but by the nature of each species. The heavenly power can influence the matter of an individual and partly determine her/his properties, character, and destiny, but, as it seems to me, does not influence the nature of the species; therefore, it does not affect the natural order of the species' reproduction and animation.

[23] Aristotle postulates the dependence of the embryo on its mother because it is the mother's body that prepares and provides the food for the embryo. Arist. *GA* 740a24-28, cf. Connell (2016) p. 147. The Stoics called the embryo part of the mother's body; therefore, unlike the Stoics, Alexander believes that the nutritive soul acts in the embryo. See Moraux (2001) p. 362 n. 201; Caston (2012) p. 137 n. 337.

4. Soul as εἶδος, δύναμις, and ἕξις

Let us return to the example of miraculous automata or puppets and the question of how an animal's organic structure is generated in a specific sequence and according to a specific measure under the influence of the nutritive δύναμις. According to Simplicius, Alexander connects the sequence of generation to the nature of species, which is contained in the seed along with the nutritive soul. Alexander (as well as Simplicius) defines nature as ἄλογος δύναμις, which means a power that acts for the sake of a goal but strives for this goal out of necessity rather than as a result of a choice, decision, knowledge, or art – that is, not as a result of some *logos* (Simpl. *In Phys.* 310.25-311.1). That is why the irrational power of nature has no alternatives and acts only in one direction and only in one possible sequence, as in the case of automata: one part moves another, the second moves a third, and so on; the sequence of movement of these parts is unchangeable.[24] The influence of one part on another occurs not by choice and not according to the *logos*, but according to the design of the automaton, although this design itself is determined by the master's intention.

The sequence in which the embryo-automaton moves is determined by the purpose of nature – nature strives to continue the existence of its forms, that is, to produce an animal that is similar to its parent. Simplicius himself suggests that such a sequence of organic generation requires not only a goal but also a *paradeigma*; nature, acting for the sake of a goal, generates a particular bodily structure in accordance with the paradigm, and the paradigm is the non-material natural *eidos*.[25] According to Simplicius, for

[24] On the action of irrational power, see Arist. *Metaph*. 1048a2-9.

[25] See Simpl. *In Phys.* 311.12-21; 313.4-9. Simplicius believes that nature, although it is an irrational power and, therefore, produces generation not by choice, but by necessity, moves for the sake of a goal, and that this goal is predetermined by the *paradeigma*, or the natural *eidos* that acts in the father. However, the paradigm is not the form itself of the father, but the intelligible *eidos* of the natural body, which is in the mind and not in matter, and nature itself as a creative cause (ποιητικὴ αἰτία) is understood as a co-cause (συναίτια) of generation or as a co-cause of higher causes (*In Phys.* 314.9-14). Thus nature, although it does not know the *logos* of creation, creates according to the *logos* that the mind knows (314.19-21). On nature as the co-cause of generation, which determines the development of the embryo as a whole, cf. Henry (2005) pp. 21-3 and 27. The idea that the natural form of the body is separated from the soul as an entelechy is also present in the commentary of Ps.-Simplicius on

Alexander such a paradigm is the form of the parent (which Simplicius himself considers incorrect): Alexander calls a paradigm the form that comes into being together with matter (τὸ γινόμενον περὶ τῇ ὕλῃ εἶδος) since it is this form that nature strives for when it creates a living thing (Simpl. *In Phys*. 311.1-7).[26]

Thus, Alexander in his statements most likely relies on Aristotle, who says that the cause of generation is not an immaterial *eidos* or *paradeigma*, but the form of the parent: "Consequently we evidently do not need to set up forms as paradigms [...] But here it is sufficient that the begetter is the producer [of form], and is the cause of the form being in the matter" (Arist. *Metaph*. 1034a2-5).[27] Alexander himself, like Aristotle, emphasizes that the form of any body exists only in matter and cannot exist separately from it (*De An*. 4.20-27). In addition, he, unlike Simplicius, does not distinguish nature as a form of the body from the soul – he believes that the soul is the natural form of the body.[28] So, Alexander considers nature not as some principle that determines only the bodily structure and is, at the same time, lower than the nutritive soul,[29] but as a general horizon within which there is a 'ladder of

De anima, see Simpl. *In De An*. 87.12-25, 86.19-30. See also Blumenthal (1996) p. 78. As Simplicius reports, Alexander, though he considers the form as a paradigm for embryogenesis, understands it differently. For Alexander, the paradigm is an actual form existing in matter. On Alexander's view of the role of the paradigm and of nature in embryogenesis, see the detailed study by Henry (2005) pp. 11-8. Henry claims, that a paradigm for Alexander is an enmattered (ἔνυλος) form, which is a goal for the process of embryogenesis, whereas nature, for Alexander, instead plays a mechanical role: it organizes the order of the development and ensures the correct sequence to achieve the goal. However, Henry does not understand the paradigm as a form of the parent.

[26] See Moraux (2001) p. 359; Henry (2005) pp. 7-8 and 11.

[27] ὥστε φανερόν ὅτι οὐθὲν δεῖ ὡς παράδειγμα εἶδος κατασκευάζειν [...] ἀλλὰ ἱκανὸν τὸ γεννῶν ποιῆσαι καὶ τοῦ εἴδους αἴτιον εἶναι ἐν τῇ ὕλῃ.

[28] According to Aristotle, the soul is defined as the formal and effective cause of the movement of a body that has life in potentiality – the cause that a living body has ἐν αὐτῷ ἢ αὐτό. According to this definition, the soul is considered to be a natural cause. Cf. Sorabji (1988) p. 222. Alexander claims that nature is the form and the principle of the movement of every natural body, both simple and complex, that is, organic ones (*De An*. 3.20-26; 7.15-23). He believes that the soul, as a form of the organic body, is a natural principle (*De An*. 10.1-11.7; 28.10), whereas both Philoponus and Simplicius consider the soul as a supernatural cause. See also Caston (2012) pp. 4 and 125 n. 271.

[29] Simplicius defines nature as "the lowest level of life" (ἐσχάτη ζωή), see Simpl. *In Phys*. 289.25-26. Cf. Blumenthal (1996) p. 78.

forms': from the simple form of the element to the rational soul, as the most complex form of the human body.[30] If the soul is the natural form of the body, just as gravity is the natural form of the stone,[31] then the nature of the species, or the specific form of the parent, exists only as the form of the individuals of that species. Since the form of the organic body is the soul, then the nature of the species is its animal (or rational) soul, as the form of an actual living individual. And precisely this form, which is in matter, is the formal cause or paradigm for the generation of a new being of the same species.

So, as mentioned above, the embryo lives and acts as a part of its parent, that is, the activity of the embryo is connected to the activity of the sensitive soul of its parent, just as the formation of its organic structure is connected to the soul of its parent as a formal cause. Alexander notes that although the embryo does not yet possess a sensitive soul in its actual form because its body is not yet prepared to function as an independent animal, it does possess the capacities of a sensitive soul in its potentiality due to its own nutritive soul, which it received from its parent through the seed:

> What is inside the womb engages in an activity on its own solely in virtue of this soul power, since even though it possesses the sources and principles for the other powers and suitable

[30] Natural bodies are classified as either simple or complex, with the matter of the complex bodies including the matter of the simple ones, and the forms or powers of the former including those of the latter. (Alex. *De An*. 7.17-8.13). Complex organic natural bodies, of which the soul is the form, can be more or less complete; the form or soul of a more complete body includes a greater number of faculties, just as a complete body itself has a greater number of capacities. Alexander asserts that there is a specific hierarchy between simple and complex bodies, with elements differing from plants in the same proportion and degree that plants differ from animals (*De An.* 10.10-19). Thus, he understands nature as the general basis for the order of natural bodies (Caston 2012, p. 125 n. 271 and 136 n. 335), and such an understanding of nature allows him to draw analogies between lightness/gravity as the power of simple bodies and the faculties of the soul (*De An.* 22.5-12; 23.24-24.4; cf. Caston 2012, pp. 4-5) and to define the soul as a form of forms (*De An.* 8.12-25; 10.28-11.5; 16.18-17.1; cf. Moraux 2001, p. 356; Kupreeva 2012, p. 119; Kupreeva 2004, p. 85).

[31] Interpreting the soul or the first entelechy of an organic body as a power or ability on the basis of which the body acts, Alexander draws an analogy between animate and simple bodies: gravity or levity is the nature, form, power, and condition (ἕξις) of a simple body, just as the soul is the nature, form, power, and possession/state of the underlying organic body (*De An.* 9.14-26; 22.5-12; 23.29-24.4). Sorabji (1974) p. 83 speaks of a similar analogy between the movement of elements, the growth of plants, and the striving of animals in Aristotle, linking the possibility of such an analogy to the teleological nature of any natural movement.

conditions for the dispositions that its parent likewise possessed, it does not yet have these in activity, since in a way it does not yet possess the parts through which the activities of those powers [are exercised] (*De An*. 36.26-37.3).[32]

Although the sensitive soul is not active, the abilities of this soul are contained in the embryo; thus, this soul resides in it in potentiality.[33] So, it can be said that the natural irrational power, which determines the sequence of generation, contains not only the possibility of a nutritive soul, present in the seed but also the possibility of a sensitive soul, present in the embryo. The embryo, having the possibility of such a soul, does not yet possess this soul in actuality and, therefore, lives and moves as a part of its parent – that is, as the subject of its parent's sensitive soul.

In his treatise *On the Soul*, Alexander defines the soul as a power and habitus or state (ἕξις).[34] Similar to how a stone's form determines its gravity – that is, its capacity to move downward – the soul, as the first entelechy of the organic body, is the power or sum of the powers that cause actions of the animate body. However, the relationship between the soul and the animate body is not the same as that between an instrument and a teacher or a helmsman and a ship (Alex. *De An*. 20.26-21.21; 23.24-28), but rather that between a wrestler and the art of wrestling or a flutist and the art of playing the flute (*De An*. 23.6-24).[35] Similar to how a flutist's art is a specific ability or skill (ἕξις) that allows him to play, an animate body's soul is a *hexis* or state

[32] καὶ κατὰ ταύτην μόνην τὴν ψυχικὴν δύναμιν ἐνεργείᾳ τὸ κατὰ γαστρὸς ὂν ἐξ αὐτοῦ ἔχον μὲν καὶ τῶν ἄλλων δυνάμεον ἀρχάς τε καὶ ἐπιτηδειότητας, ὧν τὰς ἕξεις εἶχεν καὶ τὸ γεννῆσαν αὐτὸ, οὐ μὴν ἤδη καὶ ἔχον αὗτὰς ἐνεργείᾳ, τῷ μηδὲ μόριά πως ἔχειν, δι᾽ ὧν αἱ κατ᾽ ἐκείνας τὰς δυνάμεις ἐνέργειαι.

[33] Moraux (2001) p. 363 n. 201 points out that, unlike the Stoics, Alexander does not believe in 'animating from outside' at birth but thinks that all the faculties of the soul are transmitted from the parent and are present in the embryo in a potential state.

[34] Burnyeat (2002) p. 62 distinguishes between two types of change in Aristotle: a change that leads to a changeable or temporary state, διάθεσις; and a change that results in a stable state, ἕξις. If the first change concerns primarily matter, then the second concerns human nature, leading to the completion of the natural ability (Arist. *DA* 417b16; Burnyeat 2002, pp. 63, 77; Johansen 2012, p. 139; see also Sorabji 1974, p. 69 n. 21). Aubry (2008) shows that Alexander, like Porphyry later, defines the first potentiality as the fitness (ἐπιτηδειότης) of matter to obtain some form, and the second potentiality as the possession or state (ἕξις) (cf. Afonasin 2013, p. 186 n. 22 and 196 n. 50). Cf. Alex. *In Metaph.* 391.19-392.30, where Alexander considers ἕξις to be one of the meanings of potentiality (δύναμις).

[35] Mittelmann (2013) pp. 551-3 discusses Alexander's examples in detail.

that affects the body, enabling it to perform a variety of movements. In defining the soul as *hexis*, Alexander draws on Aristotle's distinction between two kinds of potentiality and two kinds of entelechy.[36] Using knowledge as an example, Aristotle discusses two types of change in chapter 5 of the second book of *De Anima*, which correlate to two types of potentiality: the pupil possesses knowledge in potentiality because she/he belongs to the human species and has the ability to learn grammar and arithmetic, even though she/he has not yet done so. However, the grammarian also possesses knowledge in potentiality because she/he has already learned the material and can use it anytime she/he chooses. The first potentiality is associated with matter, and the transition from this potentiality to entelechy is connected to material change; the second potentiality is correlated to some form, completion, or skill (ἕξις)[37] – the grammarian already has knowledge as a skill or *hexis*, but does not apply it at the moment, and therefore this skill is power or potentiality (δύναμις). The second potentiality is the first entelechy; but when a person who possesses knowledge applies this knowledge, she/he acts according to her/his *hexis*, that is, she/he passes from the first entelechy to the second one or from the second potentiality into actuality.[38] To return to Alexander's example: the flutist's first entelechy is his ability to play as a possession or skill, according to which his body is already trained for certain movements. Similarly, the soul as the first entelechy of an organic body is a power (δύναμις), or more precisely, the compound of several faculties, and a state (ἕξις), according to which this body is disposed to carry

[36] Alexander in *De Anima Liber* does not clearly distinguish between two potentialities, but, referring to Aristotle, he speaks of two entelechies, one of which is the power of the animated body to act, and the other is actuality or activity (ἐνέργεια) according to this power (*De An.* 16.1-10). Aristotle, although he distinguishes between two potentialities and two entelechies, does not use the terms "first potentiality" and "second potentiality", nor does Alexander.

[37] In *De anima*, Aristotle uses the term ἕξις to define art or knowledge, but not the soul as a form of an organic body or levity/gravity as a form of fire or earth. It is Alexander who begins to interpret the natural form and the cause of movement (whether the soul or the form of the element) as ἕξις.

[38] On the connection of two types of change in Aristotle with the development of the embryo, see Johansen (2012) pp. 140-1.

out the movements inherent in it by nature (*De An.* 10.26-11.5; 23.24-24.17).[39]

To continue the analogy proposed by Alexander between possessing a soul and possessing an art, the development of an embryo can be compared to learning. A pupil can learn to write or play the flute, that is, she/he has this skill in potential. When the pupil learns to play, she/he is influenced by a teacher who already possesses the art of playing the flute as the first entelechy. When the pupil has already learned to play, that is, has completed the movement of learning, then she/he has the art of playing in entelechy – the art is her/his skill and ability, and therefore she/he can play at any moment, without any additional learning. The transition from the first potentiality to the second one is connected for the pupil to the influence of an external efficient cause (the teacher) and to the training of various bodily abilities. At the same time, a person who already has the skill of playing does not require any external efficient cause or learning time to act according to her/his ability. Similarly, an animated animal, already possessing organs and a soul as the first entelechy, acts by itself according to the faculties of its soul and does not require an external efficient cause. The seed of an animal contains the possibility of a nutritive soul but does not possess this soul in entelechy since it is not yet an organic body; therefore, an external efficient cause is necessary for the movement of the seed, and this cause is the nature or soul of the parent. In fertilization and the formation of the embryo, the first potentiality of the nutritive soul becomes the entelechy, and the embryo is nourished and grows. However, it does not feed by itself, and it grows like a plant, but it has the body of an incomplete animal; therefore, its body is suitable for a sensitive soul, and it possesses a sensitive soul as its first potentiality. For this possibility of the sensitive soul to become the entelechy of the complete organic body, the embryo must go through a series of material changes under the influence of the soul of the parent, which is already an entelechy, just as the pupil needs to train under the influence of the teacher. While the embryo is being formed and nourished, and is growing in the womb, it does not have a soul as an entelechy or state/*hexis* and remains part of its parent, that is, it moves under the influence of the parental form or nature, which determines

[39] Cf. Mittelmann (2013) p. 553.

both the purpose and the sequence of generation.[40] After birth, the animal is not a part of its parent anymore, and its sensitive soul becomes the entelechy of its own organic body – that is, it has a soul of its own and already acts independently based on its own powers.

In the case of learning to play the flute, the effective cause of learning, the teacher, can be distinguished from the formal cause, the art of playing as an entelechy or skill. Analogically, in embryogenesis, the effective cause can be distinguished from the formal and final one. According to Alexander, the nutritive soul, which is transferred through the seed and results in the successive generation of embryo's parts, is the efficient or moving cause of embryogenesis. The formal cause is its parent's soul as a form and the first entelechy, according to which the embryo's organic structure is articulated and the faculties of its animal soul are pre-formed. The final cause is the generation of a new being of the same species, which is the emergence of an organic body that has its own soul – not as a potentiality, but as the first entelechy.[41]

[40] As I indicate *supra*, in n. 12, Alexander does not discuss in detail the female's role in the conception and growth of the embryo. But it should be noted that the embryo grows as a part of the mother's womb; therefore, the actual soul, which becomes the active cause of the embryo's development, is the soul of the mother. I suppose that for Alexander the question here is not about male and female, but rather about the animal species and its *eidos*. The mother's soul acts on the embryo not as a female principle, but as a soul and form of an animal.

[41] Henry (2005) p. 11 believes that, unlike Simplicius, Alexander does not distinguish between form and goal. On the one hand, this is true: the form of the parent, as a specific nature, is both a formal and a final cause (*De An*. 24.11-17). However, on the other hand, this specific nature itself exists only as a form of various individuals. Therefore, it is possible to separate the formal cause – the nature of species that exists in the parent – from the final cause – the nature of species as an entelechy of the formed and born animal. Sharples (1994) pp. 168-9 points out that in the Aristotelian doctrine of the generation of animals, form and purpose are identical. He notes that for Alexander the actual form of the animal is the purpose of generation. This form is produced by the form of the parent by means of a seed through a sequence of changes in matter, which, as an effective cause, launches a chain of changes in matter.

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PIETER SJOERD HASPER, RÜDIGER ARNZEN

AGAINST HYPOTHESES. A RESPONSE CONCERNING *PHYSICS* VIII 1.250B13

Abstract

This is a response to the article published by Silvia Fazzo, 'A Hypothetical Premise about Eternal Cosmic Motion in *Physics* VIII 1.250b13' in a previous issue of *Aristotelica*, in which she argues on the basis of the sources, Vind. Phil. gr. 100 in particular, that at *Physica* VIII 1.250b13 one should adopt the hypothetical reading ἀλλ' εἰ ἦν, καὶ ἀεὶ ἔσται, rather than the categorical reading ἀλλ' ἀεὶ ἦν καὶ ἀεὶ ἔσται. We argue that a complete and methodologically sound consideration of all the textual evidence available shows that the proposal is implausible.

Keywords

Physics, Eternity of the Cosmos, Manuscripts, Arabic Translations, Stemmatic Method

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In a paper recently published in *Aristotelica*, 3 (2023) 'A Hypothetical Premise about Eternal Cosmic Motion in *Physics* VIII 1.250b13', Silvia Fazzo argues interestingly in favour of reading the first sentence of *Physics* VIII 1 as follows:

[b11] Πότερον γέγονέ ποτε κίνησις οὐκ οὖσα πρότερον, καὶ | φθείρεται πάλιν οὕτως ὥστε κινεῖσθαι μηδέν, ἢ οὔτε ἐγένετο οὔτε | φθείρεται, **ἀλλὰ εἰ** ἦν, καὶ ἀεὶ ἔσται, καὶ τοῦτ' ἀθάνατον καὶ | ἄπαυστον ὑπάρχει τοῖς οὖσιν, οἷον ζωή τις οὖσα τοῖς φύσει [b15] συνεστῶσι πᾶσιν; (250b11-15)	Has motion once come into being while not being before, and is it destroyed in such a way that nothing moves, or did it neither come into being nor is it destroyed, but ***if it was***, it will also always be, and *does it belong/it belongs* to the things that are as something immortal and interminable, it being, as it were, some kind of life to all the things that are constructed by nature?

thus proposing at b13 the hypothetical reading ἀλλ'/ἀλλὰ εἰ ἦν, καὶ ἀεὶ ἔσται against the hitherto universally adopted categorical reading ἀλλ' ἀεὶ ἦν καὶ ἀεὶ ἔσται.[1] Fazzo's argumentation for this proposal is two-pronged: on the one hand, she argues that it is found or hinted at in a considerable number of important sources for our reconstruction of the textual tradition of *Physics* VIII and thus for the constitution of the text, while on the other hand she argues that in the context it makes better sense interpretatively as well. Since in the first line of argumentation she frequently refers to the edition of the Arabic translation of *Physics* VIII accompanied by an extensive Greek apparatus (meant to provide evidence for the location of the Greek exemplar of that translation within the Greek textual tradition), which the one of us published in close cooperation with the other, we think it is opportune for us to respond to her proposal. In short, we think that there is no good evidence that the hypothetical reading is the original one, while only the categorical reading is supported by a consideration of all the available evidence together. We also think this is a good opportunity to make a methodological

[1] Cf. Bekker (1831); Ross (1936). Only Ross had the hypothetical reading available to him, as he is the first to have used Vind. Phil. gr. 100 as a source for his edition. The other two editions before Ross', those by Carteron (1931) and Prantl (1879), could not but have followed Bekker.

point about how to evaluate manuscriptal evidence for or against a certain reading, certainly if the interpretative interests at stake are considerable. Despite the fact that Fazzo's proposal is presented within an interpretative context and has a clear interpretative purpose, relevant to the question how exactly Aristotle argues in the first chapter of *Physics* VIII, we will only briefly say something about the relevance of the interpretative issues.

Fazzo's argumentation on the basis of the manuscripts starts with the correct observation that Vind. Phil. gr. 100 at folium 44r reads ἀλλ' εἰ ἦν. Vind. Phil. gr. 100, also known under the siglum **J**, is our oldest extant manuscript containing the text of the *Physica*, dating back to the middle of the ninth century, as Fazzo carefully stresses, the obviously intended implication being that it is of great authority for the constitution of the text.

Next, she finds important support for this reading in the second oldest extant manuscript containing the *Physica*, Par. gr. 1853, known under siglum **E**, from the 10th century. Fazzo points out that E reads ἀλλὰ εἰ ἦν and that previous collators, among them us, have failed to notice this. Indeed, in the Greek apparatus to our edition we failed to record this reading in E, but the mistake seems in this case of little consequence, for if one looks carefully, one sees that the accents which turn the uninterrupted string of letters αλλαει into ἀλλὰ εἰ are not the only accents written: there are also faintly written accents which turn this string of letters into ἀλλἀεὶ, that is, ἀλλ' ἀεὶ (see the pictures below). Clearly these accents are earlier, meant to be superseded by the accentuation ἀλλὰ εἰ. Thus if we had been more alert, we would have recorded in the apparatus: ἀλλ' ἀεὶ E$^{a.c.}$: ἀλλὰ εἰ E$^{p.c.}$.[2]

[2] The text of Par. gr. 1853 is written in a distinctive way: single letters and groups of letters alternate, and frequently these groupings encompass letters from two different words, as in the case at hand. Probably there were initially only some signs to disambiguate the text, in the case at hand the faint sign separating αλλ from αει (barely visible under the later, much clearer, acutus on αλλὰ) and the faint lenis and acutus on ἀεὶ. These first signs were then corrected so as to enforce the reading ἀλλὰ εἰ, perhaps by the same scribe, though more likely not, but there are no indications that the correction is by a much later hand.

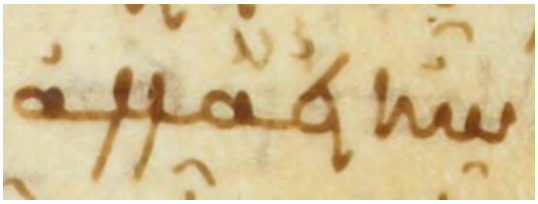

Figure 1

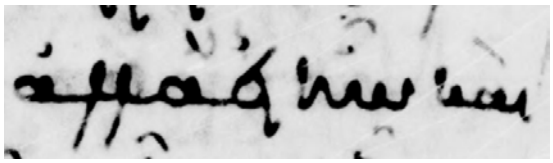

Figure 2

But even if E had unambiguously read only ἀλλὰ εἰ, this still would not have constituted sufficient evidence that ἀλλὰ εἰ would be the reading of the whole of E's branch of the overall stemma, despite the fact that E and J belong to different branches of the stemma, a fact Fazzo may allude to when she says that "E, where the *Physics* is concerned, does not depend on J". For as we have shown in the introduction to the edition mentioned above, E exhibits some contamination whose source can only be the group of manuscripts to which J belongs, or even only J itself.[3] Thus if the other manuscripts belonging to E's branch of the stemma do not exhibit the reading ἀλλὰ εἰ (as they mostly do not), the best hypothesis would have been that E would indeed have been contaminated here from J or a close relative of J, and thus for this reading would not have been independent from J.

Now the closest stemmatic relative to E is the exemplar of the Arabic translation by Isḥāq ibn Ḥunayn,[4] the next witness taken into consideration by Fazzo. She argues that though one cannot find a conditional clause (with εἰ) in this translation, one equally cannot find the two occurrences of ἀεί in 250b13 which we have in most manuscripts: the ἀεί which might have been there in ἀλλαει would be missing. That claim is disputable, however: Isḥāq

[3] See Hasper (2021) pp. clxxx-clxxxi.
[4] See Arnzen (2021). This edition is primarily based on manuscripts, and thus not on the translation as quoted in Averroes' Great Commentary on *Physics* VIII, as Fazzo states.

may translate the first *ἀεί* with *lam tazal* ("without coming to an end", "perpetually"), while he renders the second *ἀεί* differently, namely with *abadan* ("always", "ever").[5] The rendition of *ἀεί* with *lam yazal* / *lā yazālu* (and its conjugated forms) can perhaps not be found in the Graeco-Arabic translations very often, but Isḥāq's translation here is not unique either. Here are some further examples:

1. Aristotle, *Physica*, 251a21: εἰ δ' ὄντα προϋπῆρχεν ἀεὶ κινήσεως μὴ οὔσης = وإن كانت فيما مضى لم تزل بهذه الصِفة غير أنّه لم تكن حركة p. 6 ed. Arnzen;
2. Nicomachus Gerasenus, *Introductio arithmetica*, 79.14: καὶ ἀεὶ οὕτως μέχρι παντός = ولا يزال ذلك يجري على هذا المِثال بالغاً ما بلغ p. 65 ed. Kutsch;
3. Plotinus, *Enneades*, IV 8, 6.13: χωρεῖν δὲ ἀεί, ἕως εἰς ἔσχατον μέχρι τοῦ δυνατοῦ τὰ πάντα ≈ فلا يزال يسلك مسلكَ الفعْل حتّى يخرج مِن ذاته *Theologia Aristotelis*, p. 86.3 ed. Badawī;
4. Galen, *De simplicium medicamentorum temperamentis ac facultatibus*, Vol. 12, p. 311.7: ὡς ἀεὶ φαμεν = كما لم نزل نقول في ذلك (Ullmann, WGAÜ p. 74);
5. Galen, *De anatomicis administrationibus*, 281.16: κἄπειτα διαδοχαῖς πολλαῖς ἀεὶ χείρων γιγνομένη (scil. ἡ τέχνη) = ثُمّ الصناعة ... لم تزل بتداول الناس لها واحداً بعد آخر تزداد بنقْصها p. 72 ed. Garofalo;
6. Galen, *Anat.* 617.17: ἡ φλὲψ αὕτη παραγίγνεται μὲν ἀεὶ πρὸς τοῦτο τὸ χωρίον = هذا العرْق ... لا يزال يجيء إلى هذه المواضع p. 440 ed. Garofalo;
7. Galen, *De locis affectis*, 32.15: ὅπερ ... ἀεὶ λέγων = ما لم أزل أقوله Ms. Wellcome Library 401, fol. 16b11;
8. Galen, *De diebus decretoriis*, 795.14: καὶ ταῦτ' εἰσβάλλει μὲν αὐτοῖς τὴν πρώτην σμικρὰ, παραύξεται δ' ἀεὶ = وتبتدئ به هذه اليوم الأوّل هي يسيرة ثُمّ تزداد قليلاً قليلاً ... ولا يزال كذلك p. 143 ed. Cooper;
9. Galen, *De methodo medendi*, 326.7: ἀπὸ τῶν πεπονθότων μορίων ἐπὶ τὰ κατὰ φύσιν ἔχοντα ... ἀεί τι προσεπιλαμβάνειν = مِن الأعضاء المؤوفة إلى الأعضاء السليمة ... لا تزال ترتبط Ms. BNF ar. 2855, fol. 130b20.

(See soon also Arnzen, 2024: *lemma* ἀεί.)

[5] If so, since Isḥāq ibn Ḥunayn translates the first *ἀεί* with *lam tazal* and the second *ἀεί* with *abadan*, we think, unlike Fazzo (2023) n. 15, that there is nothing puzzling about Scotus' translation of Isḥāq's translation: *semper fuit, et semper erit*.

Hence Isḥāq's whole translation of the sentence *lākinnahā lam tazal fīmā maḍā wa-lā tazālu abadan* says: "but it [*scil.* motion] did not come to an end with respect to [its] past [*lit.* to that (part of time) which has elapsed] nor will it ever come to an end"; it is also impossible to understand *lam tazal* in another way. Thus it clearly presupposes the full categorical reading. The two ways of rendering ἀεί may well correspond to a relevant and often useful distinction between *semper a parte ante* and *semper a parte post*.

Also the fragment adduced from another Arabic version of the beginning of *Physics* VIII 1 is of little help for the hypothetical case. It is found in the *Kitāb al-Baḥth*, a work in the so-called *Corpus Gabirianum*, whose dates are the subject of dispute in the literature.[6] Fazzo suggests that in this fragment, which she cites as an earlier Arabic version, the hypothetical protasis "if-it-was" is found. We take issue with both points. As to its dating: the view that this fragment is an earlier version derives from the discussion by Haq (1994) 27, where he argues that the terminology, style and structure of this alternative translation shows that it is independent from Ḥunayn ibn Isḥāq's translation and also less sophisticated.[7] Now if one looks at the works mentioned or cited in the *Kitāb al-Baḥth*, they suggest that the work itself was composed at the end of the 9th century or at the beginning of the 10th century, thus contemporaneously with the translation by Isḥāq ibn Ḥunayn, who died around 910.[8] There is no evidence that the *Kitāb al-Baḥth* itself is to be dated before Isḥāq ibn Ḥunayn's translation; on the contrary, Haq's observation that in another work from the *Corpus Gabirianum* the older form of the title of the *Physica*, *Samʿ al-Kiyān*, is found, while in the *Kitāb al-Baḥth* we encounter the later form *al-Samāʿ al-ṭabīʿī*, which is used, and

[6] See Ullmann (1972) pp. 198-208, and the literature mentioned there.

[7] This view is related to Haq's overall thesis in the same chapter that the *Corpus Gabirianum* is older than usually supposed.

[8] For example, the *Kitāb al-Baḥth* cites Ḥunayn ibn Isḥāq's translation of Galen's synopsis of Plato's *Timaeus* (cf. Moseley 2017, p. 209); the title of Alexander of Aphrodisias' *Quaestio* 1.21 is identical to that of the Arabic translation which is attributed to Abū ʿUthmān al-Dimashqī (deceased after 914). Further, the anonymous author refers to refutation of Galen's work on the first mover by Alexander (against the attribution, see Fazzo 2002, pp. 109-44). As far as known, there was only one Arabic version of this work, also by Abū ʿUthmān al-Dimashqī. Something similar applies to the reference to Alexander's Work *De intellectu*, whose Arabic translation is probably also produced by Isḥāq ibn Ḥunayn. For all these references, see Kraus (1942) pp. 319-30.

possibly introduced, by Isḥāq ibn Ḥunayn, suggests that the *Kitāb al-Baḥth* was composed after Isḥāq's translation. What is more, one could even argue that this fragment is dependent on Isḥāq's translation, for even though the terminology of the translation in the *Kitāb al-Baḥth* deviates considerably from that by Isḥāq – a well-known feature of the *Corpus Gabirianum*, whose author replaces the philosophical terms often by less specific words or by terms derived from the contemporary theological or alchemist-esoteric literature –, there is some evidence that Isḥāq ibn Ḥunayn's translation is the source for the translation found in the *Kitāb al-Baḥth*. A first indication is that in both translations the interrogative adverb πότερον is rendered with the idiomatic expression *layta shiʿrī* ("I wish I knew"), a usage which is characteristic of the translation style of Isḥāq ibn Ḥunayn. A second indication is that in both texts ἀεί in ἀεὶ ἦν is rendered with the rare *lam tazal*, but which is used by Isḥāq ibn Ḥunayn more often (see passage 1 on the list above).

At any rate, even if the fragment of the *Physics* from the *Kitāb al-Baḥth* cited by Fazzo had been from an older independent translation, it still does not support the claim that it features the hypothetical protasis. For this fragment translates: "I wish I knew: (a) has motion always been, or (b) did it come into being while not being before, and (c) will it be destroyed after its existence, *if it has come into being*, or how is motion (to be described)?" The underlined clause clearly translates the categorical reading at 250b13, so that it seems a tall order to use this fragment in support of the hypothetical reading. Fazzo focuses on the italicised clause, as she finds there a hypothetical protasis. Indeed, here the Arabic *in kānat* by itself could just as well be translated as "if it was", but in the context it is clear that the correct translation is "if it has come into being'. It all depends on how one understands the function of clause (c): Fazzo would perhaps interpret its apodosis as corresponding, by way of a negative question "will it be destroyed after its existence", to the apodosis καὶ ἀεὶ ἔσται, so that the translation of *in kānat* with "if it was" becomes mandatory. However, not only is this difficult to square with the earlier phrase clearly corresponding to the categorical reading, it also seems far too complicated to understand the negative question in this way. Rather, the function of (c) is to render, together with (b), the finite existence

alternative to the eternal existence of (a). Thus understood, the phrase "if it has come into being' ensures that (b) and (c) are connected, as it merely repeats (b) in a conditional way. Thus (b) and (c) together correspond to Aristotle's "Has motion once come into being while not being before, and is it destroyed in such a way that nothing moves", to which it also stays much closer verbally.

Fazzo suggests that the categorical reading is the product of a corruption of ἀλλ' εἰ over ἀλλὰ εἰ into ἀλλ' ἀεὶ and that this corruption "could have arisen by the 12th century (if not before)", i.e. presumably not at an early stage of the textual tradition. In order to uphold this suggestion, she must dismiss the claim in our apparatus that Simplicius read the categorical version. Now Simplicius says this:

δῆλον ὅτι [...] ζητεῖ [...] καθόλου περὶ κινήσεως, εἰ ἦν τις χρόνος ὅτε οὐκ ἦν κίνησις ὁποιαοῦν οὐδὲ ὅλως ἐκινεῖτό τι τῶν ὄντων, ἢ ἔσται τις χρόνος ὅτε οὐδὲν κινήσεται, ἢ ταῦτα μὲν ἀδύνατα φανεῖται, ἦν δὲ ἀεὶ καὶ ἔσται κίνησις, ὥστε τοῦτο, τουτέστι τὴν κίνησιν, ἀθάνατον καὶ ἄπαυστον ὑπάρχειν τοῖς οὖσιν. (*In Physica* 1118.18-24)

Hence it is obvious that Simplicius envisaged the second alternative to consist in the impossibility that there was beforehand a time without motion *and* there is afterwards a time without motion (ταῦτα [...] ἀδύνατα), but "here always was and will be motion". Not only is there no trace of the hypothetical reading, it is positively excluded that he paraphrases a text with the hypothetical reading, while there is no indication in the paraphrase that he did not have the categorical reading in mind – and his paraphrase is close, from ἦν δὲ ἀεὶ onwards, even so close as to require an elucidation for τοῦτο, without being identical to it: he adds ὥστε (quite correctly), changes ἀλλ' into δὲ and leaves out the second ἀεὶ, which is not a big deal at all, not even a small one. Thus any attempt to question that Simplicius read ἀλλ' ἀεὶ ἦν fails.

In this context it is relevant that Fazzo does not discuss here Themistius' paraphrase of the beginning of *Physica* VIII 1, although this repeats Aristotle almost *verbatim*:

ἔπεται δὲ ἐφεξῆς ἐπισκέψασθαι, πότερον γέγονέ ποτε κίνησις οὐκ οὖσα πρότερον καὶ φθείρεται πάλιν οὕτως, ὥστε κινεῖσθαι μηδέν, ἢ οὔτε ἐγένετο οὔτε φθείρεται, ἀλλ' ἀεὶ ἦν καὶ ἀεὶ ἔσται καὶ

τοῦτο ἀθάνατον καὶ ἄπαυστον ἐν τοῖς οὖσίν ἐστιν, οἷον ζωή τις ὑπάρχουσα πᾶσι τοῖς ὑπὸ φύσεως συνεστῶσιν. (*In Physica* 209.2-6)

Thus Themistius only changes Aristotle's ὑπάρχει into ἐν [...] ἐστιν and Aristotle's οὖσα into ὑπάρχουσα. From the fact that both Themistius and Simplicius only report the categorical reading, one may infer that Alexander of Aphrodisias also read it and did not report the hypothetical reading, for both were strongly influenced by Alexander's commentary.[9]

Finally, a last piece of evidence mentioned in support of the hypothetical case is to be discussed, namely the exemplar of James of Venice's translation into Latin from the 12th century, which also translates as if its exemplar (which we assigned the siglum **Λ** to) read ἀλλ' εἰ ἦν: *sed si erat*. Assuming that all manuscripts and translations of the *Physics* before the 12th (E, J and the exemplars to the Latin and Arabic translations) either support the hypothetical proposal or at least do not invalidate it, one could think that the alleged corruption of ἀλλ' εἰ ἦν into ἀλλ' ἀεὶ ἦν is only a relatively late phenomenon in the textual tradition. We have already argued on the basis of Themistius and Simplicius that this suggestion cannot be correct. Here, however, we want to use the correct observation about the early Latin translation to make a methodological point about how to use manuscriptual evidence in support of or against adopting a certain reading.

The fact is that J and Λ are not the only sources featuring the hypothetical reading; it can be found in two further manuscripts: Par. Suppl. gr. 643 (which we have given siglum **w**, from the 13th century) and Par. gr. 1859 (siglum **b**, also from the 13th century). Moreover, there is also one manuscript that neither has ἀεί nor εἰ, but just reads ἀλλ' ἦν: Vossius Q3 (siglum **Q**, from the 12th century). Thus one might think that the reading is more widespread in the tradition than in just one source, and that it is old, since J has it, and thus that it enjoys considerable authority for the constitution of the text – basically the case Fazzo is trying to make in her paper.

Here are some relevant facts, however. First, J, Q and w form a group within the overall stemma for *Physica* VIII and clearly share a common ancestor – this is established by the lists of errors which they uniquely share

[9] As can be gleaned from Rashed (2011).

among the rather long list of manuscripts and sources we collated for the edition mentioned above.[10] Moreover, this group has an internal structure: J and Q are more closely related to each other than to w, so that we must assume that the common ancestor of the group was copied at least twice, by (the ancestor of) w and by the common ancestor of J and Q.[11] Now w has the reading ἀλλὰ εἰ, whereas the common ancestor of J and Q probably read ἀλλ' εἰ (Q subsequently deleting εἰ). That seems to make it equally likely that the common ancestor of the whole group read ἀλλὰ εἰ as that it read ἀλλ' εἰ.

However, we should also take a look at the other groups of manuscripts which are more closely related to the group made up of J, Q and w. There are two of them, one most closely related, consisting of manuscripts Laur. gr. 87.07 (**F**, from the 12th century), Vat. gr. 1027 (**H**, from the 12th century), Ambr. M 54 sup. (**M**, from the 12th century) and Ambr. B 007 sup. (**P**, from the 12th century), and one more distantly related, but still belonging to the same half of the stemma, consisting for book VIII of manuscripts Vat. Barb. gr. 136 (**N**, from the 12th century), Vat. gr. 1025 (**R**, from the 13th century) and Erlangen A4 (**L**, from the 15th century). Taking these manuscripts into account, we see that the reading ἀλλ' ἀεὶ dominates (manuscripts F, I, M, P and L), while there are also manuscripts which even have ἀλλὰ ἀεὶ (manuscripts N, R and H). This means that the most likely scenario is that the common ancestor of the group J, Q and w also read ἀλλαει, for otherwise we would have to postulate two more dramatic changes: first from ἀλλαει (reading of the common ancestor of all manuscripts related to JQw) to ἀλλ' εἰ (sudden disappearance of one letter) and then, in w, back from ἀλλ' εἰ to ἀλλὰ εἰ (sudden addition of one letter), whereas the two changes from ἀλλ' ἀεὶ to ἀλλὰ εἰ (different parsing of the same letters) and then to ἀλλ' εἰ (removing the threat of ambiguity) are much smoother. Similarly, it is more likely that the common ancestor of that side of the stemma, that is, for all the manuscripts related to group JQw, read ἀλλ' ἀεὶ than ἀλλὰ ἀεὶ, for it is easier to explain the addition of an α (one change, to remove the threat of ambiguity) than the disappearance and then again reappearance of a letter.

[10] See Hasper (2021) pp. cxxxvii-cxxxviii.
[11] *Ibidem*.

That Λ must have featured ἀλλ(ὰ) εἰ should not have come as a surprise, for stemmatically Λ belongs to the JQw group, as a clear list of shared errors shows,[12] while there are far fewer readings uniquely shared between Λ and other groups on that side of the stemma. The impression that Λ is somehow independent from the JQw group is due to a considerable amount of contamination in Λ, mainly from the other side of the stemma, to which E and the exemplar of the Arabic translation belong.[13]

The lesson to be drawn from these facts and considerations is that one cannot cite individual variants from individual sources for or against a certain reading to be adopted, without situating these sources stemmatically within the whole of the extant tradition. The age of the individual sources plays a subordinate role in this respect and should not be cited in favour of a certain reading in isolation from an assessment of the location of that source within the stemma as a whole. Of course, older sources are usually more important than younger sources, but that is because many of the younger sources are direct or indirect copies from extant sources or closely related to extant sources. The chances that younger sources provide information about the history of the text which is significantly independent from the information provided by older manuscripts are smaller. But they are in no way zero, as the case of, for example, manuscripts b and e (Vind. Phil. gr. 64, from the 15th century) for the text of *Physica* VII 1-3 shows: they are the only two independent sources for the whole *α* text of those chapters.

What is more, even the chances that a single source in a stemmatically less independent position, like J, uniquely provides us with the correct reading, are not zero – it is possible on two scenarios: (a) if the alternative reading through contamination takes over the rest of the extant manuscript tradition, and this source is the "last man standing", or (b) if this source alone has been contaminated from an independent part of the textual tradition which is no longer extant. The first scenario occurs rather frequently in the

[12] See Hasper (2021) pp. cxl-cxli.

[13] A similar but converse point applies to manuscript b, which also features the hypothetical reading: though it, together with Vind. Phil. gr. 64 (siglum **e**, from the 15th cent.) belongs to the side of the stemma of E and the Arabic translation, it has been heavily contaminated from the other side of the stemma (see Hasper 2021, at pp. cxlv-cliii) – thus it presumably derived its hypothetical reading from the JQw group.

Organon, where there is a lot of contamination, also in the earlier stages of the textual transmission.[14] The second scenario was, for example, the assumed situation for *De motu animalium* before the discovery of manuscripts belonging to a completely independent branch of the stemma: one manuscript (Vat. gr. 1339) uniquely featured readings which were clearly superior, but for the rest it held a subordinate position in the overall stemma.[15] However, the justification for positing one of these two scenarios to explain how a source of apparently less importance features such a reading had better consist in very strong interpretative reasons and it had better not concern a single isolated case, but rather be part of a pattern, so strongly are the odds stacked against these scenarios applying.

This brings us to the interpretative side of the proposal to adopt the hypothetical reading ἀλλ' εἰ at 250b13. Though we are very sceptical of it for interpretative reasons as well, we acknowledge it is open for a proponent of the hypothetical reading to argue in favour of the hypothetical reading by arguing for an emendation to the text, in effect that the reading of the archetype of the extant textual tradition ἀλλ' ἀεὶ constitutes a mistake in parsing the letters in the wrong way, and thus that Aristotle originally wrote ἀλλὰ εἰ – a mistake which is more common at early stages of the textual transmission because of frequent lack of word separations and accents and breathings. Since we have offered a good reason to believe that Alexander of Aphrodisias had the categorical reading, the hypothetical reading would then have disappeared before 200 AD. In this special case the burden of proof for a hypothetical reading would even be lower than normally when one wants to argue that there is an error in the archetype: it would only be necessary to show that the alternative fares better than the reading of the archetype, solely on the basis of interpretative considerations. In normal circumstances, when the emendation involves actual changes to the letters of the text, however, the burden of proof for the emendator is much higher, in that one must show that the reading of the archetype is implausibly difficult and that the proposed emendation is the smallest deviation from the reading of the

[14] For some examples, see Hasper (2024) pp. 279-311.
[15] Compare the stemma provided by Nussbaum (1978) p. 17, with the stemma provided by Primavesi (2020) at p. 133, especially with regard to the position of P (Vat. gr. 1339).

archetype which yields an interpretatively plausible text. As it is, however, the hypothetical reading does not even meet this lower burden of proof.

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William Wians

NOTE ON *PHYSICS* VIII 1.250B13: CATEGORICAL OR HYPOTHETICAL?

Abstract

P. Hasper and R. Arnzen have mounted a spirited defense of what they call the categorical reading of *Physics* VIII 1.250b13 against a hypothetical reading of the text put forward by Silvia Fazzo in *Aristotelica* 3. The crucial phrase in Ross's text reads ἀλλ' ἀεὶ ἦν καὶ ἀεὶ ἔσται. Fazzo has argued in favor of ἀλλ' εἰ ἦν καὶ ἀεὶ ἔσται, a variant derived from a manuscript designated as J (Vind. Phil. gr. 100), the oldest manuscript of the *Physica*. On Fazzo's reading, with ἀλλ' εἰ, Aristotle is completing a hypothetical pair of options rather than making a categorical assertion that motion is eternal. My question in this note is a methodological one. When interpretive stakes are considerable, when should a more plausible interpretation of a text's larger argumentative context lead us to endorse a variant reading, even when the variant is at odds with a larger extant textual tradition? Having argued that *Physics* VIII 1displays a thoroughgoing dialectical structure, I conclude that emendation of 250b13 has in its favor that it makes clearer that Aristotle is framing a dichotomy between two mutually exclusive options, just as his theory of dialectical reasoning toward principles would dictate. In this case at least, interpretive considerations of the larger argumentative structure should be given special weight in evaluating textual variants.

Keywords

Eternal Motion, Dialectic, Principles, *Physics* VIII, Methodology

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P. Hasper and R. Arnzen (hereafter H&A) have mounted a spirited defense of what they call the categorical reading of *Physics* VIII 1.250b13 against a hypothetical reading of the text put forward by Silvia Fazzo in *Aristotelica* 3 (2023). The text in question is that of E as favored by Ross, a text which as they point out has been universally adopted.[1] The crucial phrase in Ross's text reads ἀλλ' ἀεὶ ἦν καὶ ἀεὶ ἔσται. Fazzo has argued against this reading, in favor of ἀλλ' εἰ ἦν καὶ ἀεὶ ἔσται, a variant derived from a manuscript designated as J (Vind. Phil. gr. 100), the oldest manuscript of the *Physica*. The crucial difference, as H&A highlight, comes in her separating the letter string ἀλλαεὶ into ἀλλὰ εἰ (or ἀλλ' εἰ). On Fazzo's reading, with the presence of the εἰ, 'if', Aristotle is making – or rather more precisely, completing – a hypothetical pair of options. The position defended by H&A, by contrast, renders the line as a categorical assertion: in contrast to the possibility of motion coming into being and passing away as posited in the preceding clause, Aristotle is here asserting categorically that motion always was and always will be. There is no hypothetical 'if' on the basis of the manuscripts and textual traditions they cite. The categorical reading is, of course, consistent with Aristotle's own position regarding the eternality of motion announced at VIII 1's conclusion.

My interpretation of VIII 1 as a whole was published in the same *Aristotelica* volume containing Fazzo's proposal.[2] In the interest of full disclosure, I must note that her paper generously references mine, and my paper concludes with an appendix evaluating her reading on interpretive grounds. In that appendix I welcomed her proposal, saying I found it persuasive. I still find it so. This note will not, however, be a critical response to H&A's carefully documented position, a task that rests with Fazzo herself and for which I haven't the philological expertise in any case. My main purpose is to continue an important dialogue about how to read ancient texts when (as is often the case) texts and textual histories are controversial. Thus, in the spirit of dialogue, my question in this note is a methodological one. I intend it be a variation of a question H&A implied in their introductory paragraph,

[1] Ross (1936).
[2] See Wians (2023) for my full reading and for further references to passages and secondary sources.

"how [should one] evaluate manuscriptal evidence for or against a certain reading [...] if the interpretative interests at stake are considerable[?]" Their answer appeals to a larger context: "one cannot cite individual variants from individual sources for or against a certain reading to be adopted, without situating these sources stemmatically within the whole of the extant tradition." While the caution of such a conclusion is certainly important, I would ask a somewhat different question: When interpretive stakes are considerable, when should a more plausible interpretation of a text's larger argumentative context lead us to endorse a variant reading, even when the variant is at odds with a larger extant textual tradition?

To answer the question as I have framed it, I will return to the interpretive level. This will involve a further look at what I take Aristotle to have been trying to accomplish in VIII 1 as a whole. My position, as stated in my earlier paper, is that VIII 1 presents a dialectical survey of key predecessors, commencing with its opening lines, and relies throughout on the use of dialectical techniques in the pursuit of principles as described in the *Organon*. While I believe my overall reading of VIII 1 stands independently of the disputed text of 250b13, Fazzo's proposal is consistent with and would seem to strengthen my position by making the opening lines clearly hypothetical, just as I showed a dialectical investigation ought to begin. Based on interpretive grounds, therefore, I will continue to support Fazzo's revision of the text.

Let me begin with a passage in VIII 1 already alluded to in which Aristotle seems fully and unambiguously categorical in rejecting the idea that motion came into being and that it might or must go out of being in the future. This comes at the end of the chapter, the final line of which reads: "That there was not, nor ever will be, a time when there was not nor will not be motion, let this much be said" (*Phys*. VIII 1.252b5-6; my translation).[3]

The verbal parallel between ἦν [...] οὐδ' ἔσται here and the opening lines of the chapter are, I think, consistent with the either version of the disputed passage at 250b13. At a textual level, in other words, the chapter's final line do not seem to me to be conclusive for one textual variant over the other – though one's awareness that this is Aristotle's conclusion might certainly

[3] ὅτι μὲν οὖν οὐδεὶς ἦν χρόνος οὐδ' ἔσται ὅτε κίνησις οὐκ ἦν ἢ οὐκ ἔσται, εἰρήσθω τοσαῦτα.

incline a reader toward the categorical reading. I shall return to this point at the end of this note.

Here I want to ask how the statement at 252b5-6 fits into the overall argument of VIII 1. One thing is clear: the sentence marks the conclusion of the entire chapter.[4] *Physics* VIII 1 is a long chapter, extending over two full Bekker pages (250b11-252b6). Importantly, up to and including its concluding line (setting aside the categorial reading of 250b13 to avoid begging the question), Aristotle's own position regarding the eternality of motion remains conditional. Whether motion is eternal or not is precisely what is in question.

Physics VIII 1 begins by positing a dichotomy: Is motion in the cosmos eternal, without beginning and without end? Or did it begin at some point, implying that it will also end? Aristotle develops these two options in the first portion of the VIII 1 (250b11-251a8). The major portion of VIII 1 is taken up with examining and ultimately rejecting the position that motion comes into being and passes away (251a8-252a5). Aristotle then accepts the other option, that motion is eternal (251b28-252a5). But the acceptance is conditional, not categorical. For while Aristotle accepts that motion must be eternal, he immediately faults previous adherents of this position for a failure to provide an explanation for eternal motion. As I argued in my *Aristotelica* paper, the fact (*hoti*) of such motion has been established, but the reason why (*dioti*) has yet to be set forth. In other words, the conclusion of VIII 1 should itself be seen as conditional in the larger context of the chapter. It serves as a starting point for the further investigations of Book VIII, a *telos* of the argument to this point, but an *archê* for the investigation to come.

Once again, I do not claim that the interpretive context is decisive with regard to the variant texts. Interpretation of an author's meaning and intentions is just one tool, and a subjective one at that, in that it relies ultimately on the interpreter's sense of what constitutes a philosopher's outlook and methods.[5] Almost by definition, interpretations may be persuasive, but cannot be decisive. That being said, I believe H&A's categorical reading of

[4] Here and in my original paper I rely on the insights in Netz (2001).

[5] Subjective and potentially dangerous: the Stoic philosopher Panaetius, for example, rejected the authenticity of Plato's *Phaedo* on the grounds that a defense of the immortality of the soul was unworthy of so great a thinker.

250b13 is less consistent than Fazzo's hypothetical proposal with the dialectical structure of *Physics* VIII 1 as a whole.

Let me be clear that from a methodological standpoint, I am not reducing the issue to a subjective interpretation on the one hand vs. an objective reliance on received texts. What must be recognized is that a commitment to textual, i.e., stemmatic, fidelity does not eliminate the possibility of interpretive bias.

Consider what I think is a relevant parallel problem in translation. In my opinion, many translations of Aristotle exhibit an interpretive bias that runs against the evidence of the text itself. I will give just one example to make my point. The text of the first line of *Metaphysics* Lambda 9 reads as follows: τὰ δὲ περὶ τὸν νοῦν ἔχει τινὰς ἀπορίας (1074b15, Ross).[6] When Ross translates this line in the Complete Oxford Aristotle – the translation retained in the Revised Complete Aristotle[7] – he renders it as follows: "The nature of the divine thought involves certain problems." What Ross has done, in my opinion (and not just my opinion),[8] is to allow his knowledge of Aristotle's conclusion in the chapter to shape his translation of 1074b15 by importing the word 'divine', which does not appear in his text.[9] Perhaps the motive was to 'help' the reader. Perhaps it was to 'make clear' Aristotle's intentions. Such motives need to be questioned. Aristotle is seldom an elegant writer, but he is a careful one – often more so than is typically appreciated.[10]

Translation is not textual transmission. But the same sort of interpretive bias could explain how the categorical version of 250b13 came about. At some point in the transmission of the source text of E, a scribe saw the character string ἀλλαεὶ. The corrector,[11] influenced by his knowledge of the conclusion of VIII 1 and of Aristotle's consistent position on the eternality of motion, recorded ἀλλ' ἀεὶ. Like Ross's translation of Λ 9.1074b15, the text of 250b13 could have come about through the importation of an interpretive bias.

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[6] Ross (1924).
[7] Barnes (1984).
[8] Ross's translation, and the misunderstanding it engenders of Aristotle's larger position, is powerfully challenged in Lang (1993).
[9] See his commentary on 1074b15 in Ross (1924) p. 396.
[10] See the introduction to Wians & Polansky (2017).
[11] I borrow the term from Fazzo, who offers a plausible hypothesis of the stages by which the E text came to show the letter division of the categorical reading rather than the hypothetical reading of J.

Conclusion

A failure to appreciate the comprehensive dialectical structure of the argument of *Physics* VIII 1 mars all interpretations of the chapter I know. Even in the chapter's concluding lines, Aristotle's position is conditional, a statement of the fact but not the explanation of eternal motion, thus setting the stage for the rest of the *Physics*'s final book. Though recognizing the chapter's dialectical structure does not depend on Fazzo's proposal – I freely admit that I arrived at my interpretation while relying on Ross's text – her emendation of 250b13 has in its favor that it makes clearer that Aristotle is not stating his own position in opposition to those who generate motion. He is framing a dichotomy between two mutually exclusive options, just as his theory of dialectical reasoning toward principles would dictate. In this case at least, interpretive considerations of the larger argumentative structure should be given special weight in evaluating textual variant.

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SILVIA FAZZO

THE TEXT OF *PHYSICS* VIII 1.250B13 AS A CASE STUDY

Abstract

The contribution is a follow-up to my textual note in *Aristotelica* 3 (2023) on *Physics* VIII 1.250b1. What is at issue is a previously neglected *lectio difficilior* concerning cosmic motion, i.e., εἰ ἦν καὶ ἀεὶ ἔσται, "*if it was* [always] there, it will also always be", vs. ἀεὶ ἦν καὶ ἀεὶ ἔσται, "*it was* there always and it will always be". The theoretical relevance of the reading emerged more clearly in the subsequent debate: it may imply a hypothetical foundation of Aristotle's theory of the eternity of cosmic motion, hence, of the cosmos itself, and hence, of its first unmoved principle. The question is: how can this case study contribute to the evolving research field of Aristotelian textual criticism? I will provide a more comprehensive answer in 'Aristotle's Earliest Extant Manuscripts. New Doubts and Perspectives' forthcoming in *Aristotelica* 6.

Keywords

Aristotle's Theory of the Eternity of the World, Hypothetical Premises in Aristotle's *Physics*, Textual Transmission of Aristotle's Works, Ms. Vindobonensis Phil. gr. 100, Ms. Parisinus gr. 1853

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1. Premises[1]

In *Aristotelica* 3 (2023) pp. 45-60, I provided evidence for a previously neglected *lectio difficilior* at *Phys*. VIII 1.250b13. It is located in the first, long paragraph of the *Physics*, VIII 1.250b11-15, where cosmic motion is at issue. According to the vulgate, Aristotle says about cosmic motion that "it *always* was – and always will be": ἀλλ' ἀεὶ ἦν καὶ ἀεὶ ἔσται. According to the reading in ms. J, Vind. Phil. gr. 100, however, Aristotle asks whether (πότερον) or not cosmic motion has a beginning and an end:

"but *if* it was there, it will always be there too" (ἀλλ' *εἰ* ἦν, καὶ ἀεὶ ἔσται).

Constructed without ἄν, with an indicative protasis and apodosis, J's if-clause only subtly differs from the categorical vulgate: "if it was there, it will always be there too", implies "*if it was* there – and we will see that *it was* there – then it will always be there".

On either reading, that is, whether on a hypothetical or a categorical basis, Aristotle will conclude that cosmic motion is eternal. Parallels in Aristotle's corpus show the importance of the reading. In *Metaphysics Lambda* 6-7, this very argument occurs and has huge cosmological weight. It leads to an ontological argument for the eternity of the cosmos, based on the doctrine of categories and on the primacy of substance over other modes of being, including motion (*Metaph.* Λ 1.1069a22; 6.1071b5-7; 7.1072a21-23): eternal cosmic motion implies the eternity of the cosmos in motion, and this will imply the eternal immobility of its very first mover. But the question arises: is this eternity (or, rather, are all these well-connected eternities) categorically or hypothetically stated by Aristotle?

[1] I am grateful for their comments to various friends and colleagues, especially Marco Ghione, Laura Folli, Jill Kraye, to Simone Astorino, Maria Cristina Dalfino, William Wians, to Pieter Hasper and Rüdiger Arnzen, to Klaus Corcilius and to the members of his Tübingen Seminar, where I delivered this paper on the 14th of Novembre 2024. All errors are my own.

Given the theoretical relevance of a reading best witnessed in J, I concluded in 2023:

> the variant reading of J for *Phys*. 250b13 raises the issue of *assessing the authority of this manuscript in relation to the entire textual history of the Physics and of Aristotle's physical works*.

What I meant can be more clearly spelled out here.

2. Why Reconsider J's Position in the Stemma of Aristotle's Physics?

The manuscript Vind. Phil. gr. 100 (a fragment of which can be seen on every cover of *Aristotelica*) is by one and the same hand J and is regularly corrected, at the time of copying, by one and the same διορθωτής, J^2. J is the earliest manuscript of the *Metaphysics* and of the *corpus physicum*, which precedes even manuscripts of the oldest (9th century) 'philosophical collection' (Rossetto 2014, Ronconi 2008, Irigoin 1957).

With regard to the *Metaphysics*, J is the direct copy of Π, a late ancient manuscript in *scriptio continua*. The non-existence of the *interpositus* γ, a hypothetical *codex deperditus* of the *Metaphysics* in Harlfinger's stemma (1979), is now recognized.[2]

With regard to the *Physics*, Aristotle's treatises are prepared by the same scribe J and corrected by the same διορθωτής J^2.[3] For the *Physics* as well, I had thought, until Hasper's stemma, that J had a good chance of being a copy of a late ancient parchment reference codex in *scriptio continua*.

Is it possible to be more precise? The *scriptio continua* codex could perhaps be dated back to 4th-century Constantinople,[4] comparable, for instance, to ms. B of the Bible, the Vaticanus 1209, which is a reference codex *par excellence* (about 3M characters). A compatible size being given, it may be that the reference exemplar contained most of Aristotle's writings and especially the

[2] See Fazzo (2022) especially p. 58.
[3] An obvious exception is the single 13th-century bifolium, f. 137*r*-138*v*, which replaces the lost sections of Theophr. *Metaph*. 11a2-12a2 and Arist. *Metaphysics* α, 993a30-994a6.
[4] See my recent hypothesis in Fazzo-Folli-Ghione (2023-2024), cf. Themistius, *Oratio* IV 60 a-b with Pascale (2022); Dain (1949) on late ancient reference copies.

corpus theoreticum: the physical works and the *Metaphysics*. One or more similar exemplars, very like each other, could have been available. Various details of this hypothesis will be explored in the future but do not affect my main point here. The question is: how removed is J, as a copyist of the physical works, from the earliest reconstructable exemplar, probably a late ancient codex in *scriptio continua*?

In fact, based on Hasper's stemma of the *Physics* and on my own stemma of the *Metaphysics* (*Aristotelica* 1 (2022) p. 84), J's two main parts differ crucially in their sources and their stemmatic position. The archetype of the *Physics* is removed from J by no less than four lost interposed manuscripts; no less than two lost manuscripts (*deperditi*) are interposed between J and the late ancient sub-archetype γ of its family branch, one of three sub-archetypes (α, β, γ) of the *Physics*. See Hasper's stemma (2021, p. clxxxvii (https://www.degruyter.com/document/doi/10.1515/9783110582086-003/html). If this is, indeed, the case, then it would be necessary to agree with Hasper and Arnzen 2024's final claim (pp. 71-3) that if a good *lectio singularis* was ever found in J's text of the *Physics*, it would have to have happened almost by chance.

According to current scholarly views, this would not be surprising: the *vetustissimus* manuscript J was ignored until Gercke (1892). Even after it was discovered, its appearance did not make a significant impact on critical editions.[5]

3. The Meaning of J's Reading at 250b13 in the Context of Aristotle's Corpus

Especially telling readings can prompt new debates and provide new, i.e., alternative, interpretations of the textual history of Aristotle's works. *Physics* 250b13 seems to be exactly such a case. With regard to this passage, it was initially assumed that J and E^{Phys} differed and that E, more exactly E^{Phys},[6] had

[5] With regard to Aristotle's physical corpus, since 1936 (Ross 1936, Allan 1936) J's authority has consistently been dismissed, in favour of E, that is, ms. Paris. gr. 1853. Fazzo (2012) and Fazzo-Ghione (2022) provide some thoughts about the underlying reasons.

[6] I refer to the primary 10th-century copyist of the physical corpus in manuscript E as E^{Phys}. This differs from E^{Met}, the 10th-century copyist responsible for the *Metaphysics*. The two sections were originally produced as independent volumes but were later brought together (for further details, see *Aristotelica* 6, forthcoming).

the right reading, whereas J's text made no sense (ἀλλ' εἴην *ap*. Ross 1936 *ad loc.*); then J's text was read more carefully but rejected (ἀλλ' εἰ ἦν *ap*. Hasper 2021); and now I argue that J's text might be the most significant ever reading for the textual constitution of *Physics* 250b13. It is possible (see also below the Appendix 'First Reactions from *Aristotelica*'s Readers and Contributors') that this '*if* clause' in *Physics* VIII 1.250b13 can shed unprecedented light on the hypothetical foundation of Aristotle's theory of the eternity of cosmic motion and of the cosmos itself.

Such a hypothetical foundation is not obvious in other Aristotelian writings, where the eternity of the celestial motion seems to be taken for granted. Nevertheless, it is compatible with Aristotle's general line of argument. The case he makes in *Physics* VIII 1 provides the basis for other arguments elsewhere: most importantly, it forms the basis of the theory that establishes the necessity of a prime unmoved mover.

In this way, the hypothetical reading at 250b13 has an impact on the theory of the prime mover as well. It might clarify the previously uncertain meaning of 'necessary' in *Metaphysics Lambda* (6.1071b4; 7.1072b11-13). We can now see that it is precisely focused on the final clause: the prime unmoved mover is what simply *must be* because it cannot be otherwise: τὸ δὲ μὴ ἐνδεχόμενον ἄλλως ἀλλ' ἁπλῶς (7.1072b13, see also 7.1072a19-21).[7] Aristotle's original cosmology thus appears in a different perspective, i.e., as a theory based on hypothetical foundations.

In later contexts, however, the hypothetical component in the argument for the eternity of the cosmos no longer plays any direct role.[8]

We are at the origin of what progressively became Aristotle's alleged path to theology. By the early 3rd century AD, when the corpus was published and annotated in its present form, *Physics* VIII had been read by the

[7] This supports my suggested interpretation in Fazzo (2014) p. 326f.: "la definizione da attivare deve essere la controparte della nozione di contingente: deve indicare ciò che non può essere altrimenti, ma è in modo assoluto".

[8] Alexander of Aphrodisias has two *Quaestiones* concerning 'hypothetical necessity', with some special reference to eternal circular motions (*Quaestio* II 22.71.3-72.8 Bruns, cf. Arist. *GC* II 11.337b25, and *Quaestio* III 5.7.22-89.24 Bruns, cf. *GC* 10.336a21, 11.338a2: the interpretation is interesting and controversial; see Sharples 1994). But these do not seem to have had an impact on the exegetical tradition of the first celestial motion and of the prime unmoved mover.

exegetical tradition as a preliminary step towards *Metaphysics Lambda*. The two books were connected in their interpretation. This is especially visible in Alexander of Aphrodisias's treatise *On the Principles of the Universe*, lost in Greek, but preserved in Arabic and Syriac. Alexander's treatise summarises and puts forward a joint interpretation of the two books *Physics* VIII and *Lambda* and provides the latter with a certain kind of theological interpretation.[9]

The whole *Metaphysics* – centred on *Lambda* as the main book – was then given a theological value. Aristotle's assessment in *Physics* VIII 1 comes to mean categorically that *there is* eternal movement and paves the way to the argument for a prime unmoved mover, which will be shown in *Metaphysics Lambda* to be God.

4. Lectio Difficilior vs. Lectio Facilior

The vulgate categorical reading ἀεὶ ἦν καὶ ἀεὶ ἔσται, or just even ἦν καὶ ἀεὶ ἔσται is a *lectio facilior*, easily superimposed as such on the hypothetical *lectio difficilior*.

The hypothetical formulation has a higher degree of complexity, in at least three respects:

(i) it has a subordinate clause within the second branch of a disjunctive interrogative clause; instead, the *lectio facilior* ἀλλ' ἀεὶ ἦν καὶ ἀεὶ ἔσται makes ἦν the verb of the main clause; that this is an easier reading is apparent from the alternative reading of Hasper's ms. Q, Leid. Voss. Q3 (12th/13rd c., f. 98r l. 28) in which 'if' also disappears, without 'always' (ἀεὶ) taking its place;

(ii) it is made less trivial by the use of καὶ which is adverbial ('also') and not simply conjunctive ('and');

(iii) it arguably (Fazzo 2023) exemplifies Aristotle's so-called philosophical imperfect (which is better discussed with reference to Aristotle's formula τὸ τί ἦν εἶναι, where 'ἦν stands in the middle and conveys eternal identity with oneself', see *Aristotelica* 3 (2023) pp. 47-9). This means that we have to understand ἦν in the sense, not of 'it was', as if it could have changed, but of "it always is and has always been".

[9] Fazzo-Zonta (2014), Fazzo-Zonta (2015), Fazzo (2008).

The categorical reading could arise from the *lectio difficilior* in more than one context, independently, whether identical or similar.[10]

It is not surprising, therefore, that simplifying paraphrases in late ancient exegetical traditions (see below, §7) could also obliterate the original *lectio difficilior*, i.e., the hypothetical reading of J. It also makes sense that Hasper found the *lectio facilior* in most extant Greek manuscripts.[11] However, textual criticism requires manuscripts not to be counted, but to be weighed. J's ἀλλ' εἰ ἦν καὶ ἀεὶ ἔσται, is paralleled in some very early sources, including the *translatio vetus*.[12]

It is also found in $E^{Phys\ pc}$, i.e., in the physical section of manuscript E, *post correctionem*, whereas the categorical reading was there *ante correctionem*, as Hasper and Arnzen now show. Their new finding is of special interest for our research.

5. The Vetus Corrector's Double Step in E^{Phys} at 250b13

A major role is played here by the διορθωτής or *vetus corrector* of E^{Phys}, whom I shall call $E^{Phys\ vc}$, to distinguish him from the plurality of hands at work in the margins of E. $E^{Phys\ vc}$ is the copyist who interpreted the *scriptio continua*, e.g., spelling out words by marking breathings and accents with a subtle *calamus* and fairly clear ink.

In E^{Phys}, at 250b13, Hasper and Arnzen detect a double step activity by $E^{Phys\ vc}$. By virtue of their new finding, it can now be argued that the hypothetical reading underlies E^{Phys} as well as J, independently; and that E^{Phys} has its own editorial agenda, which has some points of contact with the β agenda found in some *Metaphysics* manuscripts, especially Ab, Laur. 87.12. This analogy calls for interpretation.

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[10] The tradition thus offers at least three versions of the easier categorical reading: the vulgate, ms. Q, see here above, and the Arabic tradition – see §6 below.

[11] From the 12th century onwards, the *lectio difficilior* is found only in Hasper's b and w, that is, Par. gr. 1859 and Par. Suppl. gr. 643, both of the 13th century.

[12] A version of this passage in the *translatio vetus* is found in the 13th-century school materials of the ancient University in Vercelli and has been analysed by Roberto Zambiasi (ms. Vercelli, Biblioteca Capitolare 113, late 13th c., siglum Yi in *Aristoteles Latinus* (1990), but not collated so far, f. 45r): "sed si erat, semper erit".

Let us see now what happens at 250b13. As seen in the Hasper and Arnzen (2024) figures at p. 64 (here above), E^{Phys} produces a kind of *scriptio continua* in minuscule handwriting: αλλαει. At first, $E^{Phys\ vc}$ marked the two relevant words as ἀλλ'ἀεί. But he then corrected ἀλλ'ἀεί into ἀλλὰ εἰ by *rasura*, making a bold change to the meaning. This is what Hasper and Arnzen point out:

ἀλλ'ἀεί $E^{Phys\ vc\ ac}$: ἀλλὰ εἰ $E^{Phys\ vc\ pc}$

The διορθωτής $E^{Phys\ vc}$ must have had a very strong reason for changing his mind and erasing the manuscript: he must have checked the main source and found a reading which left him in no doubt. It is not enough to suppose that the reading was introduced by contamination, that is, that the corrector checked J or another manuscript circulating at the time (even if this is possible; see Hasper' stemma, link at §2 p. 84 above), because then the question arises: why did he change the wording of E in favour of that of J? And why did he not use J all the time, as a transliteration exemplar? This would have made his task much easier.[13] The only way to fully explain his *rasura* and change of wording is if he found ΑΛΛΕΙ.

Beforehand, at 250b13, E^{Phys}, the main copyist, alone or together with his source if he was writing from dictation, must have spontaneously introduced the *scriptio plena*, notwithstanding the resulting hiatus: the source had ΑΛΛΕΙ, and he wrote αλλαει. As a 10th-century practice, the *scriptio plena* was possibly meant to be reader-friendly, in a context where a hiatus was not perceived as an unwanted feature to be avoided. But 250b13 is a rare case in which *scriptio plena* created, rather than clarified, ambiguity.

If so, Hasper and Arnzen discovered a detail – the two-step activity of $E^{Phys\ vc}$ – which is telling in a further and more important regard, i.e., *e silentio*. We see that $E^{Phys\ vc}$, revising E^{Phys} in the early 10th century, did not correct other minutiae; he did, for example, not reintroduce ποτε at line 250b11, nor other omitted particles (a very interesting different hand did so later on in the margins). This suggests that the tendency of E^{Phys} to innovate (omitting,

[13] By contrast, if E^{Phys}, unlike E^{Met}, did not have access to J, similarities might be due to a common or very similar source; see in *Aristotelica* 6 (forthcoming) my hypothesis concerning Π and its possible copies π^{J}, π^{E}.

adding, changing) was normal in the context of his agenda, at least to the extent that it did not crucially affect the meaning of the text.

This all supports the hypothesis that the exemplar of E^{Phys} had the hypothetical reading ΑΛΛΕΙ and suggests that E^{Phys}, the first copyist, or his source if he was writing from dictation, innovated by revising that reading: he introduced the hiatus αλλα-ει (as if it were ΑΛΛΑ-ΕΙ), unintentionally making the reading equivocal, i.e. susceptible of a categorical (ἀλλ' ἀεὶ again with elision and without hiatus) rather than hypothetical (ἀλλὰ εἰ) understanding. We must assume that he did so unintentionally, because there is no reason to believe that he aimed to modify the meaning of the text.

The question arises of the extent to which the copyist E revises the text. It is clear that an agenda is at play, as various scholars have noted. A challenging but important issue to investigate is whether, to some degree, E's editorial agenda might make the resulting text, compared to others, the closest to the version that could most easily be reconstructed as the basis of the Arabic tradition through retroversion.

As I have mentioned, however, the current consensus is that E^{Phys} descends from α, a different sub-archetype from J's and perhaps even a different textual archetype from J's. Such a lost late ancient manuscript 'α' would thus be a prime source, in Greek, of manuscript E, in the Graeco-Arabic tradition, of Ψ, according to Arnzen and Hasper's siglum. This α plays the main role in their stemma, as the main source to be reconstructed *via* E and the Arabic translation by Ishaq ibn Hunayn (late 9th to early 10th century).

6. More on the Arabic Sources

Hasper and Arnzen thus systematize two currently held views: the opposition between J and E^{Phys} (since Allen 1936 and Ross 1936), and the connection of E^{Phys} to the Arabic tradition.[14] This latter view is based on the hypothesis of a common source for the Arabic and E, as opposed to J's. This can be seen in Hasper and Arnzen's *stemma codicum* (link at §2 p. 84 above), where E is coupled with the Arabic model and sharply distin-

[14] See Dain (1949) together with Rashed's (2019) reactions.

guished from J's. The passage at 250b13 under investigation calls for interpretation: does it contribute to distinguishing J's source from the source Ψ of the Arabic tradition?

In 2023, I emphasized that the if clause is absent in Ishaq's Arabic version, as is the double occurrence of ἀεί in 250b13. Now that the point is controversial, one must ask which of the two, had it been originally in the text, would have had better reason to be omitted or neglected. I will argue that the former has far better reasons, and these are twofold. On the one hand, in Greek already, this is a lectio difficilior from the linguistic point of view, and also from the semantic point of view, as it provides, on a hypothetical basis, the same factual result as a categorical clause (see above). On the other hand, one must consider the peculiar way the first sentence of Book *Physics* VIII, lines 250b11-15, was translated into Arabic.

In Greek, that first sentence consists of a long independent interrogative clause articulated into two disjunctive branches, introduced by πότερον, the very the first word of the book: (i) "Was cosmic movement born…?" or (ii) "It was not born and will not die, that is, if it was there, it will be there too". Each branch consists of two coordinate clauses. The second branch is further articulated at line b13 as an *apodosis*, coordinated with the principal clause and preceded by a conditional subordinate (the *protasis*). How can all of this be rendered into Arabic?

We have two translations of this sentence, and both follow the same path, which strongly suggests that their genesis is interconnected (I share some of the reasons Haq 1994 gives for regarding the fragmentary one as a trace of an earlier version that Ishaq would have elaborated on. I share them because they fit with the experience one can gather of texts from the Aristotelian tradition available to Jâbir, including their disordered and dispersed state. However, this does not affect our point now, because in either case, the result is the same).

The former main clause, an independent interrogative sentence in Aristotle's Greek, changes in Arabic into a subordinate clause, i.e., an indirect disjunctive question, depending on ليت شعري "I would like to know". Hence the main issue: in any spoken language, it can be difficult to embed a subordinate conditional clause into the second branch of a disjunctive question that is itself subordinate. In Arabic, this becomes even more difficult when

the conditional clause is a real conditional sentence that starts with a past tense and implies a future consequence. Here, therefore, the if clause has reasons to disappear.

By contrast, ἀεί tends to be preserved in Arabic as often as it appears in Greek unless there is a special reason to omit it. For example, in another case, e.g., 254a21-22, where ἀεί occurs four times in just two lines, the Arabic adverb أبدا appears four times. Thus, ἀεί and its repetitions tend to be rendered in a way that is very close to the Greek (see, in this regard, Arnzen's *Glossary*, p. 125).

Accordingly, one understands that the structure of the if clause at 250b13 was likely simplified in the second branch of the interrogative introduced by أو ("or...?").

From a different perspective, however, Hasper and Arnzen (2024) argue that 250b13 helps reconstruct a different Ψ archetype, one which coincides with the vulgate reading ἀεὶ ἦν. In their view, the syntax of the original Greek source Ψ of the Arabic, and not just the Arabic, is certainly different from that of J: it has a double ἀεί, i.e., it reads ἀλλ' ἀεὶ ἦν καὶ ἀεὶ ἔσται. Their claim is that the second ἀεί would only be rendered by the corresponding adverb أبدا ("always," "ever"), while the first ἀεί would be translated by the periphrasis لم تزل ("it does not cease") without أبدا.

They also raise the issue of how often, or rarely, ἀεί is rendered by the negation لم or لا with conjugated forms from زال (z-w-l), i.e., لم يزل or لا يزال.

When Greek-to-Arabic translations are concerned, the main OA data collection is the *Glossarium Graeco-Arabicum* (*GlossGA*), financed by the DFG and later by ERC, and published by the Berlin BBAW. It "contains a sufficiently representative sample of the entire range of Greek vocabulary and syntax". This database provides, as of now (29 November 2024), four records of passages where ἀεί is translated by conjugated forms from زال زال, with لم or لا and with an adverb like دائما, meaning "always" or "ever," but none without the adverb – as is supposed to be the case here at 250b13.

However, Arnzen and Hasper now provide fresh data. They list nine recognizable instances where ἀεί is rendered by لم or لا with conjugated forms from زال, with لم or لا, *without* the adverb دائما or أبدا. This telling datum, however, is open to different interpretations in two senses: first, because if ἀεί

were perceived as the standard meaning of لم تزل, we would expect there to be more instances; and second, because all the quotations from Galen – six out of nine in their list – are occurrences where ἀεί does not mean "always" (e.g., "perpetually," "forever") but instead "every time" or "again and again". We must bear in mind that ἀεί does not always and only mean "always," but also "every time" (Chantraine 1990, p. 42).

The further cited passage from the *Theologia Aristotelis* (which can not always be regarded as a literal translation from the Greek) also seems to convey this meaning, as does the cited passage from Nicomachus of Gerasa, translated by Thabit ibn Qurra. In fact, the latter calls for parallel passages in the same translation of Nicomachus's *Introduction to Arithmetic*, where Thabit ibn Qurra uses لا يزال, not alone but in conjunction with the Arabic adverb دائما ("ever," "always"), so that together they more directly render ἀεί.[15]

This can certainly be developed further, and Arnzen deserves credit for these improvements. However, as things stand, Arnzen's *Glossary* conflicts with the idea that لم تزل, without any adverb such as دائما or أبدا, can be considered an obvious translation of ἀεί at 250b13. It still seems that the categorical reading, in whatever form it assumes – with or without the double ἀεί – is a *lectio facilior*, as I have argued above.

7. What Happens in the Greek Exegetical Tradition?

Commentaries, starting from the 4th century AD, could have influenced the textual transmission, currently using the reading ἀεὶ ἦν with the meaning 'there has always been'. Yet, before the Trinitarian debate of the early Church Fathers, ἀεὶ ἦν is rarely found with this meaning. It seems that this debate sharpened reflections in patristic literature about modes of eternity. The most controversial issue concerned the second Person of the Trinity: was the Son of God created in time, or has he always been there (ἀεὶ ἦν) with

[15] See the link to these cards of *Glossarium Graeco-Arabicum*:
https://glossga.bbaw.de/glossary.php@id=194709.html
https://glossga.bbaw.de/glossary.php@id=194712.html
https://glossga.bbaw.de/glossary.php@id=194715.html
https://glossga.bbaw.de/glossary.php@id=195601.html

the Father? The debate started in the 2nd century,[16] and developed especially in the 4th century, when the councils of Nicaea (325) and Constantinople (381) were held. Themistius, *In Phys.* 209.4, also used ἀεὶ ἦν, a wording current in his day in the existential sense of 'it has always been there', with special reference, in this case, to the eternity of the cosmos.[17] This might partly explain the success of the vulgate *lectio facilior* ἀεὶ ἦν at 250b13.

By contrast, restrictions on the use of commentators for *detecting* ancient variant readings are suggested by Bloch (2003); and these should be endorsed and possibly strengthened in future research. This must be especially stressed in the case of Greek paraphrases, which can normally modify even single words or particles.

8. How Many Stemmata Codicum Can Be Conceived of in a Contaminated Tradition?

Last but not least, my main point is: in Hasper and Arnzen's view, the only explanation for a sound isolated reading in the *Physics* in J is, so to speak, by chance. This is based on Hasper's stemma, which I indirectly challenged in 2023 (see 'Premises' above) but which remains for them the only possible valid one. Their stemma, however, like most stemmata in our time, is full of contaminations. Here a general consideration arises. When Maas (1956) wrote that "Gegen die Kontamination ist kein Kraut gewachsen", this was a paraphrase of "Gegen den Tod ist kein Kraut gewachsen", that is, just as for death, there is no remedy for contamination. Maas thus did not strictly forbid scholars to construct stemmata for contaminated traditions (some are currently in use, see, e.g., Weidemann 2022); but his motto did warn them not to regard their stemma of any contaminated tradition as the only possible one. A contaminated stemma is rarely immune to challenges and alternatives.

The only safe part of a stemma is what concerns the non-contaminated section of the tradition; and this should include, in principle, the earliest witness, or witnesses, where collation, i.e., contamination, is not yet an issue.

[16] See Arius' allged statement about the Son: οὐκ ἀεὶ ἦν, e.g. *ap*. Athanasius, *Epistola ad episcopos Aegypti et Libyae, PG* 25. 564, 21

[17] Fazzo (2023-2024) pp. 317-9.

According to Maas (1956), when constructing stemmata, one must start from the oldest, and most independent, manuscript; then, later manuscripts can be shown to be independent on the basis of separative errors.

True, Maas also said, which Hasper and Arznen seem to be relying on, that the age of a manuscript was not a general proof of its independence: Maas quoted Pasquali's motto *recentiores, non deteriores*. In other words, sometimes later manuscripts (*recentiores*) are more valuable than earlier ones and, at any rate, are not always worse (*deteriores*). It depends on the presence or absence of *errores separativi*.[18]

As far as the *Physics* is concerned, Hasper, in collaboration with Arznen, has boldly paved the way; but I contend that there is still much to do. He lists series of what he calls 'wrong or less preferable readings' in entire branches of manuscript traditions. Are these readings supposed to be errors? In what sense are they proven to be errors? He quotes, but never responds to, Ross (1936). He does not even respond when Ross's evaluation is manifestly wrong, e.g., Ross (1936) p. 688 on 251b4-5, cited as an authority at Arnzen (2021) p. cxx. They dismiss J's later hand reading at 251b4-5 (which is actually ὡς εἶναι – here Ross is right against Hasper) on the grounds that "as Ross remark [...] it does not make sense". In his commentary on that passage, Ross writes: "Bekker's ὡς εἶναι κτλ [as opposed to ὡς ἦν κτλ established by Ross] is unintelligible, and ἦν is confirmed by Met. 1048a6 [...] and by ὡς ἦν δυνάμενα 251b6". See, however the three passages at stake: ὅταν ὑπάρξῃ ὡς ἦν τὸ μὲν κινητικὸν τὸ δὲ κινητόν is preferred by Ross to ὅταν ὑπάρξῃ ὡς εἶναι τὸ μὲν κινητικὸν τὸ δὲ κινητόν. This (*Physics* 1.251b4f.) is paralleled by Ross to *Metaphysics Theta* 5.1048a6: ὅταν ὡς δύνανται τὸ ποιητικὸν καὶ τὸ παθητικὸν πλησιάζωσι ("when the agent and the patient meet in the way in which is appropriate to the potentiality in question"); but this does not match the case.

Ross must have been in a hurry. In fact, ὡς, with a similar meaning here to ὥστε, introduces a consecutive clause, which is correctly constructed with an infinitive form: Bekker's constituted text makes more sense than Ross's.

[18] This is in principle the main focus in standard stemmatic research, as is stressed in Primavesi's contributions (2012) and especially (2020). These *errores separativi* are a reference point no doubt even if the evaluation of E's reading might be still under discussion with regard to *De motu animalium* 6.700b23f.

Nor do Ross's proposed parallels with *Metaphysics* 1048a8 and *Physics* 251b4 help, since ὡς occurs there as a relative adverb of manner and not as a subordinating conjunction. A further parallel, 251b6, is controversial, and I would maintain that J's reading *post correctionem* works better than Ross's constituted text based on E. It thus seems that Ross sought out passages where Bekker's edition could be revised, especially by looking for passages which seemingly prioritized E: E vs cett. (including J).

We are thus left with the impression that Hasper (2021) generally counts the readings rejected by Ross as errors. These must include, in particular, J's supposed errors at 250b13 and 264b4, the first of which I believe is a very solid reading, while the second is a confused passage in the textual tradition which can hardly be regarded as a guiding error. Admittedly from such passages we could imagine, instead of one Π, that two very similar late ancient reference copies π of the *Physics* were in circulation. Whether this holds true or not can be ascertained by envisioning J and E as parallel streams of readings and making a systematic study of the resulting differences.

Hasper and Arznen have given us a huge amount of help; and I understand and fully appreciate Hasper's stemma as the programme for his future edition, largely improved in comparison to Ross's, even if not dramatically different as far as the constituted text is concerned. My ideal future edition will benefit greatly from their impressive and careful collection of data. It remains possible that, based on additional data and a closer scrutiny of the kind of differences between mss. J and E^{Phys}, an underlying agenda will emerge in a number of E's readings which have so far been referred to a different source. If such an agenda is detected, the consensus of the two *vetustissimi* will be given more force than in Hasper's stemma, where it happens solely by contamination. This could open a more linear path to the long sought after goal of reconstructing the lost ancestor of J and E, which might possibly be Aristotle's archetype.

Appendix
First Reactions from Aristotelica's Readers and Contributors

The issues surrounding J's hypothetical reading at *Phys.* VIII 1.250b13 have provoked various responses from *Aristotelica*'s readers and contributors.

Monica Ugaglia writes:

If Aristotle had based his cosmology on a hypothetical syllogism, it would be good, since that would make him a full-fledged scientist. Think about it: the difference is between those scientists who *believe* in the big bang as a physical, true and real fact, and those who say it is a model: at the beginning there is a singularity and, in this way, it works as a kind of reverse machine. Behind every physical theory there is a hypothesis. All our physics is made up of hypothetical syllogisms. This is why, unlike geometry, physics evolves: because hypotheses improve. This is how the capacity of building models to describe what scientists call reality evolves. It is rare that Aristotle spells out his hypothetical foundations. But this happens here: when he says that if there has always been, then there will always be, he provides a physical model. Does this allow for any doubt about Aristotle's cosmology and ultimate world view? If this were so, then Aristotle would have been behaving like a modern scientist. The historical background justifies that Aristotle also uses hypothetical arguments elsewhere. In *De caelo*, Aristotle's thesis is that if the heavens are generated, they must also eventually be corrupted, which is exactly what Presocratic cosmogonies admit, given that they are also tales about the cosmos passing away. Only a literal reading of the *Timaeus* would admit a beginning without an end. *De caelo* is more consistent with a hypothetical interpretation of 250b13.

Laura Folli finds:

The hypothetical character which emerges from J's *lectio difficilior* at *Phys*. VIII 1.250b13, echoes *GC* II 10.337a16-23 (Rashed 2005): Διότι μὲν οὖν ἔστι γένεσις καὶ φθορὰ καὶ διὰ τίν' αἰτίαν, καὶ τί τὸ γενητὸν καὶ φθαρτόν, φανερὸν ἐκ τῶν εἰρημένων. Επεὶ δ' ἀνάγκη εἶναί τι εἰ κίνησις ἔσται, ὥσπερ εἴρηται πρότερον ἐν ἑτέροις, καὶ εἰ ἀεί, ὅτι ἀεί δεῖ τι εἶναι, καὶ εἰ συνεχής, ἓν τὸ αὐτὸ καὶ ἀκίνητον καὶ ἀγένητον καὶ ἀναλλοίωτον, καὶ εἰ πλείους αἱ ἐν κύκλῳ κινήσεις, πλείους μέν, πάσας δὲ πως εἶναι ταύτας ἀνάγκη ὑπὸ μίαν ἀρχήν.
The insistence in this textual passage on the use of the particle εἰ is quite significant. Aristotle in this context invites us to reflect on the need to recognise that there is something that is the cause of the continuous process of generation and corruption of sensible entities. The existence of the movement in this step is presented as hypothetical in order to demonstrate the manner of this necessity: there must be something, eternal, unmoved, not generated, from which the movement's eternity stems. Within a demonstrative path of a hypothetical character emerges the nature of necessity at the origin of the process of becoming.

Maria Varlamova adds:

The 'if' reading of 250b13 is important not only in the context of Aristotle's *Physics* but also of late ancient discussions about the eternity of the world. It is precisely the emphasis on the beginning of the world and its creation out of nothing that is important for Philoponus in his arguments about matter. Because *if* the world has no beginning, *then* it has no end, as is claimed in *Aristotelica* 3; therefore, *if* the world has a beginning, it will have an end. Thus, Philoponus argues that the first underlying subject of all bodies (first matter) was created. He claims that the unformed first matter, as Aristotle defines it, is only an empty name, and that the first subject of all things is matter, determined by three dimensions (an infinite three-dimensional extension), which, since it is determined, can be created.

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