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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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