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WHAT IS TIME? SPEUSIPPUS' AND XENOCRATES' REINTERPRETATION OF PLATO'S *TIMAEUS* 37D

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1. *Introduction*

«**Q**uid est ergo tempus? Si nemo ex me quaerat, scio; si quaerenti explicare velim, nescio».¹ Concerning Augustine's question, Plato would not answer as doubtfully as the Church Father. In fact, Plato not only provides a precise definition of time but also makes it consistent, as far as possible, with his entire philosophical system, mainly by placing the treatment of time in the cosmological perspective. As is well known, in the *Timaeus* Plato offers one of the first systematic treatments of time in Western philosophical tradition, placing it in close relation to the cosmos and the eternity of the Ideas. While Plato's definition is renowned, less so are those of his disciples, notably Speusippus and Xenocrates, the first scholars of the Academy after Plato's death. Although little studied, their doctrines and the way they revisit Plato's positions have greatly influenced the way Plato's philosophy is understood throughout the subsequent history of philosophy.² Before understanding how their reworkings of the Platonic definition of time fit coherently into their philosophical systems, it is necessary to briefly analyse the Platonic definition from which they take their starting

¹ Augustinus, *Confessiones* XI, 14.

² See at least Opsomer 2020 and Sedley 2021b.

point. A detailed discussion of the nature of time in Plato is beyond the scope of this article; therefore, I will only focus on the context in which the definition of time in the *Timaeus* is presented, as well as the central problems to which it is closely linked. These issues, indeed, shape the main aspects taken into consideration also by Speusippus and Xenocrates.

After dealing with the generation of the world soul and its ordering activity, Timaeus introduces the question of time, which is conceived not as an independent entity, but as a reality dependent on the cosmos itself, closely linked to the action of the world soul, the presence of the demiurge and the relationship with the intelligible paradigm.

In *Tim.* 37c6, Plato describes how the demiurge observed the cosmos in motion and living as a reflection of the eternal gods, feeling joy³ and deciding to make it even more like the eternal model. To this aim, time is introduced to reduce as far as possible the ontological difference between the two levels of reality, that of the intelligible model – eternal and timeless – and its sensible copy (the universe) – which had an origin and is subject to change and movement –.⁴ Therefore,

³ As noted by Thein 2021, 93, *Tim.* 37c6 where the demiurge pauses to observe his creation, is the only instance of such reflection in the story. This dramatic moment serves a purpose: while contemplating the unified soul and body of the world, he conceives the idea of planets and their motions, giving rise to what we call “time”. Nevertheless, Fronterotta 2018, 210 n. 120, warns against attributing human emotionality to the demiurge since the condition described by Plato is instead linked to the benevolent will of the divinity towards the generation of the cosmos. The demiurge’s exultation, therefore, signifies the recognition of the successful fulfilment of the providential plan. In other words, through the representation of the demiurge’s joy, Plato conveys that the cosmos, both in its motions and in its nature, is indeed a perfect and supremely good creation. See also Petrucci 2022, 286.

⁴ I cannot fully address here the complex relationship between the intelligible and sensible worlds but will highlight two contrasting perspectives. Fronterotta 2021 argues that in the *Timaeus*, while the sensible world is described as a “living being endowed with soul and intellect,” its intelligible model is a “perfect living being” devoid of soul, intellect, or body. He interprets this in terms of the intelligible “vitality” that paradigmatically informs the sensible world – rooted in *Sophist* 248e-249a, where movement, life, soul, and intelligence are attributed to the *panteles on*, understood as the capacity of intelligibles to establish relations of communication and participation while remaining immutable. In contrast, Ferrari 2012, 608-613 sees the “vitality” of the *panteles zoon* in the *Timaeus* as indicative of its role as an efficient cause of the

the demiurge conceived time as a moving image of eternity: time is «an everlasting likeness moving according to number» (κατ'ἀριθμὸν ἰοῦσαν αἰώνιον εἰκόνα),⁵ namely a reflection of the intelligible world manifested through the regular movement of the stars. Evidently, the transfer of “eternity” from the model to the copy can only be partial, because a generated reality such as the sensible world cannot be eternal (as its intelligible paradigm). Nevertheless, time is not defined as a confused and casual movement but one that proceeds according to number, thus according to a regular, harmonic and invariable rhythm, precisely to resemble ideal perfection as closely as possible.⁶ The demiurge then organised the universe so that time would manifest itself through cycles such as days, nights, months and years, which did not exist before the creation of the cosmos. In this way, time, with its forms such as “past” and “future” (37e4: χρόνου γεγονότα εἶδη), becomes part of the generated world, thus remaining different from the eternal being.

The elements that enter into the definition of time are at least three:⁷ the heavens, eternity, and unity and number. The heavens are the indispensable element because their ordering coincides with the genesis of time, since time is the product of the placement of the stars on the circles of the world soul. The circular and regular motions of the stars, which make the movements of the world soul visible, give rise to the

sensible cosmos. See also Petrucci 2022, 287-288, where, rejecting a strict dualism between an eternal, immobile intelligible realm and a temporal, mutable sensible world, a contrast between two forms of dynamism is proposed: the non-spatialized, synchronic dynamism of the intelligible and the progressive, spatialized dynamism of the sensible. If the intelligible model is conceived as a perfect living being encompassing the totality of intelligible realities and structured through the supreme kinds of the *Sophist*, then *Timaeus* presents time as the key distinction between these two ontological domains.

⁵ *Tim.* 37d6-7, tr. Cornford 1937, 98. See the different syntactic construction (and consequently translation and interpretation) proposed by Brague 1982, 11-71, which, however, has not convinced most interpreters to date.

⁶ Thein 2021, 94: «The effect intended by the Demiurge with the creation of time is not one of an undifferentiated eternity, but consists rather in conferring to the world a still higher degree of nobility which is not entirely unlike the value of what is *aionios* or *aidios* – in other words, the value proper to living beings alone».

⁷ As noted by Ferrari in Petrucci 2022, LXXII-LXXIII.

μέρη χρόνου (“parts of time”, *Tim.* 37e1-3). Since the stars only make the movements of the cosmic soul perceptible, it can be concluded that time is primarily a product of the cosmic soul.⁸ The connection between unity and number, on the other hand, describes the relationship between eternity and time, since time, whose movement has a numerical structure, imitates eternity, which is unitary and immobile. The shaped universe and the paradigm are both eternal but not in the same way: while the eternity of the shaped universe proceeds according to number, that of the paradigm is an eternity that remains in unity.

This is the starting point for a well-known problem that concerns the *Timaeus* as a whole, namely the question of the “chronological sequence”:⁹ If what precedes the beginning of time is timeless and therefore eternal, and if the body and soul of the world precede the beginning of time, how can they have a beginning and a generation through the action of the demiurge? Consider the generation and constitution of the world soul. On the one hand, its constitution by the demiurge is described (*Tim.* 34c ff.); on the other, it is also considered eternal because it is before time and before the constitution of the sensible world.¹⁰ Moreover, it is in eternal motion, since the soul is itself the principle of its movement and the movement of the cosmos. This “chronological” difficulty is inextricably linked to the mythological form of the

⁸ The dependence of time on the cosmic soul has been addressed by Schmidt 2012, 30-34.

⁹ See Fronterotta 2018, 78.

¹⁰ There are, however, different interpretations among scholars of the Platonic demiurge and its relation with the soul, cf. e.g. Brisson 1974, who holds that the soul is temporally engendered but ontologically dependent on the demiurge, while Piteloud 2022, 106, holds that «The Demiurge is then an epistemological point of view, transforming Timaeus’ speech into a thought experiment that combines argumentation and visualization». The analysis of Karfik 2004, in part. ch. *Die Bewegungslehre des Timaios* on the relationship between the demiurge, the soul, movement and the *nous* in the *Timaeus*, which leads him to argue for the identification of the demiurge with the *nous*, remains fundamental (in part. cf. 216-218). For an up-to-date overview of ancient and modern interpretations of the Platonic demiurge, see Ilievski 2022, 45-61. Specifically on the analysis of the main issues concerning the world soul, see Marongiu 2023, who investigates two intertwined questions: whether the world soul’s generation takes place in time and whether its priority with respect to the cosmos’ body should be understood in chronological terms. On the *Entwicklungsgeschichte* of the *Anima mundi* concept from Plato onwards, see Helmig 2020.

plausible discourse of the *Timaeus*,¹¹ which has led since antiquity to two different interpretations of the dialogue, either in a literal sense, as Plutarch and Atticus did, or allegorical.¹²

Speusippus and Xenocrates are credited with the allegorical reading of the *Timaeus* (διδασκαλίας χάριν), i.e. they use the fictitious narrative of chronological anteriority to explain the ontological priority of metaphysical principles, probably in response to Aristotelian criticism of the eternal but generated world presented in the *Timaeus*.¹³ What I propose in this article is to analyse how the allegorical explanation was

¹¹ For an interesting analysis of the distinction between εἰκὸς λόγος and εἰκὸς μῦθος in the *Timaeus*, where the former would refer to realities belonging to the category of “that which comes into being”, and the second is instead appropriate to the human perspective, cf. Johansen 2004, 62-64.

¹² On interpretations of the relationship between time and cosmos in the Platonic tradition see Vázquez 2022a. Specific and up-to-date studies on Plato’s conception of time and its relation with the cosmos are collected in Vázquez & Ross 2022 and Ilievsky *et al.* 2023. The *Timaeus* continues to this day to be interpreted in different ways by scholars: see Vlastos 1995, 272-274 on the distinction between a uniform and measurable time born together with the universe, and the «irreversible temporal succession» proper to pre-cosmic time, i.e. a temporality that is not measurable and yet marked by the before-after succession. For different positions, see also at least Brisson 1974, Baltes 1999, Sedley 2007, and more recently Vázquez 2022b who argues in favour of a literal interpretation. Cf. Ulacco 2019, 187-189 for a clear and up-to-date summary of the various possible ways of considering the “precosmic” phase in the *Timaeus*. According to Ulacco (*ivi*, 195-200), the precosmic phase in the *Timaeus* is not to be understood as an actually existing temporal period, but rather as a logical distinction that highlights the contrast between chaotic becoming – evidenced by the ἔχνη, that is, the traces of the disordered entry of the images of the Forms into the χώρα – and the cosmogonic ordering effected by the Demiurge. In this reading, the χώρα assumes a dual function, serving both as space and as matter, and the ἔχνη mark the initial participation of the elements in the Forms, pending the definitive structure that only the mathematical intervention of the Demiurge can secure. Cf. also Sorabji 1983, whose work remains fundamental for the extensive analysis he offers on the different notions of time concerning the concepts of creation and continuum throughout the history of ancient philosophy.

¹³ Cf. Aristot., *De caelo* I 10, 279b32 ff. = fr. 94 IP = F. 73 IP; Schol. *In Aristot. De caelo*, p. 489, 9 Brandis = fr. 95 IP. On this specific topic, see Bénatouïl 2017, and also De Cesaris 2023, which on the contrary proposes challenges of standard/allegorical reading in the early Academy. Henceforth with fr./fr. x IP I refer to the texts of Speusippus in Isnardi Parente 1980 (the concordances with Tarán’s frag-

taken up by Speusippus and Xenocrates, in particular by analysing their reinterpretation of the world soul, to investigate how the two definitions of time can be integrated into their systems.

Since we possess only fragments and testimonies, it is important to clarify that the following is merely an attempt to reconstruct their doctrines plausibly, without claiming to be exhaustive. Indeed, a high degree of interpretative caution must be maintained.

2. *Speusippus*

It is useful to start the analysis by taking into account the Speusippean definition of time, as quoted by Plutarchus, *Plat. quaest.* VIII 4, 1007A-B, where it is reported that time is considered by Speusippus as «quantity in motion» (τὸ ἐν κινήσει ποσόν):

Ῥητέον οὖν τοὺς ὑπὸ τούτων ταραττομένους δι' ἄγνοίαν οἶσθαι τὸν χρόνον μέτρον εἶναι κινήσεως καὶ ἀριθμὸν κατὰ πρότερον καὶ ὕστερον, ὡς Ἀριστοτέλης εἶπεν, ἢ τὸ ἐν κινήσει ποσόν, ὡς Σπεύσιππος, ἢ διάστημα κινήσεως ἄλλο δ' οὐδέν, ὡς ἔνιοι τῶν Στωικῶν ἀπὸ συμβεβηκότος ὀρίζόμενοι τὴν δ' οὐσίαν αὐτοῦ καὶ τὴν δύναμιν οὐ συννοοῦντες, κτλ.

It must therefore be said to such as are startled at these things, that it is their ignorance to think that time is the measure of motion in respect of sooner or later, as Aristotle calls it; or quantity in motion, as Speusippus; or an interval of motion and nothing more, as some of the Stoics define it, by an accident, not comprehending its essence and power [...].¹⁴

Plutarch's indictment of the other philosophers is very similar to that which in *De animae procreatione* (1013E) opens his defence of the temporal generation of the soul and the cosmos in *Timaeus*. Since Plutarch interprets the creation myth in Plato's *Timaeus* literally, he believes there was a pre-cosmic motion before the creation of the universe, but that time came into being along with the universe. The universe, according to Plutarch, is an εἰκὼν of God's essence and time

ments refer to his edition of 1981), while with F./FF./T. x IP I refer to the texts of Xenocrates in Ead. 2012.

¹⁴ = fr. 93 IP = F. 60 Tarán. Tr. Brown in Goodwin 1874b.

of his eternity, so he practically identifies time with the activity of the rational world soul.¹⁵ It follows that time cannot simply be an accident or an attribute of motion; and, because he believes that they regard time in this way, he criticises the definitions given by Aristotle, Speusippus and the Stoics.¹⁶

Of all Plato's students, Aristotle's definition of time as a measure of motion (*Phys.* IV 12, 221b7: μέτρον κινήσεως)¹⁷ has come down to us as the most extensively argued. In comparison to this definition, the one by Speusippus does not refer to either measurement or number. But Aristotle himself in *Categ.* VI 4b20, when he divides quantities into discrete (such as numbers) and continuous (lines, surface, body, time and space), defines the time in a different way, namely as ποσὸν συνεχές.¹⁸ This definition approaches, in some way, the Speusippean position. Unfortunately, in Speusippus' collections of testimonies and fragments, the term ποσὸν never appears except in this testimony reported above. Therefore, it is not easy to understand what Speusippus means by "quantity". One might consider the notion of indefinite quantity as connected with the concept of πλῆθος, the indefinite multiplicity that seems to represent the second Speusippean principle, from which, together with the ἔν, the defined beings in each level of reality are constituted: numbers, magnitudes, soul, sensible – according to the "progressivist" hypothesis.¹⁹ Nevertheless, it is hard to think that the term ποσὸν in the definition refers to the πλῆθος, since the temporal dimen-

¹⁵ Cf. Tarán 1981, 382. For an analysis of Plutarch's interpretation of the *Timaeus* see Opsomer 2004.

¹⁶ For the Stoics the reference is *SVF* II 515. Plutarch provides evidence for an additional Stoic definition of time: besides the one that characterizes it as an *accident*, the other, attributed to Chrysippus and Zeno, defines time as the "extension of motion" (*SVF* II 510, 509). Long & Sedley 1987, 304-308, argue that Stoic thought on this topic is dependent on Aristotle's reflections. On the Platonic background of the Stoic cosmos and the consequent conception of time, however, see Salles 2022.

¹⁷ Cf. also Arist. *Phys.* 219b1-2, 220a24-25, 220b32-221a.

¹⁸ On the conception of time in Aristotle see Bostock 1980, Cavagnaro 2002, Coope 2005, Harry 2015, Roark 2011.

¹⁹ For the consideration of ἔν and πλῆθος as the principles of numbers, see fr. 64, 66, 75, 82-84 IP. On the divisions of levels of reality see fr. 48-51 IP. Cf. Tarán 1981, 299-302, Dillon 2003b, 40-64, and for the "progressivist" interpretation Isnardi Parente 1979, 32-33, 44.

sion does not fit the principle of reality, just like motion and change. It could attain the defined quantities, i.e. the realities constituted by the principles, which would be either the mathematical quantities or the spatial quantities (i.e. magnitudes). It is debated among scholars whether mathematical numbers and spatial quantities can be in motion or not according to the Speusippean perspective,²⁰ nevertheless, they cannot be corruptible or subject to change in themselves, as related to the intelligible world. Only sensible reality is subject to change and movement, therefore to time; but how and why?

According to Isnardi Parente 1980, 334-5 (again in Ead. 2005, *fragm.* I, 45), the Speusippean definition of time refers to an indeterminate quantity in motion to differentiate it from immobile spatial quantities. This is because, according to her, quantities do not move and movement is only typical of the sensible. Zeller 1921, 1007, n. 4, considers the Speusippean definition of time as «die Grösse in der Bewegung», and he asks whether this definition means the magnitudes of movement (actually: in the field of movement) or the magnitudes in movement (the movement of the spatial). Differently, for Tarán 1981, 382, ποσόν does not refer to size, but the definition is to be understood in the sense that «only that which is in motion is quantitative», i.e. that for Speusippus time is the measure of motion, which implies that quantities are also in motion and therefore temporal, based on his attribution of the geometrical «ῥύσις theory» to Speusippus.

Let us then try to analyse the definition from the Speusippean exegesis of the *Timaeus*, a procedure that does not seem inappropriate. Plutarch's text suggests, indeed, that Plato's *Timaeus* inspired the defi-

²⁰ On the basis of Aristotl's testimony that Speusippus derived spatial quantities from the point (fr. 81 IP = Aristot. *Metaph.* N 3, 1090b 5 ff.) Cherniss 1944, 396-397, sees Speusippus as the author of the "dynamic theory" of dimensions. This perspective is taken up by Tarán 1981, 457-458. *Contra* Isnardi Parente 1979, 27-28, Ead. 1980, 316-318, Ead. 2005, *fragm.* I, 35-36, who instead considers Speusippus to be an advocate of the "static theory", according to which each of the fundamental dimensions is πέρας of the next, on the basis of fr. 122 IP where each number is prime and starting point of the respective geometric figure (see also Cattanei 1996, 223-224, Metry 2002, 81-89). This implies that for Speusippus any movement would be excluded from the true essence of mathematical entities and would only concern their empirical construction.

nitions of time he criticises, and this is quite probable at least in the case of Speusippus and Aristotle since their conceptions seem to be ultimately linked to Plato's account of time in that dialogue. It is precisely from a general reworking of *Timaeus* that the different conceptions of the structure of reality of later Academics develop.²¹

Although there is very little evidence of Speusippus' "psychology", the soul seems to be defined by the scholar as the «form of the omni-dimensionally extended» (ἰδέα τοῦ πάντη διαστατοῦ)²². To explain this definition, it can be related to the fr. 122 IP where is described the importance of the *tetras*, defined as the φυσικωτάτην καὶ τελεστικωτάτην τῶν ὄντων (the most natural and perfective of existent things) and as εἰδός τι τοῖς κοσμικοῖς ἀποτελέσμασι τεχνικὸν ἀφ' ἑαυτῆς (a sort of productive form of the finished products in the world).²³ If we combine this definition of ἰδέα τοῦ πάντη διαστατοῦ with the tetradic structure of the world exposed in fr. 122 IP,²⁴ it seems to me that a new hypothesis can be advanced on the peculiar Speusippean revision of the world soul of the *Timaeus* and thus of the entire dialogue: by taking up its mathematical-geometric structure, the world soul is framed, however, in a "demythologizing" interpretation of the *Timaeus*, i.e. the Speusippean world soul would take the place of the demiurge, would be divine and, as a τετρακτύς, would express the structure of the world as a cosmic model, but it would also be the geometric-spatial form that is determined in reality as the stereometric structure of all bodies made up of pyramids.²⁵ At this point, if there is no longer this radical division

²¹ See Brisson 1974, 276-295, Dillon 2003a, Id. 2003b, 61 ff., Merlan 1960, 40 ff., Isnardi Parente 1979, 30, 170-178, Ead. 1980, 372-373.

²² Iambl. *ap.* Stob. *Ecl.* I, 49, 32, p. 363, 26-364, 5. Wachsmuth = fr. 96 IP = F. 54a Tarán, tr. Finamore & Dillon 2002, 29.

²³ Fr. 122 IP = ps.-Iamb., *Theol. Arithm.* 82, 10-85, 23. De Falco = F. 28 Tarán 1981. Tr. Dillon 2003b, 62.

²⁴ Cf. Merlan 1960, 40 ff. who argues for the integration of fr. 96 IP with fr. 122 IP, hypothesising that Speusippus identified the soul and its perfect form with the pyramid, symbolising the *tetractys*. Cf. Isnardi Parente 1979, 153-180 for a broadening of this interpretation. *Contra* Tarán 1981, 257 ff. For a recent examination of this aspect, see Palmieri 2025, cap. I.3.c.

²⁵ On the "demythologisation" carried out by Speusippus see Dillon 2003b, 51, who however considers the world soul as the immediate transmitter of form to the physical universe, considering it the executive aspect of the Paradigm/Decade. For the "immanen-

of ontological levels, but the myth is to be understood on an allegorical level, reality itself, then, contains both numbers and geometrical magnitudes and is always quantitative, just as is the world soul, which is the form of the extended understood as the set of the 4 numbers that enclose the totality of geometric-spatial relations (as reported in fr. 122 IP: one, two, three and four corresponds to point, line, surface and solid, overcoming Platonic geometric atomism that stopped at triangles)²⁶. The difference is that only at the sensible level qualities are added to the quantitative structure, as also all the differences in genera and species Speusippus analysed in the Ὀμοια.²⁷

Compared to the Platonic one, Speusippus' definition of time lacks the reference to the eidetic dimension, which is unsurprising since, in Speusippus' philosophy, ideas are eliminated and replaced by mathematical numbers (fr. 73-76 IP). This entails the elimination of the problem of participation and the mimetic image. Surprisingly, on the other hand, the Speusippean definition also lacks the notion of ἀριθμός. In my view, however, this is not striking. Reality itself is structured according to numbers and magnitudes, so the progression according to number no longer serves, as in Plato, to guarantee the order of the temporal reality, since the reality itself is constituted according to a tetradic world-soul that encompasses numbers and magnitudes. The definition of time as a moving quantity perhaps serves to explain the temporality of the sensible understood as everything that is constituted as a quantity, hence its not being eternal, whereas the world soul is. If, indeed, we assume that, throughout the *Timaeus*, the motion described by the verb κινεῖν implies physicality, only bodies are properly κινούμενα [Thein 2021, 97]. If bodies are constituted according to a stereometric structure given by the world soul that connects, in reality, the level of numbers and that

tization" of the mathematical-geometric structure of the world in Speusippus' thought concerning Plato's ontological dualism see Isnardi Parente 2005, *fragm.* II, 14-17.

²⁶ On the dimensional series and geometric atomism from *Tim.* 53c-e see at least Brisson 1974, 314-332, Cattanei 1996, 217-218, Verde 2013, 146-159, Zilioli 2020, in part. *Introduction* and Pitteloud 2020, Krása 2021.

²⁷ fr. 123-145 IP. The quantitative-mathematical analysis of the structure of reality is flanked by the qualitative-sensitive analysis suitable for determinate realities, which can only be examined on the basis of the criterion of similarity (see Isnardi Parente 2005, *fragm.* II, 18-20).

of magnitudes to the sensible one, there is neither need to hypothesise a demiurge to initiate movement and time, nor need to specify that time as a moving quantity proceeds according to numerical order, since reality itself follows these principles thanks to the world soul.

Therefore, the above appears to be the plausible way in which Speusippus approached the definition of time, linking it to a recasting of Platonic philosophy²⁸. However, this is not the only possible reinterpretation of Plato's definition. Within a different philosophical framework, indeed, Xenocrates also seems to have dwelt on time, a crucial issue that is extremely connected to the structure and composition of reality.

3. *Xenocrates*

Even for the second Head of the Academy after Plato's death, a testimony on the conception of time is preserved, which is worth analysing in its context. In book 1, chapter 22 of Aëtius' *Placita*, a doxographical list of definitions of time is given (*Titulus* κβ'. Περὶ οὐσίας χρόνου). Paragraphs 1-5 are about time *qua* συμβεβηκός, but still regard it as something that subsists in reality. In § 3 the Xenocratean definition of time is reported as follows:

Ξενοκράτης μέτρον τῶν γενητῶν, καὶ κίνησιν αἰδίων.

Xenocrates (says it is) a measure of what is generated, and (also) everlasting motion.²⁹

Mansfeld and Runia do not point out anything relevant, content-wise, about the paragraph on Xenocrates, except that Aëtius in-

²⁸ Although I cannot elaborate on this issue here, it is interesting to note that, like Speusippus, Strato of Lampsacus also regards time as (a) quantity (31 Sharples). However, while Speusippus linked it to Plato, Strato traced the theoretical origins of this idea back to Aristotle, whose conception of time he criticizes in reference to the presence of number and the link to change (35 Sharples). For a detailed analysis of Strato's conception of time and its relation to Aristotle, see Verde 2022, 107-26; for an updated analysis of Strato's philosophical position, see Schorlemmer 2022, Chapter VI. I thank the referee for this suggestion.

²⁹ Aët. *Plac.* I 22, 3 = F. 79 IP = p. 624 Mansfeld-Runia, tr. p. 2084.

interprets Plato's cosmogony-in-time not literally as Aristotle did but (as so often in the wake of Speusippus and Xenocrates) as being presented in the way it is for pedagogical reasons [Mansfeld & Runia 2020, 625-626]. Just as Plutarch implies that the definitions of time he criticises were inspired by Plato's *Timaeus*, at least in the case of Speusippus and Aristotle, also Aëtius' testimony seems to confirm that even Xenocrates' conception of time emerges from an exegesis of the *Timaeus* and the allegorical consideration of it.

Let us see how Xenocrates reinterprets the *Timaeus* in particular concerning the question of time and, therefore, the world soul. Xenocrates unifies mathematical ideas and numbers by placing them in a continuous derivation system from principles to sensible reality via magnitudes and indivisible lines.³⁰ By analysing his psychological conception, in my view, there emerges, for him as for Speusippus, a demythologising of the *Timaeus*' verisimilar narrative that passes through a new conception of the world soul. As reported in Aristotle, *De anima* I 2, 404b27-30 = F. 85 IP, the soul for Xenocrates is conceived of as a self-moving number (ἀριθμὸν κινουῦνθ' ἑαυτὸν), which gives it kinetic and cognitive capacity.³¹ The possibility of the soul's knowledge de-

³⁰ For the conception of ideal numbers as the foundational elements of reality, replacing Platonic Forms and derived from the principles of the Monad and the Indefinite Dyad, see FF. 26-28 IP, which concern the identification of the μοναδικός and εἰδητικός numbers. These serve as the basis for Aristotle's critiques of the impossibility of mathematical operations, found in FF. 29-30 IP. Interpretations of Xenocrates' metaphysical framework vary significantly. I just refer, therefore, to Krämer 1964, 117 ff., who locates ideal numbers within the divine intellect (*Nous-Theologie*) and connects this doctrine to Middle Platonism (see also Thiel 2006 and, in part, Dillon 2003b, 102-107); *contra* Isnardi Parente 1979, 109, Ead. 2012, 400-1, who argues that ideal numbers arise from the hypostatization of the concept of principle into the two fundamental forms of the One and the Indefinite Dyad of the Pythagorean tradition. According to this view, ideal numbers encompass both unity and multiplicity, constituting a unified complex formed by a multiplicity of ἄτομα εἶδη.

³¹ «Since they believed that the soul was capable of bringing about movement and capable of awareness, some wove it together out of both and declared that the soul was a self-moving number» tr. Miller 2018. For an analysis of Xenocrates' presence in *De Anima* I see Rossitto 2011 and for a more general examination of how Aristotle critiques Xenocratean perspective to develop his own doctrines by contrast, see Carter 2019, 103-122.

rives from its numerical-ideal structure, i.e. from the fact that it shares the same nature as the elements that are the foundation of reality, the ideal numbers, but differs from simple ideal numbers in its capacity to be the principle of movement and thus of life to itself and the sensible world (insofar as it is αἴτιον τοῦ ζῆν: F. 105 IP). Thus, Xenocrates combines the numerical ontological structure of the soul that emerges from *Timaeus* 35a ff., revisited according to his doctrine of ideal numbers, with the self-kinesis that is expressed in *Phaedrus* 245d-e, *Timaeus* 36e ff. and *Laws* 896a ff.³²

But what about the “chronological dimension”? Plutarch, *De procr. anim. in Tim.* 1, 1012D ff. = F. 108 IP, reported that according to Xenocrates, the soul is born from the mixture of the One and the Indefinite Dyad (the Indivisible and the Divisible of *Tim.* 35a ff.) which generate numbers, to which are added rest and motion (the Same and the Other of *Timaeus*).³³ But Plutarch also says that the soul for Xenocrates «neither derives its beginning from time nor is the product of generation» (ὁμαλῶς δὲ πάντες οὗτοι χρόνῳ μὲν οἴονται τὴν ψυχὴν μὴ γεγενῆσθαι μηδ’ εἶναι γενητήν).³⁴ Indeed, the soul for Xenocrates is self-moving and therefore eternal, so also for Xenocrates the “constitution” of the soul is to be understood in an allegorical sense.

Building on an allegorical reading of the *Timaeus*, Xenocrates, like Speusippus, seems to eliminate the figure of the demiurge from his system. Indeed the world soul constitutes reality through its numerical structure, which is linked to the geometric level, and imparts movement and life by moving on its own. As an ideal number endowed with motion and connected to the sensible world, the cosmic soul could, within Xenocrates’ system of derivation culminating in indivisible lines,³⁵ represent the element that bridges the ideal and geometric dimensions.

³² On this see in particular Isnardi Parente 1979, 190 ff., Ead. 2012, 296 and Sedley 2021a, 22-25.

³³ Cf. Opsomer 2020, 176-178.

³⁴ Tr. J. Philips in Goodwin 1874a.

³⁵ On Xenocrates’ indivisible lines, see FF. 44-67. Sedley 2021a, 19-20 has proposed that indivisible lines serve as Xenocrates’ justification for his conception of the cosmos as eternal. As «limite ultimo teorico dello spazio» [Isnardi 2012, 281], they appear to prevent the infinite dissolution of reality (see, for example, F. 60 IP).

Rather than being the projection of the dyadic principle alone,³⁶ the world soul, determined by the cooperation of μονάς and ἀόριστος δυάς, and whose geometric counterpart would be the indivisible line, would represent the “working hand” of the principles in reality, providing the ontological and geometric-spatial justification of the progressive derivation of reality from the principles down to the sensible body, passing through the geometric level.³⁷ In the *Timaeus*, the demiurge was the efficient cause that, using the ideal model (perfect living being) as the paradigmatic cause of the sensible world, shapes the living world, and renders it self-sufficient. Differently, Xenocrates seems to identify the efficient cause of the cosmos with the paradigmatic cause (i.e. with the structure of the ideal numbers) to which he also attributes the connotations of movement and life, making the world soul itself a perfect living being, which is self-sufficient and perfect insofar as it has a numerical-ideal nature, even though it moves and moves the cosmos without this affecting its intelligible nature. From this, it would appear that Xenocrates identified both the demiurge and the paradigm of *Timaeus* with the world soul. Therefore, the soul is the most “complete” reality and the one that explains and determines life itself.

How does the conception of time fit into this? By eliminating the medium of the demiurge and considering the constituted soul as the very entities of reality to which movement and knowledge are also added, the world soul expresses in itself and legitimises the ideal structure of the sensible realm, which is therefore ordered and regular. The fact that time is defined as “eternal movement” and is also said to be the measure of what is generated – which implies that it is numerical – brings it rel-

³⁶ Isnardi Parente 1979, 190-201, identifies the cosmic soul as a projection of the dyadic principle, given that the elementary-geometric structure of the universe appears to be reducible to duality – specifically represented by the άτομος γραμμή (F. 47 IP). By contrast, Dillon 2003b, 102-107 proposes a metaphysical and cosmological tripartition (based on his reconstruction of F. 2 IP and F. 133 IP), considering the world soul an intermediate entity – a «creative repository of the Forms» [ivi, 107] – generated by the two principles of the Monad and the Indefinite Dyad.

³⁷ This is what explains the nature of “intermediate” (FF. 113-115 IP) between the ideal numbers and the sensible realm, which does not mean that it lacks something; rather, it unites and justifies the different characteristics of the various degrees of reality, enabling knowledge and movement.

evantly close to the definition of the soul as a number that moves itself; they are, indeed, highly connected. The conciliatory character of this Xenocratean definition has been rightly noted, as it places the concept of κίνησις and that of μέτρον (and so of number) on the same plane, but to which the important condition of eternity is also added.³⁸ These are the very characteristics of the world soul too. Furthermore, the Xenocratean world soul is said to be that which «governs the realities below the heavens».³⁹ This implies that as a number and as the principle of movement and itself in movement, located at the level of the heavens, it is the soul itself that scans the temporal dimension of everything that is below the heavens. This would also fit the fact that, in Aëtius' account, time is considered an accident. I would therefore tend to believe that the Xenocratean definition of time indicates one of the characteristics of the soul, namely that of allowing and regulating the movement of the sensible. The world soul, therefore, is that which allows for not only movement and knowledge but also the temporal dimension. Although differently, Xenocrates aligns with the idea emerging from the *Timaeus* of time as a product of the cosmic soul,⁴⁰ insofar as it can be attributed to the sovereignty that the soul exercises within the astral sphere.

I would not venture further, as the absence of textual references prevents a more explicit elaboration of this already highly speculative point.

4. Conclusions

As has been shown in this article, Speusippus' definition of time presents a dynamic and quantitative conception, yet without explicitly invoking numbers. Xenocrates, on the other hand, offers a definition that emphasizes the mathematical nature of time, bringing together the notions of “motion” and “number” – the latter being implicit in the concept of μέτρον – while also underscoring the eternal dimension of time (αἰδιος). This difference in approach suggests that, for both scholars,

³⁸ Isnardi Parente 2012, 292.

³⁹ F. 133 IP = Aët, *Plac.* I 7, 30 = p. 374 Mansfeld-Runia. On this passage and some textual and interpretative problems see Thiel 2006, 265 ff.

⁴⁰ For this interpretation see *supra* (0000, fn. 8).

time could not exist independently of the world soul, but for distinct reasons. According to Xenocrates, time depends on the soul because the soul is the very source of motion, and without it, there would be no movement to measure. Speusippus, however, does not attribute to the soul an intrinsic connection with motion; rather, motion is an inherent property only of sensible and quantitative entities, whose ultimate ontological constitution depends on the soul. Thus, while both philosophers see time as necessarily linked to the world soul, they do so from different perspectives: one emphasizing the soul as the active principle of motion, the other considering it as the foundation of the very existence of things that undergo change.

This article has aimed to bring to light how Plato's immediate successors, as scholars of the Academy, developed a philosophical reflection on time that was neither marginal nor accidental. Their engagement with this theme was deeply rooted in an exegesis of Plato's *Timaeus*, which they read through the lens of a broader reinterpretation of the dialogue. This reinterpretation followed an allegorical and demythologized approach, placing particular emphasis on the nature and function of the world soul. In this context, the world soul emerges as a crucial intermediary between the purely intelligible and the sensible realms. It bridges these two dimensions by structuring reality mathematically and geometrically, ensuring continuity between the eternal and unchanging domain of intelligibles and the ever-changing world of sensory experience. Through this mediating role, the world soul allows for a conception of time that is not merely an abstract framework but is something intrinsically connected to the very structure of reality. If time is dependent on the world soul, it is because the soul itself acts as the principle that unifies and organizes the cosmos, making possible the transition from intelligible order to the perceptible, measured flow of temporal existence.

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Keywords

Speusippus; Xenocrates; time; world-soul; cosmology

Abstract

Speusippus and Xenocrates, the first two Heads of the Platonic Academy after Plato's death, mainly take their cue from *Timaeus* to elaborate their philosophical systems from a pre-eminently mathematical point of view. Both are credited with the allegorical reading of the *Timaeus*, i.e. they use the fictitious narrative of chronological anteriority to explain the ontological priority of metaphysical principles. Anyway, the definitions of time attributed to them differ considerably from one another and the one of Plato: whereas by Plato, time is «an everlasting likeness moving according to number» (*Tim.* 37d6-7), for Speusippus it is «quantity in motion» (τὸ ἐν κινήσει ποσόν) (fr. 93 IP) and for Xenocrates time is «a measure of what is generated, and (also) everlasting

motion» (μέτρον τῶν γενητῶν, καὶ κίνησιν αἰδίων) (F. 79 IP). The two definitions remain isolated accounts and are usually not analysed and explored within the overall philosophical systems of Speusippus and Xenocrates by most scholars. My aim in this article is to explore what these two definitions of time have to do with the constitution of the cosmos and how, based on the different systems developed by the scholars, they recast the main aspects of the Platonic *Timaeus*, such as the world soul, the figure of the demiurge, and the principles of reality.

Speusippo e Senocrate, i primi due scolarchi dell'Accademia platonica dopo la morte di Platone, prendono principalmente le mosse dal *Timeo* per elaborare i loro sistemi filosofici da un punto di vista preminentemente matematico. A entrambi viene attribuita la lettura allegorica del *Timeo*, ossia l'utilizzo della narrazione fittizia dell'antiorità cronologica per spiegare la priorità ontologica dei principi metafisici. Tuttavia, le definizioni di tempo a loro attribuite differiscono notevolmente l'una dall'altra e da quella di Platone: mentre per Platone il tempo è «un'immagine eterna che procede secondo il numero» (*Tim.* 37d6-7), per Speusippo è «quantità in movimento» (τὸ ἐν κινήσει ποσόν) (fr. 93 IP) e per Senocrate il tempo è «misura delle cose in divenire e movimento eterno» (μέτρον τῶν γενητῶν, καὶ κίνησιν αἰδίων) (F. 79 IP). Queste due definizioni rimangono isolate e solitamente non vengono analizzate né esplorate all'interno dei sistemi filosofici complessivi di Speusippo e Senocrate dalla maggior parte degli studiosi. Ciò che intendo indagare è il rapporto tra queste due definizioni di tempo e la costituzione del cosmo e come, sulla base dei diversi sistemi sviluppati dai due scolarchi, esse rielaborino i principali aspetti del *Timeo* platonico, quali l'anima del mondo, la figura del demiurgo e i principi della realtà.

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