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PLATO'S DIALECTICAL COSMOLOGY
IN THE *TIMAEUS*

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1. *Introduction*

Plato's natural philosophy in general and his cosmology in particular are expounded in his late dialogue *Timaeus*. In this dialogue, he gives a detailed account of the structure of the universe and the formation processes of its components, as well as further detailed analyses of various physical and biological phenomena. For ancient scholars and philosophers, the *Timaeus* was a major cosmological reference. However, it was also a great source of inspiration for modern thinkers, such as Bacon, Newton, and Whitehead.¹ While numerous historical references could easily confirm this exceptional placement of the *Timaeus* in the history of philosophical cosmology, the question of assessing Plato's cosmological account seems to call for two parallel research tasks. On the one hand, it is necessary to determine the main characteristics of the Platonic cosmological account. On the other hand, there is the task of elucidating its relations to the general system of Plato's philosophical

¹ For the impact of the *Timaeus-Critias* on Bacon's *New Atlantis* see, for example, Welliver 1977, 61-63. In various works, Newton was influenced by the *Timaeus*. For instance, in his essay *Of Violent Motion*, he deals with the doctrine of *antiperistasis* as discussed in *Timaeus* 79e-80a, cf. McGuire & Tamny 1983, 195. Famously, Whitehead admits that his greatest influencers in developing his conceptions in *Process and Reality. An Essay in Cosmology* were Plato's *Timaeus* and Newton's *Scholium*, which for him «are the two statements of cosmological theory which have had the chief influence on Western thought», cf. Whitehead 1978, 93.

thought. To do so, I suggest that an interpretation of the *Timaeus* in light of Plato's dialectic² would be an appropriate approach to combine both research paths. This method draws a comprehensive and coherent picture of Plato's cosmology, which could be integrated into the totality of his philosophical system.

Although recent contributions on Plato's *Timaeus* have attempted to cope with these challenges, I believe that the success of their suggestions should be evaluated according to the established connections between the Platonic conceptions of cosmology and dialectic. For instance, I think that the accounts of Sedley 2019 and Ionescu 2010 fail to fulfil the two tasks mentioned above, insofar as the first neglected Plato's dialectic and the second reduced it to its epistemological dimension. As to my suggested conception regarding the opportunity to relate Plato's dialectic to its cosmology, two aspects need to be considered: (i) The interdisciplinary character of the *Timaeus* and (ii) the ontological dimension of Platonic dialectic. With respect to (i), the long history of the commentaries on the *Timaeus*, entailing Greek, Latin, Armenian and Arabic traditions, contributes to its vast reception. This is evinced by the fact that scientists from different disciplines (e.g., astronomy, physiology, medicine, mathematics, and geography) and researchers in various fields of philosophy and theology have intensively discussed the contents of the *bible des platoniciens* [cf. Jonkers 2017, 383].

The interdisciplinary appeal of the *Timaeus* could be considered as the culmination of a substantial feature of Platonism itself, since Plato's dialogues famously cover countless areas of knowledge. But the specificity of the plurality of the disciplines tackled in the *Timaeus* lies primarily in its close relation to the very notions of cosmology and cosmogony, which involve *per definitionem* not only scientific explanations but also mythical and religious elements [cf. Blackburn 1994, 85].³ This holds true from an etymological perspective: in

² There is a wide range of meanings, conceptions and interpretations of Plato's dialectic (see e.g., Dixsaut 2001). The conception I am using in this work assumes an ontological reading of dialectic as will be explained below.

³ Cosmology is «[t]he study of the origin and structure of the universe» and cosmogony is «[a] theory of the origin of the universe, whether religious, mythical or scientific». Angeles 1981, 49-50, notices that cosmogony is sometimes used synonymously with

Greek, the meaning of the word *kosmos* includes the notion of «a crafted, composed, beauty-enhancing order», as well as the notions of «ornament» and «adornment». Furthermore, when it comes to the verb, *kosmeo*, namely, «to set in order, to marshal, to arrange», it expands its moral and aesthetic connotations to «military, civic, domestic and architectural applications of *kosmos*» [cf. Vlastos 1975, 3-4]. In order to cope with the various meanings that corresponds to the complex contents of the *Timaeus*, the interdisciplinary capabilities of Plato's dialectic are needed. In fact, there is an «architectonic character» of dialectic, which seems to be the «consequence of its synoptic attitude to the other sciences». For, dialectic explores the community and relatedness of things (*Republic* 531d) and examines the related and unrelated in all sciences (*Sophist* 227b) [cf. Robinson 1953, 74-75].

Therefore, if this basic part of Platonic philosophy is omitted, the analysis of his cosmology remains fragmentary. As a result, a unified and systemic account is hardly attainable, which is reflected in Sedley's 2019 account. In order to underpin the plausible claim that the *Timaeus*' function is to vehicle Platonic doctrine, Sedley gives the examples of «four familiar Platonic theses on which Timaeian cosmogony is founded» [*ibid.*, 53], which are also called the «four key metaphysical principles» [*ibid.*, 56].⁴ Furthermore, he provides eight additional points, which constitute «a series of further theses, all of them bearing on the soul» [*ibid.*]. As far as Plato's dialectic is concerned, Sedley admits that «numerous theses defended dialectically» in the other dialogues are to be found in the physics of the *Timaeus* as parts of Plato's «global system». However, he seems to strictly distinguish between the «physicist and the dialectician» – as in Aristotle's *De Anima* – in order to

cosmology. Whereas cosmology – in the particular sense of the «study of the most general and pervasive concepts that can be applied to the universe (such as space, time, matter, change, motion, extension, force, causality, eternity) » is sometimes used synonymously with metaphysics.

⁴ These are: (1) «The principle that god is the cause only of good things, never of bad», (2) «The role of Forms as eternal paradigms», (3) The necessity of assuming «Forms of physical entities» for the Demiurge's model, and (4) The so-called Two-World-Thesis, according to which there are «two radically separate realms – those of being and becoming, or of Forms and sensibles – accessed by distinct cognitive powers» (cf. *ibid.*, 53-56).

be able, when it comes to the entire Platonic system, to consider them as «constructively complementary». The strict distinction between physics and dialectics enables him to associate the first with the *Timaeus* and the second with «Plato's more typical works of ethical, psychological, and epistemological inquiry» [cf. *ibid.*, 50]. Yet, by excluding dialectic from physics and natural sciences, he excludes it from cosmological and ontological inquiry.

In reference to the second element, (ii) the ontological dimension of Platonic dialectic, I wish to single out Ionescu's 2010 account. Although Ionescu used Plato's dialectical method to cope with the interdisciplinarity of the cosmological account of the *Timaeus* she seems to reduce dialectic to the method of division and collection, which Plato famously sketched in various dialogues. As a result, her analysis of the Platonic ontological system, or his «structure of reality», is limited to determining the logical relations between concepts in the sense of species and genera, rather than explaining the dialectical connections between the components of Plato's cosmological system. In contrast, by taking the ontological status of Plato's dialectic into consideration, I wish to illustrate the dialectical foundations of Plato's cosmology, which consist in the ontological functions of dialectic in general and the dialectic of Being and Becoming in particular. While setting the focus on this last form, the ontological-cosmological dimension of Platonic dialectic will be introduced briefly within a historical perspective in the following section. This is crucial to explaining the characteristics of Plato's dialectical structure of reality, which will be undertaken in section 3. In fact, the interactions between the two Platonic principles of Deity and Matter are not manifestations of a dualistic system. Instead, they represent the dynamic kernel of Plato's dialectical cosmology, which describes one single world, unique in its kind – as *Timaeus* argues in 31b and 92c – even if it may be «variously called τὸ πᾶν, the All, or τὸ ὅλον, the Whole, or again ὁ οὐρανός, the Heaven, or ὁ κόσμος, the Order of Things» [cf. Hartley 1918, 2].

2. *Cosmology and Dialectic*

The conception of Plato's dialectical cosmology is supported historically by the influence of the Presocratic dialectical thought on Plato's philosophy in general and his views in the *Timaeus* in particular. This influence refers to several philosophers and implies various forms of dialectic, such as the dialectic of the One and the Many and the dialectic of Being and Becoming.⁵ One could mention the case of Heraclitus, who in his fragment 124 «supports the idea of a disorderly state in some phase of the development of the universe» [cf. Christidis 2009, 51; 59-61]. One could also mention Empedocles' cosmic cycles and dialectic of unity and multiplicity [cf. Tsimbidaros 2010, 44-45], as well as his antagonist principles of hate and love, or enmity and friendship. Above all, Empedocles' four elements present, together with the mathematical insights of the Pythagoreans, the kernel of Plato's corpuscular theory in the *Timaeus*. The contribution of the Presocratic thinkers in shaping the Platonic conceptions of dialectic on the ontological level includes numerous cosmological reflections. Regarding the global status of the universe, in *De Caelo* (279b12-17), Aristotle emphasizes the role of Heraclitus and Empedocles in conceiving the idea of an evolving world order that consists of a coming into being and decaying of the cosmos. Furthermore, Parmenides and the entire Eleatic tradition had a deep influence on Plato's philosophy in general and his cosmology in particular. In fact, compared to previous works, the *Timaeus* exhibits more similarities with the second part of Parmenides' philosophical poem than with the *Theogony* of Hesiod [cf. Kalfas 2005, 93]. Against the widespread conception of a strict antagonism between Parmenides and Heraclitus, which associates the first with the unchanged being and the second with unceasing change and eternal becoming, it is more accurate – and crucial for understanding Plato's dialectical account – to maintain the much more complex position, according to which «both of

⁵ In the *Sophist* we find multiple references to these forms of dialectic within Presocratic contexts, as in 242d-e, where «some Ionian and later some Sicilian Muses reflected that it was safest to combine the two tales and to say that being is many and one» (transl. Fowler), or in 246a, where the γιγαντομαχία between the friends of the ideas and the dogmatic sensualists is introduced.

them dealt with *Being* as well as with *Becoming*» [cf. Christidis 2012, 40]. Considering the well-known influence of the Parmenidean and Heraclitean ontologies on Plato's philosophy, I propose examining the cosmological questions raised in the *Timaeus* primarily in the light of the basic dialectic of Being and Becoming. Thus – without omitting the other forms of dialectic which are closely interconnected – I will begin by questioning the status of the cosmos itself.

According to ancient interpretations of the *Timaeus*, from Aristotle's *De Caelo* and the discussions in the Academy to Plutarch, Porphyry and the notorious commentary of Proclus, the metaphysical problem of the coming into existence of the world (*Weltentstehung*), i.e., whether the cosmos is γενητός or not, was considered its central theme [cf. Baltes 1976, 1-2]. This problem was formulated in *Timaeus* 28b.⁶ It rests on a series of fundamental determinations started in 27d. This passage includes the explicit distinction between two modes of existence, namely, «that which is always Existent and has no Becoming» and «that which is always Becoming and is never Existent». The former is associated with apprehension «by thought with the aid of reasoning», and the latter is «an object of opinion with the aid unreasoning sensation». Along with the basic connection of epistemological modes of knowledge to ontological classifications, the fundamental statements preparing the question of the status or genus (εἶδος) of the cosmos include other elements that draw the attention of the interpreters. Proclus saw in them the usage of all kinds of the dialectical method (276.10: Πάσαις ταῖς διαλεκτικαῖς μεθόδοις ἐν ταῖς ὑποθέσεσι)⁷ [see also Baltes 1978, 7].

⁶ «Now the whole Heaven, or Cosmos, or if there is any other name which it specially prefers, by that let us call it, – so, be its name what it may, we must first investigate concerning it that primary question which has to be investigated at the outset in every case, – namely, whether it has existed always, having no beginning of generation, or whether it has come into existence, having begun from some beginning» (*Timaeus* 28b); all *Timaeus* translations are by Bury.

⁷ In the introduction to the second volume of his translation of Proclus's *Commentaire sur le Timée*, Festugière summarizes the interpretation of Proclus as consisting in five hypotheses extracted from 27d5-28b5, namely, the formal and the material causes represented by the always Existent and the always Becoming (1&2), the efficient cause of the Demiurge (3), the exemplary cause of the model (4), and the fifth hypothesis is the search for a name influenced by the method of the geometers

The dialectical characterization of the entire passage does not lie in the formalism of a diairetic analysis of concepts and the distinction between two opposite terms, which can be associated with different forms of an alleged Platonic dualism or chorism. Instead, it lies precisely in the possibility of overcoming that kind of dualistic thinking to reach a systemic, unified and harmonious conception.

Moreover, the point of the dialectical solution for the problem of the disjunction Being (οὐσία) vs. Coming-to-be (γένεσις) requires the ontological distinction between different kinds of motion: the vital motion (self-motion) of the soul (both World Soul and human soul) is different from phenomenal motion (κίνησις), and both of them differ from phenomenal becoming (γένεσις).⁸ On the ontological level, the dialectic of Being and Becoming must be connected to the dialectic of Motion and Rest, seeing as the first step toward determining the five biggest classes (*megista gene*) in the *Sophist* begins with the «most important» three, namely, «being itself and rest and motion» (cf. 254d). On the cosmological level, this first dialectical constellation must be related to rationality and life, since the two remaining big classes, namely, sameness and otherness, which are added in the *Sophist* at 254e, come into play in the *Timaeus* in the complex composition of the World Soul. The result is a unitary and dynamic context, in which the ontological classes are dialectically interrelated, so that the totality of all conceivable phenomena, from the formation of the cosmos to the human cognition and the entire realm of anthropology, is considered in one harmonious and coherent account.

Consequently, the plurality of application fields does not contradict the unity of the dialectical principle that underlies them. In fact, it becomes clear how Plato is able to use the terms γένεσις and οὐσία in the *Philebus* (53c-55a) in a dynamic context, in which they mean «process» and «finished product» in a general sense [cf. Shiner 1974, 67]. In order to cover the diversity of the forms, the subcontexts and

and Pythagoreans (5). In addition, there are three «auxiliary theorems», namely, (i) the world γέγονεν (28b5-v2), (ii) the world γενητός needed a creator, and (iii) this creator works according to an eternal model (cf. Proclus 1967, 8-9; 121).

⁸ See Cherniss 1965, 352. Plato criticizes the friends of the ideas in *Sophist* (248a-249d) precisely because they overlooked these distinctions.

the implementations of the various dialectical structures in Plato's cosmology in the *Timaeus*, countless detailed studies are necessary, which would deal with different themes. Take for example, the role of teleology and values [see Johansen 2004], or the functions of the political and historical dimensions, which are expounded both at the beginning of the dialogue concerning ancient Athena and Egypt (21e-25d) and in the Atlantis-story in the *Critias*. For the purpose of this paper, I will limit my analysis to focusing on the general thesis of dialectic as the ontological foundation of the Platonic cosmological account, and I will move now from the abstract analysis of its structural forms (Being and Becoming, the One and the Many, etc.) to search for validation in the concrete context of the *Timaeus*, namely in the components of the structure of the cosmos.

3. *The Dialectical Structure of the Cosmos*

Ionescu 2010 maintains that Plato's *Timaeus* presents a fourfold model of reality, composed of «the Demiurge, the forms, the particulars, and the Receptacle».⁹ She claims that this composition is analogous to the structure of reality discussed in the *Philebus*,¹⁰ «with the intelligible forms corresponding to Limit in the *Philebus*, the Receptacle to the Unlimited, particular things to the Mixtures of Limit and the Unlimited, and the Demiurge to the Cause of mixture (*Nous*)». Remembering the afore mentioned «four key metaphysical principles», as put forward by Sedley 2019, it seems that the focus of many scholars on particular cosmological problems in the *Timaeus* led them to distinguish between exactly *four* domains of reality as the main pillars of Plato's cosmology.¹¹

⁹ Ionescu 2010, 299-300.

¹⁰ For a detailed analysis of the use of the dialectical method in the *Philebus*, see Ionescu 2007. For the similarities between the *Timaeus* and the *Philebus*, see Rivaud's remarks in the introduction to his French translation of the *Timaeus* (Platon, 1970, 21-22). See also Migliori's arguments for the plausibility of reading these two dialogues «in close connection, as they complement each other» in Migliori 2010.

¹¹ Erler 2007, 268, lists also *four* issues as the focus of the modern literature: (1) the figure of the Demiurge, (2) the problem of the Chora, (3) the construction of the regular bodies, and (4) the formation of the world soul.

Ionescu's interpretation of the *Timaeus* starts from this assumption to focus primarily on the «employment [of the dialectical method] in the investigations of elements and animals». For her, the dialectic in the *Timaeus* is, «just like in the *Sophist*», an exercise the pursuit of which «becomes the main way for our soul to advance from opinion to knowledge» [cf. *ibid.* 300; 309]. In contrast, I suggest an alternative reading that focuses on the dialectical structure of the cosmos and follows the principal contradiction between mind and matter, under which the main components of the cosmos can be classified. In determining these components, I will take my lead from an ontological theory – inspired from the interpretation of the *Timaeus* – by the Arab philosopher Al-Razi (Rhases). According to Al-Razi's theory of «the five co-eternal principles», the basic elements of reality are «matter, space, time, the Soul and the Creator (*Bāri*': Demiurgus)» [Fakhri 1968, 19]. I will first discuss both the World Soul and the Demiurge under the principle of cosmic rationality, and subsequently proceed to the material principle involving matter, space and time, within the complex theme of the third kind.

3.1. *The Dynamics of Cosmic Rationality*

A central theme in Plato's cosmology is the question whether or not there is a cosmic rationality governing everything that exists. Several interpretations tend to focus on the figure of the Demiurge as the creator – even if not *ex nihilo* – of the world and hence binding the cosmological account with various theological connotations. However, the theme of the World Soul can offer valuable insights when it comes to grasping the nature of an all-encompassing rationality on the cosmological level. The theme of «the role of mind in ordering the universe» can be detected in several middle and late dialogues (*Cratylus* 400a9, *Phaedo* 97c3, *Philebus* 30d8, *Laws* 966e4), «but never as the subject of dialectical examination».¹² In the *Timaeus*, however, the composition of the World Soul, its functions and characteristics, can attest to the dialectical core of Plato's concept of cosmological rationality. This not only explains

¹² Cf. Sayre 1983, 241.

the relation between the macro and micro levels of rationality, but it also integrates key concepts, such as motion and life, into the systemic totality of the cosmological account.

Before turning to the World Soul, I will point out a few brief remarks about the Demiurge. The Demiurge is frequently considered as the Platonic figure of a personal God, who is equivalent to the God of monotheistic creationism. As the Neoplatonic interpretations became more and more influential, this view on the Demiurge became the predominant one. In contrast, there are two reasons why the Demiurge can be considered as uniquely distinct from the God of monotheism. On the one hand, the Demiurge is not the source of motion; and on the other hand, he is not the cause of order.¹³ Considering the action of a divine craftsman as the origin of cosmic order is a widespread view, which some religions share with certain philosophical interpretations of the Demiurge.¹⁴ Van Riel criticizes these kinds of readings because they over-emphasize the role of the Demiurge in Plato's cosmological system. The elevation of the Demiurge leads to further complications, when the literal readings of some passages are anachronistically associated with creationist interpretations. This can be avoided by taking seriously Plato's «claim that what he is telling is a likely myth» [cf. Van Riel 2017, 117-118]. Hence, to avoid the misleading consequences of reading the statements about the cosmos-maker literally entails developing a philosophical interpretation of cosmic rationality. Such an account could

¹³ Cf. Mohr 1985, 22. Mohr associates these two aspects with two theological traditions. According to Mohr: «The strongest traditions of theistic speculation in the West have treated the divine either as primarily a source of motion or as primarily a source of order. The one tradition can be traced back to Empedocles, whose Love and Strife set the world's components in motion. This tradition blossoms in the cosmological or first cause arguments for the existence of God. The other tradition can be traced back to Anaxagoras, whose divine Mind set the world's components in order. This tradition blossoms in the teleological arguments for the existence of God».

¹⁴ See Johansen 2004, 91. Johansen claims, «if God acts *qua* craftsman, we would expect him to be on standby and restore chaos to cosmos whenever the world slips into disorder. [...]. The *Timaeus* would, then, be a story not just about what a divine craftsman did once upon time, but also a story about what divine craftsmen do at all times».

address certain developmental aspects of Plato's thought throughout the dialogues. For instance, Findlay maintains that we can assume that the «eternal, timeless Mind as such, dimly adumbrated in the *Republic*, but given clearer standing in the *Parmenides*, *Sophist* and *Philebus*, now [in the *Timaeus*] takes its place as an active, creative Demiurge» [Findlay 1974, 304]. Diogenes Laertius' observation can be read in this non-anthropomorphic sense when he says that Plato «maintained that the universe has two basic principles: god and matter; the former he also calls mind and cause».

If the "divine" principle is not theologically interpreted, i.e., not reduced to the Demiurge as cause of the World Soul, and if it is instead considered as a unified cosmic rationality, then the dialectic of Being and Becoming that governs Plato's ontological thought can be situated in the more general framework of the dialectic of Mind and Matter. In this perspective, the World Soul is the determinant element in developing a dialectical conception of rationality on the cosmological level. In fact, it shows that the coming into existence of the World Soul involves material factors and its rationality (*Vernünftigkeit*) cannot be realized unless it unites with the world body (*Weltleib*) [cf. Fleischer 2001, 97-98]. Thus, the World Soul is capable of binding the astronomical level of cosmic rationality with its human manifestations in a harmonious unity. Plato's analysis of the World Soul described at 37a2-c5 can be interpreted as his «account of an *ideal cognitive agent*, thus offering a general account of intellectual cognition that is based on the very same principles as those that govern human intellectual activity» [see Corcilius 2018, 52]. The composition process of the World Soul involves being, sameness and difference (37a-b). These are the very concepts that constitute the essence of the *logos*. It rests on the concept of mixture (μῖξις), which Plato considers as a basic model for his ontological thought and uses in other dialogues such as the *Philebus* and the *Statesman*, [cf. Gadamer 1985a, 143]. This can be interpreted as a confirmation of the primacy of the category of motion, which is central in Plato's conception of the soul.

The soul is the ἀρχή of κίνησις and it is therefore described in the *Laws* (892c) as the authentic essence of the *physis*.¹⁵ This is the

¹⁵ For an analysis of the Platonic use of the term *physis* in *Timaeus* 35a1-37c5, see Mannsperger 1969, 272-283.

case because it shows the basic feature of *nature* in general and every organism in particular, namely, self-motion and self-regeneration. It allows us to finally understand that this account of the *psyche* indicates a certain unity of all existents within one single cycle of being [cf. *ibid.*]. Considered together, all these aspects build the dialectical *nature* of the World Soul, which «straddles the two disparate realms» of Plato's ontology, namely, the realm of eternal Being and the realm of sensible, ever-becoming things. As Vlastos puts it, it «has a leg in each of these» because Plato «pictures the creation of soul as a blending of Being and Becoming» [cf. Vlastos 1975, 31].¹⁶

3.2. *The Puzzle of the Third Kind*

In the *Timaeus*, Plato introduces the notion of *Third Kind* (τρίτον γένος) which he describes as *Receptacle* (ὑποδοχή in 49a; δεχόμενον in 50d).¹⁷ It means that-what-receives or the «receiver of all» (πανδεχές in 51a7), and as *chora* (χώρα in 52a8, d3), which denotes place or space or location.¹⁸ This threefold terminology is the source of confusion and misunderstanding in the secondary literature. It remains a controversial question whether Plato intended to consider one or more subject matters. In her detailed analysis of the third kind, Dana Miller 2003 claims that the two kinds distinguished in 27d5-28a4 already account for all things. Therefore, the third kind is a differentiation within the second kind. She makes this clear when she says, «Plato argues for two distinct entities which both belong to the third kind» [cf. Miller 2003, 16].

Against these views, I maintain that Plato felt the need for the third

¹⁶ Here, Vlastos asserts that he «take[s] this to be the main point of the complicated psychogony at 35A ff.»

¹⁷ The translation of ὑποδοχή as “Receptacle” can be traced back to Calcidius, who translated it as *receptaculum*. For a detailed analysis of the appropriateness of different meanings (e.g., recipient, place of welcoming, refuge, containing vessel etc.), see Reynolds 2008.

¹⁸ It is a controversial issue determining whether or not *chora* should be translated as “space”. For “place” is a translation of *topos*, and “seat” is a translation of *hedra*. It also remains a question whether Plato conceived this notion as absolute or relative to bodies (cf. Johansen 2004, 127-129).

kind precisely because he realized that, on the level of cosmology, there are things that neither belong to the first nor to the second kind. For the purpose of simplification, I will use the three terms *chora*, third kind and receptacle as synonyms. Plato conceives the *chora* as a third ontological kind along with the first kind of unchanged being and the second kind of becoming (or coming-to-be). Plato's attempts to explain the nature of the *chora* leads to several controversial assessments and interpretations that could be classified into four groups: (i) *chora* as matter, (ii) *chora* as place, (iii) *chora* as both, and (iv) *chora* as neither [cf. Miller 2003, 20]. In its negative formulation, the fourth option accords with Plato's explicitly assumed undetermined nature of the third kind. However, this should not necessarily lead one to adopt an agnostic attitude. Instead, I believe it gives grounds for searching for an appropriate speculative solution.

Therefore, I suggest developing the fourth interpretation of the *chora*, namely, by openly assuming its dialectical nature and considering it as constituting the core of the Platonic cosmological system. In fact, this interpretation has far-reaching ontological impacts. Since the formulation of "neither matter nor space" merely constitutes a general framework, a specific reading of this neither-nor in light of the above-mentioned ontological interpretation of the Platonic notion of dialectic is needed. For the Platonic concept of *chora* seems to dialectically overcome the dogmatic opposition between form and matter. It represents the dimension that ensures the independence and otherness of the *eikon* vis-à-vis the *paradeigma*, and at the same time, enables the similarity between both of them [cf. Moncada 1995, 70]. This dialectic of sameness and otherness, or identity and difference, goes hand-in-hand with the coexistence of two opposite determinations of the *chora* as it relates to the intelligible and the sensible realms. The *chora* is «Mother and Receptacle of this generated world, which is perceptible by sight and all the senses». At the same time, it is «invisible and unshaped, all-receptive, and in some most perplexing and most baffling way partaking of the intelligible» (cf. 51a-b).

This exceptional metaphysical status led to various specific versions of the fourth interpretation that sees the *chora* as neither matter nor space. For instance, Jacques Derrida claims that the description of the *khôra* – as he writes it – goes beyond the dichotomy *logos/mythos* and hence

appeals to a third kind of discourse (*un troisième genre de discours*) [cf. Derrida 1993]. This version of the fourth alternative describes the *chora* with terms such as «quasi-entity», «non-something» and «beyond being» [cf. Miller 2003, 32]. It ensures that there is still a need for a genuine explication of the nature of the *chora* and its status in Plato's cosmological system. Derrida's linguistic perspective offers helpful insights. For example, he recognizes an analogy between the *chora* and the idea of the good (*idea tou agathou*), which is also determined as beyond being [cf. Gasché 1994, 165-166.]. However, the puzzle of the third kind should be solved within an ontological framework, which constitutes a reliable foundation for the entire cosmology.

This solution consists in considering the *chora* as the dialectical *milieu*¹⁹ of the encounter of opposites, as exemplified by the fundamental unity of the antagonistic terms of Being and Becoming. This interpretation needs to be developed regarding a series of further aspects surrounding the puzzle of the third kind. These include the crucial theme of the status of *time*, without which the material principle remains incomplete, and the entire cosmological account remains inconsistent. In fact, as Gadamer notices, if we identify the *chora* with space, it cannot be considered as principle of individuation precisely because such a principle necessitates the notion of time. In contrast, Gadamer maintains Plato's motivation underlying his conception of the *chora* was determining how necessity is already present within the «mindless mind» (*vernunftlose Vernunft*) [cf. Gadamer 1985b, 259]. This formulation refers not only to the dialectical character of the *chora*, but also to the dialectical structure of Plato's entire cosmology as a system entailing countless pairs of opposites (mind-matter, being-becoming, forms-particulars, truth-opinion etc.), which interact continuously within one dynamic totality.

¹⁹ I agree with the two reasons Luc Brisson gives for choosing the word *milieu* to describe the *chora*, namely the neutrality and the emphasis on the distinct character of the third kind (cf. Brisson 1998, 218). However, I disagree with his overall interpretation, since he calls the *chora* a «milieu spatial», that has both spatial and constitutive aspects (cf. *ibid.*, 177), and – even if he assumes an “ontological nature” of that «milieu spatial» (cf. *ibid.*, 208) – he cannot link it to dialectic, because dialectic for him is merely a “heuristic method without ontological extension” (cf. *ibid.*, 120).

4. On the Actuality of the Platonic Account

The dialectical cosmological account developed in the *Timaeus* can offer insights for several areas of research within modern philosophical cosmology. For instance, the thesis of considering the *chora* as dialectical entity can serve as a paradigm for new conceptions of matter and materiality. In fact, Plato's corpuscular theory or his theory of the elementary bodies could have possible applications within modern physics and astrophysics (e.g., wave-particle duality). Since the basic geometrical determinations acquire an ontological status, the Platonic Theory can establish a new conception of materiality, which is radically different from the classical notion of material substance [cf. Schulz 1966, 93]. Further, the Platonic conceptions of cosmic motion could inspire a systemic explanation of this new kind of materiality. In 57d7-58c4 Plato develops a general cosmological theory of motion. It is called «a mechanical-causal theory of the motion in the cosmos», as it explains motion by means of two entities and one «field» or relation, to which he then adds «the circulation of the whole» (περίοδος τοῦ παντός). The first entity is the passive entity to be moved (τὸ κινησόμενον), the second is the active entity causing the motion (τὸ κινῆσον), and the field is a heterogeneity composed of the elementary triangles in their (physical) mixture (cf. Scheffel 1976, 83-84). This theory ensures the connection between the two main components of the structure of reality mentioned above. Namely, the circulation of the whole is the result of the formation of the World Soul, the cycles (κύκλοι) or circular movements of which are described in 36c-d. This global cosmic circulation exerts a kind of pressure that, together with the formation of the elementary bodies, causes the motion of the *chora* [cf. *ibid.*, 87-90].

On the basis of these and other examples, the striking actuality of Plato's dialectical cosmology can be confirmed. Several prominent thinkers have already underlined this connection. In fact, the physicist, Werner Heisenberg, maintained that the two major ideas of Greek natural science are to be found in Plato's physics. Namely, the conviction of the atomists that matter is composed of small entities and the Pythagorean doctrine of the meaningful power of mathematical structures. The historian of science, Abel Rey, saw in Platonic dialectic the foundational step for all natural sciences [cf. Friedländer 1964, 261]. Additionally,

Paul Natorp's assessment, as advanced in his *Platos Ideenlehre*, serves as an example of the acknowledgment of the dialectical character of the *Timaeus*. According to Natorp, the main source of difficulty of the «dialectical content» lies in the problem of distinguishing between the truly scientific and the merely probabilistic character of Plato's statements.²⁰

This difficulty is often related to the opposition between *logos* and *mythos*, which refers to the assertions *Timaeus* makes in several passages that suggest that his discourse is a likely story. Since he uses the expressions of *eikos muthos* (29d, 59c, 68d) and *eikos logos* (30b, 34c, 48d, 49b, 53d, 55d, 56a, 57d, 90e),²¹ different translations include likely story, likely myth and likely account [cf. Johansen 2004, 48]. The word «likely» (εἰκώς), going back to Parmenides, Xenophanes and even to Hesiod, means «probable» or «plausible».²² It makes the cosmology of the *Timaeus* appear as a kind of mythology or – as Cornford suggests – «poetry» that can only attempt to come near to the truth. As Cornford tells us: «But the truth to which it can approximate is not an exact and literal statement of 'physical law', such as modern science dreams of», but a truth involving «the working of a divine intelligence» [cf. Cornford 1971, 30].

Regardless of the fact that some interpreters claim that *eikos muthos* and *eikos logos* are used synonymously in the *Timaeus*, the actuality of the dialectic of *mythos* and *logos* consists precisely in its usefulness in questioning the epistemological capabilities of modern natural philosophy, natural sciences and philosophical cosmology. Citing Aristotle's *Metaphysics* A, 6, Cornford claims that «there can be no exact, or even self-consistent, science of Nature», and «[i]n Plato's view there can be no exact science or knowledge of natural things

²⁰ Cf. Natorp 2004, 355f. He says: «Die Schwierigkeit dieses Werks in seinem dialektischen Inhalt betrifft hauptsächlich die genaue Abgrenzung dessen, was als wissenschaftliche Lehre, und was als freies Spiel des Gedankens (s. bes. 59 C D) oder Ausführung bloßer Wahrscheinlichkeiten verschiedensten Grades angesehen sein will».

²¹ For a detailed interpretation of the usage of these two expressions in the *Timaeus* see Brisson 2012.

²² Kalfas remarks that «[e]ach time 'eikos' refers to something 'logical', 'coherent', 'fitting', even 'necessary' [...]. It is all these shades of meaning, which are contained in the scholarly rendering 'plausible'» (Kalfas 2005, 87).

because they are always changing» [*ibid.*, 28-29]. However, we should bear three things in mind. (i) The dialectic of Being and Becoming; (ii) We should not reduce cosmology to natural science; and (iii) We should not consider natural science as a dogmatically exact science in the sense that it excludes knowledge of the Forms. This should lead us to the conclusion that there must be true knowledge about the cosmos, namely, a dialectical knowledge, which explores the totality of the *physis* in the light of its dialectical structures.

The *eikos logos* of Timaeus is comparable to the method of the mathematicians in the *Republic*, since they both use the visible structure of the cosmos to grasp the invisible truths, which are accessible only through *dianoia* (cf. *Republic* 510d, 529d). However, Timaios also imitates the dialectician, as he starts his speech with the idea of goodness (cf. *Republic* 511b, 533c) and orients it toward that starting point. It is here where the philosophical kernel of the *eikos logos* as mode of presentation lies (cf. Moncada 1995, 40-41). And it is here where we can identify a message from Plato to modern scientists: analogously to his point in the *Statesman* (285c), the reason behind some particular inquiries is often nothing but becoming better dialecticians.

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dialectic; cosmology; ontology; being; becoming

Abstract

In this paper, I present Plato's cosmology in the *Timaeus* as the attempt to establish a dialectical account of the universe, which rests upon various forms of Platonic dialectic, especially the dialectic of Being and Becoming. First, I provide a historical contextualization of the ontological usage of this aspect of Plato's dialectic on the cosmological level (section 2). Second, I discuss the main components of the dialectical structure of the cosmos in light of the dialectic of Mind and Matter. That is, the Demiurge and the World Soul stand for the principle of cosmic rationality, while the puzzle of the third kind refers to the material principle (section 3). This leads me to the conclusion that the resulting picture of the universe corresponds to a systemic dialectical cosmological account, which emphasizes the actuality of Plato's natural philosophy and its potential role in developing modern philosophical cosmology (section 4).

In questo articolo, presento la cosmologia di Platone nel *Timeo* come il tentativo di stabilire una concezione dialettica dell'universo, che si basa su varie forme di dialettica platonica, in particolare la dialettica fra Essere e Divenire. In primo luogo, fornisco una contestualizzazione storica dell'uso ontologico di questo aspetto della dialettica di Platone a livello cosmologico (sezione 2). In secondo luogo, discuto i componenti principali della struttura dialettica del cosmo alla luce della dialettica di Mente e Materia. Cioè, il Demiurgo e l'Anima del Mondo rappresentano il principio della razionalità cosmica, mentre l'enigma del terzo tipo si riferisce al principio materiale (sezione 3). Questo mi porta alla conclusione che l'immagine dell'universo

che ne risulta corrisponde a una concezione cosmologica, dialettica e sistemica, che sottolinea l'attualità della filosofia naturale di Platone e il suo ruolo potenziale nello sviluppo della cosmologia filosofica moderna (sezione 4).

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