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Plato's Myth in The Timaeus

In many ways, Plato's cosmological myth in the Timaeus represents a breakup with the ancient Greek religious tradition, or at least, a significant divergence. After he carried out a severe critique of anthropomorphic representations of Gods in the second and the third book of The Republic, Plato proceeded to sketch his own vision of ideal state by calling upon the so-called Forms, or Ideas - the objects of true knowledge and principles of all things. However, Plato's method achieves its final, mature form, only in The Timaeus. The treatise on the nature of righteousness and good governance turns into a creationist-cosmological myth, as we learn that being Good and Just requires not only good deeds and the knowledge of the Idea of Good, but also the knowledge of the underlying mechanisms of the Universe. We are introduced to an Architect (demiourgos), the one God who creates the physical world by using mathematical objects as paradigms. The Timaeus could be described as a well-balanced mixture of scientific, religious, and literary ideas, and is heavily influenced by the Pythagorean theories of number and proportion. There is no doubt that Plato's conception of demiourgos as well as his understanding of the Good as One inspired Christian theologians in great extent, particularly through the Neo-Pythagoreans and the Neo-Platonists. Contemporary experimental sciences, particularly physics and chemistry, are now coming to the realization that the Universe we inhabit truly is structured by number and proportion, and that some of the geometry Plato described in The Timaeus may very well correspond to the geometry of physical structures.

1. Plato, and Aristotle, appear to be incredibly significant for the European and the Christian tradition which, in the last 1700 years¹, follow the similar path. Many of the concepts which the two great philosophers dealt with, continued to occupy the central spots in Christian thought, and modern Western philosophy. Plato's *Timaeus* has a special place in the history of philosophy: it is quite rare that one text – and not a lengthy, detailed one we may add – exerts such tremendous influence on latter religious, philosophical and scientific thought. The first critic of Plato's *Timaeus* was, of course, Aristotle. His remarks provided in *On the Heavens*

¹ The exact date of the creation of Christianity cannot be, of course, pinpointed, but the span of 1700 years refers to the 313 A. D. in which, due to the Edict of Milan, Christianity became one of the official state religions of the Roman Empire.

mostly concern the allegorical-mythological framework which Plato employs in order to elaborate his cosmology. Although, according to Aristotle, Plato speaks about the generation of the world (*kosmos*) which happens in time, this is analogous to the diagrams drawn by mathematicians: the steps undertaken are only for instructional purposes and clarification². The account of creation given by Plato is, therefore, an analysis of the world's structure conveniently expressed in the form of a myth. But there are much more agreements than disagreements between Plato and Aristotle, and even the criticism we mentioned does not undermine Plato's theory but actually makes it more understandable and sound. Aristotle adopted the spherical model of the Universe³, which was shared by Plato, Eudoxus, and many ancient Greek cosmologists, he adopted the so-called Platonic, or regular bodies as the five elements which constitute the structure of the world, and he also thought that the fifth element possesses the special, aetherial nature, just like Plato did in *The Timaeus*. Furthermore, for both philosophers the problem of motion appears to be central to understanding Divinity and the creation of the physical universe. In *Metaphysics A*, Aristotle conceives God as the Unmoved mover, the first cause of motion which does not require explanation, and somehow, through the interaction of celestial spheres, sets the world into motion. Plato, on the other hand, gives a more detailed, substantiated account on how this happens. We learn that there has to be a special geometrical arrangement of the spheres, or circles, in order that the experience of motion arises⁴. It is very unfortunate that Plato did not provide us the geometrical drawings which would accompany his theory.

So, what did Plato say in *The Timaeus* which makes it so important for understanding the Christian tradition? How do the concepts and solutions offered in *The Timaeus* continue to survive, less or more evolved, in the Western religious and scientific thought, and how do they affect our everyday lives? In many ways, Plato's cosmological myth in *The Timaeus* represents a breakup with the ancient Greek religious tradition, or at least, a significant divergence. Classical Greece was a bridge between older Middle Eastern civilizations and Europe. Hebrew and ancient Egyptian traditions predate Plato, and it is natural to assume that he was influenced both by Judaism, which was already an established monotheistic religion in his time, and the cosmological and theological teachings of the Egyptian clerics. The Pythagorean school was dominant in Pre-Hellenistic Greek philosophy, and it is believed that its founder, Pythagoras, somewhat a mythical figure, was taught by the Egyptian priests about the nature of the universe. Through the Pythagoreans, Plato became acquainted with the supposed geometry of the physical universe. In *The Timaeus*, Plato completes his attempted reformation of traditional Greek thought in a lucid, quite original manner. We are introduced to an Architect (*de-*

2 Aristotle: *De Caelo* in J. Barnes (ed.): *The Complete Works of Aristotle*, Princeton University Press, Princeton, New Jersey 1984, 279b-280a.

3 In *Metaphysics*, 1074a, Aristotle mentions the 55 spheres, and the 47 spheres.

4 Plato, *The Timaeus* in E. Hamilton and H. Cairns, (ed.): *The Collected Dialogues of Plato*, Princeton University Press, Princeton, New Jersey 1989, 36c.

miourgos), the one God⁵, who creates the physical world by using geometrical objects as paradigms. But the Architect is not a person with human characteristics, he is nothing like the Gods of the Greek mythology who are able to love, hate, kill, revenge. He is mainly a metaphor of an intelligible principle (*arche*) by which the Universe is governed. At this point, Plato's thought is very well within the Abrahamic traditions⁶. There is no doubt that Plato's conception of *demiourgos* as well as his understanding of the Good as One, but with structure which can be expressed in terms of number and proportion, inspired Christian theologians in great extent, particularly through the Neo-Pythagoreans and the Neo-Platonists. And since the Romans adopted most of the Greek philosophy, and accepted Christianity as one of the state religions in 313 A. D, the Platonic tradition (though a bit distorted by the Aristotelian and Christian interpretations) effectively spread all over the Western world due to the successful Roman conquests. Perhaps the attractiveness of Platonism consists in well-balanced mixture of science and myth, which offers the best of both worlds.

Plato is very well known for his depiction of ideal society in *The Republic* and cosmology in *The Timaeus*. For centuries, the two texts were praised by various philosophers, social theorists, idealists, and, on the other hand, criticized, sometimes even condemned by liberal, positivist thinkers, particularly in the modern era. British historian of science George Sarton used to call *The Timaeus* "the greatest intellectual evil in the Western world after the Revelation of John"⁷. As G. E. L. Owen argued, the dialogues constitute a single whole and should be studied together, since the conversation in *The Timaeus* proceeds from the conversation in *The Republic*⁸. *The Timaeus* is somewhat the key to comprehending *The Republic*. One can sense the gradual development of Plato's method. We begin with discussion on the nature of righteousness (*dike*) and the characters expose different views, some of which correspond to the popular opinions of the time, and some of which are Plato's Socrates refutations and suggestions. But as we advance through the books of *The Republic*, particularly when we reach the Book V in which Ideas, or Forms, are introduced as the objects of true, noetic knowledge, and the Book VI, in which the Idea of Good is depicted as the highest of all Ideas, it becomes clear that this is no ordinary treatise on ethics, morality and good governance. Plato employs this ethical framework only to draw us into his own metaphysical and cosmological considerations. The transition between *The Republic* and the cosmological myth in *The Timaeus* is brilliantly executed through the myth of Er, elaborated in the concluding Book X. The myth of Er contains some mathematical elements already.

5 *Ibid*, 30a.

6 S. Broadie, *Nature and Divinity in Plato's Timaeus*, Cambridge University Press, Cambridge 2012, pp. 7-26.

7 W.K.C. Guthrie, *A History of Greek Philosophy*, Vol. 5, Cambridge University Press, Cambridge 1978, p. 241.

8 G.E.L. Owen, *The Place of The Timaeus in Plato's Dialogues* in R. E. Allen (ed.): *Studies in Plato's Metaphysics*, Routledge and Kegan Paul, London 1965, pp. 313-338.

2. Plato's Demiurge, the Architect of the physical world, does not appear suddenly on stage. In the introductory books of *The Republic*, Plato carried out a severe critique of anthropomorphic representations of Gods⁹. Such representations, in the context of his educational program and the theory of art, are found to be morally unacceptable because they corrupt youth, usually prone to imitation (*mimesis*). While citing various examples from the Greek mythology, it is said that Gods cannot be cause of evil in the world, but only good, that they don't engage in deceiving humans by changing shapes etc, that they are not able to tell a lie, as well as that they mustn't behave wickedly by pleasing their senses whenever, or wherever they want to. Apart from being influenced by Abrahamic traditions, Plato's position is quite similar to Xenophon's – another philosopher who was highly critical of anthropomorphism in religion. The character of Demiurge, the sole creator of the world, is anticipated within the lucid, extraordinary passage in the concluding book of *The Republic*. The passage is rarely cited in literature, and it springs out several pages before the above-mentioned myth of Er:

But now consider what name you would give to this craftsman (*demiourgos*). "Which one?" "Him who makes all the things that all handicraftsmen severally produce." "A truly clever and wondrous man you tell of." "Ah, but wait, and you will say so indeed, for this same handicraftsman is not only able to make all implements, but he produces all plants and animals, including himself, and thereto earth and heaven and the gods and all things in heaven and in Hades under the earth." he said. "Are you incredulous?" said I. "Tell me, do you deny altogether the possibility of such a craftsman, or do you admit that in a sense there could be such a creator of all these things?"¹⁰

The stage is now set-up: Ideas, including the Idea of Good at the top of the hierarchy of Ideas, geometry and mathematics which study the eternal, unchanging aspects of reality (*The Republic*, 7.527b), the "wondrous craftsman" who makes all the things in the world, the spindles (i.e. spirals) of destiny from the myth of Er... These are all perfect ingredients, for a perfectly executed creationist myth.

The very beginning of *Timaeus*' speech indicates that Demiurge is absolutely good¹¹ and that his creation is absolutely good and beautiful¹². This is reiterated within the closing passages of *The Timaeus*: "all that is good is also beautiful"¹³. Although the mathematical aspects of Plato's cosmology would fulfill their purpose on their own, Plato is very keen to incorporate them into a wider ethical, aesthetical and mythical framework. Among other things, Plato was battling the Sophists and the relativism they promoted aggressively. He understood it was his duty, his

9 Plato, *The Republic* in E. Hamilton and H. Cairns, (eds.): *The Collected Dialogues of Plato*, Princeton University Press, Princeton, New Jersey 1989, 377e-392a (particularly 378a-e, 379e-380e, 382e, 390b-c, 391c-3).

10 *Ibid*, 596b-d. Most probably, Plato refers to the heaven and the gods of popular Greek mythology.

11 Plato, *The Timaeus*, 29e.

12 *Ibid*, 30a.

13 *Ibid*, 87c.

mission, to establish an objective theory of values, and throughout his dialogues, he was gradually progressing towards this goal. *The Timaeus* is simply the peak of this peculiar quest. Being unable to find the absolute Good, or the absolute Beautiful, among worldly things, or diverse peoples' opinions, he established them within the realm of Ideas and mathematical objects. On top of that, he introduced the character of Demiurge, which may be compared to an artist¹⁴ who makes the world by setting the chaotic, primordial matter into order¹⁵, in accordance with measure and proportion. Of course, Demiurge sometimes seems to be redundant. Even Ideas sometimes seem to be redundant, as Aristotle used to point out. Contemporary scientific texts never claim the natural principles to be "absolutely Good". One has to bear in mind that Plato is not only a philosopher – he is a writer, a dramatist, as well. The literary elements contribute to the originality, attractiveness and popularity of his texts in great extent. However, it's not difficult to distinguish the mythical from the scientific-cosmological aspects of the dialogue. It is much more important to understand *how* Demiurge creates, than to establish its existence and characteristics. He is present mainly for literary purposes.

The similarities between the Christian creator-God and Plato's Demiurge are obvious. Still, it is interesting to notice a couple significant differences. First, *The Timaeus* does not recognize *creatio ex nihilo*. The Demiurge does not create the world out of nothing, but from the disorderly motion of circular (spherical) elements, or chaos. Generally speaking, ancient Greek philosophers, particularly Pre-Hellenistic cosmologists, did not favor the creation out of nothing since it appeared logically unacceptable (*ex nihilo nihil fit*). They used to tell about the creation out of chaos, just like Plato did. The only way to accommodate this view into the Christian theology is to consider the "nothingness" to be the "absence of shape", "absence of order". Second, Plato's Demiurge is not omnipotent. He is largely constrained by the necessity (*ananke*), and he has to overcome it by persuasion¹⁶. The struggle between the intelligible principle which sets chaos into order, and the material which the principle acts upon, is constant. It seems that Plato's position is quite dualistic. Order – chaos, soul – matter, Ideas – particular things, these are only some of the opposites which dominate Plato's philosophy. And not only that.

The two basic notions out of which entire Plato's cosmology derives are *the Same* and *the Different*, and it is said that they are mixed with *Being*¹⁷. Being is, supposedly, the substratum out of which the physical world is made. Same and Different, through which we experience the physical, sensory world, are represented by perfect, circular shapes. This is unambiguously stated several times¹⁸. Furthermore, in the opening lines of *Timaeus*' exposition, the entire universe (*kosmos*) is said to be spherical in shape, for "the sphere is the most perfect of all shapes and contains

14 B. Pavlović, *Tajne dijaloga Timaj* in Platon, *Timaj*, Mladost, Beograd 1981, pp. 21-26.

15 Plato, *The Timaeus*, 30a.

16 *Ibid*, 48a.

17 *Ibid*, 35a-b.

18 *Ibid*, 36b-37a.

all the other shapes within”¹⁹. The entire theory echoes the so-called Pythagorean concept of “the music of the spheres”. One of the most significant passages is the one where Plato explains the structure of the so-called “World soul” (the living essence of the universe) by the geometry of the intervals of the Pythagorean scale: “He (God, Demiurge, A.K.) began to distribute the whole thereof into so many portions as was met; and each portion was a mixture of the Same, of the Different, and of Being. And He began making the division thus: First He took one portion from the whole (1); then He took a portion double of this (2); then a third portion, half as much again as the second portion, that is, three times as much as the first (3); the fourth portion He took was twice as much as the second (4); the fifth three times as much as the third (9); the sixth eight times as much as the first (8); and the seventh twenty-seven times as much as the first (27). After that He went on to fill up the intervals in the series of the powers of 2 and the intervals in the series of powers of 3 in the following manner: He cut off yet further portions from the original mixture, and set them in between the portions above rehearsed, so as to place two Means in each interval, one a Mean which exceeded its Extremes and was by them exceeded by the same proportional part or fraction of each of the Extremes respectively; the other a Mean which exceeded one Extreme by the same number or integer as it was exceeded by its other Extreme. And whereas the insertion of these links formed fresh intervals in the former intervals, that is to say, intervals of 3:2 and 4:3 and 9:8, He went on to fill up the 4:3 intervals with 9:8 intervals. This still left over in each case a fraction, which is represented by the terms of the numerical ratio 256:243. And thus the mixture, from which He had been cutting these portions off, was now all spent”²⁰. Marić (1997) proposed, and Milosavljević (2007) advanced the idea that Plato’s geometrical approach is quite correct and that real, measurable structures can be represented by this interplay of circles, interplay of radiuses. The correspondence between geometrically obtained values and the experimental results concerning the water molecule structure is stunning, incredibly precise²¹. The angle of 104.4775°, which is the span between hydrogen and oxygen atoms within the H₂O molecule in gaseous state, along with its constructible modifications in liquid and solid states, can be used as the beginning step in geometrical construction of the structure of many other physical-natural objects²². The geometry of the Pythagorean scale, accompanied with the geometry of the Golden mean²³, and the geometry of Platonic, regular solids²⁴, which all

19 *Ibid*, 33b.

20 *Ibid*, 35b-36b.

21 P. Milosavljević, *Lestvična deoba po zlatnom preseku in Phlogiston*, Vol. 15, Muzej nauke i tehnike, Beograd 2007, p. 58; A. Kandić, *The Physics of Social Processes* in «Skepsis Journal», Vol. 22, Iss. II, ISUD, Olympic Center for Philosophy and Culture, Athens 2012, p. 214 and <http://www.lsbu.ac.uk/water/> (November 11, 2012)

22 P. Milosavljević, *Lestvična deoba po zlatnom preseku*, pp. 54-63.

23 Plato, *The Timaeus*, 31c-32a.

24 *Ibid*, 54d-55c.

play pivotal role in Plato's cosmology and physics, seem to describe the physical structures amazingly well.

There is another fine example which substantiates Plato's model. It is not found in *The Timaeus*, but in *The Republic*. In the Book VIII, we are introduced to some kind of mathematical-physical theory of social processes by which the degradation of social systems, from aristocracy to timocracy and so on, is directed by the two exact "geometrical numbers"²⁵. The first among the two numbers – which we are going to address here only – is given as "100 times 100"²⁶, which equals 10,000. This number is very important for Plato, as it plays crucial role in the structuring of organized, non-chaotic systems. The passage 546a-d was exposed to many unfounded criticisms – it was often perceived as vague, esoteric and mystical. But in the 20th century, Australian physicist Ernest Rutherford established, by conducting experiments and precise measurements, that in each and every atom, the ratio between its size and the corresponding nucleus equals approximately 1/10,000²⁷! This is now common knowledge in science. Plato's "mystical" number is all around us. One could argue that such correspondences are pure coincidences. But then again, Plato and the Pythagoreans were dealing with the problem of the structure of matter, as well as many other cosmological problems, only in their own terms and by their own means. The archaic philosophical and scientific language may be difficult to translate, but the numerical values, and various geometrical and mathematical terms are not.

How could Plato know about these numbers, or ratios, which are today proven to be omnipresent in Nature? Is it really true that creation can be understood in mathematical terms, as many other great minds proposed? Could we, with the assistance of contemporary experimental sciences, finally uncover the image of God and decipher the religious myths?

3. The religious myth, being the product of the abstract-allegorical expression of various characteristics of reality incorporated into a uniform system, recognized through many different layers, represented one of the most convenient and most effective aspects of the ancient educational practice²⁸. In ancient Greek society, the function of the myth, which served as the basis as well as the principal constituent of the social theory concepts, was to harmonize the social customs with the geometry of natural processes. Thus, the natural-philosophical fundamentals were made closer to the broader population and the human needs to develop and nurture different views on cosmological thought and the organization of social

25 Plato, *The Republic*, 546a-d. The numbers are "geometrical" because they can be geometrically constructed.

26 *Ibid*, 546c.

27 See: http://www.newworldencyclopedia.org/entry/Ernest_Rutherford#Rutherford_model_of_the_atom (November 11, 2012).

28 P. Milosavljević and A. Kandić, *Geometrical Aspects of Chronos: Ancient Teachings About Time and Cosmic Order in The Concept of Divine in its Diachronic Dimension*, Olympic Center for Philosophy and Culture, Athens 2011, pp. 254-262.

activities. On the other hand, both philosophic and natural-philosophic thoughts enabled a more expert or “higher degree” insight into the abstract elements and cognitive meanings, which were kept away from the common populace because of the clerical and aristocratic domination of the time. The conception and preservation of the abstract and constructible principle enabled the ancient clerics and philosophers to establish a rationally grounded and logically reliable milestone that could be used by the educated individuals (*mathematikoi*) and the members of the ruling class to measure the effects of natural forces and coordinate the social order dynamics according to the characteristics of the cosmic phenomena. Thus the democratic quality of the shared knowledge was only partial, because although the relations within the myth provided insight into cosmological relations, the symbolic expression prevented the conversion of ideas, i.e. prevented the knowledge of the general principles to be correlated and interpreted without knowing the higher language of the constructible-geometric abstraction. The reason for such restriction was in the fact that both the deities and the mythical characters were given the meanings relative to the arrangement of the elements within a special method of geometric construction²⁹.

In this sense, Plato's *Timaeus*, along with Euclides' *Elements*, represents a significant divergence from the ancient Greek intellectual practice: it simply “reveals” too much.

Christian mythology, which disregarded the mathematical, scientific aspects of ancient Greek cosmologies and expressed them in strictly symbolic-allegorical form in accordance with the Testaments, was certainly a step backwards from Plato. But it was also a step forward for the Western cultures, who were now exposed to the ideas of Unity, symmetry, abstract science, mostly through the Christian interpretations of Plato and Aristotle. It is quite erroneous, naive, to claim that science and religion are mutually exclusive. In fact, one could argue that societies which developed religious, spiritual consciousness, also developed interest in science. Religion usually confronts the man with abstract, transcendent, unexplained, and thus engages him in tremendous intellectual activity: demystification of vague, mythical concepts leads to rational explanations and discoveries of natural principles. The concept of “force”, or “quantum gravity”, is nothing less religious than the concept of “divine Trinity” unless it is given some rational, comprehensible meaning. As Kant puts it, a notion without content is an empty notion. Religious myths of creation were a popular way to express and promote the rationality and explicability of worldly existence, accessible to a wider population. Expectedly, at certain point of historical development, man became very unsatisfied with such vague, symbolic-mythical explanations of existence, and decided to take things into his own hands. The goal was not only to understand Nature and its internal workings, but to interfere in natural processes and alter their courses. From a frag-

29 Only multidisciplinary approach to the study of ancient mythology and philosophy reveals the speculations about arranging and structuring of matter which can be correlated to contemporary research.

ile, pious being, frightened by numerous natural and supernatural forces, in only a couple of centuries man has turned himself into a divine creature who manages to alter its own genetic structure, produce new species by genetic engineering, travel into space, and predict many natural phenomena. In a way, inspired by Divine, man is becoming God-like.

From the standpoint of contemporary natural sciences, the approach to the study of Nature which Plato exercised in *The Timaeus* does not lack any theoretical rigorosity, exactness, nor modernity at all. The extensive usage of mythical and literary elements does not diminish the scientific value of the dialogue. The only obstacle which Plato and the Pythagoreans couldn't overcome, was the lack of technical equipment and experimentation by which they could verify some of their more ambitious theories on the origin of the Universe and the structure of matter. Modern chemists and physicists cannot escape Pythagoreanism as well (for example, popular physicist Michio Kaku tends to speak of subatomic particles as "symphonies of strings"). The concepts of order, harmony, proportion, are deeply embedded in the Western tradition. Contemporary experimental sciences are now coming to the realization that the Universe we inhabit truly is structured by number and proportion, and that some of the geometry Plato described in *The Timaeus* may very well correspond to the geometry of physical structures, such as atoms and molecules at the microscopic scales, or planetary and celestial systems at the macroscopic scales. And if the structure of religious myths intentionally, or unintentionally, reflects the structure of reality, then religion is not fiction: it's certainly not explicit, as science, but symbolically communicates us some facts about the world³⁰.

Sir Isaac Newton, whose religious and alchemical studies were largely neglected by the scientific community, predicted that science and religion will become one in the 21st century. There may be truth in his claims.

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³⁰ In *The Republic*, 377a, Plato claims that although the myths are themselves untrue, they also express some kind of truth.