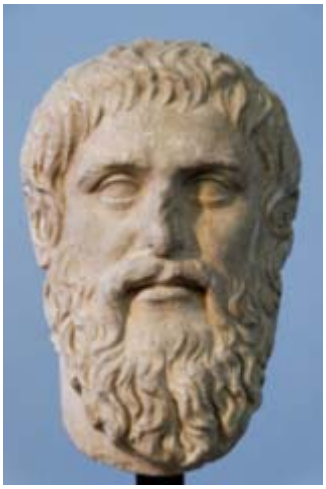

Plato
(428/427-348/347 b.C.)

GOD AS ARTIFICER
THE COSMOLOGY OF PLATO

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(revised 2022.12)

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In a way, *the history of ideas* can be traced back to Plato. It was Plato who was the first to use the word *idea* in his philosophy and it is from him it got its theoretical content. In Greek, it is termed *eidos* (ἐῖδος), or *idea* (ἰδέα), which means something like form, figure, shape, or outline; and the two words are approximately synonymous.

It is the key notion in his famous theory of ideas, and a grasp of this is a condition for our understanding of Platonism as a phenomenon in the history of philosophical ideas. In what follows, I shall focus on a limited aspect of the thinking of Plato: his cosmology, as presented in one of his later works, the *Timaios*.

In the Middle Ages, the *Timaios* was considered to be *the* major work of Plato. Without any doubt, it should be reckoned as one of the most interesting and influential works in the entire history of philosophy. At the same time it is a work that in a unique way yields a prospect of the antique way of thinking by summarising a lot of incentives from the whole history of philosophy before Plato.

In this work, Plato sketches his theory of ideas, its premisses and consequences, as an introduction to his cosmology. Just as he earlier, in his work on politics (πολιτέια), had stressed the analogy between the structure of the city state and that of the human soul, he now wishes to insert the idea of the city state into a much wider perspective by outlining the very origin and purpose of the whole world, *kósmos* (κόσμος).

He believes that a secret relationship may be disclosed between the temporal life of man and the eternal order of the universe: there is a connection between microcosm and macrocosm. The nature and aspiration of man cannot be realized by the exertion of the will driven by fortuitous desire. True *ethos* (᾽ῆθος) follows from the order of the soul of man only if this has been brought into accord with the order of the soul of the world which expresses the eternal *harmony* (ἁρμονία) of the divine reason.

The construction of the universe is reflected in the lawlike order of the heavenly circuits, and an impression of this *order* (τάξις) has been communicated to every soul from eternity, before its temporal birth. That there is "a kinship between the soul and the stars" is a basic theme in the whole philosophy of Plato. The cosmology presented in the *Timaios* serves to support this view by "the insights of contemporary science".

The work, which, for its major part, is not a dialogue, but a monologue, is named after its main person who is in charge as speaker, obviously a sophisticated Pythagorean. Plato apparently wishes to show that the doctrines of Pythagoras are in agreement with his own personal philosophy. He therefore employs the trick to let the foreign thinker affirm his own philosophy indirectly.

It seems probable that Timaios can be regarded as a spokesman for Plato himself. He opens his discussion by asking: "What is it that *always is*, without having an origin?" And, on the contrary: "What is it that *always becomes*, without having any real being?" Whereas the former is something that is conceived by *cogitation*, the latter is something that is perceived by *sensation*. In this way, Plato makes a important distinction between *cognition*, or *knowledge* (ἐπιστήμη), and *assumption*, or *confidence* (δόξα).

The answer to his query can be summed up in two words: *ideas* and *phenomena*. The word *idea* we know already: the ideas are those entities that, possessing true and valid being, constitute *reality*. The word *phenomenon* (φαινόμενον) stems from a verb meaning: to emerge, to become visible, and can therefore be translated: *appearance*. The phenomena are subject to all sorts of variation, or change, and are continually being produced and destroyed. With this concept of appearance, Plato has introduced a sort of "mean" between being and nought, in order to mediate their stark contrast.

Parmenides, his Eleatic predecessor, sanctioned the concept of pure being (τὸ ὄν), separated by an abyss from its fake counterpart, the false notion of pure nought (μὴ ὄν). According to Parmenides, no mediation is possible between these two, the most serious mistake of human reason being to try to merge them or, to mix them up. Pure being has no part whatsoever in pure nought, and it can neither emerge nor perish.

If change were possible, it would have to take place in such a way that nothing were transmuted into being or being were transmuted into nothing. Such alteration being totally impossible, motion is impossible: what *is* now has always been and will always be. This is summed up in the Latin dictum: *ex nihilo nihil fit*, nothing comes from nothing. Hence the world of our senses is spurious, mere illusion, just a phantasm.

To a modern mind, it is obvious that this manner of thinking had to be gainsaid. But it took some time before someone was able to refute Parmenides by valid arguments. As it happened, he had a cunning ally and companion, named *Zeno*, who showed such skill in arguing that anybody who made the attempt to refute him was knocked down by his famous paradoxes. These exemplify the kind of sophisticated sophistry that was first designated by the term *dialectics*.

Evidently, only a very sharp intellect was competent to cope with these difficulties. An efficient disproof would have to consist in nothing less than a trenchant logical analysis of the concept of motion, combined with a stringent elucidation of the entire problem of motion, or change. This was more than even Plato was able to yield, since the nutcracker was first supplied by modern mathematics.

But he made a splendid beginning by inventing the mediating concept.

The world of our senses, consisting of events occurring and things being perceived, could not, should not, be explained away. Nevertheless, it is hard to avoid the impression that it, when considered in the light of pure reason, remains dusky and flimsy, due to its uncessant change. For Plato, the only way for reason to understand a phenomenon was to classify it by subsuming it under a specific concept, i.e., an idea. Plato thus assumed a relationship between phenomena and ideas. This relationship is asymmetric:

An idea is conceived as it is in itself, the reason being that it is what it is by itself. By contrast, a phenomenon is recognized by means of something else, namely, that idea from which it receives both being and essence by its participation (*μέθεξις*) in the idea. This is where the concept of *form* becomes important, it being immediately evident that what is perceived by our senses is recognized by its external form.

Now the concept of form is extended to comprise all those conceptual marks, or signs, whereby a thing can manifest itself as a sensible object. The concept of a thing (*οὐσία*) has two different aspects: it is perceived as a phenomenon, and it is conceived by means of an idea. It is by its form that a thing is defined, and it is by its definition it is subsequently classified. The question is how the concept of motion should be introduced. The answer to this question is a long story which first leads us back to cosmology and then forth to the Platonic conception of the dialectics of the ideas.

We therefore make a fresh start by returning to the *Timaios*. Any kind of motion entails a change in the state of things towards a new state, and is in this sense equivalent to becoming, or emergence (*γένεσις*). Now, because nothing can come from nought, it is impossible that something can emerge without a cause (*αἰτία*). For this reason, it is necessary (*ἀνάγκη*) that anything emerging must originate from a cause.

Proposing this principle, Plato accepts that urge for a source, or an origin (*ἀρχή*), which distinguished his early philosophical predecessors. However, by introducing the principle of causality as basic, he gave their way of philosophizing a totally new twist. With Plato, the origin can no longer be interpreted as being purely material, the point being that the principle no longer univocally refers to a material thing, or a substance, because it primarily states the rational imperative of referring to an origin.

Plato was the first philosopher to formulate *a principle of causality*. At this stage in the history of thought, it was not possible to distinguish clearly between reason and cause (*ratio et causa*). The principle can therefore also be viewed as *a principle of rationality*. With this principle, Plato puts up a norm for what can be seen as a scientific explanation. Therefore the passages quoted above are of such crucial significance.

However, it should be clearly realized that Plato's conception of science is not ours. From the point of view of modern science, it is not the inference *backwards in time*, from the supposed effect to its preceding cause, which is essential but, rather, the inference *forwards in time*, from the supposed cause to its succeeding effect, that is important. Today we would rather characterize a retrodiction backwards in time as metaphysical. What is important to modern science is the ability to *predict* the course of events.

Suddenly, and apparently without any motivation, the text is changed into a myth, as Timaios, spokesman of Plato, initiates his phantastic story of the ***Master God***, or the ***Divine Craftsman*** (*Δημιουργός*). In this we encounter the ideas of *pattern* and *image* (*παράδηιγμα και μίμημα*), closely corresponding to *idea* and *phenomenon*.

The core of this tale is that the Divine Craftsman, with his gaze firmly fixed upon the Eternal Paradigm, created the universe (*κόσμος*) out of primordial confusion (*χάος*). Now *kósmos* means *adornment*, and the universe is beautiful by imitating the paradigm. The benevolence of the Divine Master is pure, without any stain of malice; a hint to the myth of Prometheus whose terrible punishment was motivated by the envy of the gods. Therefore he wished that everything should simulate himself as far as possible.

Already in these few sentences we have met with a whole series of exciting and important issues. First we realize that the relationship between kosmos and its paradigm is analogous to the relationship between a phenomenon and its idea. Further, the cause of the universe is *a divine creator*, and its reason is *a divine plan*. So the universe is not a dream, or phantasm, but - to use a phrase of Leibniz's: "a well founded phenomenon". Moreover, the world is beautiful, because it simulates its divine source and bears the mark of his goodness. The *divine goodness* (*τὸ ἀγαθόν*) is the fountain of everything. This is a clue that the divine creator and his plan merge into one supreme God.

We also see that all sorts of change apparently presuppose a productive power as their effective cause. This informs us about the kinds of causes that could come into play in a scientific explanation at that time. In his discussion of this, Timaios now makes a distinction between two kinds of effects, namely: 1) *planned* artefacts achieved by *divine* (i.e., rational) causes, 2) *unplanned* results produced by *fateful* (i.e., irrational) causes. This anticipates the distinction between: 1) *teleological*, and 2) *mechanical* causes.

However, it should be noticed that these two types of Platonic causes deviates from the more modern ones at two points. First: *the rational causes* are not only determined by their goal or *purpose*, they also manifest themselves in *freedom*. To Plato, freedom and reason are nearly identical. The Demiurge freely chose to imitate the eternal paradigm. Second: *the fateful causes* (*μοῖρα*), comprise a duplicity which unites two for us rather opposite elements, viz., *necessity* and *contingency* (*ἀνάγκη και τύχη*).

What is really strange is that, whereas the gods in Greek mythology are subject to the decrees of fate - Zeus always makes great efforts to hide the fact that he has nothing to say against the *moíra* (goddesses of fate) - the whole issue is turned upside down in the myth composed by the poetic philosopher Plato. The God Artificer here stands forth as a Master God by creating the entire Greek *pantheon*, i.e., the assembly of all the gods; but as if this were not enough, the Master God dares to set himself up against the *moíra*.

Timaios tells us that he, in all circumstances, tried to assimilate that which was going to be to that which is best - however, not by exerting violence, as was customary, but by reasoned persuasion, exercising clever courtesy: it was by the *cunning of reason* that the creator tried to master the ominous *idleness of fate* which threatened his work. The necessities of blind accidence can be overcome only by subtle reasoning!

Now a world wherein nothing happens is not a real world. What happens, we call occurrences, or events, and *events take place in time*. Concurrently with his creation of the world, the Divine Artificer therefore produced an image in motion of eternity which he called: *time* (χρόνος). Eternity is immutable in its exalted Oneness; but time changes - is, in a sense, the first of motions - and all motion is determined by number (ἀρίθμος).

Hence time is the dimension of motion or change. In this way the notion of time points to the course of phenomena which as a whole mirrors the eternal paradigm of the kósmos as well as the goodness of its creator. But phenomena happen in time as they take place in *space* (χώρα). For that reason space is dependent on time.

Time reveals the divine plan, the pattern of eternity. Space, on the contrary, has in itself no pattern to disclose, but is just the empty condition for something to occur when things emerge in time. We see that, in stark contrast to time, space is not a genuine idea. Further, the notion of a thing is closely bound up with an image of space as the place (τόπος) wherein the things appear and, as an idea, it is as spurious as the idea of space.

For that reason, the notion of thing, or substance (ὐσία) - broadly understood as the notion of that which emerges and perishes, the material manifestation of change - has sometimes been interpreted as a necessary precondition for the concept of motion. This holds for his pupil Aristotle, e.g. But with Plato the relationship is the very opposite. For Plato, *the spaceless duration of **time** makes it possible for **events** to take place*, and *the timeless vacuity of **space** makes it possible for **things** to appear* - cf. p.37, §52a:

In itself, *space is dreamlike, an empty nought*, whose nature it is hard to describe. As regards space, just as regards anything else, it is important to discriminate between our *rational conception* (νόησις) and our *sensual intuition* (ἀίσθησις); when this is said, it is obvious that space is none of these: it is nothing but the static background for things to manifest themselves as processes in time by virtue of their inherent temporal dynamics. *Space as such is completely devoid of structure and form, neither idea nor phenomenon.* Plato describes it by a metaphor: "the uterus of becoming", meaning: "pure receptacle".

Of the created *kósmos*, all phenomena that appear to our senses in time and space, it holds that it incessantly changes in a perpetual motion: everything flows (πάντα ῥέι). Here Plato is clearly on a par with his predecessor Herakleitos. However, when it comes to the timeless world of pure ideas, he sides with the opposite view of Parmenides.

I have described the cosmology of Plato in a way which gives primacy to time as compared to space. This is not in accordance with the majority among interpreters. However, Plato emphatically states that *Paradigm*, *Genesis* and *Chora* are three eternal preconditions for the creation of *Kósmos.* For this reason I feel convinced that:

1) *Eternity* (ὁ ἀιών), *the divine paradigm* (παράδειγμα), *contains the pattern of temporal events and the rational form of sensible phenomena*;

2) *Becoming* (γένεσις), *by simulating eternity, is the prototype of all those things that are deliberately being created by divine reason* (νοῦς);

3) *Chasm* (χώρα) *is the prototype of all that which is always already there, produced in an obscure way by the necessity of fate* (μοίρα).

The paradigm, *the eternal pattern of divine reason*, directs our thought towards something that we, with *Leibniz*, may describe as *a pre-established harmony of ideas*. *Kósmos*, being the paradigm's temporal image in the chasm, is called: a created divinity. Now it was incumbent on the Demiurge, creator, poet, and father (*ποιήτηs καὶ πατέρ*) of the World, to produce all the lesser gods: first Heaven (*ὀύρανοs*) and Earth (*γαία*), then Kronos (*κρόνος*) and Zeus, together with all the other. The subordinate position of Kronos at this place in the myth is a remnant from the traditional theogony, wherein he figures as the god who devours his own children. The deification of time, derived from a confusion of the nickname "old fool" (*κρόνος*) with the word for "time" (*χρόνος*), belongs to a later period in history. But how could the Demiourge defeat the Moira?

The reason is that *time*, being the freely created product of the *divine reason*, is more dignified than *space*, which is the casual result of *blind fate*. The Master God had the power to stuff the void (*χώρα*) with form (*ἐῖδος*), making intelligible things sensible. Time is simply the process of becoming that satiates space by the production of things. *The process of creation is that event which always happens, the primordial occurrence of existence, and this is the reason why it is required to depict it in the shape of a myth. Plato showed his ingenuity as a philosopher not by a blunt reduction of myth to logical reasoning, but by his insistence to describe the event of creation in the form of a myth.* It is a deep truth that the idea of creation must be expressed in the language of dreams, where *φανταsία* is realized as a fruit of the wedding of *λόγος* to *μύθος*.

But how does Plato's fairy tale run? How is his imagination conveyed into words? Timaios, his spokesman, tells that, when the Master God created Kosmos, he first made *the world's soul*, then *the world's body*, and - when they were both ready - he *conjoined* them so well that they could never since be separated and go apart. To construe the body he used *the hot* and *the firm*, inserting *the airy* and *the humid* as the mediating means. Then he let the soul connect these *four states* by virtue of *proportion* (*ἀναλογία*) with respect to number and quantity. As a result, his intelligent contrivance of the world was ordered by means of harmonious geometry and mathematical poetry. From that moment *the world emerged as a living creature, perfect and undivided, free of age and illness; its form being that of a perfect sphere that comprises all inside, leaving nought outside.* On the heavens, he ordered the created gods to shine, instructing their lawlike motions to display the number of time. In this way the light of the stars embellished the void.

The idea of the divine finds expression at many places in the authorship of Plato. Most beautiful, perhaps, in the famous *Sun Parable*, in the 6th book of *The Republic*. The problem discussed in this dialogue is how to determine the concept of goodness. Socrates, the main figure, explains the concept by saying that, just as the Sun is related to the faculty of vision - viz., as its precondition - in the same way goodness is related to the human soul. Without the light of goodness the soul is blind. This shows goodness to be the ultimate reason and cause of all true insight, i.e., the origin and source of all truth. Divine *goodness* is the *wellspring* of everything that is and of everything that becomes; so *goodness is superior to being, transcending it as regards dignity and power*.

Plato is thus the first philosopher ever to express *the transcendence of divinity*. In comparison it should be noticed that his pupil Aristotle, in straightforward opposition to his master, is the first philosopher to express *the immanence of divinity*, insisting that being in itself is Divine, since nothing can transcend being. Making this move, Aristotle became the founder of *metaphysics*, defined as *ontology*, the doctrine of being.

There is reason to believe that Plato, in his *Parmenides* - a masterpiece of *dialectics* where he let Parmenides discuss with another Aristotle ("he, who later became one of Athen's 24 tyrants"!) - wished to dissociate himself from his student; see ch.10,§2!

The question now arises, in what way the Demiurge and his Paradigm is related to the idea of goodness (*τὸ ἀγαθον*). For my own part, I side with the traditional opinion which is neo-Platonic, insisting on the possibility that the two concepts may be identical in principle, even if this goes against the dominating tendency in Platonic scholarship. Plato is not very clear on the issue; see pp.33-34 and compare 29e & 30c to 37c.

A dissimilarity like that which reigns between idea and phenomena, or between paradigm and kósmos, or between transcendence and immanence, points to a difference which is often designated as: *categorial*. The concept of category (*κατεγορία*), which obviously cannot be put on a par with concepts subordinate to some definite category, was made known to philosophy by Aristotle, who wrote a short tract on the categories. According to him, the categories constitute the basic modes of being, or things.

There are ten modes of being, whereof the four most important are: substance, quality, quantity, and relation; besides these so-called *predicaments*, medieval philosophy recognized some few even more fundamental concepts, the so-called *transcendentals*. The latter represents the different possible aspects of the concept of substance (*ὀυσία*), which is the first of Aristotle's ten categories. The transcendentals comprise: thing, being, something (*res, ens, aliquid*), furthermore, unity, truth, goodness, and beauty are equal; *unum, verum, bonum et pulchrum convertuntur*, as the medieval theologians insisted. Both transcendentals and predicaments can be applied to any existing thing.

The decisive problem regarding the categories concerns their conceptual status. The Aristotelian categories are notions of things; but which relationship do we recognize between a thing as it is in itself, and the same thing as it appears and is perceived by us? How do we describe the relationship between thought and thing, knowledge and being, subject and object? Such questions have far-reaching repercussions on the idea of truth. Knowledge, cognition, science, must needs find its expression in language, if it is to be communicated to others; and if truth is to be anchored in the nature of things, then an assertion must apparently in some way "correspond" to that which it denotes.

Here we confronted with a new problem: what sort of similarity exists between a sensible thing and our conception of that thing? When one first realizes that there is a cleft between being as such on one hand and our knowledge of being on the other, it may seem impossible to answer this question. Aristotle believed that the categories were anchored in the things themselves, and that human reason were able to conceive them by a mental process of *abstraction*, by virtue of which the immanent form of things could in

a way "transferred" to the intellect, although without the form leaving the thing because, if this happened, the thing had perished. All this was accepted in the Middle Ages.

However, the problem still persists, for what is the sign of such correspondence? Maybe the problem is insoluble when posed in this way. This was the opinion of Kant. In any case, everything looks very different if one does not conceive of *things* as if they were independent and irreducible *substances*, as did Aristotle, but does rather conceive of them as if they were *processes* depending on what occurs in time, as did Plato.

Now it can be argued that even Plato acknowledged the use of certain categories. He probably did not make any use of the word, but his meaning appears to be the same. What is at stake is the logical character of phenomena, their basic ways of appearance. Plato's "doctrine of categories" we find expressed in the *Timaios*.

So let us return to the myth of the Demiurge. How did he shape the world soul? From the indivisible, that is always itself or the same, and the divisible, which is always going to become different, he made a blend which he mixed up with being. In this way he united identity, or *sameness*, with difference, or *otherness*, albeit it was difficult.

This blend he divided into seven shares, so that their relative proportions betokened two number series. The first share, together with the second, the fourth, and the sixth, formed the series 1: 2: 4: 8, whereas the first share, together with the third, the fifth, and the seventh, formed the series 1: 3: 9: 27. In the same way, using the arithmetic mean $m_1 = \frac{1}{2}(x+y)$, the geometric mean $m_2 = \sqrt{xy}$, and the harmonic mean $m_3 = 2/(\frac{1}{x}+\frac{1}{y})$ - please, note the interesting fact that $m_1 m_3 = m_2 m_2$ - he devised a lot of other series which he tried to unite in the visible, but inaudible, harmony of the heavenly adornment, *kósmos*. Having kneaded all these lumps into one dough, he cut up two rolling-pins which he formed into an inclined cross, connecting their ends so as to form two angled circles. Finally, he placed them on the heavens as a sign of instruction to the created gods.

When the gods, as heavenly bodies, had reached their proper motions, they passed around in circles: *the stars* (ἄστροις), of which there were most, participated in the motion of *the same* following the outermost circle (: *equator*, symbolizing the "category" of *identity*); *the rovers*, or planets (πλανήται), of which there were seven, participated in the motion of *the other*, accompanying the innermost circle (: *ecliptica*, symbolizing the "category" of *difference*). As the last and most intimate bond between soul and body he made the sense perceptions (*hard-soft, cold-hot, wet-dry, dark-light*) as bodily states. To his purpose he made use of the five regular polyhedra (πολυέδροι):

Thus he formed *the firm* after the *hexaedron* (6 sides of squares), *the wet* after the *ikosaedron* (20 sides of triangles), *the airy* after the *oktoedron* (8 sides of triangles), and *the hot* after *the tetraedron* (4 sides of triangles); and they resembled the four elements: *earth, water, air, fire*. But the heavenly element, called *the aether* (ἀιθήρ), he fashioned from *the dodekaedron* (12 sides of pentagons), because that particular form seemed very much like that of the heavenly sphere. Thus, by his clever use of geometry, he framed the primordial multitude of sensible qualities so that they appeared as *quasi-elements*.

To pretend a definitive translation of this tale to the language of reason, or *lógos*, would merely manifest an arrogant reductionism. Nevertheless, there can be no doubt that the myth is meant to illustrate some important notions in the philosophy of Plato. Most important among them are the "categories": *unity-plurality* and *identity-difference*. Oneness in the strict sense is only to be found in the paradigm, the pattern of goodness. Otherness, or multitude, we find in the phenomena. But what is many exists by virtue of what is one, and what is one only appears in contrast to all the other, i.e., the many. In this way singularity and plurality condition and presuppose each other conceptually. They both emerge when the ultimate, inconceivable, inexpressible One at once mirrors itself in single individuals and unfolds itself in the host of units constituting the universe.

This thought was adopted and elaborated by the neo-Platonics. We see that every thing is similar to every other thing with respect to being single, or particular; however, by the same token, things can only be many by being different. The same holds of the notions of identity and difference; they condition and presuppose each other as concepts. This mutual dependence between the four "categories" we may call *dialectical*.

The dialectical character of the concepts further displays itself in the fact that they not only possess "categorial" status as conditions for the appearance of phenomena, but that they are also manifested in the phenomena by emerging as signs, or symbols. This is the core of the myth. The heavenly circles are not identical to the "categories" of *sameness* or *otherness*, just as the stars and planets are not identical to the "categories" of *oneness* and *maniness*; but their purpose is to show the "categories" as *cosmic symbols*. First *the dialectical dance of the gods of light in two categorially connected circles* is capable of showing the ***pattern of time*** as ***sensible rhythm***. By the motion of the gods, stars and planets, time gains meaning and content, and the world - the masterpiece of a mastergod - manifests itself as ***a synthesis of music and astronomy*** ...

According to Plato, the science of nature is mathematical; and, in the myth of the Demiurge, the function of the five polyedra constitutes a plausible scientific hypothesis. However, in Plato, *mathematical calculation* is subordinate to *dialectical comprehension*. The reason is that the *mathematician* organizes his knowledge as a deductive system, using a number of unproven axioms as premisses for the derivation of theorems, whereas the *dialectician* tries to subject the premisses themselves to a detailed investigation and to show their inevitability by demonstrating their fundamental status and character.

Mathematics rests on hypotheses, not in the sense of suppositions that are dubious, but in the sense of suppositions whose truth is taken for granted.

Dialectics, by contrast, sets itself the task of suspending the hypothetical character of the premisses of mathematics by retracing them to their ideas.

We may clarify this by investigating the famous *Line Parable* from *The Republic*. Socrates, when persuaded to explain this parable, recurs to the picture of a vertical line divided into four parts in order to illumitate the nature of human cognition:

At first the line is bisected, corresponding to the fundamental distinction between the level of ***ideas*** and that of ***phenomena***. The upper part, *A*, which is the larger one, represents ***being***, or *essence*, *conceived* by ***cogitation*** leading to knowledge, or ***science***. The lower part, *B*, represents ***becoming***, or *apperance*, *perceived* by ***intuition*** leading to conjecture, or ***surmise***. The two larger parts, the one above and the one below, are now bisected further, *A* into *a*+*b*, *B* into *c*+*d*, so that *a*, *b*, *c*, *d* are related in the same way as are *A* & *B*. Their proportions therefore become: $\frac{a}{b} = \frac{c}{d} = \frac{a+b}{c+d} > 1$.

The graph is meant to illustrate how the concepts concerned should be weighted. The first bisection makes the deepest cut: *ideas* and *phenomena* are separated by a cleft. The two levels keep a delicate balance, the ***separation*** ($\chi\omega\rho\iota\sigma\mu\acute{o}s$) of the phenomena from the ideas being in a way counteracted by their ***participation*** ($\mu\acute{\epsilon}\theta\epsilon\xi\iota s$) in the ideas. The further partitioning entails that *essence* is divided into *notion* and *shape* just as *science* is divided into *reason* and *study*. Correspondingly, *appearance* is split up into *things* and *images*, just as *surmise*, or *opinion*, is split up into *belief* and *fiction*.

Plato's parable of the line holds the key not only to his theory of knowledge, but also to his theory of science. According to the Platonic program for science, its first task is to "save" the phenomena, i.e., to set up mathematical hypotheses which enable us to explain them in the light of certain basic ideas. The expression: $\varsigma\acute{o}\zeta\epsilon\iota\nu\ \tau\grave{\alpha}\ \phi\alpha\iota\nu\acute{o}\mu\epsilon\nu\alpha$, however, does not stem from Plato himself, but from some of his followers. Any kind of explanation (*explanatio*) involves at first a distinction, and then a correlation, between that which explains (*explanans*) and that which is explained (*explanandum*).

What is characteristic for a Platonic explanation is that it is valid if, and only if, the *explanandum* is related to the *explanans* in the same way in which *the phenomenon* described in the explanandum is related to *the idea* comprised by the explanans, namely, by way of *participation*. Hence it follows that the *difference* between *explanans* and *explanandum* should be understood as a consequence of their basic *separation*, just as their *similarity* should be interpreted as a consequence of the *participation*. However, from this it also follows that one single question is excepted from all explanation: namely, that concerning the relation of *participation* itself, which is left *unexplained*.

The structure of a Platonic *explanatio* is wholly based on proportion, $\grave{\alpha}\nu\alpha\lambda o\gamma\acute{\iota}\alpha$. Therefore its validity remains hypothetical. The task is to find precisely that hypothesis which ensures that the *phenomenon* in the *explanandum* displays the highest degree of *resemblance* ($\mu\acute{\iota}\mu\eta\sigma\iota s$) in relation to the simplest and most beautiful *idea* as *explanans*. To Plato himself, the use of a specific method was an important element in his program: the task, to explain astronomical phenomena by heaping up mathematical hypotheses, should be solved by using uniform circular motion as the only theoretical means of aid. His reason was that this kind of motion is the only one that is perfectly rational.

THE PARABLE OF THE LINE

LEVEL OF IDEAS

TRUTH
ἀλήθεια

Notion *ιδέα* — **P A R T I** — ***Reason*** *νοῦς*

Reality *τὸ ὄν* — ***Cogitation*** *νόησις* — ***Science*** *ἐπιστήμη*

Form *εἶδος* — **C I P A** — ***Study*** *διάνοια*

SEPARATION
χωρισμός

LEVEL OF PHENOMENA

IMITATION
μίμησις

Thing *οὐσία* — **T I** — ***Belief*** *πίστις*

Becoming *γένεσις* — ***Intuition*** *ἀίσθησις* — ***Surmise*** *δόξα*

Image *εἰκών* — **O N** — ***Fiction*** *εἰκασία*

It is natural to try to characterize the philosophy of Plato by a comparison with that of his pupil and opponent, Aristotle. It is probably not quite misplaced to designate the thinking of ***Plato*** as ***dialectics***, and that of ***Aristotle*** as ***metaphysics***, a difference that can be elaborated by describing *metaphysics* as *static* and *dialectics* as *dynamic*. The metaphysician makes a laborious attempt to unite his concepts into a *firm structure*. The dialectician, by contrast, consciously tries to let his concepts *hover freely* without subjecting them to any stricture in advance, so that they can better imitate and express the very progress of thinking itself. Precisely, because Plato is a dialectician, and not a metaphysician, to construe his philosophy as *dualism* is a *misconception*.

Also as regards *the scientific notion of truth* we find a marked difference between Plato and Aristotle. Using two expressions coined by Kant, we can say that the notion of truth in Plato has *a regulative function*, whereas the same notion in Aristotle assumes *a constitutive function*. As a consequence of this, Aristotle seriously believes that it is possible to obtain true knowledge about nature and the universe, while Plato for his part rejects that it is possible to overstep what is more or less probable. Further, Aristotelian science is empirical and qualitative, but that of Plato mathematical and quantitative.

Historically, it seems evident that the Platonic program of a mathematical science of nature, in spite of its giving priority to reason over experience, in important respects has turned out to be immensely fruitful and effective - much more than that of Aristotle. Maybe it can even be said, paradoxically, that it also has shown itself to be more "true". When I insist that the philosophy of Plato, considered as a whole, is more "true" than that of Aristotle, my reason is that Plato seems to me more human, whereas Aristotle is much more focused upon things as substances, i.e., units of materialized form. Therefore it is not only the fact that the first is a dialectician and the second is a metaphysician which to me is decisive, but just as much the way that they are what they are.

With the *metaphysics* of Aristotle - all its virtues unmentioned - a *reification* of the entire Western philosophy occurs from which we have not yet recovered, in spite of all the past revolts against it. Its dialectical *antidote* I find in Plato. He does not say that being is good just by virtue of being - but he tells me that what is good transcends being with respect to dignity and power, and that the real exists by participating in the good. The ***kósmos*** of Plato is so beautiful because it is ***a symbol of supreme goodness***.

I shall therefore describe Plato's world as "a world with a human face".

Note: The later repercussions of Plato and Platonism are examined further in ch.5. The contents and significance of Plato's *"Parmenides"* are discussed in ch.10, §2.

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PLATO'S 'TIMAIOS'

Selected Annotated Passages

27d. In my opinion we have to make this distinction: What is it that always is, but never becomes; and: What is it that always becomes, but never is? The first[1], which always remains itself in the same way, is conceived by thought engaged in rational reflection. The second[2], which incessantly appears and disappears without ever being, is perceived by opinion based on thoughtless sensation. Now everything which emerges must needs have a cause[3], it being impossible that anything can emerge without a cause. Further, everything which the Master[4] produces with his gaze steadily fixed upon the immutable, using this as his model[5], must needs be beautiful.

28b. Now, concerning the heavenly ceiling, the worldly adornment, or whatever other name this deity[6] itself would find proper, we need to raise that question in our inquiry which should always be raised, namely, whether the universe was always there, without any origin, or whether it once came to be, and thus had a beginning.

28c. So let us make clear that the world has come to be; for it is visible, tangible and material, i.e., it is sensible and, as already said, what is accepted on the testimony of the senses has become, and must needs have an origin. Furthermore it was claimed that what become*s* must stem from a cause. But to find the Poet[7] and Father[7] of the world is hard, and even if he were found, not everybody would be able to grasp that. ...

29b. Now it is crucial to start the inquiry into any subject whatever in a manner that agrees with the core of the subject.[8] As regards the relationship between model and copy[9] it is obvious that the explanation must be akin to that which is to be explained. Explanations aiming at that which is firm and immutable, and therefore comprehensible to reason, must themselves be firm and immutable .. Those affirmations, on the contrary, that imitate what is fixed, firm and irrefutable, can only be more or less probable.

29c. Therefore you should not be surprised, Socrates, if it turns out that there is much relating to the gods and the making of the world which we cannot fully explain. If only we are able to offer an elucidation which is in the least as probable as that given by any other person, we should be satisfied, recalling that I as your speaker, and you as my listener, are both of a human nature. When inquiring into such subjects, we ought to content ourselves with what is probable and not strive for what exceeds it.[10] ...

29e. So let us state the reason why becoming and everything was made by God: He was good, and in the good one no envy can ever arise.[11] Thus being without rancour, he wanted that everything should resemble himself as far as possible.[12] .. Desiring that it should all be good, and nothing bad, he took over all that which was sensible, whirling around in messy and confused motion, and brought it from disorder into order ..

30b. Naturally, for the supreme good it would be improper to produce anything but what is beautiful. Considering this question he realized that, amongst visible things, nothing thoughtless can ever be more beautiful than that which is gifted with reason. He also realized that reason is not to be found in that which has no soul. Therefore he framed the universe in such a way that he placed the reason in the soul, and the soul in the body, in order that his work should be as excellent as possible ...

30c. So we must assume that the world, more than anything else, resembles that living nature in which all other living beings partake, according to number and family. This living nature[13] contains in itself the concept of all those beings which are alive and can think, just as the world in itself comprises us together with all other visible beings. Since God[14] wished[15] that the world should imitate the most beautiful and perfect one among all the intelligent natures, he framed it as a single creature, visible and living, containing within itself all that which is alive and of a similar nature.

31a. Was it right of us to speak of one world, or would it have been more proper, if we had spoken of many worlds, maybe infinitely many? One, it must surely be called, if it is to resemble its pattern. For that which encompasses all imaginable living beings cannot be one of a pair, since, if it could, another living nature could be imagined which embraced them both, and in which each of them took part. Hence the world could not be properly said to be framed in the likeness of these two, but would rather be like that which embraced them.[16] So the Master did not frame two worlds, nor infinitely many, but this world is the only one he ever made - and it is, and remains, unique.

31b. Now that which comes to be must be corporeal, both visible and tangible. But nothing can be visible without fire, and nothing can be tangible without solidity, i.e., without earth. Therefore God, when framing the world body, made it of fire and earth. However, it is impossible to connect two things without a third, for there must always be something in between that binds them together. But the best of all bonds is that which in a perfect way adjoins itself to the two by making them one; and this property is primarily to be found in numerical proportion, or analogy.[17] ...

32b. If the world body was meant to be surface without depth, then a single mean would suffice to connect the two links with itself. But it was meant to be corporeal, and to the purpose of framing bodies a single mean was insufficient, since two are needed. Therefore God introduced water and air as the necessary means between earth and fire; making them, as far as possible, proportional to each other, so that air is to water as fire is to air, and water is to earth as air is to water, he thus framed a visible and tangible world. In this way, and from such stuff, the body of the world was created. By such proportions it was made harmonious, and by virtue of the four elements[18] it made friends with itself. Thus it was made one unit, indissolvable[19] for any other than for him who unified it. ...

33a. Therefore, and for such reasons, he produced an entire living being which was complete in itself, and of which all its parts were also complete: one perfect world, free of age and illness. And he gave it precisely that shape which was most fit for it and which accorded best with its nature. But for the nature destined to comprise in itself all

living beings, the shape most fitting was that which in itself contains all other shapes.[20] Hence he turned it around until it finally got the shape of a sphere,[21] with equal distance from center to periphery, finding uniformity immensely better than discrepancy.

33c. On the surface he made it entirely smooth, and that for several reasons.[22] It had no need of eyes, for nothing visible was left outside. Neither could it make use of ears, as there was nothing to hear. Nor was there any air outside which it could breethe. Neither did it necessitate any part of the body to absorb its food or to acquit its waste. Nothing came out from it, just as nothing went into it. Outside it there was nothing at all. The sphere was contrived so intelligently that it was able to nourish itself by itself,[23] and it was able to perform and to endure everything alone, solely by virtue of itself ...

34a. This, then, was the plan, drafted by the eternal God, for that deity which was eventually to appear. According to this plan he made it smooth and even, with the same distance overall to its center: a perfect body composed of perfect bodies. In its center he placed its soul, letting it permeate the body, and wrapping it all around on the outside.[24] In this way he created the one and only universe .. as a sphere turning round about itself, a perfect being, enough in itself as friend and kinsman, and never missing any company. Precisely for that reason it was also a blessed deity he had created. ..

34.b Albeit, in the narrative here attempted, we have treated the soul as the later, God in fact did not make it younger than the body. Hence, when joining them together, he gave the soul the right of the first born: the soul should command, and the body obey .. Thus he made the soul prior to the body, more admirable regarding birth and perfection ..

37a. The soul,[25] being created as a mixture of identity, difference, and existence, split up and bound together in due proportion .. now began its eternal motion by itself,[26] a motion contrived to tell precisely how, in which sense, and when, something displays the properties of sameness or of otherness, relative to some other given thing ...

37c. When the father, maker of the world, saw it alive and in motion, a worthy abode for the everlasting gods, he rejoiced - and in his joy he decided to make it still more like the paradigm. Thus, since the paradigm was a living nature, he tried to change the universe, as far as possible, into such a being too. The paradigm being itself eternal, it was not quite possible to conjoin this property to the created universe. For that reason he decided to make *an image in motion of eternity*. So, concurrently with producing the world, he therefore made an everlasting image of that eternity which is invariably one.[27] This image, whose motion is determined by number, is what we call: *time*.[28]

37e. There were no days or nights, months or years, before the heaven emerged ..

38e. When each of those beings that were conjointly ordered to determine time had found its proper orbit and it, as a body held together with the ties of its soul, had come to life and been informed of its task, they all went around following the motion of otherness, which crossed the motion of sameness aslant and was subordinate to it[29] ..

39b. In order that they might have a clear measure for their relative delay or haste around in the eight orbits, God put up a light in the second orbit from the Earth, which is the light we call the Sun, so that it can diffuse its splendour all over the heaven ..

39d. It is not hard to see that the perfect number of time is equal to the fulfilment of the perfect year,[30] which occurs when all eight orbital motions .. meet simultaneously.

40a. The major part of the form of the deities he made from fire, in order that it might be as bright and fair as possible; and the gods he made spherical like the universe itself, and ordered them to assist the supreme intelligence. He spread them all over the heavenly ceiling as a carpet of stars, so that it could properly be named 'adornment'.(6)

40b. Each of the gods he accorded two kinds of motion: a uniform motion on the spot, each of them always thinking the same of the same,[31] and a forward motion, since they are all subject to the uniform motion of sameness[32] ... Our great nurse, the Earth, eldest and most venerable of all created gods, who is winding herself around the axis of the universe,[33] he ordained to be the guardian and maker of night and day.

40c. To describe the dances of all these deities,[34] their crossing each other, their going back and forth,[35] to tell which of them will meet in conjunction or stand in mutual opposition, how they will hide each other or themselves, in which order, and at what instants of time they will reappear to scare simple-minded people who cannot calculate - to explain all this without making use of visible models would be a waste of time.[36]

41a. When all these deities had been born - both the visible ones going in circular orbits and those only appearing as they feel the urge - the creator addressed them thus: "In order that mortal creatures may emerge, and to the purpose that this world may truly contain everything, it is now up to you to produce such living beings by imitating the capability I displayed by creating you ... Make living beings by conjoining mortal with immortal; let them be born, nourish, grow up - and when they die, receive them again."

41d. Having said so,[37] he turned once more to the mixing vessel in which he had kneaded the world soul in its proper blend, pouring all that into it which had been left of the former mixture and blending all parts almost as before; only the blend was not that perfect this time, but of a second or third quality. Having prepared the blend, he divided the dough in so many souls as there were stars, distributing each soul to its own star and placing them as in chariots, teaching them of the worldly order and the laws of fate.

42d. When he had explained all these laws to them, so that he would not be guilty in their future vices,[38] he sowed them, some on the Earth, others on the Moon, and still others on other tools of time. Then he left it to the newly created deities to frame the mortal bodies of men and whatever else remained of the human soul ...

44d. Imitating the form of the universe they built the two divine circuits into a round body, called the head. This is the most divine part of us, ruling everything else. They gave it power over the body just made, so that the body might serve the soul ...

47a. In my opinion, vision is the most valuable of all our senses. Nothing of what we have said about the world could ever have been stated if we had never seen the Sun, the stars, or the heaven. But, as it is, the sight of day and night, of months and years, of equinox and solstice, has caused that we recognize the numbers. It has also given us the notion of time, and taught us to explore the universe. From this even philosophy stems. A greater gift to humanity has never been, and will never be, granted by the gods.[39]

47b. But the cause and purpose of vision is, in our view, this one: God invented it and gave it to us in order that we should observe the circuits of reason on the heaven, utilizing them to adjust the circuits of our own intellect which are their kindreds, albeit the latter are confused, while the former are imperturbable, and to the purpose that we, having learned to know and calculate them correctly, might be able to bring order into our own winding paths by imitating the regular ones of the heavenly deity.

47e. Our discussion has hitherto been focussed solely on the works of reason, but now we have to tell about that which was brought about by the force of necessity.[40] In fact, the construction of the universe was the common effect of the collaboration of necessity and reason; however, reason overcame the power of necessity by enticing[41] it to assimilate most af that which was to become to that which is best ...

52a. One is the pattern, primordial and indestructible; always the same, it neither receives anything from the outside, nor is mixed up as part of anything else, but remains an invisible and insensible object of thought. Another is that which is named by the first and imitates it; sensible, and in ceaseless motion, it incessantly appears and disappears, and is grasped by conjecture or surmise, combined with sensation. The third is space;[42] emptiness is always there and can never perish, but gives place to all that which occurs. Imperceptible, it is grasped by a sort of bastard reasoning and is hard to believe in ...

89e. We have already stated that there are three different kinds of soul in us,[43] each determined by its own motion. ... As regards the noblest kind, we believe that it is given us by God as our guardian. This it is that dwells in the top of our body, and truly we say that it hoists us from the ground to our heavenly kindreds like plants not rooted in the earth, but in the heaven. Thus it is by conjoining our head and root to the heaven, home of the soul, that the divine part of us keeps our body upright! -

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NOTES:

1) *Ideas*, timeless and invariant, are what they are by virtue of themselves; they are conceived by reason (*noesis*), producing truth (*aletheia*) and knowledge (*episteme*).
2) *Phenomena*, in ceaseless change, become what they become by taking part in ideas; they are perceived by the senses (*aisthesis*), producing surmise (*doxa*) and belief (*pistis*).
3) The metaphysical principle of causality allows us to derive a cause from its effect.
4) The *Demiourge* (: artificer), the active principle behind the creation of the world, a mythical expression for the power effecting the transmutation from *cháos* to *kósmos.*
5) The *Paradigm*, the divine harmony, the eternal pattern of time, model of the course of events; comprising all ideas within itself, it is the origin and source of all phenomena.
6) *Oúranos* ('heaven') ≃ *kósmos* ('world' or 'adornment') ≃ *to pán* ('everything')
7) The Mastergod is described as Creator and Father (*poiétes kai patér*) of the world.
8) An important principle of science: the *topic* should determine our choice of *method*.
9) The relation of *kósmos* to *paradigm* is analogous to that of copy to model.
10) Timaios opines that the pretensions of natural science should be modest; knowkedge based on perception, aiming at the world of becoming, should not aspire to absolute truth, but rather be satisfied with the probable. This stance anticipates modern fallibilism.
11) Timaios claims that divine generosity is the origin and source of the created universe, with no other limits than those due to necessity, latent in the idleness of becoming against rationality; he thus explicitly rejects the old notion of divine envy and revenge (*némesis*).
12) The explanation consists in referring to divine goodness as the principle of creation.
13) The eternal and immutable model is "a living nature" - a *contradictio in adiecto*?
14) Here the demiurge is called God, *Theós*, from *theoreo*, to behold, akin to *theoria*, vision; in this way mythical polytheism is made subordinate to philosophical monothesm.
15) God's providence, or care, *prónoia*, is the ultimate contrast to arbitrary fate, *moira*.
16) The Paradigm cannot be one of a pair, as we could then imagine a higher paradigm comprising them both. Plato here anticipates the 'third man' argument of Aristotle.
17) A remnant from Pythagoras: number pertains to the very essence of nature.
18) Plato transmutes Empedocles' old theory of elements into a theory of quasi-elements: earth, water, air, and fire, are not really *material substances*, but rather *formal structures*.
19) The world is unified by *filía*, love, friendship; another remnant from Empedocles.
20) A hint that the spherical form comprises the five regular *polyhedra*, of which four are meant to explain the quasi-elements, while the fifth designates the cosmic *aether*.
21) Parmenides' sphere of being, according to Plato: *kósmos* is a perfect sphere.
22) The narrative offers a wonderful glimpse of Plato's humour!
23) A principle also of modern cosmology: the universe is assumed to be "a free meal"!
24) So it is the body that is placed in the soul, rather than the other way round!
25) The soul (*psyche*) is female; one of a few places modifying Plato's male chauvinism.

26) The seven kinds of motion: forth, back, right, left, upwards, downwards, turn around; by uniform circular motion, combined with epicycles, every motion can be approximated.
27) Time is the most important feature of God's work of creation, the essence of change, "an image in motion of the eternal paradigm", made together with the world, shall never cease as long as the world subsists. The nature of time is: number, rhythm, arithmetics.
28) Time is counted by repetition of sameness (lat. *idem*, the same, whence *identitas*). The stars (being fixed to the heaven) take part in the motion of sameness (equator).
29) The two motions on the heaven are shown by the *equator* (the motion of sameness, or *identity*), and by the *ecliptic* (the motion of otherness, or *difference*). The motion of the equator does not partake in the annual motion of the Sun around the ecliptic, but the motion of the ecliptic is subordinate to the diurnal motion of the equator.
30) This is the great year of the universe; maybe Plato surmised that time is cyclic.
31) Socrates, Plato's master, was "the one who always said the same about the same".
32) The efforts of the Demiurge illustrates an important philosophical problem: how can we grasp the mutual relations between oneness and plurality, sameness and otherness? Plato's solution is that these four concepts may be distinguished, but not disconnected: they are two kindred oppositional pairs, and their interconnections are "dialectical".
33) This passage has been much disputed. Did Plato suggest a rotation of the Earth? The pretentions of astrology to be a science presupposes a geocentric world-view.
34) By incorporating traditional mythology in his own myth of the Mastergod, Plato tried to make his philosophical monotheism acceptable to the contemporary society.
35) The planets have a bend on their orbits: sometimes their motions go backwards.
36) Plato probably had a real model - maybe devised by the mathematician Eudoxos?
37) The myth of God as artificer here becomes wonderfully explicit and picturesque!
38) God is good, humankind must carry the guilt of its own evilness.
39) Vision, and philosophy; to Plato, the most elevated signs of the generosity of God!
40) Plato has two types of cause: α) *teleological*, or rational, ones with intended effects; ω) *mechanical*, or inevitable, ones with chance effects. It is significant that Plato, contrary to many modern thinkers, equates *reason* with *freedom* and *necessity* with *randomness*.
41) This passage may be read as anticipating Hegel's concept of "the cunning of reason".
42) *Time* emerged together with the world as sensual plenitude, *a free product of reason*. *Space* was always already there as an empty frame, the arbitrary outcome of *necessity*. The trouble with space is that it is not a part of the divine paradigm, nor does it imitate it. So it is neither an idea, nor a phenomenon, but rather something dreamlike in between.
43) Compare the famous description of the human soul in the *Faidros*.

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