

PHILOSOPHICAL CHUNKS

INCENTIVES FOR A NEW WAY OF THINKING

(revised 2022.12)

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1. PRESENTATION OF THE PROBLEM

When, in 1967, I started lecturing in philosophy, reference was made to my thesis which discussed the relationship between *classical metaphysics* and *modern cosmology*. Now, more than 50 years later, one can reasonably ask if, on account of changing times and scientific progress, there is something new to report. Does their relationship appear dissimilar today? Is there any relationship, at all, between these two disciplines?

My purpose with this paper is not to attempt to measure the temperature of some more or less hot contemporary trends. The changes of philosophical fashion really do not interest me much, and I leave it to others to assess the profundity or, rather, shallowness of current crazes. In fact, I would very much prefer to keep in touch with Socrates, like him simply saying the same about the same - in contrast to Hegel who attempted to pass beyond Socrates albeit, according to Kierkegaard, not having understood him properly. However, I clearly realize that, with respect to my chosen topic, I shall not be able to make any real progress by associating myself with Socrates, for he simply gave a damn in metaphysics and cosmology, pursuing ethical issues instead.

So, commemorating Socrates, I shall try to repeat myself without echoing myself. Such enterprise is presumably more likely to succeed if it is being presented in the form of *thema con variatione*. This, therefore, might have been the title of the present paper, had it not been too inflated and pretentious. The necessary constraints on the extent of this contribution, however, force me to renounce on the required elaboration of details, in order to be satisfied with the art of allusion, or inking.

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As the term 'Ansatz' sounds only too German, and is not too closely affiliated with sobriety, I have, with an inkling to a book of my famous countryman Søren Kierkegaard (*Philosophiske Smuler*), chosen a title offering a variety of associations to the Danish word 'Smuler', viz.: *Philosophical Chunks* - relating to, e.g., 'scraps', 'pieces', 'bricks', 'elements', or 'fragments'. In short, I shall adhere to my paragon Kierkegaard by being a bit systematic without pretending to follow a clear method.

How can one be occupied with metaphysics and cosmology without, in one's very point of departure, obliterating all remembrance of Socrates? Well, asking Kierkegaard, the Christian admirer of Socrates, his answer is surely not encouraging. In metaphysics and cosmology, the speculative element is predominant and, like his master, Kierkegaard showed no sympathy for speculation; but if one considers how extremely complicated he often managed to express himself concerning even the simplest questions relating to human existence, it appears natural that he had to abstain from studying mathematics. He seems to have paid some respect to the value and significance of human knowledge, but few have expressed themselves more disdainfully than Kierkegaard about science: to him, it was nothing but up stairs, down walls, and "searching hell in the ass, chasing an intestine worm" (whereby, indeed, he displayed an amazing sense for assiduity).

Now neither the irony of Socrates, nor that of Kierkegaard, is commensurable to the earnest taken to be the mark and stamp of metaphysical and cosmological studies. However, one should not automatically blame these masters of irony for the mismatch. On the contrary, it is tempting to puncture the inflated form of debate among certain scientists, who like to pose as philosophers, by exercising some cheerful irony and a grain of "fröhliche Wissenschaft". So this is the point where I hope to preserve a connection to Socrates, even when discussing such esoteric disciplines as cosmology and metaphysics. More than that: the distance set up by irony is of vital importance for one who is not apt to give up the *Parnassos* of science to a narrow forum of so-called experts, but assumes the duty to exert the most important of philosophical activities, *criticism*, both relative to the presumed *intelligentsia* of society and to its self-preserving scientific *establishment*. In order to survive the poisonous gasses escaping from the many cracks in this artificial mountain, one has to make indefatigable use of irony, yeah, inhale it by heavy breathing, in order to pour it out again afterwards as a sort of purifying incense!

As regards philosophical *criticism*, the revolt against an intellectual establishment, and the debunking of false consciousness, Socrates and Kierkegaard are in line with Kant. Kierkegaard spoke with applause of Kants "honest way". Kant was not merely the great *criticus*, but also the great *terminator* ("der grosse Zermalmer"), i.e., of bad metaphysics. By exerting irony, understood as criticism armed with humour, we may commemorate Socrates as well as Kierkegaard. Both of them wisely abstained from Kantian pedantry. Instead, we may recall Kant by depicting the *architectonics* of Pure Reason *en miniature*, only modernized as a structure built up with bricks ("chunks") of *Lego*. In this way I hope to be able to be systematic without being rigorously systematic, and to reassert my most important points without simply repeating myself in the way of an empty echo.

My criticism must therefore be constructively related to its philosophical theme. But what is the issue, object, or subject matter, of my architectural criticism - its *tópos*? As our problem is the relationship between classical metaphysics and modern cosmology, we must ask what these disciplines have in common. Traditionally metaphysics have been split up in two separate realms: (A) *metaphysica generalis*, treating Being as Being; and: (B) *metaphysica specialis*, treating God, World, and Man (i.e., his soul, the human mind) as distinct kinds of Being - whence its division into (i) natural *theology*, (ii) speculative *cosmology*, and (iii) rational *anthropology*, or just *psychology*. From this point of view, *metaphysics* is identical with *ontology*, implying that it is fundamentally *Aristotelian*.

It is then clear that our question about the relationship of classical metaphysics to modern cosmology is reducible to the problem of the relationship between, on one hand, a cosmology which is purely philosophical and speculative, based solely on a frail human power of reason, and, on the other hand, a cosmology which is scientific, founded also on observation and experiment. Presented this way, there is no problem at all, the solution being obvious. No wonder that the breakthrough of classical natural science involved a revolt against Aristotelianism. But strange, that the many revolts in the course of time have not been able to emancipate us from its many manifest shortcomings.

Its division into God, World, Man is okay. So what is wrong with Aristotelianism? Its flaws are threefold: 1) First, it is a fault that the triple partitioning just mentioned is made subordinate to a general concept of Being, whereby the three entities are degraded to be nothing but separate "parts" of a Being assumed to be universal and all-inclusive. Ontology is thereby elevated to "first philosophy". 2) Second, it is an error to assume that all entities having part in Being as a matter of course must be conceived as "things", since that indicates a "reification" of Being. Ontology is thereby modelled after the Aristotelian subject-predicate logic, supposing the subject to represent a real thing called "substance". 3) Third, it is a mistake to expect too much of pure reason and too little of observation and experiment: ontology is thereby made prior, and empiricism is degraded.

The classical science of nature only succeeded in extirpating the latter prejudice, but has not yet had the fortune to do away with the other two, viz., that the basic question of philosophy is the one concerning Being, and that Being is manifested by the existence of entities called things, or substances. It is often claimed that this only relates to reason and that, by contrast, the basic question of empirical science is that concerning reality. This stance, however, ignores the fact that the modern picture of "reality" is nothing but an unreflected variety of the ancient notion of "being", where the basic elements of reality are still envisaged as material objects, i.e., as "things". The old ghost of Aristotelianism has not been laid, but is still rattling around, now only disguised as materialism!

Classical materialism, being denounced as obsolete already by Engels and Lenin, still survives in our own days as "common sense", maybe not among physicists, but often among people having some sort of scientific education, and very often among lay people. It is further latent in the meta-scientific concept of *objectivity*, meaning something like truthfulness relative to the subject-matter under investigation, conjoined with impartial

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and dispassionate commitment to the facts of reality, where the object, or subject matter, "reality as it is in itself", is preconceived as being material, and where the outcome of the inquiry is presupposed to be some kind of formal structure of material objects.

What hope is left to us in our time for pursuing classical science in the sense of examining "objective reality" thoroughly in depth "as it is in itself"? To which reliable instance can we appeal, in order to have this exceedingly serious question illuminated? Not to classical metaphysics, at least! But is modern natural science in a position that enables it to judge the quality of its own work? Should we just forget about philosophy and appoint the establishment of modern science to be the tenant of our notion of reality? No doubt, most physicists would want that. The typical modern scientist is marked by a deep disdain for philosophy and, paradoxically, that exemplified by Aristotelianism.

It is only too well known that the classical scientific revolution was conditioned by its break with the mediaeval scholastic tradition which was predominantly Aristotelian. Ironically, for both Galileo and Kepler, this break involved a sort of return to Plato and a restoration of Platonism; however, without their accept of one of his deepest ideas, viz., that regarding our knowledge of nature we must renounce on truth and be satisfied with what is merely probable, since truth as such is unattainable for us fallible human beings. By asking for *verae causae*, they remained subject to an Aristotelian delusion.

The examples where philosophical ideas have led science astray are in fact *legio*. But the same holds for those cases where a deeper philosophical insight might have led scientists on the track of solutions and thus have saved them for the waste of possibilities. It is therefore a mistake to claim that good science should keep itself clear of philosophy. Einstein and Bohr, two scientific giants of the 20th century, had their private philosophy. The question is much rather, whether these philosophies of science were good enough. All with an interest in science have heard of the discussions between Bohr and Einstein; the saying goes that, when they paused from talking science, they discussed philosophy, especially that of Spinoza. What fascinated them was probably its monism.

In spite of Spinoza-lovers like, e.g., the Danish theologian and historian of ideas J. Sløk and the Norwegian philosopher A. Næss - Sløk's admiration for Spinoza is aired in his early book on the philosophical rationalism, and Næss even instituted a Norwegian school for Spinoza-studies - it must be objected that *the monism of Spinoza is spurious because it appeals to our ignorance*. The Substance is One, its central doctrine runs, and it manifests itself in a veritable infinity of attributes, of which only two are known to us, viz., cogitation and extension. But, if we now apply "Ockham's razor" to remove all the attributes except the two known ones, it becomes clear that the monism of Spinoza is an illusion and that Spinozism even more than Cartesianism involves an irreducible dualism. Another shortcoming of it is an extreme *determinism* which today seems wholly obsolete, due to the quantum theory of Bohr & al., but which continued to fascinate Einstein.

To these serious philosophical objections, however, we must add a scientific one. It is well known that Einstein in the year 1905 published his theory of *special relativity*, which he based on 1) the principle of relativity and 2) that of a constant light speed.

What is less known is that the French mathematician Poincaré three weeks before Einstein published an equivalent, but formally more advanced, theory which he entitled *relativité restreinte*; however, he did not draw the same consequences of the theory as did Einstein of his, but left open the possibility that its temporal coordinate did not represent "true time" - with the hidden implication that true time may, after all, be universal.

Poincaré further anticipated Minkowski by stressing that the universal constancy of the speed of light enables us to use the same unit for temporal and spatial intervals. The common use of "rigid rods" is thus made redundant for measuring spatial distance, since such distance can be defined as the product of time and light speed ("light-seconds", "light-years") in accordance with what might be termed: the *radar-principle*.

The significance of the radar-principle is unique. Not only is it well-known from the natural world itself where, e.g., bats and dolphins navigate by utilizing radar-signals, but it also provides us humans with an invaluable means for orientation and navigation. Today we have developed atomic clocks enabling us to measure the spatial distance to, e.g., the Moon with hitherto unseen precision (down to centimetres!). But few people have realized that the theoretical importance of the principle is even greater than its value for practical purposes, since spatial extension can no longer be considered fundamental. The philosophical implications hereof are, in fact, extraordinarily far-reaching.

Ubi extensio, ibi materia et ibi geometria: where extension is, there is matter, and where there is matter, there is also geometry. At this important point Galilei and Kepler agreed with Descartes and Spinoza. But if geometry is supposed to be real, i.e., to be the true geometry of nature itself, as Einstein insisted, the connection must also hold the other way round: where geometry is real, there must be matter and space.

The radar-principle, therefore, in its utmost consequence, entails not only that the theoretical basis of classical materialism (if it ever had any) suddenly hovers in the air; but it also implies that the metaphysics of Aristotle, supposing the separate existence of things consisting of "informed matter", as well as those due to Descartes and Spinoza, postulating the real existence of spatially extended "things", have no rational foundation. Exactly the same objection must, *á fortiori*, be raised against the metaphysics of Einstein. *If space is explainable in terms of time, then TIME, not space, is fundamental.*

According to the positivists, a thing without extension cannot exist, it is a nothing. Now, if the concept of extension is reducible to light-time, i.e., the fictitious "motion" of so-called "photons" in an imagined space that is only "a dreamlike something" (cf. Plato), supposed to be "our outside surroundings" (cf. Kant), but which we are unable to explain, since it is wholly devoid of inherent form (rejecting the phantom of a spacetime structure which, by including time, exists "timelessly"), then extension cannot be basic to physics. As Poincaré insisted: *space has no intrinsic form*, but simulates the form we impose on it. Hence we must discard the entire scientific program of Einstein, "to reduce everything in physics to spacelike concepts": *the idea of spacetime is an unfounded dogma.*

But should we instead embrace the philosophy of Bohr? Not at all! With his motto: *contraria sunt complementa*, in symbols: *yin & yang*, he also affirms a kind of dualism.

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In his case, it is illustrated by the contrast between light as "particle" and light as "wave" and is stated precisely in the opposition between "causal" versus "spacetime" description. Attempts to overcome this dualism by speaking of "wavicles" has not met with success. Further, by his insistence (against Einstein, Podolsky & Rosen) that quantum theory is complete in its classical form, he forces physics to stay on a particular stage of evolution. Finally, by his proposal of the *principle of correspondence* with classical physics as the sole guide to progress in physics, he theoretically accepts a principle which he practically rejects, e.g., by endorsing Einstein's rejection of classical simultaneity and by defending quantum theory against Einstein with arguments taken from Einstein's general relativity.

The main task of physics is still assumed to be the ultimate unification of general relativity with quantum mechanics, whether by a "quantization" of general relativity into so-called "quantum gravity", or by a "relativization" of quantum mechanics by means of so-called "string theory"; but neither of these options have so far met with any success. Both attempts at unification have stumbled on unexpected difficulties: "quantum gravity" on the fact that its inherent non-linearity apparently entails the interaction of "gravitons" with other "gravitons", leading to hitherto unseen, probably unobservable, phenomena; and "string theory" on the fact that the number of solutions is hyper-astronomical.

Maybe the whole project of "unifying" two such seemingly incompatible theories is simply in vain and might better be scrapped? Judged in the light of Bohr's principle of correspondence, advising compliance to classical physics as a clue to scientific progress, its failure may be due to its baseless and untimely dismissal of the classical concepts of universal time and absolute simultaneity. Unless physicists decide to roll back "Einstein's unfinished revolution" (P. Davies), physics is doomed to remain barren.

2. IS A NEW METAPHYSICS THINKABLE?

The marxist Engels had a bright moment when he proposed to distinguish between metaphysics and dialectics. His explanation was that, whereas metaphysics by tradition is dogmatic (Gr. *δόγμα*, assertion of belief), dialectics (Gr. *διαλεκτική*, dialogue as an art) is its antidote: *dialogue* is the best medicine against the popular trend to usurp truth.

Today, metaphysics is once more on the agenda. We do not get rid of intolerance or patronage by removing a term from our dictionary. Thus, instead of following Engels in his efforts to scorn metaphysics (one really does not wish to be enrolled as a marxist), I shall propose to redefine the idea of *metaphysics* so as to discern between two kinds of metaphysics: one that is dogmatic, or obstinate, and another that is dialectic, or delicate. But what do these two terms, *dogmatism* and *dialectics*, really mean?

Few intellectuals will feel unsafe with respect to dogmatism. Almost all will find this attitude abundantly represented by those people whose opinions they do not share. Somewhat more problematic is it to pinpoint the connotation of dialectics as a concept. Regarding that, one must regret that Engels found it suitable to substantiate the word.

This fault furthered the mistake that dialectics is a formal discipline of philosophy. However, materialism is antiquated, the dialectical one as well as the mechanical one. But what, then, can we mean by dialectics? To clarify that question we must ask Plato. Just as Aristotle was the master of metaphysics, Plato was the master of dialectics. And Platon knew that dialectics cannot be formalized, but must be elucidated.

I will now offer my patient reader a quick crash-course in the dialectics of Plato. Of course, this is not merely a headless undertaking, but further also a reckless project, and so I hurry to correct myself at once: what I offer is neither instruction, nor education, nor schoolmastering; I just want to narrate what I have learned myself by reading Plato. That Plato was a sovereign master of dialectics is, moreover, not an invention of my own, but one of those very few issues about which Kierkegaard agreed with Hegel.

Plato, with his late work *'Parmenides'*, aimed at celebrating the named philosopher, has written the unique, unsurpassed masterpiece of dialectics, at least according to Hegel. Kierkegaard, who never got worn out in his admiration for Socrates, the "existentialist", was nevertheless not a keen admirer of the late Plato whom he found too "speculative". At this particular point, however, I will agree with Hegel and disagree with Kierkegaard. My motif for doing so is a deep admiration and veneration for - Socrates.

What may interest the reader, however, is not my own admiration, but that of Plato. Against most other interpreters, I believe that Plato's admiration for Socrates is the key to our understanding of this much discussed work. It has been said that, just as Plato earlier had written dialogues about the statesman (*'Politikós'*) and the word-twister (*'Sophistes'*), it was similarly his intention to write a dialogue about the wisdom-seeker (*'Philosophos'*). Granted this is true, I think that he might as well have given his work the name *'Socrates'*. However, the disadvantage of that choice would be, as he wrote in his *'Second Letter'*, that *"there is no writing of Plato, and there will not come to be any; but all the writings which are ascribed to him are instead due to Socrates, beautified and rejuvenated."* All that Plato wrote was dedicated to the memory of Socrates; so it was impossible for him to highlight one work ahead of another. But what did he say about himself?

"That much can I tell about all those .. who are claimed to know my writings well .. in my own judgment there is no sense in what they are saying. I have not written anything about it myself, and I shall never do so, for it is impossible to put such insight into words. But first after many discussions about some topic, and much togetherness, may a light, as from a spark, suddenly hit the soul; and then it persists by itself .. In short: if one sees that someone has put works in writing .. one ought to conclude that for him it was not seriously meant, that is, if he is able be serious; but what is most serious remains hidden at the most beautiful place in his own soul." Plato, from his *'Seventh Letter'*.

Exactly like Kierkegaard, Plato dismissed the possibility that deep insights can be transferred in any direct way: truth cannot be communicated by means of lecturing, but it may be unveiled by means of poetry, maybe myth. Plato often availed himself of myth. He does so in his *'Politikós'*, where he presents his tale about the golden age of mankind.

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The young Socrates meets a foreigner, who informs him about the blessed time under the dominion of the god Chrónos, when the world course had another and better direction: "The white hair of the old grew dark again, their bearded cheeks got smooth once more, and they won back the bygone beauty of their youth. The bodies of the young, however, got smaller and softer day by day, until they took on the appearance of a newborn baby; at last they disappeared completely". Thus time went "backwards" in that golden age: the dead ones arose from their graves, and from then on they got younger and younger, prettier and prettier, until they finally were swallowed up again by their mother's womb. - Just as Plato let it happen to Socrates in the course of his own lifelong authorship!

As I see it, *Socrates is the very prototype of the man of the Platonic Golden Age, and, in my opinion, this view yields the key to our understanding of Plato's 'Parmenides'*. Hence the work should hardly be read as an eulogy where Plato applauds Parmenides in order to detract from Socrates. On the other hand, it does not seem to be the intention of Plato to expose Parmenides, although the figure in some ways resembles a caricature. It is an undeniable fact, however, that the *Parmenides* of Plato, in his ways of reasoning, on important points deviates from the thinking of the Parmenides we know from history. This explains why the reader of that work is liable to perceive a certain intended distance. The most important difference is, that the Parmenides of history may be described as an *ontologist* (Gr. *ón*, being), since he in a *dogmatical* way accentuates the concept of *being*, while the figure called *Parmenides*, of Plato, might rather be described as an *henologist* (Gr. *hén*, oneness), because he in a *dialectical* way emphasizes the concept of *oneness*. Thus Plato, in his work '*Parmenides*', lets *Parmenides* correct Parmenides!

E.A. Wyller, partly in his thesis, partly in '*Enhet og Annethet*' (Dreyer, Oslo 1981), his later *opus magnum*, taking his inspiration from neo-Platonism, has developed his own interpretation of the "henology" of Plato. I believe that he is that modern interpreter who has best discharged the ineffable intentions hidden in this dialectic masterpiece of Plato. I nevertheless feel that he somehow falls short in understanding the figure of Socrates. Whereas Plato, in his early works: '*Apologia*' and '*Phaidon*', had depicted how the elder Socrates met injustice and penalty to death, he, in works from his own maturity, depicted Socrates as prospering in full action. But it is only in his late work '*Parmenides*', and in the still later '*Timaios*', that we meet the young Socrates, shortly before he disappears from the authorship. In Plato's last work, the '*Nomoi*', only a so-called "foreigner" is left. Thus, the time of the authorship goes backwards, Socrates getting younger and younger, prettier and prettier! So I trust that '*Parmenides*', too, is Plato's tribute to Socrates!

Many interpreters have advanced the view that Plato, in the introductory discussion between the young heady *Socrates* and the old canny *Parmenides*, the main performers in this fictitious play, displays so many serious shortcomings in his doctrine of ideas that he must have been on the verge to giving up the central core of his favourite theory. That this can hardly have been his intention, however, seems clear from an introductory passage in his work entitled '*Timaios*', where his theory of ideas is sketched very briefly.

The important point is that *'Parmenides'*, apparently, was written earlier than *'Timaios'*. The passage in question, presented by Plato's spokesman, *Timaios*, runs as follows:

"In my view, we must distinguish thus: What is it that always is, having no origin? And what is it that continuously becomes, but has no true being? The first is understood by the intellect with the use of reasoned thinking, as it remains itself without any change. The second is approved as conjecture based on unreasoned sensing, since it ceaselessly emerges and disappears, but never has being. Now everything that becomes must needs have a cause, for it is impossible that something can come into being without any cause. To this we must add that everything which the Divine Craftsman produces, with his gaze firmly fixed to the unchanging Paradigm, must necessarily become beautiful .."

But, if Plato did not abandon his theory of ideas, how can we then understand the circumstance that *Parmenides*, after a heated discussion where he apparently discloses one fault and frailty after another regarding the supposition that all knowledge is based on ideas, ends up by having hushed *Socrates*? What is beautiful in the result that the young *Socrates*, confronted with the contrived arguments of *Parmenides*, is forced to be silent? In my view, Plato's portrayal is beautiful because *Socrates'* defeat is only apparent.

A more thorough reading of the account seems to unveil that *Socrates*, after all, does not deviate an inch from his original position, as expressed in the doctrine of ideas. The real *Socrates* is *the one who always says the same about the same*, in sharp contrast to all the airheaded showmen so prolific in sophistry; and if he is being prevented from talking, he still has one weapon left, viz., *the irony of silence*. *Socrates* knew very well, probably better than Wittgenstein, that about the unspeakable it is best to remain silent. Confronted by a deluge of empty words, deliberate muteness is an eloquent sign.

If *Socrates* is recognized by being the one he was: one, himself, and the same, one can better comprehend Kierkegaard's concern by the project: "to pass beyond *Socrates*". Plato, at least, never came further. But *Parmenides*, did he reach *Socrates* to the ankles? And what shall we think about *Parmenides*? After having shut the mouth of *Socrates*, *Parmenides* declares himself ready for the final contest. Now the grand trial of reason is imminent, and let us anticipate the result: *Parmenides* sets the ideas in motion or, rather, he puts motion into the world of ideas! By making use of shrewd dialectics, he transcends the rigid dualism between ideas and phenomena. And so far, so good; okay?

But does this recall the *Parmenides* known from history? By no means! Not at all! By depicting *Parmenides* as *Parmenides*, Plato lets him resemble his antipole, *Heraclitus*! Plato has invented a metamorphosis, transforming the philosopher into his counter image! For a sophist it holds that he is not the one he is, but much rather he is the one he is not. Maybe, then, the *Parmenides* of Plato is not a philosopher, after all, but a simple sophist? The answer to this absorbing, but tricky, question is blowing in the wind. What is certain, however, is that *Parmenides* makes use of dirty tricks to silence *Socrates*.

As stated by Plato, *ideas* are what they are due to themselves, while *phenomena* become what they become by virtue of their participation in their corresponding ideas.

This proves participation (Gr. *métexis*) to be *asymmetric*. Now, in his '*Parmenides*', Plato describes the young *Socrates* as the inventor of an early version of the theory of ideas. According to this theory, participation is a basic concept that cannot be explained further. *Parmenides*, who is not willing to admit this, provokes *Socrates* to offer an explanation, and, as *Socrates* hesitates, he suggests to interpret it as imitation (Gr. *homoiósis*).

Socrates who, with a youngster's lack of experience, does not detect the trap laid out by his guileful interlocutor, concedes that the suggestion might be worth considering. This, of course, is not equivalent to adopting it. So they concur to check out the proposal. But *Socrates*, feeling that he is being deceived, does not want to accept the conclusion drawn by *Parmenides*, and so finds himself forced to discard the premisses. *Parmenides*, however, does not care about that, but perseveres in his own line of reasoning.

How is the pitfall contrived? The point is that if something imitates something else, then both seem to resemble each other; thus the relationship will seem to be *symmetric*, not *asymmetric*. By focussing on imitation instead of participation, *Parmenides* exploits the ambiguity inherent in the verb 'to imitate', or 'to resemble', which can be understood in two different ways: 1) in the sense of *making similar*, as an *active process*; 2) in the sense of *being similar*, as a *passive result*. While the first sense can still be understood as being asymmetric, the second sense is definitely symmetric. *Parmenides*' trick is to prepare a pitfall apt to baffle *Socrates* and lure him onto smooth ice. *Socrates* is not easy to catch, however, but dismisses all cheap solutions, insisting honestly on his ignorance.

Parmenides now seizes the occasion to lift up his index finger: "*But don't you see the big problems it gives rise to if one assumes the existence of ideas?*" - "*Yes, indeed!*", *Socrates* consents. Like his historical rôle model, he willingly admits his basic ignorance, in order not to be caught in "a bottomless swamp of nonsense". *Parmenides*, who does not seem to feel the same concern, now anticipates the famous Aristotelian "third-man" argument, which many interpreters see as a conclusive proof against the theory of ideas. From this he draws the equally famous consequence called the "two-world" hypothesis, viz., that all reality is cleaved into two separate realms having no mutual interconnection. Just as we know nothing of the world of the gods, they know nothing of our world.

Socrates bravely defends himself: "*No, that conclusion seems a little too strange: to deny that God is in possession of knowledge!*". But *Parmenides* now places himself in a position ready to deliver the *coup de grâce*: "*Much too prematurely, Socrates, before you have got the necessary training, do you attempt to define beauty, justice, goodness, and all the other ideas. I noticed that, the other day, when I heard you talk to Aristotle. Beautiful, indeed divine, is the spark which prompts you into discussion; but you need, while you are still young, to exercise what people call "the purposeless craze of talking". If not, truth will probably elude you before you are able to grasp it!*"

Dear reader, did you ever meet a more subtle irony? *Parmenides* here recommends *Socrates* to engage in specious discussions like those practised by his own pupil Zenon, the inventor of sophisticated paradoxes, as a suitable short-cut to the recognition of truth! Furthermore, he eagerly hints the audience to beg him present an example of that activity.

Socrates, who is now preparing himself to experience what is really "astounding", viz., that something, if exposed to a keen logical analysis, is being forced to "turn around", i.e., to transmute itself into what is its directly opposite, exhorts his adversary to elaborate on what he alludes to; and *Parmenides* "reluctantly" embarks on the enterprise.

As his interlocutor, *Parmenides* nominates *Aristotle*, the youngest in the audience, whom he observed the day before, discussing with *Socrates*. Why did Plato, of all names, introduce the name *Aristotle* for this fictitious person? '*Parmenides*' was written at a time when, in all probability, the real Aristotle was adopted as a pupil in the academy of Plato. It is hard to think that this choice was just accidental. The explanation could well be that Aristotle, who would have been of the same age as *Socrates* in this fictitious discussion, had made himself noticed as the most intelligent member of the academy: a self-confident young man who was not afraid of gainsaying his master. This may have occasioned Plato to create his work as a kind warning, shaped as a "magic mirror", to the hotspur.

About *Aristotle* it is told, that it was him who later became "one of the thirty", viz., the thirty tyrants of Athens. This might be a clue that the work was meant to admonish. Concurrently, it might be meant as a teaser, for Aristotle is smart, but *Aristotle* is dumb. This made it easy for Plato to discard inquisitive questions from Aristotle by ensuring that "any affinity to living persons is not aimed at". But Aristotle must have felt that there was a secret meaning behind this apparent madness, for Plato, without leaving his theory of ideas, made *Parmenides* act as spokesman for a series of Aristotelian objections to it. One can easily imagine that this has made Aristotle muse like a madman.

What is striking about the '*Parmenides*' of Plato is that the author does not entirely expose his main figure, but in a sense restores him in the major section of his work. This, after all, is not a dialogue, but much more like a monologue, as the job assigned to *Aristotle* is merely to mirror the reflections of *Parmenides* in the way of an empty echo. The surprising fact is that this fictitious monologue now evolves in an astounding way by unfolding a true intellectual firework of really amazing dimensions.

The arguments which, to most people, must seem contradictory and nonsensical, have inspired a whole galaxy of thinkers from the time of Plotinus until that of Hegel. The theory of the universe as an emanation from the ineffable and unfathomable Oneness is latent in the major section of '*Parmenides*'. As I see it, the lesson of this work of Plato is that *Parmenides*, as a dramatic figure, necessarily must emerge as an equivocal person. Only in this way could Plato ensure that his reasoning could be perceived as an exercise in dialectics, instead of being read as a lecture in ontology and metaphysics!

The task *Parmenides* now takes on himself is to perform a trenchant investigation of the concept of Unity, or Oneness, by means of eight hypotheses which are successively put forward and dispensed with. A comparison with the three parables known from the work on the State, '*Politeia*', viz., about the Sun, the Cave, and the Line, is instructive and discloses a striking similarity of structure, especially with respect to the latter one. The parable of the Line is Plato's most famous attempt to map the constitution of human knowledge as well as its connection with its contents, or subject matter.

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PARMENIDES' EIGHT HYPOTHESES:

THE WAY OF TRUTH:

- Hyp.1 *the one is: what follows for it self?*
 reason can say nothing about the one as being
- Hyp.2 *the one is: what follows for it self?*
 reflection distinguishes the one from the other

*Intermezzo: 'becoming' is a sudden change from the same to its opposite
confer: "the turn around" (Hegel) in "an eye's twinkling" (Kierkegaard)*

- Hyp.3 *the one is: what follows for the other?*
 sensation perceives a world of things, a unity of parts in motion
- Hyp.4 *the one is: what follows for the other?*
 imagination perceives only empty shadows, i.e., nothing

THE ROAD OF DELUSION:

- hyp.5 *the one is not: what follows for it self?*
 the mistake of reason: the non-existent one feigns everything
- hyp.6 *the one is not: what follows for it self?*
 the mistake of reflection: the non-existent one feigns nothing
- hyp.7 *the one is not: what follows for the other?*
 the mistake of sensation: the detached other feigns everything
- hyp.8 *the one is not: what follows for the other?*
 the mistake of imagination: the detached other feigns nothing

This survey of the eight hypotheses of *Parmenides* is intended as an interpretation. For such boring reasons as dearth of time and scarcity of space I shall, regrettably, have to restrict myself to the above hints, or allusions, which, admittedly, are rather meagre. Hopefully, they suffice to show that metaphysics, following Plato, is very different from metaphysics, according to Aristotle. Informed people will know that what is presented here traces the shape of a new and pretty original interpretation of Plato's '*Parmenides*'. It will further be noticed that I have deliberately avoided using Latin terms to translate Greek concepts, as such terms are unduly strained by medieval points of view.

How can we describe the disparity between Platonic and Aristotelian metaphysics? Both are philosophical *idealists* in the sense that the notion of *form* (Gr. *éidos*) is in focus. With Plato, however, this is developed in the direction of *forms of thinking* (Gr. *idéai*), i.e., something that *transcends* what "emerges for the senses" (Gr. *phainesthai*), whereas the concept with Aristotle is developed in the direction of *forms of things* (Gr. *morphés*), i.e., something that *inheres* in real, existing, things. This dissimilarity may explain why the position of Aristotle has sometimes been termed philosophical *realism*.

Descartes, the founder of classical philosophical *rationalism*, initiated the modern revolt against Aristotle by returning to Plato, following the Italian renaissance humanists; not only the Cartesian doctrine of knowledge, but also his concepts of time and space, are indebted to Plato. Even Galilei and Newton, the two great figures of classical physics, were a sort of Platonists, although Plato did not care about observation and experiment. Kant later made his Copernican turn in philosophy by rejecting the Aristotelian view that assimilation occurs when the form of a thing is transferred to our thought by *abstraction* - cf. the famous scholastic maxim: *veritas est adaequatio intellectus et rei*.

For Kant it was a philosophical scandal that Hume had invalidated this viewpoint by demonstrating that the principle of causality has no foundation in the reality of things, since it turns out to be impossible to verify the assumed necessary connection between our sensory perceptions and our concept of causality. This fatal consequence, however, was clearly foreseen by Plato; cf. the proclamation of *Parmenides*: "So the things in our world have no effect on the ideas, just as the ideas have no effect on the things here; but, as said: they make up their own world and are only related to each other; and the same holds of the things here. Do you understand it now, *Socrates*?" - "Yes, perfectly!"

Kant who, with his '*Kritik der reinen Vernunft*', attempted to restore philosophy by giving classical physics a new basis, accepted Hume's critique of traditional metaphysics. His Copernican turn took its point of departure in the cleave, cut by Descartes, between the knowing subject, set up by the *cogito*, and its object of knowledge, the external world. As clearly shown by Plato in his '*Parmenides*': If you dig a ditch, you will need a bridge! Therefore, as soon as Cartesianism had excavated this trench between subject and object, the question arose: how can we guarantee that our thoughts mirror the things adequately? Thus the old problem of *adaequatio* reappeared, now disguised as one of *correspondence*. As we know, the answer of Hume was: There is no guarantee, no bridge!

But Kant was not that easy to dismiss. Whereas Aristotle explained adequation by *abstraction*, i.e., the *transportation* of forms from things to thought, Kant explained it by *subsumption*, i.e., the *transmutation* of things in the image of our own way of thinking. Thus our reason is not just a *passive receptacle* of the forms inherent in external things: on the contrary, reason produces an *active transformation* of things by its own concepts. In this way Kant avoided to base physics on the dubious Newtonian concept of induction. As an example he mentioned that, if gravitational effects are transmitted in (flat) space on a par with lines of force, then the Newtonian law of gravitation can be deduced *a priori*. So the law of gravitation does not rest on experience, but is based on reason!

How did he justify this stance? With what reasons did he dispose of metaphysics? In order to clear up these two questions, it is illuminating to compare Kant with Leibniz, whose *monadology* involves a magnificent unification of Platonism and Aristotelianism. Taking Leibniz as his example, Kant posed a distinction between: A) *truths of reason*, which holds *á priori*, and: B) *truths of experience*, which holds *á posteriori* - cf. Hume, who similarly distinguished between: *relations of ideas* (RoI), and: *matters of fact* (MoF). However, the agreement between these three thinkers is merely apparent.

According to Leibniz, all true propositions have their foundation in reality itself. Concurrently, he assumed: *a*) that reality consists of things whose forms inhere in them (cf. Aristotle) and: *b*) that all real things exist as separate units, called *monads* (cf. Plato). Monadic time is based on before-after relations between perceptions in a single monad: *a single monad* subsists as its own *individual time*, while the simultaneous co-existence of *all compossible monads* founds a possible world unfolded spatially in *universal time*. Cosmic time is thus anchored in the harmonious co-existence of monads.

However, relations do not subsist as separate entities: they are anchored in logic, being logical constructs from the contents of the only existing substances: the monads. The construction of monadic relations, i.e., of monadic time and cosmic space, and thus of entire possible worlds, is effected by a logical analysis of the ideal contents of monads. In this way, his concept of *reality* is anchored in, and derivable from, his concept of *truth*; and the analysis, by which *the universe itself* is reducible to *a well founded appearance*, is to be performed - by man or by God - in agreement with the *in esse* principle.

According to this, the truth of a complete subject-predicate proposition, where the subject stands for a monad and the predicate for an event enclosed in its ideal program or history, is defined by *praedicatum inest subiectum* - the predicate inheres in the subject. This reflects on the above relationship between truths of reason and truths of experience. For Leibniz, all truths of experience are, in the end, also truths of reason, at least for God. So he insisted that all truth is *analytic*, and thus *á priori*, i.e., given ahead of experience.

To Kant, this consequence was unacceptable, and most people today would agree. He therefore proposed a very different interpretation of the distinction mentioned above, between A) truths of reason and B) truths of experience. As *analytic* propositions he solely accepted obviously identical propositions such as $A \equiv A$ and $2 = 2$, but neither $A \equiv B$, nor $2+5 = 7$, which shows his class of identical propositions to be nearly empty. All other propositions, i.e., all propositions that do not fulfil Leibniz's *in esse* principle, he designated as *synthetic*. So it might seem as if Kant meant that all informative truths are only valid *á posteriori*, but then it would be hard for him to defend the physics of Newton against Hume's attack, and thus also to dismantle the presumed "scandal of philosophy". But he believed to have the solution: maybe some synthetic truths are provable *á priori*? In fact, his entire '*Critique of Pure Reason*' rests upon the viability of this stance.

The background of this view Kant found in the Platonic partition, presented above, of our cognitive abilities in, respectively: 1. *reason* (Vernunft), 2. *reflection* (Verstand), 3. *sensation* (Anschauung), 4. *imagination* (Einbildung). Each of these inborn abilities has a specific function: that of *reason* being to *conceive* of pure ideas and their relations; that of *reflection* being to *produce* knowledge by processing the contents of our sensual perception in conformity with its own inherent concepts, the categories; that of *sensation* being to *comprise* our impressions within the framework of time and space, two inborn forms (Anschauungsformen), where space is the form of all external experience and time is the form of all our experience, internal as well as external; and, finally, the function of *imagination* being to *transform* the contents of our sensation into pictures and dreams.

According to Kant, all knowledge, also scientific, is produced by the interaction between *cogitation* and *perception*. As just mentioned, sensation, or sensual perception, is bound within the framework of time and space, which can be analysed mathematically: as the structure of *space* is mapped by *geometry*, so that of *time* is mapped by *arithmetic*. In this manner Kant ensured that *mathematics* remains valid for all possible experience. Further, cogitation is bound to use its own concepts, so that the categories of reflection, foremost those of substance and cause, are used within the limits of possible experience, whereas the ideas of pure reason: God, World, and Mind, are used outside those limits. These ideas form the contents of the presumed science called metaphysics; and that they are used outside the limits of possible experience is precisely the problem.

That it is illegitimate to use the ideas of pure reason outside the limits of possible experience, Kant claimed to prove as follows: α) All so-called proofs for *God* are invalid. β). All statements about the *World* as a unitary being in time and space are contradictory. γ). All presumed demonstrations of the immortality of the human *Mind* are null and void. He was so convinced of the soundness of his own arguments that he declared himself willing to stake his entire philosophy upon them. If we are able to refute his arguments we can, therefore, claim to have dismantled his annihilation of metaphysics.

Ad α . If only a single proof for God holds good we shall need no other, of course. A valid and coherent defense of the argument of St. Anselm will therefore be sufficient. At another occasion, I have presented an effective defense based on simple modal logic. It is not the right place to repeat it here, so I shall be satisfied to point out that Anselm's argument, which is definitely not a piece of ontology, but most certainly one of dialectics, is an *argumentum ad hominem* which presupposes the explicit denial of God by atheism. It then shows that the atheist has ensnared himself in a dilemma: either he does not know what he is talking about, or he gainsays himself. Anselm's point is that, if we identify God as *quod nihil maius cogitari potest* - something "than which nothing greater can be thought", then God cannot be rejected as if "he" were just a product of the human brain, since it is more / greater to be *both* in the brain *and* in reality than to be *solely* in the brain. In this way the distinction between *fact* and *fiction* is now turned against the atheist!

Ad β . Only a single coherent model of a possible world is sufficient to dissolve the famous first antinomy of Kant, it needs not depict the real world. A model with the right properties was devised by the British mathematician and cosmologist E.A. Milne [1948]. The point is that the mathematical properties displayed by his model are very different, depending on whether it is structured according to one or the other graduation of time, the *t*-scale or the τ -scale; but our choice between these two scales is purely conventional. According to the *t*-scale, which is determined by keeping the sizes of atoms unchanged, the galaxies are spreading with constant speeds in a flat isotropic space of radius $r = ct$ after having formed a singularity at the instant $t = 0$; thus cosmic time has a beginning. In the τ -scale, galaxies are at rest in infinite hyperbolic space, and time has no beginning but, in order to keep the universal proportions invariant, all atoms are shrinking secularly! This model is mathematically coherent, and so it dissolves the presumed antinomy.

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Ad γ . Here all "proofs" are irrelevant: "the proof of the pudding is in the eating"! So it is clear that Kant's attempt to demarcate the limits of human knowledge has failed. The border between reason and folly is not fixed, as Kant said, but fluent, as Hegel held. As already hinted at, Kant was so convinced about the validity of his critique of reason, and so sure of a rigid borderline between "reality in itself", inaccessible to human reason, and "reality for us", open to our perception and reflection, that he challenged all hopeful aspirants in the academic discipline of metaphysics to decide for, or against, his criticism. Posterity, however, has found it hard to see how synthetic statements can be true *á priori* - and if that class is empty, the same must hold of his criticism of metaphysics!

Does that show that we must return to Hume? Anselm's argument prevents that; and Kant is right that Hume's criticism of causality presupposes what it wants to disprove. But can we join Hegel, then? Kierkegaard's revolt against speculation excludes that too. Furthermore, the principle of non-contradiction cannot be annulled by smart dialectics. No, philosophy needs a new kind of dialectics respecting the principles of logic!

If logic cannot be made dialectical it has, at least, to be understood dialectically. What this means may be easier to grasp if we realize that there are many kinds of logic, many different logical systems. Well, maybe not on the lowest level; but as soon as we move to higher levels we will see that the possibilities are multiplied by sheer branching. This holds in particular if we ponder the logics of time, here possibilities are *legio*.

What can we do when we find ourselves confronted with the choice between two or more logical systems that are internally consistent, but mutually exclude each other? What kind of intellectual capability can we marshal in order to make a reasoned choice? Do we have any other possibility than to mobilize common sense and sound reason?

But if we are to make a choice between two sorts of logic, two different systems, we must assume that our choice is free to begin with. If not, to talk of choice is nonsense. So we cannot start by being compelled to prefer one or the other logic, for then our will is bound up and our choice is made in advance, before we can deliberate rationally.

My advice is that a choice must be made by means of a reason trained in dialectics; and if I am asked what that means, I shall say: Study Plato's '*Parmenides*'!

3. IS A NEW COSMOLOGY CONCEIVABLE?

The preceding section might convey the impression that I am ready to skip Kant. On the contrary, I find that Kant has produced the best antidote against his own criticism of metaphysics. So, in the present section, I shall venture to use Kant against himself!

The elements I will use are his notions of *das Ding an sich* and *das Ding für uns*, but I will use them with reference to "something" that is definitely not a "thing" and about which, allegedly, we cannot even to form a consistent concept, viz.: *The Universe*.

What do we mean by that term? To answer this question we shall have to focus upon the scientific disciplines of mathematical physics and physical cosmology.

Concerning our purpose, which is to throw new light on the possible relationship between classical metaphysics and modern cosmology, we may - from a philosophical point of view - determine *cosmology*, the science of the origin and structure of the world, as an art, viz., that of inventing, constructing, and testing, models of the world.

Cosmology is an *art*, since its practitioner must possess mathematical imagination, or fantasy; but it becomes a *science* when this fantasy is kept under control by a strict obedience to the following fundamental rules, or maxims, for our scientific method, viz.: α) only to sustain a world-model in case that its description is consistent, free of flaws; ω) never to uphold a world-model against repeated results of observation and experiment. By a 'world-model' I shall here understand a material interpretation of a formal structure that is supposed to represent an unknown, indeed unknowable, *X*, viz.: *The Universe*.

Since cosmology, as a discipline, proceeds by comparing world-models in plural, let us call them *universes*, while their *paradigm*, "das Ding an sich", remains *incognito*, we can conclude, that *The Universe*, this mysterious *X* behind all observable phenomena, only exists as representation due to the world-models, *universes*, assumed to represent it. Any *universe*, being a model of the world, is neither "reality itself" nor "reality for us", but as a model it mediates between these two, "das Ding an sich" and "das Ding für uns", the latter being the world we live in and which we perceive by means of our senses.

Kant was right that we shall never be able to grasp "the *Universe* itself" (capital U). Likewise he was right that it is hard to conceive of a consistent *universe*, or world model, in so far as we by the term 'world' understand "the totality of all observed phenomena". The point is that any particular observation refers to an observer's individual perspective, so that "the totality of all observed phenomena" remains a fiction as long as the totality of observers have not agreed about how to integrate the sum of their subjective perspectives into an objective totality, a consistent universe, i.e., a world-model free of logical flaws. In current cosmology, which is totally dominated by Einstein's general relativity theory, this problem is "solved" by imposing a *dogma*, viz., that of an "universal spacetime".

Kant did not foresee that world-models may be devised as intermediaries between the Universe itself as "Ding an sich" and the world of our experience as "Ding für uns".

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The scientific establishment, on the other hand, has deliberately ignored the inconvenient fact that all statements about the Universe itself, albeit based on the world of experience interpreted as the universe for us, are not merely illegitimate, but outright metaphysical. Regrettably, the history of modern science has produced plenty of examples displaying how easily good physics can devolve into dubious cosmology and bad metaphysics.

Among such examples we may count not only the hypothesis of phlogiston, which was soon discarded, but also that of the aether, long believed to have been disproved, but later revived in a new form by Einstein, the physicist who at first did away with it. Not many scientists today are prepared to take the aether hypothesis seriously; neither is there any reason to do so, in so far as the aether is identified with "universal spacetime". But in physics and, especially, in cosmology, a profusion of weird ideas and hypotheses not only flourish, but are right away elevated to be "scientific facts", i.e., dogmas.

Such "facts" abound: 1) that the Universe emerged when "nothingness" suddenly burst as a "big bang"; 2) that the primeval explosion was followed by short but extremely intense phase of exponential expansion, or "inflation"; 3) that the inflation ended with a "slow-down" when the Universe had been split up into an infinite "multiverse" of isolated spacetime "bubbles" separated by unsurmountable "horizons"; 4) that such "bubbles" in the "multiverse" came up in consequence of arbitrary "quantum fluctuations" in the void; 5) that one of these "bubbles", viz., that one wherein we happen to exist and which we call "our own", was afterwards speeded up anew by an enigmatic sort of "dark energy"; 6) that this "dark energy" happened to overpower a semi-classical gravitational "force" needlessly supposed to be "universal"; 7) that gravitational effects are "caused" by the curvature of "spacetime", which is itself "caused" by the presence of matter; 8) that rods become "really" contracted, just as clocks become "really" retarded, if exposed to motion relative to the observer's "frame"; 9) that there is not, and can never be, an universal time; 10) that such time, nevertheless, appears as the independent variable of the standard FLRW metric which is founded on general relativity; 11) that the universe, accordingly, can be ascribed a definite age, viz., approximately 13.7 billion years - etc, etc, etc.

Against such confused speculations it is compelling to ask for intellectual sobriety. Kant obtained an almost heroic fame for having introduced *apriorism* into science. However, at this point I am ready to defend him; some important tenets are valid *á priori*: *Á priori it is an incontestable precept of natural science that its aim is threefold, namely, (1) to describe the present in order (2) to predict the future and (3) to explain the past. Thus the triple division of time into past, present, and future, is indispensable to science. It is simply a gross misunderstanding to believe that Time, the basic feature of existence, can be deduced from, or explained by, science, because it is a precondition of science.*

Thus we should never consent to those scientists who are resolved to ignore time. The least to be expected from a science that is faithful to experience is that its structural representation of nature is compatible with the *passage*, hence also the *direction*, of time. But just that is not the case with those models of the world that represent reality as some multi-dimensional "spacetime" which exists timelessly like a piece of crystalline mineral.

That attempts to soften them by imposing a *temporal order* have had some success may not obscure the fact that nothing less than the full acceptance of a *temporal flux* will do. It is amazing, and one of the paradoxes of history, that, confronted with today's science, we have to insist on the factual evidence born out by everyone's own bodily senses.

If scientists, therefore, want to enlighten lay people by informing them that reality in itself is timeless and that all talk of time's flow is nonsense since it refers to a fantasm, then they should be dismissed with the remark that they have not done their job properly. It is simply unacceptable that the established science of nature excels in producing results which are outright incompatible with its own meta-scientific preconditions and premisses. That Einstein himself considered *time* to be nothing but a *chimera*, claiming that science is unable to make sense of the *now*, backfires on the specific sort of science he professed. Clearly, his idea of "spacetime" leaves no place for a genuine temporal experience.

Modern astronomy is justly famous for two epoch-making discoveries of the 20.C. Now the idea of an ***Absolute Cosmic Time*** is supported by the following reasoning:

1) In the twenties, the astronomer Hubble noticed a systematic displacement towards the red end of the spectrum of light emitted from distant galaxies. This *redshift* is usually seen as a sign that the galaxies are receding with velocities increasing almost proportional with their distances from us. Unless the position of our own galaxy is so privileged that it occupies the very center of the entire universe, this means that all galaxies are subject to a systematic scattering, the center of which can be found anywhere, i.e., it has no center. This dissipation of material contents in the universe is often described as an "expansion" of world space, or of the universe itself, but both manners of speaking are misleading: partly, it is puzzling to imply that empty space is something having separate existence; partly, it is confusing to speak of an expansion of the universe, since its material contents may be subject to a continued dispersion, and yet universal space may be stationary.

2) In the sixties, the physicists Penzias & Wilson observed a strange radio noise that turned out to be caused by an almost isotropic universal background radiation having its origin in the distant regions of the universe. This radiation, termed the *cosmic microwave background radiation* (CMBR), has a temperature of ca. 3 Kelvin and shows a spectrum very similar to that shown by the thermal radiation from dark bodies, a Planck-spectrum. This spectrum is generally seen as a proof that the world originated in a "hot big bang" about 13.7×10^9 yrs ago; but other explanations are also possible, e.g., radiation from the so-called zero-point field or light reflected from graphite grains in interstellar space.

However, *the only certain conclusion we can draw from these two discoveries* is that both corroborate the view that the universe is subject to a certain sort of symmetry, viz., that all directions in space are equally good: no one is privileged ahead of any other. This substantiates the fact that the universe, in spite of huge local structural asymmetries, is fundamentally characterized by *cosmic isotropy*. Now, if the class of possible worlds is subject to this important restriction that it merely comprises world models obeying the principle of cosmic isotropy, the so-called *cosmological principle*, it can be demonstrated mathematically that *a cosmic time can always be introduced, or constructed*.

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This consequence follows immediately from Robertson's & Walker's analyses of the Friedmann-Lemaître metric based on Einstein's own general relativity theory, but can also be deduced from more general considerations based on the cosmological principle, ordinarily ascribed to Einstein but, in fact, first formulated by the aforementioned British mathematician and cosmologist E.A. Milne; cf. North [1965]. Our above reasoning mocks the well-known Einsteinian dogma, based upon his special theory of relativity, concerning the supposedly inevitable dissolution of the classical concept of an absolute simultaneity. Now, if time is in fact universal, then it is indisputably true that simultaneity is absolute. That a genuine cosmic time is at variance with the spirit of Einstein should only disturb dogmatists: this spirit has too long spread a mist impeding progress in physics.

Einstein admitted that his definition of time-at-a-distance rests upon a convention. From this it follows that the one-way light speed (1-*wls*) also rests upon a convention. The same clearly holds for the Lorentz-transformations together with their consequences for clocks and rods in inertial motion. What does not rest upon a convention turns out to be the average or two-way light speed (2-*wls*) for a radar-signal that is reflected between a light source and a mirror. Similarly, the retardation of a clock that, after a round trip, returns home, where it is compared to a resting clock of the same type, is unavoidable. The 1-*wls*, accordingly, may vary freely on the condition that the 2-*wls* remains constant. In fact, the standard Lorentz-transformations can be generalized so as to assume merely the principle of relativity combined with the principle of the constancy of the 2-*wls*.

So it seems that the principle of the constancy of the 2-*wls* holds good universally. But if the 1-*wls* is allowed to vary freely, we cannot take r/c , i.e., the radar-distance r divided by c , the 1-*wls*, and say that $t = r/c$ then represents the age of a distant object. Moreover, the top-angle of the light-cone can only be settled by an arbitrary convention. These are very serious consequences that totally jeopardizes most relativistic cosmology. But there is a rational way out of this impasse: Accept the cosmological principle!

So let us investigate the implications of the cosmological principle a little further. This principle is our only guideline if we want to construct a true scientific cosmology, otherwise our efforts are doomed to end up with an confused patchwork of hypotheses. Accepting the observation that the material contents of the universe is not stationary but, in fact, subject to a systemating motion of scattering, an universal dispersion / dissipation, we must ask: what is the sense of using the light-time distance $t = r/c$ to a distant object as a measure of the time elapsed since the observed light was emitted from the object? This question cannot be answered by referring to a local theory such as special relativity, neither will it do to appeal to general relativity as that theory also allows a variable 1-*wls*. But in order to bring in the cosmological principle we must first make a little detour.

Any observer, if provided with the right apparatus, can discern whether the CMBR is distributed isotropically, or not. If the CMBR is observed to be isotropic, we conclude that the observer in question is *at rest* relative to the CMBR; we shall call such observers *fundamental*. If, by contrast, the CMBR is observed to be anisotropic, we conclude that the observer is *in motion* with respect to CMBR; such observers we shall call *accidental*.

Now fundamental observers at rest in CMBR may nevertheless partake in a dissipation of contents *in* the universe without, necessarily, taking part in an expansion *of* the universe. The motion of accidental observers is then superposed upon this dissipation/dispersion.

Following Milne who devised his theory of *kinematic relativity* in direct opposition to the dominant relativity theories of Einstein, we shall take his cosmological principle as being satisfied by any system of fundamental (: equivalent) observers who offer formally identical descriptions of the system as a whole; see my *NSR* (2021, ch.3 §2 & ch.11 §3). So the principle says that the structure of the universe is determined by an equivalence class called 'the substratum' of fundamental observers at rest relative to the CMBR.

Milne used his cosmological principle to prove mathematically that the substratum of fundamental observers functions as a cosmic system whose members are distinguished formally from non-members by their *signal-functions* being symmetric and commutative. Instead of following Einstein, who insisted that 1-*wls* should be treated as constant within the comoving systems of coordinates assumed to follow any observer without exception, we shall take the 1-*wls* to be constant only in the local neighbourhood of a fundamental observer, thus implying that it varies over cosmic distances due to its being "stretched" by participating in the universal dispersion, i.e., the scattering of material objects.

Since the principle of relativistic equivalence makes it reasonable to conclude that light is not propagated instantaneously but "hesitates", as expressed by Rømer, and since the so-called "light-speed" appears to be a common limit to the propagation of all kinds of causal effects, it follows that no possible universe is accessible to direct observation. So, what we observe is "the world for us" *as it was*, when the light we see was emitted. Not only is *The Universe Itself* unobservable, the same holds for all possible models of it! This implies that *distance in space* is a sign of *distance in time*, as generally assumed; nevertheless, as earlier argued, we are not entitled to say that it is measured by $t = r/c$, since the 1-*wls* is not constant, but varies by being "stretched" over cosmic distances.

The preceding objections to Einstein's interpretation of his own special theory of relativity do not mean that the theory must be skipped, but only that its validity is limited, so that the principle of relativistic equivalence is valid solely for fundamental observers. The obvious implication is that *true relativity* only holds for members of the substratum: hence, for Milne, *the relativity principle becomes identical to the cosmological principle which claims that the substratum is subject to the principle of cosmic isotropy*.

Our reinterpretation of Milne's cosmological principle means that a constant 1-*wls*, as well as any deviation from this, is definable with regard to CMBR, at least statistically. Moreover, in agreement with the equivalence of the fundamental observers constituting the substratum, we can conclude that the top-angles of their light-cones must be identical. However, it is wise to remember that, irrespective of whether we depict light as photons or as waves: imagining light as "something traveling in space" is just a weird fantasm. Since we can only observe it by stopping it, we have to rely on our mathematics.

To sum up: using the cosmological principle as an unique clue to the introduction of a universal time and an absolute simultaneity, we can construct a scheme that enables us to integrate an infinite variety of observational perspectives, called 'light-cones', into a consistent totality, a genuine cosmological theory, representing the Universe by a model. It has been claimed that recent observations have put the cosmological principle in doubt. But it is hard to take an argument seriously that forces us to give up all hope for a theory. In that case we might rather abstain from pursuing natural science altogether!

Recalling our purpose, which is to throw light on the possible relationship between classical metaphysics and modern cosmology, it is worth mentioning that H. Poincaré, the great French mathematician and philosopher of science (who published a formally more satisfying theory of *relativité restreinte* some weeks before Einstein published his more famous 1905-theory of *special relativity*), described the development of physical science as a continued upgrading of inductive generalizations to theoretical principles. Accordingly, he described the physics of his own time as *the physics of principles*.

It should be noticed that simultaneity of observations does not, in general, imply simultaneity of observed distant events. This relativisation of the concept of simultaneity is much more relevant than the one due to the arbitrary conventions of special relativity. In *cosmology*, it yields the basis for a distinction between *World-Map* and *World-View*, i.e., between *the general structure of a world-model* as it is at *an instant of cosmic time*, and *the individual perspective of an observer* who studies this structure as it appears at *the instant of observation*. This important distinction is likewise due to Milne.

The distinction is clearly decisive for a correct interpretation of the data observed. One might believe that it just reproduces the Kantian distinction between the Universe as it is in itself and the possible universes we may introduce to interpret the observed data, but this is not quite the case, the point being that the distinction between formal structure and observational perspective refers to particular instants of cosmic time, whereas the distinction between "das Ding an sich" and "das Ding für uns" was meant to be timeless, and thus elevated beyond such reference. This might also explain why Kant and Milne are seldom discussed, nor even mentioned, by the current textbooks of cosmology.

The Idea of a Cosmic Time is consistently ignored by the scientific establishment. Dogmatism dominates the mindset of scientists as heavily as it did in the Middle Ages! But the catholic cardinal Nicolaus from Cusa, who lived at the dawn of the renaissance, displayed an astounding clarity of mind in his *De Docta Ignorantia*, see ch.15, §8.

Let me conclude the present section with the following survey of concepts:

Philosophical Metaphysics: The Universe, an unknowable X.
Theoretical Cosmology: universes, or models of possible worlds.
Empirical Cosmology: control by observation and experiment.

Cosmic Time \Leftrightarrow *Cosmic Isotropy* \Leftrightarrow *Cosmological Principle*
'World-Map': the structure of a model \neq *'World-View': an observer's perspective*

Man Time World

4. ARE THEY SOMEHOW RELATED?

One can say that, while it was the feat of the renaissance mind to discover *space*, cf. the great voyages exploring other continents and the use of perspective in drawing and painting, so it is the achievement of the modern mind situated in the interplay between the second and the third millennium to discover *time*; and just as the metaphysics of the future can be expected to underscore *oneness* ahead of *being*, similarly the cosmology of the future may be expected to accentuate *time & light* ahead of *space & matter*.

On that background, the Einsteinian programme for the science of nature, which is: "to reduce everything in physics to spacelike concepts", inevitably appears to be striving somehow backwards, in the least. In a direct criticism of this programme, André Mercier (founder of *GRG* and co-founder of *CERN*) has emphasized the unique rôle of Time in mathematical physics and suggested that *spacetime* should be re-baptized *time-space*. Time ought rightly to be recognized as the primary dimension of nature, instead of being placed in the background as the fourth dimension. But Mercier wanted to go even further: if understood correctly, time is not a dimension at all, for the word 'dimension' means that something can be measured; and time cannot be measured, it can only be counted!

This point of view, to which I can fully subscribe, was also defended by Poincaré. In contrast to Einstein, he argued that there cannot be a *metric* of time, only a *topology*. Such understanding of time is also at variance with the metaphysics proposed by Bergson who claimed that the concept of *duration* is fundamental. In one way he was on the track: time is indeed fundamental; but duration is not, since the attempt to specify a measure of duration would be suspect on a par with hawkers sales of rubber band measured in yards. Since good philosophizing is conditioned by more than an impeccable moral, the concept of duration has no worth as a basic idea in philosophy. On the other hand Bergson was surely right that philosophy cannot afford to ignore natural science and cosmology.

This backfires on a different kind of metaphysics, viz., that devised by Heidegger. The concept of a Cosmic Time (*Welt-Zeit*) is so far from being "vulgar", that it demands an extraordinarily refined type of logic not based on extension, as usual, but on intension, in order to map its many subtleties. This temporal logic, moreover, turns out to open up far-reaching perspectives for philosophy. On that background, Heidegger's endeavour to ensure a direct connexion between the immediate world of human experience and a new interpretation of the concept of Being *via* a very original confusion of everyday language involves a fatal collapse of both common sense and analytic reason in philosophy!

Maybe it baffles my reader that I do not argue for any specific world-model here. However, I find it more important to present some more general considerations which preserve their validity for any possible universe, or scientific world-model, whatsoever. Whether my musings hold for *the Universe itself* is a question I leave to my reader.

But I want to emphasize as strongly as I can that *a Cosmic Time is indispensable to any intelligible model of the universe*. Such time at any instant makes a cut, *The Now*, between *The Past*, that is forever inevitable, and *The Future*, that is as yet undetermined. Thus the past is closed whereas the future remains open to human intervention.

So we are invited to act freely with responsibility for our fellow human beings, and then the question of good and evil becomes urgent. What is true is not known in advance, nor from eternity. Truth emerges together with the reality whereof we are the *co-creators*. For this reason Protagoras was right: "*man is the measure of everything*", as stressed by Nicholas of Cusa; and with this conclusion I finally take my leave from Plato.

As I understand the idea of *time*, it is very far from signifying *destruction*; so far, indeed, that, on the contrary, it is equivalent to *continued creation*. That a *cosmic time* is indispensable to any world-model which can pretend to be rational therefore means that the *idea of creation* is crucial both in relation to metaphysics and to cosmology.

What is new today is that *time*, meaning *the creation of something out of nothing*, can be analysed by means of formal logic, and that our basic physical conjectures can be structured by means of mathematical world-models, each depicting a possible universe. So we possess the formal means that can visualize the consequences of our assumptions.

The truth of our beliefs and convictions, however, is up to ourself to decide.

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Dear reader: I promise you that, if you have chewed, and digested, these chunks, you have got a very healthy meal that may save you from swallowing weird dogmas!

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