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Kant and the Starry Heavens or the Splendor and Misery of Speculative Rationalism

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Abstract Kant stresses that scientific cognition can only materialize in conjunction with experience. Leaving the sphere of experience takes one into the world of fantasy. From the point of view of Kant's Copernican revolution in philosophy his description of the inhabitants of other planets in the *Universal Natural History and Theory of the Heavens* should also be viewed as unfounded wanderings of the mind. Such wanderings of the mind never occur in Kant's philosophy of mature years.

Kant's philosophical revolution strengthened the positions of scientific cognition by excluding metaphysical speculation. At the same time rejecting metaphysical claims for cognizing the supernatural and acknowledging man's inclination towards it, Kant imprints a sphere of freedom returning to the starry heavens above its mystique, its inscrutability that had actually been looted by speculative rationalism.

Kant is preoccupied with the problem of the objectivity of world cognition all through his lifetime and returns to it in his later-day treatise *Opus postumum*. In this manuscript Kant offers a special program of the metaphysics of nature that should ensure the objectivity of cognition in natural sciences. The program never saw its completion, yet it serves to demonstrate Kant's attempts at ensuring maximum objectivity to the world cognition process.

The history of science to this day gives positive appraisal of the origin of cosmos hypothesis, known as the Kant-Laplace hypothesis. The essence of the hypothesis is as follows: contrary to the ideas predominating in the eighteenth century as to the constancy of the universe an idea is voiced of the cosmos originating from initially chaotically scattered matter and its shaping itself in the further historical development. According to Kant, the formation of cosmos is a never-ending process.

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Kant substantiates his theory of the origin of the Universe in his work *Universal Natural History and Theory of the Heavens or an Essay on the Constitution and the Mechanical Origin of the Entire Structure of the Universe Based on Newtonian Principles*, published in 1755. One cannot say that Kant's ideas were especially appreciated by his contemporaries. In 1796 the French astronomer Laplace published a hypothesis that is actually analogous to Kant's hypothesis. It is significant that Laplace had no idea of Kant's hypothesis.

Kant's hypothesis of the origin of the Universe is set forth in the first two parts of the work. These two parts are usually referred to by science historians describing Kant's contribution to the theory of the origin of the Universe. However, the treatise consists of three parts. The third, the last one, while speaking of Kant's cosmology theory remains in the shadows, as it were. Besides, the language giving an account of the philosopher's work more often than not draws the philosopher's conclusions nearer to contemporary scientific theories that kind of removes from the foreground the question that could arise in the reader's mind as to what "magic means" could have been at Kant's disposal allowing him to form a theory in the field of natural sciences – a theory that in its general outlines is not rejected in our time? The further theory of the formation of cosmos could be viewed as the continuation and specification of Kant's theory.

It is well known that Kant based his hypothesis on Newtonian physics, and it is well known that Kant was one of the most educated men not only in the humanities, but also in physics, astronomy, mathematics, medicine and geography. Could it all be enough for the formation of a magnificent *scientific* cosmological theory? By asking this we may finally come to raising *the question of the essence of scientific character and a scientific theory*. Writing his cosmological treatise Kant does not raise this kind of question. Much more significant, to his mind, is the question of how to combine the nebular hypothesis with the proof of the existence of God, the feasibility of which the philosopher is in no doubt at the time.

The problem of scientific character and the method of investigation becomes more acute as we read the work up to the end, not only the first two parts. However, for the sake of the experiment one could start reading the treatise from the third part forgetting for the moment the content of the first two parts. The third part is sure to have shocked any contemporary reader, especially if he did not know that the author of the text was the famous German philosopher Kant of whom, as is well known, it is said that he made a Copernican type revolution in Western philosophical thought. Maybe, it is this text that demonstrates the magnificence of the transformation?

What is it that Kant writes about in the third part? Neither more nor less than the inhabitants of other planets! Besides, the judgments and the argumentation claim to be no less scientific than those in the first parts. One must say that the third part brings to mind Voltaire's (Kant's contemporary) philosophical pamphlet *Micromegas* about an inhabitant of the planet Sirius – his stature being 24,000 times greater than man's stature – who travels round the Universe accompanied by a dwarf. The dwarf comes from Saturn and is only a thousand times bigger than man. In their travels they reach the Earth that seems rather deplorable to them. With the help of a microscope the Cosmos travelers manage to discover reasonable beings but are astounded

by their stupidity. One might think that Voltaire's tract was a parody on Kant's theories, had it not appeared 3 years earlier than Kant's treatise. Kant had not read Voltaire's tract, just like Laplace, as has been mentioned, had had no idea of Kant's cosmology theory. It is so characteristic of the century. Just like, it must be mentioned, that speculations on the inhabitants of other planets and their characteristic features are characteristic of the eighteenth century. Probably it was a reaction to the collapse of the Ptolemaic geocentric (and at the same time anthropocentric) model of the Universe. The lack of anthropocentrism is compensated by sowing human beings in the now immeasurable Cosmos or, as it is done by Kant, forming a theory of knowledge that actually ascribes universal anthropomorphic features to any reasonable being – no matter where in the new Universe.

Following the traditions of the time Kant is convinced that the Universe is inhabited and based on the "scientific principles" of the time he indulges in speculation about the differences existing among the inhabitants of the Earth, Venus, Jupiter and Saturn. According to Kant, the Earth's inhabitants would dry up in the hot climate of Venus while those of Venus would become stiff and immobile getting to Earth. The inhabitants of Jupiter, according to Kant, should be made up of lighter and more gliding elements in comparison with the inhabitants of our planet so that the weak impact of the Sun could make them move.

Finally, the philosopher is so bold as to formulate even two "general laws".

1. "The material stuff of which the inhabitants of different planets, including even the animals and plants, are made must, in general, be of a lighter and finer type, and the elasticity of the fibres as well as the advantageous construction of their design must be more perfect in proportion to their distance away from the Sun".¹
2. "That the excellence of thinking natures, the speed of their imaginations, the clarity and vivacity of their ideas, which come to them from external stimuli, together with the ability to combine ideas, and finally, too, the rapidity in actual performance, in short, the entire extent of their perfection, is governed by a particular rule according to which these characteristics will always be more excellent and more complete in proportion to the distance of their dwelling places from the Sun".²

Is it really written by the author of the famous origin of cosmos hypothesis, and how do these judgments go together with the ideas expressed in the first two parts?

Strange as it may seem, we may reasonably state that the two parts are not at variance with each other; they marvelously supplement each other by illustrating the method of scientific cognition and basic orientations of the time and highlighting the splendor and misery of speculative rationalism.

The author of *Universal Natural History and Theory of the Heavens* being the son of his time is sure both of the feasibility of giving "scientifically precise"

¹Kant, I. *Universal Natural History and Theory of the Heavens or An Essay on the Constitution and the Mechanical Origin of the Entire Structure of the Universe Based on Newtonian Principles*. (Arlington, VA: Richer Resources Publications, 2008), p. 151.

²Ibid., p. 151.

description of the origins and history of the Universe, the inhabitants of other planets and offering convincing proof of the existence of God (although it should be added that Kant is not satisfied with the existing proof of the existence of God). The main thing is in finding and consistently implementing a method that would allow to cognize any sphere, and cognize it to the full. According to the representatives of speculative rationalism (this trend in Germany is most consequentially attested to by Christian Wolff), this possibility is provided for by logic and mathematics. The more we use mathematics in our investigations – whatever the object of research – the more precise will be the answers to the questions raised. At the initial stage of his philosophical activities, accepting the basic metaphysical orientations of speculative philosophy, Kant at the same time endeavors to base his investigations on the newest cognitions of natural science, Newtonian physics included. The result of the two trends produces a chimerical combination – a merger of cognition of natural sciences, logic-mathematical speculation and metaphysical fantasies.

Based on the mathematical method Kant undoubtedly achieves positive results in the explanation of the universal processes of nature; extensive knowledge of different spheres of natural sciences allows him to introduce into the vision of nature elements of historicity. It must be added that before Kant the Universe is thought of as created by God, ready and unchangeable. According to the German philosopher, God is the creator of the basic matter from which the world organization evolved according to the laws of mechanics. Henceforth, God does not interfere in the mechanics of the heavens and that is what enables the searching mind to penetrate into the secrets of the Universe. “Give me the material, and I will build a world out of it! That is, give me the material, and I will show you how a world is to come into being out of it”.³

In the work under discussion Kant refers to Democritus and Epicurus. According to Kant, Epicurus groundlessly makes atoms change their rectilinear motion and collide with each other for no reason at all. Everything is given to chance. Kant offers a different theory in which matter would obey certain indispensable rules. Kant writes: “I see a beautiful and orderly totality developing quite naturally in its complete dissolution and scattering. This does not happen through accident or chance. By contrast, we see that natural characteristics necessarily bring this condition with them”.⁴ The philosopher is convinced that based on the universal laws of matter it would be possible to metaphysically show and substantiate the basic constructions of the edifice of the world. At the same time Kant is given to doubts whether just like previously one could say: “Give me the material, and I will show you how a caterpillar could have developed?”⁵ The philosopher asks us not to wonder that he dares to state one could sooner discern the structure of all heavenly bodies in their motion, to learn of the origins of the current situation of the edifice of the world than to comprehend the emergence of one single stalk of grass or caterpillar.⁶

³ *Ibid.*, p. 17.

⁴ *Ibid.*, p. 15.

⁵ *Ibid.*, p. 18.

⁶ *Ibid.*, see p. 18.

It is interesting to note that already in the *Universal Natural History and Theory of the Heavens* an essential trend of thought is marked by the notion of *attraction* that makes one think of an especial liveliness of matter, a law-governed self-motion. In Kant's further works⁷ the notion of *repulsion* is added, in the concept of the development of nature the theory of "physical monads" and "the centre of monadic power" occupy an ever more significant place testifying to an essential approximation to some of Leibniz's ideas. Although the theory, according to the philosopher, does not allow one to reach further than an understanding of the cosmic order, it embodies a peculiar poetical appeal, even pantheistic moods that address us from the pages of the *Universal Natural History and Theory of the Heavens*.

Kant tends rationally to reconstruct the process of the formation of the Universe. And his imagination conjures up a vision of the process that is a long way from the dry logic of mathematical formulae:

We see at a glance wide seas of fire, raising their flames towards the heavens, frantic storms, whose fury doubles the intensity of the burning seas, while they themselves make the fiery seas overflow their banks, sometimes covering the higher regions of this world body, sometimes allowing them to sink back down within their borders. Burned out rocks extend their frightening peaks up above the flaming chasms, whose inundation or exposure by the seething fiery element causes the alternating appearance and disappearance of the sun spots. Thick vapours which suffocate the fire, lifted up by the power of the winds, make dark clouds, which in fiery downpours crash back down again and as burning streams flow from the heights of firm land of the sun into the flaming valleys, the cracking of the elements, the debris of burned up material and nature wrestling with destruction – these bring about, along with the most awful condition of their disorder, the beauty of the world and the benefits of its creatures.⁸

No matter to what extent Kant's cosmological conception reminded one of the teachings of Democritus, Epicurus and Leibniz, no matter how the mathematical method interlaced with poetical visions the rationalistic interpretation of the world combined with empirical knowledge gives fruit.

In Kant's time people knew of the existence of six planets – Mercury, Venus, Earth, Mars, Jupiter and Saturn. Kant advances a speculative supposition that beyond Saturn there are other as yet unknown planets. With time his suppositions proved to be right. Uranus was discovered during his lifetime, Neptune – in the nineteenth century and Pluto – in our time.

However, can logic and the mathematical method be regarded all powerful, can they be applied anywhere, in the investigation of any object? Let it be remarked that already in the *Universal Natural History and Theory of the Heavens* Kant does not venture to speak about the origin of life. In his opinion, mathematics is of no help here.

One could surmise that those were the attempts to consistently use the logic-mathematical method in the solution of any problem, the search for the proof of the

⁷ See *Metaphysicae cum geometria junctae usus in philosophia naturali, cuius specimen I. continent monadologiam physicam* (1756) 4 *Metaphysische Anfangsgrunde der Naturwissenschaft*. (Riga, 1786).

⁸ Kant, I. *Universal Natural History and Theory of the Heavens*, p. 121.

existence of God included, that made Kant re-evaluate the possibilities of rational speculations and the limits of their application. The entanglement of the problem is sharply delineated in the work *The Only Possible Argument in Support of the Existence of God* (1763). Kant is no longer satisfied only with considerations and proofs connected with an object or phenomenon – he raises the question of the specific character of veracity attributed to the object, i.e., actually the question raised is whether it is possible to speak of what is beyond this world in the same categories as of things of the physical world.

Writing the *Universal Natural History and Theory of the Heavens* Kant is also sure that he bases the work upon the material of experience, however when facts are missing he does not refuse to supplement the empirical experience and go beyond its framework making use of the synthesizing power of imagination and the conclusions of the intellect. It should be taken into account that hypothesis, speculation from the contemporary point of view as well not only can, but should go beyond the framework of the given experience, on the condition though that the hypothesis obeys the experiential content control. That is the borderline dividing the rational judgment, hypothesis from fantasy.

Kant increasingly tends to acknowledge that there are two forms of veracity: the veracity of natural necessity connected with the use of experience and logically mathematical method and the veracity pertaining to the sphere of metaphysics, to man's imagination and fantasy – as well as to the moral sphere. That marks the sphere of freedom. However, in doing scientific work man should not blunder into the realms of fantasy.

The further evolution of Kant's views proceeds under the influence of the epistemology of the English philosopher David Hume, especially his considerations on the causal relationship as a phenomenon of a psychological level. According to Hume, there are no causal relationships in nature, only processes, succession; causal relationships are a way one views things, a form of an attitude man uses interpreting phenomena in a given, inherited form.

In his conclusions Kant goes further than Hume. In his view there exists a whole line of a priori, i.e., independent of experience forms of world view and interpretation that man adjusts to the explanation of things and phenomena. Thus, the world turns into a man-made "scene of the world".

At one time under the influence of Neoplatonism (and not on the basis of empirical investigations) Copernicus came to realize that it was not the Sun that rotated round us, but we rotated round the Sun. Afterwards natural science confirmed Copernicus' Neoplatonic conclusion. Kant carries out a revolution in philosophy similar to the one perpetrated by Copernicus. He perceives that *in the process of cognition it is not the mind that adapts to things, but things adapt to the mind*.

The kind of understanding turns things into phenomena – occurrences – thus sharply raising the question of the feasibility of adequate cognition. *Is precise knowledge possible in the world of phenomena?* Prior to Kant the prevailing understanding in philosophy was that there was a consonance between the intellect and the world and the achievements of modern natural science seemed to confirm it, that Kant in no way wanted to question. According to Kant, there really exists an agreement between

the mind and the world, but it exists in a very special way – not in the usual naïve kind of understanding, i.e. Kant believes that *the world science explains has already been arranged by the mind*. Man cognizes objective reality up to the level to which the reality is contained in the basic principles of the mind, and – one could add – to what degree those principles allow to cognize the world. Any cognition of the world takes place making use of categories inherent in the human mind. The specifically concrete character of scientific cognition derives from the mind embodied in man's world understanding, in his perception of things and phenomena. Kant convincingly proves that man's observation of the world is never neutral and free from previously given notions and judgments (in this respect contemporary science speaks of paradigms of scientific cognition). The world the man perceives and thinks about is formed as a result of world perception and judgment. Hence the question the scientist asks the world in principle arises actually from observation, from the existent horizon of understanding – judgment and notion. The question to a great degree embodies the answer. Thus, what we call the laws of natural processes are actually *the products of mutual interaction of the inner organization structures of the observer and the outside objects* and precisely for that reason the objects themselves are inscrutable because of the practical impossibility to separate the observer's inner organization structures from the object observed.

However, Kant stresses that scientific cognition can only materialize in conjunction with experience, i.e. fusing into one the sensual world, its perception and the grasping activity. Any attempt at leaving the sphere of experience takes one into the world of fantasy and dreams. From the point of view of Kant's Copernican revolution in philosophy his description of the inhabitants of other planets in the *Universal Natural History and Theory of the Heavens* should also be viewed as unfounded wanderings of the mind. Such wanderings of the mind never occur in Kant's philosophy of mature years.

Copernican Neoplatonic revolution at the time precluded man from occupying the central place in the Universe – the place he had ascribed to himself. Kant's philosophy robs us of the conviction that it is possible to unequivocally and truthfully cognize the Universe. This is the observation also made in many of the works by Anna-Teresa Tymieniecka who concludes that Kant's philosophy does not get as far as an objective viewing of the connection of cosmos, logos and the creative act – primarily being immersed in man's subjectivity. It is also stressed referring to Bertrand Russell by the contemporary German philosopher Wolfgang Welsch, in whose opinion "Kant has actually made an anti-Copernican revolution" or even "a Ptolemaic counterrevolution".⁹

We might only partly agree with Welsch. Really, while Copernican teaching decentralizes the world, Kant recentralizes it. Kant places man in the centre of the world that must be cognized, ascribing the primary role to the cognitive activity of man's mind that forms the scene of the world. By humanizing science Kant shakes the tradition that was at the basis of natural sciences as established by Descartes and

⁹Welsch, Wolfgang, *Mensch und Welt. Eine evolutionäre Perspektive der Philosophie*. (München: Verlag C. H. Beck, 2012), pp. 12, 13.

Newton. Kant's philosophical revolution undoubtedly strengthened the positions of scientific cognition by excluding metaphysical speculation (it is in this sense that Kant's contribution could be likened to the Copernican revolution). At the same time rejecting metaphysical claims for cognizing the supernatural and acknowledging man's insatiable inclination towards it, Kant imprints a sphere of freedom returning to the starry heavens above its mystique, its inscrutability that had actually been looted by speculative rationalism.

In Kant's opinion, the process of cognition can be endless, however, one should always bear in mind that the result of the process can never be characterized as absolute and final. That could only be achieved by a divine, not human intellect.

One must ask – as it has already been frequently done in the history of philosophy – hasn't Kant's theory of cognition been overpowered by supreme subjectivism? Hasn't there developed an insurmountable crack between the sensual and transcendental world, between nature and freedom? The questions seem to be troubling the philosopher himself. That is why the third critique – *Critique of the Power of Judgment* – tends to look for some intercession between the sensual world, the Cosmos being cognized by our understanding and the transcendental world of freedom. Such mediation, according to the philosopher, could be the principle of goal-directedness. However, the introduction of goal-directedness does not free the process of cognition from basic subjectivism. Kant is sure that our reflexive power of judgment should be capable of regarding nature in such a way "that in conformity to the law of its form it at least harmonizes with the possibility of the ends to be effectuated in it according to the laws of freedom".¹⁰ Nature should be regarded in such a way as though it were in possession of a goal that is inaccessible to us, as though it had been energized by some transcendental substratum. It must be admitted that the principle of goal-directedness models our cognition process, formally it establishes unity between the sensual and the transcendental world, yet it hardly does anything to enhance either the cognizing activities or the objectivity of their results.

Kant is preoccupied with the problem of the objectivity of world cognition all through his lifetime. He returns to it in his later-day treatise *Opus postumum*. In this manuscript Kant offers a special program of the metaphysics of nature that should ensure the objectivity of cognition in natural sciences. Transcendental basic principles naturally retain their governing position while next to them is placed an elaborated system of physical notions. The go-between role, according to the philosopher, could be played by notions that could be derived from the physical notions with the help of specific transcendental idealization. It should be added that the program never saw its completion, yet it serves to demonstrate Kant's attempts at ensuring maximum objectivity to the world cognition process.

¹⁰Kant, I. *Critique of the Power of Judgment*, (Oxford: Oxford University press, 2007), p. 12.

Part VII