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Philosophical and methodological premises for the crisis of SETI programs: about the place of intelligence in the Universe

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SETI is the problem of the greatest importance for modern astronomy from the viewpoint of world outlook. It is absolutely impossible to give here all the reasons why it is so popular among researchers, philosophers, writers, psychologists, and other representatives of the intellectual elite of mankind. It will hardly be an overstatement to say that any fundamentally important step toward the development (to say nothing about "solving", i.e., the discovery of extraterrestrial intelligence) of this problem would have revolutionary consequences for the entire world science, for the entire self-consciousness of mankind, for its self-determination in Space. Say, all the philosophical and purely scientific analyses of the phenomenon of intelligence — all attempts to determine its essence, methods of identification of intelligent, conscientious activities (recall the famous "Turing test"), specifics of its genesis and role in the overall structure of the Universe — are fraught with fundamental narrow-mindedness. The basic principles of scientific analysis of any phenomenon require that one studies the greatest possible number of its particular implementations (single variants, which should differ from each other by structural and functional properties to the maximum possible extent). However, we know only one intelligence — i.e., human intelligence, which we call "consciousness", and we actually have no way to analyze this reality "objectively". Consciousness is, by definition, the only instrument of cognition. Can it become itself an object of cognition? The paradox is that the foremost of all questions raised by the mankind still remains unanswered. We have no example of "another intelligence "... Above everything, we would like to meet fellow intelligent beings. We have been purposefully looking for them for about 50 years, and one would expect that they have been seeking us for an incomparably longer time (although it is fare to say that the terrestrial civilization has begun to produce cosmic-scale manifestations only since radio was invented about one hundred years ago), however... we have not met them yet.

The history of SETI programs has undergone several stages. We do not discuss here purely speculative models of natural philosophers (e.g., G. Bruno) and science-fiction writers, and go straight to the first, "naively optimistic", stage of development of the problem of extraterrestrial civilizations. Chronologically, this corresponds to 1960–1970-ies. This period was characterized by conspicuous technological orientation of SETI studies (which shows up even in "sociological" and "culturological and civilizationist" style constructions of the pioneers of the search for extraterrestrial civilizations). Furthermore, many conclusions — especially at the beginning of these studies — were too abstract and speculative (recall, in this connection, the well-known Drake formula). Every civilization was believed to develop (exponentially) in an ascending line, reaching rather rapidly (by cosmic time scales) the highest technological level (and, naturally, the highest level of energy consumption). Such civilizations begin to explore the surrounding space and, e.g., eventually master the energy of their entire galaxy. Such an "astroengineering" trend of the evolution of space civilizations was addressed by F. Dyson, N. Kardashev, L. Leskov, and many other researchers[1]. It is "evident" that the higher the technological level of a civilization, the more sense it makes for it to look for "a partner for cosmic dialog" or even simply for "another intelligence", because the interest in this problem (as we know from our own experience) is of objectively existential nature. A civilization that has stepped into space becomes appreciable. Manifestations of its activity (let us skip here the problem of demarcation of natural and obviously artificial phenomena) cannot fail to be seen if the Universe hosts, at least one, somewhat developed techno-

[1] See, e.g.,: *Leskov L.V.* Kosmicheskie tsivilizatsii: problemy evolyutsii. ("Space civilizations: problems of evolution") Moscow: Znanie, 1985 (in Russian)., *Shklovskii I.S.* Vselennaya, zhizn', razum ("The Universe, life, and intelligence"), seventh edition, Moscow, 1987 (in Russian). *Rubtsov V.V. and Ursul A.D.* Problema vnezemnykh tsivilizatsii ("Problem of extraterrestrial civilizations"), Kishinev, 1984 (in Russian).

logical civilization, which has also become interested in the problem of its nonuniqueness. In other words, if extraterrestrial civilizations exist, it is quite possible to at least discover them and, moreover, this is not a difficult task. Enthusiasts have developed dozens of possible strategies for searching for "extraterrestrials" and scenarios for the contact and interaction of different cosmic civilizations (including the development of a communication language). It only remained to implement all these strategies and scenarios. The progressive development of radio telescopes allowed us to probe space deeper and deeper in increasing number of frequency intervals. We addressed messages to potential fellow intelligent beings, we were ready to receive our "brothers" on the Earth (it was clearly more reasonable and likely to expect a "visit" of representatives of some supercivilization than to prepare to fly one does not know where and visit extraterrestrials "on their own territory"). It seemed that the long-awaited breakthrough in experiments was going to happen just now. However, Space remained silent. Experts in humanitarian fields — psychologists, linguists, specialists in social sciences — began to take increasingly more active part in these studies. An entire interdisciplinary field — astrosociology — came into life. However, we are facing yet another paradox — this science has everything except the actual subject of investigation (other than the anthropomorphic fantasies of exuberantly imaginative researchers)[2]. It was becoming clear that the flaw was rooted not in technical computations or in the limitedness of our knowledge about Nature, but rather in the methodological, or, on a broader scale — philosophical — support (justification) of SETI programs. Optimism declined. "Thinking sceptics" suggested calling the resulting situation the astrosociological paradox (the AS paradox): given the age of the Universe and the implications of the theories of cosmic civilizations, highly developed civilizations should be by no means a rare phenomenon; we should see them (our present-day instruments are already sufficient to this end) or they should have already visited us; however, this is obviously not the case. The lapidar formulation of the AS paradox: "If extraterrestrials really exist, their spaceships must have been in the Solar system for a long time". However, there are no spaceships, whereas extraterrestrial civilizations must exist, hence... The researchers tried to interpret the AS paradox along various lines: from purely fantastic (like "extraterrestrials exist, but they live and observe us from parallel worlds"), "buddhistic" (extraterrestrial civilizations lose interest in the surrounding Cosmos at a certain stage of their development), and "sociological" (highly developed civilizations are short lived and destroy themselves as a result of internal conflicts) to "pessimistic" (our terrestrial civilization is simply a unique phenomenon because of the random nature of the process that "triggers" biological and social evolution of matter and for this reason, it is actually improbable to be repeated in some other place of the Universe — this is the famous concept of I.S.Shklovsky). The concepts of philosophers, who offered a broader critical and methodological approach to the problem, remained at the periphery of the discussion. Hence if the absence of extraterrestrial civilizations proves to be less likely than their "ubiquitous" and active existence, it is reasonable to suggest that there are so far unknown mechanisms or even laws of unknown nature — not necessarily physical — which prevent contacts between different intelligent beings. Our "great solitude" in the Universe may prove to be rooted in some profound principles (that are philosophical in essence) of the organization of the Universe, which have so far escaped the attention of natural sciences researchers. However, we believe that it is philosophical models that deserve the closest attention, because without philosophical analysis there appears to be no solution of any heuristic value to the evident impasse in SETI research. Unfortunately, the philosophical introspection of the problem remains on a rather low level. Most of presuppositions implicitly adopted in SETI programs still remain based on rather primitive naively materialistic concepts. Their "core" assumption is the "*thesis of anthropomorphism*": extraterrestrial intelligence is isomorphous to our intelligence as far as their essential properties are concerned, implying that all possible intelligent beings in the Universe should have the same possible attitudes (cognitive and practical) toward the objective reality, which is universal for everybody (the big "haystack").

The researchers began to become aware of this implicit assumption and started criticizing it when overoptimistic illusions about SETI programs were dispelled in 1970-ies. At the same time, the cosmologists were vividly discussing the famous "anthropic principle" (AP), and by late 1980-ies the dominating interpretional models had considerably shaken the naive variant of cosmogony and epistemology with its treatment of consciousness as the highest form of reflection of objective reality by itself. Understanding the place of intelligence in the Universe proved to be not so very simple. Spirit obstinately refused to fit the straightforward frames constructed for it by the "adherents of materialism" with not too much experience in the philosophy of science. The relation

[2] It is, however, fair to say that some "astrosociological" studies proved to be valuable from the viewpoint of purely "internal" problems of the terrestrial civilization.

"the Universe — perception of the Universe by man" turned out to be not a one-way link. We now suggest a very unusual viewpoint on the discussions concerning the AP, which will allow us to lay down the methodological and paradigmatic basis for our interpretation of the AS paradox. We analyze the famous concept of "participatory Universe" by J.Wheeler. In its time, this concept triggered a wide debate among the research community due to its unorthodox conceptual understanding of the relation between the observer and reality. We now perform a philosophical and methodological analysis of the visionary bases of Wheeler's theory and try to show that "everything old is new again", that when closely examined, the basic presuppositions of the physicist Wheeler prove to be identical to the postulates of the *transcendental philosophy* of Immanuel Kant. We want to emphasize by our paper that physics and philosophy should go hand in hand when studying such complex concepts as time, consciousness, and existence; that physical interpretations should take into account visionary generalizations and basic philosophic models and lean upon some fundamental philosophical metatheories. We try to reanimate Kantian philosophy and assimilate it into modern science. We also briefly describe some of the basic Kantian ideas in order to link them to modern quantum cosmology.

According to Kant, our cognition always begins with experience, but is not entirely the product of experience; our cognitive activity introduces something of its own (B1[3]), namely, the form of experience, the universal, limit parameters of the objects of consideration (more precisely, objects that can be viewed as such), including, according to Kant, the localizability of objects in spacetime, their extensivity, capability for bearing properties, for obeying the casuality principle, etc. The characteristic feature of Kant's "critical philosophy" was the "Copernical revolution in the method of cognition": "...It has hitherto been assumed that our cognition must conform to the objects..." (BXVI), i.e., the object proves to be dependent on the subject in a certain sense. Thus in pre-Kantian philosophy time was believed to be a property of things by themselves, or their universal objective relation that follows from the very fact of their existence (Leibnitz), or universal ontological reality, objectively existing form, a "vessel" that contains all things and the change of their states, the "arena" where the world history unfolds (Newton); time was believed to be an objective parameter of nature, or an attribute, or a substance (see B49). Kant, on the other hand, views time (along with space) as an *a priori form of perception*, sensibility. According to Kant, there are two main and equal sources of cognition, which create the entire world of human knowledge: sensibility and reason. Our senses give us the things, and reason thinks them. Time can then be understood as a subjectively human (but not in the sense of subjective arbitrariness) form or way of existence of what we call objects of our concepts and, consequently, of the *objects* proper, because Kant identifies object with objective representation. The conceptual activity of reason, which creates the world of knowledge (and thereby the world of objects), is aimed at the material provided by sensibility, which by itself lacks any coherence. Time and space are eyeglasses through which we look at the world (B. Russell). We know this about objects as a result of perceiving them, where perception is understood in the spirit of the concept of "reflection", not because objects by themselves are subject to the condition of time (such a concept would imply interpreting time as an ontological phenomenon), but because there may be no other objects for us, all other objects will simply never fall within the field of our perception, within our objective world. Kant actually abolishes ontology as an autonomous philosophical discipline by immersing traditional ontological problems into epistemology, i.e., he views ontological properties of objects as products of gnoseological structures (a priori forms of sensibility and reason) and, correspondingly, considers ontology as a part of epistemology. Thus "Time is therefore given a priori. In it alone is all reality of phenomena possible. These may all be annihilated in thought, but time itself, as the universal condition of their possibility, cannot be so annulled. " (B46). Time is a necessary tool of cognition of the world by man, the underlying means of objectivation of concepts, which lies at the very basis of what we call objective reality. According to Kant, object is simply a necessary correlate of the ability of our consciousness to make judgements that are of suprasubjective nature. "...we are conscious of them [our representations — K.M.] as in a succession, that is, according to the form of the internal sense [and this is time — K.M.]. Time, therefore, is not a thing in itself, **nor is it** any **objective determination pertaining to, or**

[3] Here we quote Kant's "Critique o Pure Reason" [Immanuel Kant. "Critique o Pure Reason". Translated by J. M. D. Meiklejohn, eBooks, Adelaide 2004; Immanuel Kant, Critique of Pure Reason translated by Norman Kemp Smith, St. Martin's Press, New York, 1965.; Immanuel Kants Critique of Pure Reason. In Commemoration of the Centenary of its First Publication. Translated into English by F. Max Mueller (2nd revised ed.) (New York: Macmillan, 1922)] in accordance with international system of pagination: letters A (the first edition) or B (the second edition) followed by the number of the paragraph. "Prolegomena..." [Immanuel Kant. Prolegomena: "To Any Future Metaphysics That Can Qualify as a Science". Translated by P.Carus, Open Court Publishing Company, 1986] are cited by paragraphs.

inherent in things [highlighting supplied — K.M.]" (B54).

Let us quote some more Kant's propositions, where he unambiguously asserts that the structure of the world depends on that of the subject who perceives it. Kant agrees with the idea of Berkley that we are dealing with nothing but the phenomena of our consciousness — thoughts, judgements, and concepts[4]. "... the form [of phenomena] must lie ready a priori for them in the mind, and consequently can be regarded separately from all sensation. " (B34); "Categories (a priori structures of reason, wherein the universal information about objects proper is coded — K.M.) are conceptions which prescribe laws a priori to phenomena, consequently to nature as the complex of all phenomena (including the laws of casuality, conservation, etc. — K.M.)" (B163)[5]. "Even the laws of nature... we may therefore at least expect them to be determined upon grounds which are valid a priori and antecedent to all experience" (B198). "... categories are not derived from nature... nature must regulate herself according to them" (B164). "... how the conditions a priori of the possibility of experience are at the same time the sources from which all the universal laws of nature must be derived." ("Prolegomena", §17). Laws discovered by science are introduced into nature by reason: Kant points out that "all empirical laws, although they cannot be deduced from pure reason, are only particular definitions of pure laws of reason, and it is only through and in accordance with these pure laws that empirical laws are possible"[6]. "... reason only perceives that which it produces after its own design" (BXIII). "... we (i.e., what concerns the necessary statements — K.M.) only cognize in things a priori that which we ourselves place in them" (BXVIII)[7]. "... but in regard to experience in general, and everything that can be cognized as an object thereof, these a priori laws are our only rule and guide" (B165). "Before objects are given to me, that is, a priori, I must presuppose in myself laws of the understanding..." (BXVII). Categories allow reason to become itself the creator of experience (see B127).

Such are the fundamental bases of Kant's doctrine. Its subjectively idealistic background appears rather evident. *Transcendental*[8] subject as Kant calls it, i.e., collective subject, mankind), uses a priori schemes to construct "nature as conformability to law". However, as a philosophical paradigm, subjective (more precisely, subjectival — a term introduced by V.V.Sokolov) idealism has a number of advantages, which are important from the viewpoint of the methodology of critical approach, and puts forth a number of rather profound theses concerning the relation between subject and object and the nature of knowledge that are better thought-out than naively materialistic theses. What particular conclusions concerning the place of subject in objective reality does Kant draw from his doctrine of "a priori forms of cognition"?

The chief thesis is: *observer cannot be thought off*! The observer, but not the object is brought to the fore when looking for the substantial basis of scientific world view. This idea is very close to the viewpoint of quantum physics! All objects appear to be real only in relation to the conscience that perceives them. "We can and ought to regard extended bodies in it (space — K.M.) as real. ... But time and space, with all phenomena therein, are not in themselves things. They are nothing but representations and cannot exist out of and apart from the mind. ... The objects of experience then are not things in themselves, but are given only in experience, and have no existence apart from and independently of experience." (B520). Note that an observer — *someone who would imagine it* is needed even to imagine an observer-free universe. The Universe must presume a (future) observer ("[the Universe] could not develop in another way" in the language of physics), otherwise it is, strictly speaking, nonexistent. There may not exist a Universe without someone *to ascertain it as a Universe*, it is nonexistent in the absence of an observer who would construct it! "We must well master this paradoxical, but quite correct proposition that nothing can be in space, except what is represented in it. For space itself is nothing but representation, and whatever is in it must therefore be contained in that representation. There is nothing whatever in space, except so far as it is **really** (highlighting supplied —

[4] See *Mikhailov K.A.* "Fundamental coordination" of subject and object in Kant's philosophy // Istoriko-filosofskii al'manakh: Vypusk 1 [Issue 1]: Kant and modernity. — Moscow: Sovremennye tetradi, 2005. – P. 173-182. "Outside our knowledge we have nothing which we could set over against this knowledge as corresponding to it" (A104). "It is impossible to find even the slightest *foundation* for the idea of ... an object that exists by itself with no relation to the laws of the form of cognition" (*Kassirer E.* "Zhizn' i uchenie Kanta" (Life and Kant's doctrine). St-Petersburg, 1997. p. 193).

[5] "Quantity (actually, one of the categories — K.M.) is an instrument of thought itself: a pure means of cognition, which we use to construct for ourselves the "nature" as the general regular order of phenomena" (*Kasirer E.* Opus cit. P. 160).

[6] Quoted from: *Kassirer E.* Op. cit. P. 152.

[7] "pure a priori representations ..., which we can draw in perfect clearness and completeness from experience, only because we had already placed them therein, and by that means, and by that alone, had rendered experience possible" (B241).

[8] Transcendental — i.e., related to possible experience, concerning the conditions of its possibility.

K.M.) represented in it. That a thing can exist only in the representation of it, may no doubt sound strange; but will lose its strangeness if we consider that the things with which we have to deal, are not things by themselves, but phenomena only, that is, representations." (A375).

For Kant, existence is first and foremost a category of reason whose meaning can be expressed as follows: "That which coheres with the material conditions of experience (sensation), is *real*." (B266). Existence **is not any more an attribute of things**! According to Kant, the question of existence of something cannot be resolved within the sphere of pure reason. It is meaningless outside *of someone's* actual congitive experience (based on sensuous perceptions). According to Kant, the Universe organizes itself as an integral system that conforms to laws, the consciousness of some transcendental subject. Nature (the Universe) is nothing else but the object of all possible **experience**, as an a priori complex of phenomena (B163), i.e., the Universe a priori correlates *with its observer*. Reason is the source of laws of nature and thereby the source of *the unity of nature* (it is by no means in its materiality!): "The unity of the universe, in which all phenomena to be connected, is evidently a mere consequence of the admitted principle of the community of all substances which are coexistent." (B265). Cognition constructs fragments of reality — objects — in such a way as to make them obey the universal law of nature — the law of universal interaction, universal interrelation. "For in the understanding alone is the unity of experience, in which all perceptions must have their assigned place, possible. " (B282). It is only in the form of its scientific view (i.e., by thus satisfying the criterion of orderliness, regularity, and coherence) that the world acquires and maintains its unity.

Let us now project ourselves to the 20th century. Here is Wheeler's statement that has already become classic: "whether man is involved in the design of the Universe in a much more central way that one can previously imagine"[9]. Perhaps "There exists one possible Universe 'designed' with the goal of generating and sustaining 'observers."[10]! And Kant: only our Universe is accessible to us *by definition* and therefore the *existing* Universe is unique. As for various hypothetical fantastic Universes, Wheeler points out: "what good would a universe be with no one to observe it."[11]. There is no doubt that Kant would agree with this statement, he would even specify that the Universe is nonexistent if not constructed by an "observer" (reason). John Wheeler formulates his famous "**participatory anthropic principle**": "Observers are necessary to bring the Universe into being"[12]! And here is what Kant writes: "... There are therefore certain laws (which are moreover a priori) which make nature possible" (B263). I.e., the Universe as such cannot exist without reason, or, more precisely, without a subject in general. Indeed, nature in its material aspect (as a complex of phenomena, objects of perception) is possible via the arrangement of *our sensibility*; in the formal aspect (as a complex of rules that all phenomena must obey if thought of as related in experience) it is possible **only** via the arrangement of *our reason*. According to Kant, it is the synthesis of sensibility and reason, like in the case of human knowledge, that makes possible the unity of material and formal aspects of the Universe.

Thus Wheeler associates the concept of "origin" with such concepts as genesis, self-organization, self-reference, self-reflection (just like Kant! — K.M.)"[13]. What ideas underlie the reasoning of J.Wheeler?

At the beginning of its evolution the Universe (or more precisely, matter) was in a specific superdense state — the so-called singularity. Processes that take place in it are of quantum nature. Numerous Universe-worlds are born as a result of numerous quantum fluctuations of this primordial vacuum. Most of them (e.g., non-three-dimensional Universes or Universes where fundamental constants have values that differ from those of our world) do not allow the development of complex material structures, i.e., they are "abortive creations of nature". They came into being from nothingness and into nothingness they passed. "We can say that the Universe is born perpetually from fluctuations... the Universe perpetually reproduces itself"[14]. In such a way, nature tried many times to create a Universe that would be able to self-develop. "We live in the copy of this perpetual creation that is "most appropriate" (for us)"[15]. J.Wheeler suggests a principle according to which the Universe could not be born until accidental evolution created conditions allowing consciousness to develop over some finite interval of time, "communicating community that will give meaning to that

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[9] *Wheeler J.* Discussion// Cosmology: theory and observations. Moscow, 1978. P. 368.[in Russian]

[10] *Barrow J.D., Tipler F.J.* The anthropic cosmological principle. Oxford, 1986. P. 21.

[11] *Wheeler J.A.* The universe as home for man. Discussion. // The nature of scientific discovery. Wash., 1975. P. 576.

[12] See *Barrow J.D., Tipler F.J.* Op. cit. P. 22.

[13] *Nesteruk A.V.* Problems of global evolutionism and anthropic principle in cosmology // Global evolutionism. Moscow, 1994. P. 101.

[14] *Novikov I.D.* : "Kuda techet reka vremeni?" (Where does the stream of time flow?) Moscow, 1990. P. 172. (In Russian)

[15] *Ibid.* P. 173.

universe from start to finish". Wheeler sets forth the same idea in the form of a question: "Is the Universe... sort of a "self-excited circuit"? Is it possible that by generating participating observers the Universe acquires through them the tangibility that we call reality?", or "is it possible that billions of observations haphazardly brought together generate the giant Universe with all its majestic regularities?"[16]. That is to say that selection of a certain Universe from the infinite set of ever emerging worlds does not end at the time of birth of the Universe that is "most appropriate" for self-development, but rather at the time when this Universe generates an intelligent subject who attributes to it this "appropriateness", this property of being a Universe. The resemblance to Kant's ideas is evident[17]. In support of this statement, we give the following phenomenal quote from "The Critique of Pure Reason". "To call a phenomenon a real thing prior to perception means either that we must meet with this phenomenon in the progress of experience, or it means nothing at all.... phenomena in space and time (i.e., fill our Universe — K.M.) ... are mere representations, which if not given in us — in perception — are non-existent.... The things that really existed in past time... But these are to me real objects, **only in so far as I can represent to my own mind** (highlighting supplied — K.M.), that a regressive series of possible perceptions- following the indications of history, or the footsteps of cause and effect — in accordance with empirical laws — that, in one word, the course of the world conducts us to an elapsed series of time as the condition of the present time. **This series in past time is represented as real, not in itself, but only in connection with a possible experience.** (highlighting supplied — K.M.). Thus, when I say that certain events occurred in past time, I merely assert the possibility of prolonging the chain of experience, from the present perception, upwards to the conditions that determine it according to time." (B521-B524). That is, the past becomes real, it acquires prior existence, and the Universe "acquires reality" only when this past becomes *somebody's* past, when an observer appears to arrange the events in temporal order! Without the emergence of time proper, i.e., according to Kant, without the emergence of the concept of time as a form of perception of reality (recall that time is the form of the internal sense that "determines the relation of representations in our internal state." (B50)), the very idea of sequence in natural events is meaningless (see B37). "I must not say of what I think in **time** (highlighting supplied — K.M.) or in space, that in itself, and **independent of these my thoughts** (highlighting supplied —K.M.), it exists in space and in time ... Objects of the senses therefore exist only in experience" ("Prolegomena", §52).

Hence the "*strong anthropic principle*": observers must appear in the Universe at a certain stage of its development to bring it into existence. According to quantum mechanics, the properties of objects do not exist until they are measured. J.Wheeler generalizes this thesis and postulates that the entire Universe is brought into real existence only when it is observed, remaining until then in only a *virtual* state ("participatory Universe")[18].

Kant uses the old Platonic argument: the simultaneity or sequence of events could not have been perceived if sensibility would not a priori have pure intuition of space and time (B46)[19]. Before the appearance of intelligence the very idea of the *appearance* of the Universe is ill posed, because it would imply temporal connotation (the Universe *did not exist until* a certain *instant of time*). Like Wheeler, who considers the "existence" of the Universe in two modi — the "intangible" modus before the development of an intelligent community, and the "tangible" modus, the modus of reality that intelligent observers impart to the Universe — Kant could, in principle, distinguish the existence of the Universe as the existence of a transcendental object (which corresponds to what appears to us while remaining a thing "in itself", a thing "beyond" the only world that is real for us, the world of phenomena) and its real existence as an existing object (see B522). This reasoning (about the evolution of the Universe) also applies, in principle, to the

[16] See *Nesteruk A.V.* Op. cit. P. 101.

[17] For a more detailed discussion of the problem "Kant's philosophy, status of objective reality, and anthropic principle" see our paper: *K.A. Mikhailov.* Kant's concept of time and modern quantum theory: subject and reality // Real'nost' i sub'ekt [Reality and subject]. 2002. Vol. 6. 2714. — P. 54-62. (In Russian). See also our other papers: *K.A. Mikhailov.* Kant's philosophy and modern cosmology // Istoriko-astronomicheskie issledovaniya / Institute of the History of Science and Technology named after S.I.Vavilov. Issue. 29 / Edited by G.M.Idlis. – Moscow: Nauka, 2004. – P. 150 – 166; *K.A. Mikhailov.* Kant's concept of time and modern quantum theory: the problem of the existence of the Universe (In Russian). // http://www.chronos.msu.ru/REPORTS/michailov_kantovskaya.htm

[18] These formulations are due to Prof. A.Moskovskii.

[19] Cf. Plato's reasoning: to understand and ascertain that, e.g., two animals that we contemplate belong to the same genus of "equus", we must **already have an a priori** concept of "equus". Only then we will be able to classify the empiric object under a concept, i.e., cognize this object as a **determinate** being. Concepts cannot appear as a result of comparison, generalization, or abstracting, because the very attribution of similarity with the aim to form a general concept on its basis already implies, according to Plato, the knowledge of the uniformity of the objects in question, i.e., mastery of a general concept.

future. The fact that the knowledge of the principles and laws of our (possible) experience allows **us** to trace the development of the Universe toward the future including its evolution to a state that rules out the existence of an intelligent observer[20] does not necessarily imply that *the Universe as such* has a future of its own, that it develops and evolves on its own, and that it will sometimes exist without us. In reality, the Universe has the modi of the future, history, development, etc. only in the consciousness of the observer who perceives it. It is the observer who makes possible the notion of the past and future states of the Universe, it is the observer who unfolds the line of the world evolution as "real", it is the observer who "attributes a meaning to the Universe from its very beginning and to its very end". The Universe by itself as actual whole exists as a universal **timeless** aggregate of things. It has neither past, present, or future. It is improper to say that the Universe actually *developed* before man appeared, — the very notions of change and sequence do not exist without man. In noumena, i.e., in things viewed in the modus of "existence for itself", "nothing happens in this subject — for it is a noumenon, and there does not consequently exist in it any change, demanding the dynamical determination of time" (B569, see also B604). Change of states is a feature peculiar only to things viewed as phenomena. And we see the Universe evolving, because we perceive all its objects via temporal determinations. We thus have to acknowledge that we *do not* observe the ***Universe** itself*, but only its *spaciotemporal "section"*. It thus follows that an *intelligent* observer (and not just "heavy nuclei") endowed with the property of self consciousness and thinking is needed to bring the Universe into existence.

Let us see what Kant says. Although "The empirical reality of time, therefore, remains, as the condition of all our experience.[21]... we deny to time all claim to absolute reality... But absolute reality, according to what has been said above, cannot be granted it. Time is nothing but the form of our internal intuition. If we take away from it the special condition of our sensibility, the conception of time also vanishes; and it inheres not in the objects themselves, but solely in the subject (or mind) which intuites them." (B54). Thus Kant admitted empirical reality of time — time as a parameter indeed inheres in empirically existing objects. However, this is a secondary feature. As a universal condition for the existence of objects time is *transcendental*: "... and that if we take away the subject, or even only the subjective constitution of our senses in general, then not only the nature and relations of objects in space and time, but even space and time themselves disappear; and that these, as phenomena, cannot exist in themselves, but only in us." (B59)[22]. The past, history (as an aspect of temporal measurement) is only a modus of human conceptions, or, more precisely, of their form, and in this sense they are ideal. What human intellect introduces into nature attributes it the status of reality: "... Save through its relation to a consciousness that is at least possible, appearance could never be for us an object of knowledge, and so would be nothing to us; and since it has in itself no objective reality, but exists only in being known, it would be nothing at all...." (A120). Thus the Universe is nothing without self-reflecting consciousness! An observer is required for the creation of the Universe to the same extent as the Universe is requited for the creation of an observer ... observers create the Universe first of all (Wheeler)[23].

It follows from Wheeler's ideas that "the emergence of the Universe should be viewed as the genesis of the objective content of the notion of the "Universe in the form of collective human consciousness"[24]. And according to Kant, the objective content (meaning) of knowledge, its attribution to the object

[20] Stars will die out when they exhaust their reserves of nuclear fuel (hydrogen) and life in the Universe — at least as we imagine it now at the current stage of the development of science — will cease to exist in a natural way.

[21] "Time is therefore merely a subjective condition of our (human) intuition (which is always sensuous...), and in itself, independently of the mind or subject, is nothing. Nevertheless, in respect of all ... things which come within the sphere of our experience, it is necessarily objective." (B51).

[22] According to Kant, we can say nothing about the "objectively" existing Universe (in the materialistic sense of the word "objective", i.e., as existing in itself and for itself), and we do not need it. Of the transcendental object (the correlate of all our phenomena as phenomena) "of which we are quite unable to say whether it can be met with in ourselves or out of us, whether it would be annihilated together with sensibility, or, if this were taken away, would continue to exist." (B245). Therefore questions whether the Universe will exist after intelligent life perishes and if so then how will it exist and what awaits it in the future, etc., make no sense in modern science. Such reasoning is beyond the scope of science. The point is that the subject of such statements is not an object of possible experience. And only the latter may be objects of research. "What things may be in themselves, I know not and need not know, because a thing is never presented to me otherwise than as a phenomenon. " (B333).

[23] *See D.Ya.Martynov* Anthropic principle in astronomy and its philosophical importance // The Universe, astronomy, and philosophy. Moscow, 1988. P. 61. "There is no object without a subject. Here the subject is in the form of transcendental apperception (unity of consciousness — K.M.). It is an active party. The object is its result, however, this subject exists only in such a uniting action and not independently of it. Therefore, according to Kant, the subject does not exist in the absence of an object" (*Tevzadze G.* Immanuel Kant: Problems of theoretical philosophy. Tbilisi, 1974. P. 175).

[24] *Nesteruk A.* Op. cit. P. 102.

are created by the reason itself: "it is the unity of consciousness alone that constitutes the possibility of representations relating to an object, and therefore of their objective validity, and of their becoming cognitions" (B137). Wheeler says about "collective consciousness", which, in principle, is the same thing if we remember how Kant treats his "transcendental subject" — as a supraindividual ability to think common to all mankind, which is, however, subject-localized, and identical for all men, as a "consciousness in general". "Nature is a completed, incarnate transcendental subject"[25]. "All reality (at least in form – K.M.) is contained in the subject, and its understanding requires an "analysis" of the subject"[26]. According to Kant, something acquires the status of an existing phenomenon only when I **cognize** this something as objective, i.e., as something whose properties are invariant with respect to my subjective features. And then the appearance of an object (phenomenon) as an object described as pertaining *to nature*, its attribution with the status of *a thing* — is the genesis of the conception of objectivity of this phenomenon (object) in human reason. "... every intuition must necessarily be subject [to the condition of synthetic unity of consciousness, i.e., the unity of representations in a single *cognizing reason* — K.M.], in order to become *an object for me*; (B138). According to Kant, objectivity consists in transferring the content of subjective consciousness beyond it as the content of any possible consciousness. In essence, phenomena are the knowledge about phenomena: they, ", in their character of mere representations, are not given, if I do not attain the cognition of them (**in other words, I do not attain themselves, for they are nothing more than empirical cognitions**... — highlighting supplied — K.M.)" (B527).

Thus the seemingly long rejected Berkeley's idea about the "principal coordination" between the subject and the object, the unity of microcosm and macrocosm (man in the world, the world in man), the idea about the "human dimension of the Universe" has resuscitated at a new turn of the development of science, at a new level of the interaction between science and philosophy. The world is such because so it appears for the observing subject. Hence a thread toward the thesis about the multiplicity of worlds-Universes corresponding to the innumerability of the ways of its construction by active cognizing beings (to adopt this view, one has at least to reject the thesis about the material unity of the world). And this reasoning leads us to the philosophical reflection of the SETI problem.

The prominent Soviet astrophysicist *B.N. Panovkin* played the leading role in the "great disillusionment stage" in extraterrestrial civilizations research and pioneered the development of philosophical and methodological aspects of the SETI problem as such [27]. He pointed out that the development of particular strategies of the search for extraterrestrial civilizations must be preceded by the philosophical and methodological substantiation of these strategies[28]. In Panovkin's opinion, all modern methods of the search for and of hypothetical "detection" of extraterrestrial civilizations (e.g., via radio "eavesdropping" on the Universe, search for manifestations of "astroengineering" activities, etc.) are based on implicit, non-obvious, and, essentially, anthropocentric logical assumption that "extraterrestrials are also humans", that they see the Universe like we see it, that they have the same attitude toward it as we have (say, they are also oriented toward technological progress), and that they use the same line of reasoning as we do. To question and criticize this assumption, Panovkin uses the apparatus of the (dialectically materialistic) epistemology and theory of self-organization. He writes that the medium of a self-organizing system includes only a certain part of material interactions that is of special importance and value for this system. The system sort of selects from all matter a particular domain identified by the very existence of the organism. The world that is given to man is the world that has been changed, transformed, and that is being explored by man[29]. Human cognition dissects the reality[30] in accordance

[25] *Bakradze K.S.* The problem of dialectics in Kant's philosophy // *Bakradze K.S.* Selected philosophical works. V. 1. Tbilisi, 1981. P. 75. (In Russian)

[26] *Ibid.* P. 76.

[27] *Panovkin B.N.* Problem of extraterrestrial civilizations. Moscow, 1979. P. 56-63. B.N.Panovkin expressed the same ideas in his earlier work: *Panovkin B.N.* Objectivity of knowledge and the problem of meaningful information exchange with extraterrestrial civilizations // Filosofskie problemy astronomii XX veka (Philosophical problems of the 20th century astronomy). Moscow: Nauka, 1976. – P. 240-265. (In Russian)

[28] Below we draw parallels between Panovkin's theory and the basic postulates of Kant's idealistic philosophy; we give many of these parallels in footnotes — as comments to Panovkin's theses. However, we may point out now, from the very beginning, that this thesis of B.Panovkin is close to the so-called Kant's "critical plan": we must first analyze the potential and limitations of cognition itself and only then pass to actual scientific cognition and, in particular, to the identification of its main objects.

[29] This is an evidently constructivistic approach toward interpreting the reality and objects of cognition, which is very close to Kant's philosophy.

[30] The authorship of the idea that the principles of organization of cognitive experience, the principles of "preliminary schematization" of the world view are not universal for all intelligent beings (i.e., are not derivable from the material reality

with the properties that are determined by the material experience of mankind (here Panovkin has in mind a certain community of intelligent beings in general) with its exclusive characteristic features. According to Panovkin, the conclusion that material regularities have identical manifestations under all conditions does not follow from the thesis about the unity of material world (and, let me add from myself, this was a manifest error). According to Panovkin, the objectivity of laws shows up in the fact that they are invariant at whatever location in the Universe for each and every particular intelligent being, however, they are not bound to be invariant event at the same location for different intelligent beings[31]. Panovkin further says that for the world views to coincide, not only material contexts, but also the methods used to dissect these contexts must match. It depends on the activity of the subject[32] whether a certain part of objective reality would be included into the sphere of cognition and practice, and the dissection of this part of objective reality into "objects" and the fact that objects are dissectioned parts of objective reality is determined by the subject[33]. For man, objects dissected by his activities have absolutely objective existence, however, only "inside" his cognition[34]. According to Panovkin, reality is given to man only through the prism of his activity. Other intelligent beings would give a different description for "other" reality, this description would be represented in the forms and would reflect relations that differ from those given by terrestrial science. Knowledge cannot be taken out of the context of practical activity or cognized by a different cognizing subject that ignores this context[35]. According to Panovkin, it is quite possible that a civilization with a fundamentally different arrangement, i.e., a civilization with different self-organization or a different type of practical activity, would not see our Universe in the form as we see these (our) objects. It is possible that, concludes B.Panovkin, the very attempt to place other intelligent worlds into "our" Universe, or even to arrange them in "other Universes" in the form they appear to us, would prove to be absolutely naive[36].

Such is the rather controversial theory suggested by B.N.Panovkin[37]. Panovkin views man as a distinguished (due to specifics of practice under terrestrial conditions) intelligent being. Panovkin's concept came under a storm of criticism in astronomical literature and in the literature on philosophy of science from the position of "consistent materialism" — the doctrine about material unity of the world, about the unity of the laws of existence and cognition. We believe that Panovkin's concept deserved this fare critisism along these lines. Pakovkin's concept is indeed inconsistent and eclectic. His postulates that the selection of objects of cognition is determined by practice are close to pragmatism, his reasoning about various "dissections" of the unified (whereas the unity evaporates as a result of this very dissection!) material world are rather abstract and speculative, he does not distinguish between essential and secondary (necessary and accidental) "dissections". For example, any community of intelligent beings is bound to discover one and the same invariant law of nature (perhaps at different time), although it may formulate it in its own language. Thus B.Panovkin leaves the true dialectics off screen. He, finally, puts himself in a spot because of his incorrect quoting of classic works. Panovkin writes: "As Karl Marx emphasized, "The dispute over the reality or non-reality of thinking that is isolated from practice is a purely scholastic question" "[38]. It is, however, clear, that Marx actually means not reality *as such* in its ontological sense, but the reality *of thought*, i.e., the criteria of its objective

as such) also belongs to Kant.

[31] According to Kant, laws are indeed immutable for us, because they "are only specific determinations of pure laws of the reason", which is the true lawmaker of nature, but they are immutable only within the framework of cognition by the given intelligence exclusively. By the way, Panovkin should have put the word "location" in quotes, because we cannot speak about a location in the Universe in general, we can speak only about the location of the given intelligent being in the given Universe.

[32] Kant would say: "...a priori structures of a cognizing subject", which also constitute the subject as such.

[33] Kant expressed the same idea — it is the subject who attributes a certain phenomenon the status of an object by fitting it the conditions of the unity of apperception (consciousness).

[34] Recall that Kant, too, considers objective knowledge to be created by intelligence, to be its necessary synthetic activity. B.N.Panovkin, without his knowing, recounts in a materialistic way the famous Kant's theory known as transcendental deduction of categories.

[35] According to Kant, "conditions of the possibility of experience" typical for the given cognizing subject.

[36] Kant could point out that, indeed, if every intelligence with no direct knowledge constructs by itself its own unique Universe (variety of sensuous perceptions in specific forms) from its own "incidental material" using its own, maybe unique, rules, then the probability of these two intelligences to meet would hardly differ from zero even if the two Universes prove to be identical.

[37] The physicist A.A.Grib expressed similar views: "the subject... "cuts out" of reality a certain "sector" where the physical conditions of its existence are realized and which is therefore the only "sector" the subject can be "coreferenced" with as an observer" (See *Balashov Yu.V., Illarionov S.V.* Anthropic principle: content and speculations // Global'nyi evolyutsionizm (Filosofskii analiz) [Global evolutionism (philosophicla analysis)]. Moscow, 1994. – P. 117) (In Russian).

[38] *Panovkin B.N.* Problem of extraterrestrial civilizations... P. 59.

significance, criteria of truth[39]. However, these are totally different issues! B. Panovkin sees no difference between the significance and importance of a sign. B.N.Panovkin relativizes significance with respect to the entire system of signs in the sense that different systems of the description of the world may contain no signs to denote one and the same invariant object. Thus, for example, we measure in our reference frame the frequency of emission of neutral hydrogen — the frequency that exists objectively in nature — and say that it is equal to 21 cm. Panovkin appears to believe that in a different system of world cognition this frequency would not just have a different value depending on the standards employed, but even that analogs of the very notions of "radiation frequency" and "hydrogen" may be absent, because they are constructed by man who lives in his unique dimension of the world.

Our task and intention are to view Panovkin's concept, the context in which no one appears to have ever analyzed it. We try to understand B.Panovkin maybe better than he did it himself. As we already pointed out above, we demonstrate that the philosophical basis of Panovkin's theory is actually identical to that of *Kant's transcendental philosophy*. Kant was the first to address the problem of the correlativeness between the properties (i.e., the nature) of subject and those of its world. It was Kant who "pointed out" the anthropocentric nature of naively realistic concepts about a different intelligence. Not too many researchers surmise that Kant actually formulated and theoretically analyzed the philosophical problem of how reality is viewed by creatures with a different organization of intelligence, and the problem of possible existence of such creatures in general.

Kant by no means considers man to be the only possible intelligent creature and, consequently, does not consider our cognitive ability to be unique. There may exist aggregates of other conditions of experience understood in a totally different way, thinking that may be totally different in principle. "What is known to us as experience is based on the joint effect of ... pure intuition and pure reason. We have no positive understanding of how would experience appear with one of these factors eliminated or defined in a totally different way in its respect to the other factor; we even do not know whether such an assumption would preserve any form of experience in general, its firm regular structure... the notion of noumenon, i.e., things that must be conceived by pure reason... as a thing by itself, and this question remains ... purely problematic. The object understood in such a way is not a special... object for our reason, "reason it would refer to, and it is itself a problem", a method of cognition of whose possibility we have not the slightest idea"[40].

And here what Kant says: "As to the intuitions of other thinking beings, we cannot judge whether they are or are not bound by the same conditions which limit our own intuition, and which for us are universally valid." (B43). "We know nothing more than our mode of perceiving them [i.e., objects — via a priori forms of sensibility — space and time — K.M.], which is peculiar to us, and which, though not of necessity pertaining to every animated being, is so to the whole human race." (B59). "It is, moreover, not necessary that we should limit the mode of intuition in space and time to the sensuous faculty of man. It may well be that all finite thinking beings must necessarily in this respect agree with man **(though as to this we cannot decide)**... (highlighting supplied — K.M.)" (B72). "... we were not able to prove that the sensuous is the only possible intuition, ... but neither could we prove that another kind of intuition was possible..." (A252). "... the cognition of every, **at least of every human** (highlighting supplied — K.M.), understanding is a cognition through conceptions– not intuitive, but discursive.[41]" (B93). "... so that we **cannot form the least conception of any other possible understanding** (highlighting supplied — K.M.), either of one such as should be itself intuition, or possess a sensuous intuition, but with forms different from those of space and time." (B139)! If we claim to cognize the possibility of intellectual intuition[42] then we wish "so that thus we should not be men, but belong to a class of beings, the possibility of whose existence, much less their nature and constitution, we have no means of cognizing." (B334). *For us*, understandable by mind (the object of intellectual intuition) is actually nothing (B336). It thus follows that other intelligent beings with other "eyeglasses", other forms of cognition may "exist" somewhere in a place that is inaccessible for us. Kant believes that any search for pure objectivity of the world (understood in its naively materialistic variant) is mean-

[39] The problem is actually due to the ambiguous nature of the statement "The dispute over the reality or non-reality of thinking... is a purely scholastic question". What is actually scholastic: when "pure" thought divorced from practical activity "asks" about *reality* (being), or when the question is raised about the correlation between thought and reality (about real, actual content of thought) in isolation from practice?

[40] *Kassirer E.* Op. cit. – P. 193.

[41] Discursive (mediate) cognition is cognition of things via notions to which sensuous intuitions are referred.

[42] Intellectual intuition is the hypothetical ability of cognition implying direct congition of things by reason (via its pure a priori notions), which does not require the object to be given in sensuous perception.

ingless, and so is the question about the universal structure of cognition. Our world view (method of cognition) cannot be generalized over all intelligent beings. Yes, we see the world in spacetime and we use categories to partition it accordingly (in terms of quality, magnitude, cause, etc.). However, this applies only to us! Our intuition is always sensuous intuition and therefore no object is ever given to us in experience that would not be subordinate to the condition of time (recall that Kant views categories as a priori definitions of time). "It is therefore **from the human point of view only** (highlighting supplied — K.M.) that we can speak of space, extended objects, etc.... It is clear that we cannot make the special conditions of sensibility into conditions of the possibility of things, but only of the possibility of their existence as far as they are phenomena. And so we may correctly say that space contains all which can appear to us externally, but not all things considered as things in themselves, be they intuited or not, or by whatsoever subject one will." (B42-43).

It is thus that Kant arrives at the idea of possible incommensurability of the views of the Universe. It in no way follows that all creatures are arranged in the same way as we are. This would be an obvious anthropocentrism (whose criticism is an obvious implication of transcendentalism). All our theoretical constructions are based on our cognitive net. According to Kant, man is also a distinguished intelligent being, an intelligent being distinguished by its inherent transcendental structure of cognition. Of course, this is not so for materialism. The laws of cognition strictly correspond to the laws of objective being (the world) that are universal for all intelligent creatures, and therefore are themselves universal. Intelligent beings may differ only in morphology but not in essence. Kant thus arrives at the problem of mutual understanding of "intelligences" via the problem of potential nonequivalence of possible world "views". Kant's epistemology emphasizes the possible uniqueness of this transcendental net (recall: "though as to this we cannot decide") and this raises the problem of semantic contact. Although, of course, "we can form no view whatsoever" of truly other intelligences.

Thus one can indeed find in Kant's philosophy anticipations of the "Problem of semantic contact with extraterrestrial civilizations". And this is a very remarkable fact — an eighteenth-century philosopher thought within the framework of the same paradigm as modern methodologists — having no scientific facts available whatsoever pertaining to the field considered. We thus see that B.Panovkin actually rediscovered Kant's idea about transcendental nets in cognition (more precisely, about possible incommensurability of world views developed by different intelligent beings), and even repeated Kant's theses and arguments by expressing them in the language of Soviet philosophy. B. Panovkin sensed the profound idea of the constructive nature of scientific world view, the idea of a special status of theoretical concepts, their irreducibility to observational terms, the idea of 'logical scaffolding of the world", the idea of possible nonintersection of such world views of different intelligent beings, but he tried to plant this idea on the materialistic ground that proved to be inappropriate for it.

We thus see that Kant's ideas about the structure of the world bear fundamental affinity to modern astrophysical theories, and the topicality and profound conceptual pathos of Kant's philosophy become immediately apparent. If other beings have a different transcendental net, "our Universe may in fact remain unseen by them". They live in a sort of another dimension of the "world", in a dimension of their own (in this case it is unclear what is the world as a whole). Kant could further develop Shklovsky's idea about the potential solitude of man in the Universe. We indeed see no one in our Universe, because it is a priori our Universe — it so appears to us through our transcendental net. If other beings have a different net then they will have a different Universe. As for us, we can observe in our Universe only what is consistent with the formal conditions of our experience, i.e., a differently arranged intelligence is simply impossible in our Universe! Inhabitants of distant planets, "they are therefore really existent, if they stand in empirical connection with my actual or real consciousness, although they **are not in themselves real** (highlighting supplied — K.M.), that is, apart from the progress of experience." (B521). And what if all intelligences are differently arranged? We then are indeed alone! However, Kant himself was optimistic in this regard: "I should not hesitate to stake my all on the truth of the proposition — if there were any possibility of bringing it to the test of experience — that, at least, some one of the planets, which we see, is inhabited." (B853).

Note that Kant did not raise the question as to how the very ability to think is possible, i.e., the question of the origin of intelligence itself. "... because my principal problem is and remains, "What and how much may understanding (Verstand) and reason (Vernunft) know without all experience?", and not, "How is the *faculty of thought* possible?"" (AXVII).

Having explicitly stated the enormous role that consciousness plays with respect to the status of the existence of the Universe, let us now clearly formulate our own hypothesis: **some objective mechanisms exist that prevent semantic contact between different intelligent beings** (which belong to in-

dependently developed civilizations). These mechanisms lie not in the realm of material regularities (they cannot be there), but within the nature of intelligence proper. In other words, contact with "other intelligence" is somewhat logically inconsistent — like a journey to one's own past and meeting oneself there. The true goal of philosophical and methodological component of SETI programs is to identify the content of this inconsistency. And, in our opinion, here again German philosophy suggests an answer.

The transcendentally idealistic approach toward the interpretation of the essence of intelligence found its completion and final logical justification in the great system of Hegel. Recall that Kant leaves unclear the origin of the ability to think, the ability of every mind to construct its own Universe. It remains unclear how to reconcile scientific data on the development of living matter from abiotic matter with the principle of "inverse correlation" between material world and man's ability to think. (By the way, here it is appropriate to recall the "participatory anthropic principle" of J.Wheeler). For Hegel, everything aligns in a single sequence. Yes, nature develops, human spirit (ability of consciousness) develops from abiotic "matter", however, this nature, matter is otherbeing of Spirit as such in its pure form. There is no insurmountable difference between human consciousness and matter — they both are manifestations of one and the same common origin (the Absolute Idea) and, strictly speaking, they are this very origin in a limited form. Their ontological difference is only illusory. It is incorrect to say that matter preceded spirit, matter itself is a form of otherbeing of the same Spirit, which in the form of human spirit simply becomes aware of itself as a spirit and returns to itself, becomes itself, thereby completing the process of self-knowledge and hence of self-construction[43].

Hegel brilliantly "substantiates" the absolute necessity for the uniqueness of human civilization (human reason) in the Universe. Once having arrived to its self-negation in its pure timeless development (the state of being when "time was yet nonexistent"), alienates itself into nature (the "Big Bang"), by putting itself the "task" to go to self-consciousness in its otherbeing ("return to itself") via the development of its forms. At a certain stage the spirit (human consciousness in various forms of subjective, objective and absolute — higher forms of world outlook including the philosophy of spirit) originates from nature, and its individual representatives ("precursors of the Idea") fulfill this task. Hegel's theory is actually a philosophical variant of the "theory of Absolute knowledge". Hegelian philosophy puts the end to history as such [44], the system of human knowledge reaches its logical limit (empirically, say, technical thought may go further, but this would change nothing in the knowledge as such in its political and world-outlook dimension), completing a "full circle". It is thus clear that since the Idea, Logic is one whole (here is the absolute unity, which eliminates the problem of multiplicity of possible reasons and their Universes), then human intelligence is also one whole and unique — as a form of otherbeing of the Idea, because — just logically — it is possible to alienate from itself and return to itself only once. The Universe as such is one whole — it was created in an act of timeless creation by the origin that is united in itself — Absolute Idea (Primordial Vacuum, impersonal God — Pure Logic). Idea cannot return itself to itself simultaneously and twice ("from different places") in a consistent way (Idea is Logic as such) and hence it cannot imply this as a theoretical possibility in general, and hence we are alone in the Cosmos that we observe and, moreover, Cosmos itself is one whole and unique — this statement is proved a priori, because Hegel deprives human ability to think of its, so to say, "individual (personal) belonging". The entire evolution of Cosmos is directed toward a single object — the self-knowledge of Spirit, which is empirically implemented in the creation of this (Hegelian) philosophical system. Hence the very appearance of this system is "self-evidence", it proves its truth and hence it proves the uniqueness of intelligent life in the Universe. This is a classic example that demonstrates the possibility of premiseless thinking and hence the possibility of rejecting any subjectivism and the possibility of Absolute Truth as such. The terrestrial civilization is unique. The Idea has nowhere to rush in its absolute eternity. It "knows" that it will sooner or later find an appropriate philosopher (it actually turned out to be Hegel), and create (in advance) for this philosopher all the conditions for the final and decisive step. The Idea does not need to "secure itself" via multiplicity of worlds in order to increase in such a peculiar way the probability of completing the empirical process of the history of philosophy, i.e., of the return to itself. This probability is a priori equal to unity, because it is logical truth by virtue of the very characteristics of the Idea. According to Hegel, the end of intellectual history is inevitable in this philosophical sense! And therefore we are alone!

These Hegelian ideas are close to the theory of

[43] We cannot here expound the basics of Hegelian philosophy. We refer the reader to the works of V.V.Sokolov ("Hegel's philosophy").

[44] The aim of history is to come to the understanding that history is self-knowledge of Spirit and thereby to complete it.

I.Prigogine. He also points out that "man occupies an absolutely distinguished position in the world". "Here, anthropic principle not only states the form of the implementation of the form or type of reality, but also leads us to conclude that such a statement is possible only as a result of evolution, development of the Universe". "...having made a full circle (compare it with the circle in the self-comprehension of the Idea in Hegel's philosophy — K.M.), we returned to the starting point and now see ourselves as an integral part of the world we describe". Like Prigogine, J.Wheeler suggested in 1986 a model of conscious physics (note that he even uses Kantian and Hegelian terms!). At the current stage the observer became conscious of his role, i.e., the role of observability in the formation of the content of the physical reality of the Universe. Wheeler's and Prigogine's concepts present, in a logically summarized form, "the evolution, history of human knowledge and cognition, and use concrete examples to uncover the dialectics of the content and form (which is essentially Kantian and Hegelian — K.M.) of the cognition of our Universe by Man... In this concept, the very process of cognition is prone to evolution: "Physics, finally, becomes as historical as history itself" "[45]. As Einstein predicted, physics essentially transforms into metaphysics, i.e., into philosophy.

The contradictoriness of "contact between intelligences" can also be illustrated as follows. It is clear that an extraterrestrial civilization that has reached the stage of contact must be sufficiently developed in terms of the humanities and world outlook. Hence this extraterrestrial civilization must have history of philosophy (of its own). Logical considerations dictate that the works of the philosophers of this extraterrestrial civilization should reflect, on the whole, the same problems as those that terrestrial philosophers had and have to confront (the objective nature of philosophical problems, e.g., the problem of the substance of the world, relation between spirit and matter, etc.). This means that we would meet there analogs of Plato, Berkeley, Kant, and Hegel. Hence this civilization would also be convinced that it is the very last tool of the Absolute Idea. However, its meeting with us would make this conclusion absurd (and so would become our own conclusion). Hence Hegelian system is wrong. However, this possibility is excluded by its construction (it proves itself). Hence there is no such a thing as extraterrestrial intelligence! A system similar to Hegelian system may appear only once, and this fact rules out multiplicity of intelligent beings in the Universe.

Thus in this work we tried to philosophically substantiate the uniqueness of human civilization, the fundamental solitude of man in the Universe.

[45] See Nesteruk A.V. Op. cit. P. 105-107.