

Alternative Concept of Human Origins

Vadim Markovich Rozin

*Institute of Philosophy of the Russian Academy of Sciences,
Moscow, Russia,
ORCID: 0000-0002-4025-2734*

The article is devoted to developing an alternative concept of human origins, in which classical Darwinism and the Synthetic Theory of Evolution (STE) are criticized as reductionist approaches that reduce anthropogenesis to biological mechanisms and processes. Drawing on the methodological ideas of R. Thom, A. A. Lyubishchev, V. I. Nazarov, and B. F. Porshnev, the author proposes to consider the emergence of man not as a smooth biological transformation, but as a qualitative leap — a change of the whole, the appearance of a new formation irreducible to its preconditions. The author considers the invention of signs to be the key factor in this transition, which transforms the signal behavior of hominids into sign communication, generating imagination, social relations, and the rudiments of the psyche. The article introduces the concept of "paradoxical behavior" as a mechanism that makes it possible to overcome biological determination and trigger the process of semiotic adaptation, which, in turn, transforms the corporeality and genetic organization of transitional beings ("hometams"). The work also discusses the role of schemas and tools, which are understood not instrumentally, but as ways of organizing a new reality. The proposed concept represents a semiotic and cultural alternative to biologizing models and opens up prospects for further research into the genesis of archaic culture.

I. Critique of the Darwinian Concept

The Darwinian concept is based on the assumption that man is a biological species; however, Charles Darwin believed that natural selection alone cannot explain the origin of man from apes; in addition to natural selection, he believed, it is necessary to invoke the theory of sexual selection (which agrees well with the data of modern gene theory). Darwinian theory relies on comparative anatomical data (the similarity in appearance of humans and apes, atavisms), human variability within different human races, facts of embryology, and finally, paleontological finds of transitional forms from ape to man (*Australopithecus*, *Pithecanthropus*, *Sinanthropus*, etc.). The most vulnerable point of this theory is the reduction of man to a biological species. Darwinian theory explains much, but it cannot explain how human consciousness and reason were formed, without which "*Homo sapiens*," i.e., rational man, is not human.

Darwinism is currently not just one of the popular and socially significant concepts (paradigms), but a doctrine that has become a true worldview, claiming to be the only correct scientific explanation of evolution, both biological, anthropological, and social, and moreover, a worldview that is quite aggressive towards alternative views. However, knowledge cannot be stopped, especially in the humanitarian field. An example is the book by V.I. Nazarov, "*Evolution Not According to Darwin*," in which the author not only sharply polemicizes with Darwin's concept and the "*Synthetic Theory of Evolution*" (STE) that underpins it, but also presents the main counterexamples and alternative concepts of evolution, and even, though briefly at the end of the book, outlines V.A. Krasilov's "*Ecosystem Theory of Evolution*," which, according to Nazarov, meets all modern scientific views and can explain biological evolution much better than Darwinism.

Vadim Ivanovich's position can be better understood by reading his assessment of Darwin's teachings. Summarizing Danilevsky's criticism of Darwin from the century before last, Nazarov writes the following. "According to Danilevsky's assessment, Darwin created the most unaesthetic, 'terrible doctrine, surpassing in its horror everything imaginable. No form of the crudest materialism has ever descended to such a base worldview.' By inventing the mechanism of selection, which replaced reason with chance, Darwin gave birth to a 'pitiful and miserable' virtual world, in which 'meaninglessness and absurdity' reign supreme. Our good fortune is that the

world in which we live has nothing in common with the one invented by Darwin... it is absurd to think," Nazarov writes on his own behalf, "that chance and probability can take the place of reason, intellect, and the spiritual principle. Transformations of species are conceivable only if an internal law of development is recognized, which every living organism carries within itself. What Darwinism postulates does not deserve the name of development at all."¹

In all fairness, of course, it should be noted that Nazarov was not the only one to suddenly come out "against Darwin." The first to doubt the doctrine was the author of "The Origin of Species" himself, who, incidentally, became disillusioned with the evolutionary idea by the end of his life (in 1876). Then there were many other famous biologists and thinkers who criticized Darwinism (for example, D. Mivart, W. Thomson, F. Jenkin, A. Quatrefages, N. Danilevsky). And currently in Russia, the opposition to Darwinism and the STE is very strong; it is enough to mention at least the names of A.A. Lyubishchev, Yu.V. Tchaikovsky, and E.B. Muzurukova. "As a method unworthy of science," notes Vadim Ivanovich, "Lyubishchev and, following him, we are forced to note the ignoring by adherents of the STE of a huge mass of 'inconvenient factors' and considerations that contradict this theory or find no explanation within it."²

But all this, I think, is unknown to the average educated modern person, raised from school in the spirit of Darwinism; he is confident that Darwin, like Newton, established laws that cannot be doubted. Especially since (as many researchers emphasize) the ideas of "variability," "heredity," and "natural selection," which form the core of Darwin's teaching, generally appear as a rigorous "causal theory."³ At the same time, Nazarov shows that this doctrine is a hypothetico-deductive theory, attempts to prove the validity of which "were doomed to failure."⁴ This theory was formed, firstly, on the basis of a number of Darwin's own values (a natural-scientific positivist-type orientation, the analogy of natural selection with artificial selection, the influence of the first part of Smith's doctrine of competition, with Darwin completely "not paying attention to its second part, connected with the reciprocity of services rendered"). "In the logical scheme of Darwin's theory," writes Vadim Ivanovich, "there was simply no place for positive interaction between individuals and species."⁵ Secondly, Darwin's teaching is built on the basis of deductive methodology; that is why, Nazarov notes, Darwin, raised in strictly inductivist traditions and not finding empirical confirmation for his theory, delayed its publication for almost 20 years.

When discussing Nazarov's book at the Institute of Philosophy, B.I. Golubov, following A.S. Severtsov, accused Nazarov of fabrications and other mortal sins. And V.G. Borzenkov, although he bowed at length and swore love for Vadim Ivanovich, concluded his speech by stating that reading Nazarov's book had further convinced him of the correctness of Darwinism. Other biologists and philosophers, for example, Yu.B. Tchaikovsky and I.K. Liséev, defended the published book. What can be said to this? First of all, there is a confrontation between two scientific paradigms, different scientific schools. Therefore, unscientific arguments are often used by Nazarov's opponents. In addition, it is worth noting that Vadim Ivanovich presents in his book not the history of Darwinism and the STE, but the results of genetic research. Genesis, however, is a theoretical history, a special reconstruction that solves certain problems. In this case, Nazarov sought to show what methodological premises and limitations lay at the foundation of Darwin's theory and the STE, what contradictions these doctrines encountered, what phenomena these theories cannot explain, what objections were raised against them, and what alternative concepts to Darwin's teaching were put forward.

Having presented all the main counterexamples and objections to Darwin's theory, Vadim Ivanovich specifically dwells on the problem of the relationship and unity of the factors of macro- and microevolution in the STE. And this, of course, is not accidental, since supporters of Darwinism and the STE currently appeal to data from genetics and molecular biology. In doing so, they typically carry out a reduction, asserting that the development of species and populations can be fully explained on the basis of genetic mechanisms and processes. "All the most complex, at first glance, macroevolutionary phenomena," assert, for example, A.V. Yablokov and A.G. Yusupov, "are explainable by the concepts of microevolution without losing their specificity: everything that arises at the macroevolutionary level is primarily associated with the transformation

¹ Nazarov, V. I. *Evolution Not According to Darwin. Shifting the Evolutionary Model*. Moscow: KomKniga, 2005. P. 74.

² Ibid. P. 87.

³ Ibid. P. 59.

⁴ Ibid. P. 58.

⁵ Ibid. P. 40.

of populations and species and leads to the formation of adaptations." Thus, Nazarov concludes, "the authors declare themselves as outright reductionists."⁶

Vadim Ivanovich himself is against reductionism, so he sympathetically quotes the prominent geneticist and zoologist Yu.A. Filipchenko: "There is absolutely no reason," the latter wrote in 1927, "to think that mutations, combinations, and selection can explain the entire evolution of the animal and plant kingdoms."⁷ To Filipchenko's thesis, Nazarov adds an important thought. Currently, he writes, "it has become clear that, regardless of the path by which speciation occurs, a new species is formed on the basis of a saltatory transformation of some part of the parent species. It is clear that in the case of allowing a leap, the boundaries between the considered alternative theories are erased, and the very question of whether microevolution serves as a prerequisite for macroevolution loses its meaning."⁸

Here one can also recall A.A. Lyubishchev, who repeatedly said that it is impossible to reflect the existence of different levels of being, practically irreducible to each other and using different forms of causality and different types of laws. And Yuliy Anatolyevich Shreider emphasized in one of his speeches that a taxon is real in a different way than the organism that belongs to it, and one should not try to reduce these levels to each other.

Indeed, shouldn't we move to a different methodology? Let us acknowledge that we are dealing with phenomena belonging to different levels of reality. Although these levels may somehow be objectively connected, it is more correct (pragmatically effective) for cognitive purposes to consider them unconnected and describe them independently within different scientific subjects. The same applies to evolution. If a phenomenon has already taken shape, we can analyze its development and complication. But from a certain point, it begins to experience a crisis or dies. To explain the emergence of a new phenomenon, it is necessary to identify the prerequisites, which will include the preceding phenomenon experiencing a crisis and a fundamentally new situation. Although the emergence of a new phenomenon is impossible without identifying the prerequisites, nevertheless, the new phenomenon is not derived from them. The new phenomenon is constituted by the researcher fundamentally as a new formation, that is, it is assumed that a new reality with its own logic and regularities appears.

Isn't this essentially what Nazarov writes, albeit in different language? "As a result of everything said, I would like to especially emphasize that, following Depéret, Huxley, Takhtajan, and Tatarinov, we accept the idea of a plurality of paths and methods of macroevolution. This plurality depends on the structure of the genome in different systematic groups, the ability to duplicate genes, to hybridize with other species, on the type of reproduction and the capacity of individual development. As for the directions of phylogeny, they are determined by the patterns of ontogeny transformation, interspecific selection, differential fertility, degree of adaptability, presence of free adaptive zones, etc."⁹

In essence, Krasilov's "Ecosystem Theory of Evolution," recounted in the book, is built on similar principles. "Changes in climate and all other physical parameters of the environment," Nazarov specifically emphasizes, "no longer act as a direct cause of biota transformation, as was the case in the old hypotheses of the first half of the 20th century. They are now seen as nothing more than a trigger mechanism that starts destabilization processes in ecosystems."¹⁰ Similarly, destabilization processes (interruption of restorative processes in ecosystems, extinction of the most adapted dominant forms and species, liberation of ecological niches) act only as prerequisites for the formation of new species.¹¹ New species and populations are formed under the influence of many micro- and macroevolutionary factors, the action of which is currently gradually being clarified within the framework of alternative non-Darwinian concepts of evolution.

For example, Nazarov analyzes the concept of "nomogenesis" and the concept of "Kordyum" (evolution involving foreign genes), on which, in turn, Krasilov's theory relies in explaining development processes in stable and unstable conditions. "In its original form," writes Vadim Ivanovich, "nomogenesis was opposed to Darwin's theory as based exclusively on random variation and therefore named tychogenesis. Guided by a priori judgments in the spirit of Kantian agnosticism, L.S. Berg (author of the book 'Nomogenesis, or Evolution Based on Regularities' (1922). – V.R.) proclaimed the basic law of evolution to be 'autonomic

⁶ Ibid. P. 111.

⁷ Ibid. 127.

⁸ Ibid. 140.

⁹ Ibid. P. 141.

¹⁰ Ibid. P. 441.

¹¹ Ibid. P. 444-445.

orthogenesis' – an immanent property of living nature to produce, independently of the external environment, increasingly perfect forms... Berg honestly admits that he knows nothing about the causes of progress... According to his nomogenetic concept, autonomic factors change 'the essential features that determine the very plan of structure of this group' and lead along the path of progress. As a result, new organs arise and systematic groups from the species to the class level are formed, with Berg specifically emphasizing that the corresponding features often 'are formed in a certain direction... regardless of utility... and sometimes even to the detriment of the organism'.¹²

But Kordyum knows why the progress of biological forms occurs. "Evolution is simply forced to follow the path of complicating organization due to the existing mechanism of variability, which deals with the influx of a large array of exogenous genetic information. Moreover, according to many authoritative specialists (Bednikov, 1981, 1990; Birshtein, 1987; Golubovsky, 2000, etc.), the complication of organization is determined by the autogenetic properties of the genetic material itself to increase DNA length and enlarge genome size... Under such conditions, one should not be surprised at the appearance of organisms bearing the most bizarre traits. And what is completely shocking for adherents of the STE, according to the information theory, new species with such traits will be forced to adapt not so much to the environment as to their own new traits!"¹³

Interestingly, the principle that "the complication of an organism's organization is conditioned by its functioning" also operates in cultural studies. As I have tried to show in my works, cultures as social organisms become more complex, develop, and even come to an end precisely because of their functioning. But of course, the functioning itself must be understood correctly. It proceeds both under the influence of external factors ("vital catastrophes" and "situations of rupture") and internal ones (problems and their solutions, semiotic and technical inventions, opening new possibilities, etc.).

To Nazarov's critique, one can add the significantly earlier methodological considerations of psychologist A.N. Leontiev. In his well-known work "Problems of the Development of the Psyche," he wrote the following. "There is still a widespread notion of the phylogenetic development of man as a continuously ongoing process governed by the laws of biological evolution. Descriptions of fossil humans, starting with the most ancient ones, create, at first superficial glance, a sufficiently convincing picture of progressive morphological changes that occur up to modern man and will continue further, perhaps even with the prospect of the emergence of a new species of people – some kind of *Hominum futurum*. Such a notion is associated with the conviction that human evolution, subject to biological laws, extends to all stages of its phylogenetic development, including the stage of its development in societal conditions; it assumes that even in these conditions, selection and inheritance of biological traits continue, ensuring further adaptation of man to the demands of society.

Modern advanced paleoanthropology, however, decisively opposes this notion of anthropogenesis, as well as the crude biologizing conclusions that follow from it...

The qualitative boundary that separates these stages from the preceding preparatory stage is that in *Pithecanthropus*, the manufacture of tools and primitive joint activity with the help of tools arises, that is, rudimentary forms of labor and society are formed. And this changes the very course of development... a sphere of exclusive action of completely new, namely social, socio-historical laws arises."¹⁴

But Leontiev was not an anthropologist and therefore did not set himself the task of showing how man emerged. In fact, it is unclear why hominid ancestors needed to make tools, and how they could do so without possessing human consciousness. An appeal to the cooperative behavior of apes or their occasional use of natural tools proves nothing. "For a long time," writes D. McFarland, "the ability to use tools was considered a trait that distinguishes humans from other animals. Now that we know much more about animal tool use, this issue does not seem so clear to us."¹⁵

¹² Ibid. P. 309.

¹³ Ibid. P. 344.

¹⁴ Leontiev, A. N. Problems of Psychic Development. Moscow: Moscow State University Press, 1972. P. 357-359.

¹⁵ McFarland, D. Animal Behavior. Moscow: Mir, 1988. Page 464. There is, in particular, a wonderful Japanese film about a monkey, after many hours of effort and peculiar experiments, who discovered a way to crack a coconut with a stone. All this time, the rest of the troop (living in the mountains near a hot spring) sat around and watched. The question

But here is an even more definite conclusion of the Soviet anthropologist and psychologist B.F. Porshnev: "What if some animal not only 'makes tools' but also 'makes tools for making tools'? We will not actually cross any boundary if we mentally elevate the same thing to any degree... This whole technical approach to the problem of the beginning of human history actually implies the psychological side of the matter."¹⁶

One can fully agree with Porshnev's criticism, but he also fails to convincingly show that the transition to activity and tool-making is connected with the emergence of speech in communication processes; according to Porshnev, the formation of speech was conditioned by suggestive processes, on the basis of which relationships between the hominid ancestors of man were built. Perhaps for the 60s and 70s, the reflections of Leontiev and Porshnev were convincing, just as today the ideas of sociobiology or evolutionary epistemology are convincing for many biologists and anthropologists.

In the 1920s, an interesting solution to the problem of the origin and nature of man was outlined by V.N. Voloshinov (from the circle of Mikhail Bakhtin) and Lev Vygotsky. These researchers at the beginning of our century turned to semiotics and cultural studies. The idea was that the sign and the cultural mechanisms of individual socialization mediate the connection of the psyche with the biological organism and with situations external to the organism (environment, activity, other individuals). But this was only an idea, and moreover, at that time cultural studies and semiotics were taking their first steps.

Let us try to implement these ideas, taking into account modern views on signs and culture, as well as, in essence, the methodological considerations of Nazarov, who writes that "new species and populations are formed under the influence of many micro- and macroevolutionary factors, the action of which is currently gradually being clarified within the framework of alternative non-Darwinian concepts of evolution." In my opinion, one should not discard the idea of technology either, understanding it not instrumentally (technology as tools), but as a way by which biological development is interrupted and the opportunity for the formation of non-biological, social behavior opens up. B. Porshnev wrote about the importance of the latter turn, though understood physiologically and semiotically according to I.P. Pavlov (brain function as the action of signaling systems).

"The social cannot be reduced to the biological. The social cannot be derived from the biological. In the book, I propose a solution to this antinomy. It is based on the idea of inversion. The latter can be briefly expressed as follows: a certain quality (A/B) is transformed in the course of development into its opposite (B/A) – here nothing is new, but everything is new <...> But as for the neoanthropus (*Homo sapiens*)," writes Porshnev, "it appeared only 35-40 thousand years ago... The history of people is an explosion. During its course, only a few generations succeeded each other... For the beginning of analysis, it is only clear that, being a biological process, it at the same time had something distinguishing it from any other divergence in living nature <...>

At the threshold of history, we find not an 'add-on' to the first signaling system, but a means of parrying and inhibiting its impulses. Only later will this become an 'add-on,' i.e., the negation of negation (the idea of 'negation of negation,' as well as 'contradictions,' are two more heuristic ideas used by Porshnev, alongside inversion. – V.R.). An important step towards such a transformation is the conversion of interdiction into suggestion... Suggestion becomes a fundamental means of people influencing the actions and behavior of others, i.e., a system of signaling regulation of behavior... Another matter is that suggestion thereby carries a contradiction within itself: it initiates the coordination of two signaling systems, from whose opposition it originated. This contradiction will prove productive: it will lead to countersuggestion. However, this will occur at a later stage of evolution."¹⁷

arises, is the stone a tool in this case? Unlikely. Not only is it not designated in language in this new role, but it also has no meaning for the group of monkeys. The monkeys simply remembered the actions of the "creative individual," i.e., a new conditioned reflex was formed.

¹⁶ Porshnev, B.F. On the Beginning of Human History. Moscow: Mysl', 1974. Page 44.

¹⁷ Porshnev, B.F. On the Beginning of Human History. M., 1974. P. 17, 370, 414-415, 440. Inhibition for Porshnev is both physiological inhibition and the constitution of excitation responsible for behavior, and, finally, a mechanism close to suggestion. "The beginning of human influenza is the suppression, the inhibition of the organism's own actions... The inhibitory dominant, as it were, molds and forms an antagonistic pole—a complex, or system

I will use these ideas as heuristics within the framework of my own understanding and interpretation, drawing upon the author's concepts (semiotics, technology, culture, sociality).

II. Strategy of Reconstruction and Analysis of Human Origins

This strategy is based on several methodological positions. Let us characterize them.

- Following René Thom and a number of Russian methodologists, evolution should be understood not as the development of one, even very complex whole, but as successively changing wholes, in each of which cycles of "formation, functioning, and completion" can be reconstructed. Let us recall René Thom. "A breakdown (or 'catastrophe') occurs, predetermining the disappearance or disintegration of the object in question, whereby a new form emerges, the appearance of which is practically impossible to predict on the basis of previously observed conditions. At the same time, the new form self-organizes according to new principles, demonstrating a completely new way of development... any system of causal laws is reliable only at some specific level, and the creation of conditions for achieving some aggregate state depends on some other, fundamental principles and laws, causal relationships of a higher order, which can be formulated only when a qualitative transition to a new state occurs."¹⁸

Applied to our topic, the origin of man should be understood not as a biological transformation (Porshnev: "the social cannot be derived from the biological"), but as a change of the whole, as the emergence of man, as it were, from "nothing," but within the field of certain prerequisites. It should be emphasized that prerequisites are not causes, but necessary but insufficient conditions for becoming. In this sense, man is not a metamorphosis of hominids, but a new formation, a different whole, which, however, incorporated and transformed the biology of hominids.

- The second main position is the hypothesis that the origin of man was conditioned by the invention (discovery) of signs by hominids. It was semiotic behavior that, on the one hand, transformed the biology of apes, and on the other, acted as the crystal around which the formation of a new whole took place – a transitional creature, not yet human, but no longer a hominid (let us call it a "hometam," from "ho" – hominids and "metam" – metamorphosis).

Here it is worth distinguishing between the concepts of signal and sign (signaling system and sign system). Animals are characterized by the use of signals, while humans are characterized by the use of signs. Signals used by animals (danger, indication of food, etc.) differ significantly from signs. A sign denotes some object (action or situation) and presupposes imagination, i.e., the recreation in consciousness of a special object (in semiotics it is called a denotation). For example, I say "elephant," and a person understands what it is, although I do not present them with a real elephant. Unlike a sign, a signal does not denote anything; it is the first triggering part of an animal's behavior in a certain situation (for example, in a danger situation, the leader triggers its actions with a specific cry, which is perceived by the rest of the pack also as a danger situation and the beginning of behavior).

- As can be understood from the previous chapter, an equally important position is the role of the environment, which determines the main characteristics and boundaries of the whole. In this case, it can be assumed that this whole was defined by the prerequisites discussed above, "semeiosis" (the system of signs and schemas), technology, and some random factors. In particular, it is likely that semeiosis determined the life world of hometams (transitional forms), and technology allowed them to solve unsolvable problems and tasks. The role of random factors is also significant: currently, explaining the genesis of complex phenomena involves a combination of two logics – one uses the concept of regularity, and the other uses the concept of randomness

of excitation... In other words, in the continuous field of inhibition, it itself makes a hole, a tiny hole, into which excitation, in the ordinary sense of the word, pours... The improvement of a living thing is the improvement of the inhibition of reactions... The "mind" of an animal is the ability not to react in 999 cases out of 1000 occurrences of excitation" (ibid. Pp. 194, 262, 264, 298, 299).

¹⁸ Quoted from Salman R. "The Future of Management." Moscow: Piter, St. Petersburg. 2004. Pp. 128, 129, 131.

(singularity).¹⁹ "Anthropogenesis," writes L.B. Vishnyatsky, "being, on the one hand, a regular and predictable episode in the development of the organic world, on the other hand, was the result of a whole series of coincidences. In a certain sense, the origin of man can be considered as a consequence of the optional and even unlikely intersection at one point of independent natural processes."²⁰

- The transformation of hometams (the process of human origins) must be supported by new formations in genetic organization. It can be assumed that such new formations represent changes in the genome, as well as in a broad sense in corporeality (brain enlargement, bipedalism, restructuring of sexual function, formation of new mental processes, etc.).

- In explaining the origin of man, I will follow the logic of systemic and evolutionary approaches. The latter requires examining the formation of the whole, its functioning, the completion of this whole, and the transition to a new cycle with the same three stages of development.

- I assume that the origin of man constitutes the first whole, while the formation of archaic culture and man within it constitutes the second. Culture, as I show in my books, is defined by a specific semeiosis that developed during the resolution of human problem situations (man is the final point of change in hometams). Semeiosis determines the life world of man characteristic of a given culture (the objects, events, and relationships that he is aware of and experiences).

Now four substantive hypotheses that allow implementing this strategy in relation to the topic of human origins.

- Judging by the research of paleontologists and anthropogenesis, the initial prerequisite for the formation of man was climate change. As a result, hominids found themselves in some extraordinary, extreme conditions for survival (for example, they had to descend from trees, seek food in open spaces, defend themselves from predatory animals, and use sticks and stones more widely than usual). Let us consider this the first prerequisite for the origin of man (research shows that such a problem situation was caused by a sharp cooling around 5-3 million years BC).

- The second prerequisite is the assumption that in these conditions, only those communities of apes that had strong leader authority and a developed signaling system survived. **We arrived at this premise by projecting onto hominids the relationships humans have with wild animals and with their own children.** Naturally, with the adjustment that assumes the replacement of the signaling system with a sign system. This also includes the well-known fact of hominids using natural tools (stones, sticks, bones, etc.), as well as cooperative behavior organized by the leader.

- The event that created the conditions for the meeting of the established prerequisites and the random factor can be considered the transition of hominids to "paradoxical behavior." I borrowed this idea from E. Seton-Thompson's book "Animal Stories." It contains a story about a small brave female coyote named Tito. Tito, whose mother had been killed, was taken in by people. Tito grew up, although her owner treated her cruelly and experimented on Tito with various methods of combating coyotes. One day, he acquired two greyhounds and decided to use Tito as an example to teach them to hunt coyotes. Tito was chased by the greyhounds.

"Within a minute, the dogs were supposed to catch her and tear her apart. But suddenly Tito stopped, turned around, and walked towards the dogs, wagging her tail amiably. Greyhounds are special dogs. They are

¹⁹ Compare this with the concept of individuation introduced by Gilbert Simondon, a scholar currently very popular in Western philosophy of technology. He seeks to demonstrate that individuation is a lawful and singular process (singularity, something that happens once, is the opposite of the concept of law); it is precisely a process, not its result. "The true individual is the one who preserves within himself his system of individuation, strengthening singularities <...> individuation is an event and an operation within a reality richer than the resulting individual <...> everything can be an individual, and nothing can be complete <...> If we agree to know the individual in connection with the systematic totality where his genesis occurs, then we will discover that there is a certain function of the individual concerning a specific system, considered in accordance with his formation; individualization expresses a change in the phase of the being of this system, avoiding its degradation, incorporating into the form of structures the energetic potentials of a given system, combining antagonisms, resolving the internal conflict of the system" (Gilbert Simondon. *The Individual and His Physical-Biological Genesis*. Trans. by Svirsky Ya. I. Moscow: IOI, 2022. Pp. 99, 103, 104, 106).

²⁰ Vishnyatsky, L.B., "The History of an Accident, or the Origin of Man." Moscow: Vek-2, 2005. 240 p. <https://cyberleninka.ru/article/n/istoriya-odnoy-sluchaynosti-ili-proishozhdenie-cheloveka>

ready to chase and tear apart anyone who runs away from them. But anyone who does not run away and calmly looks them in the eyes immediately ceases to be an enemy to them. That is what happened now. Having accelerated, the greyhounds rushed past Tito, but immediately returned, confused. The greyhounds refused to attack an animal that wagged its tail and did not want to run away."²¹

If we generalize and translate this example into a theoretical plane, we can give the following definition: the behavior of an animal is paradoxical when it behaves in the opposite way (or indifferently) to the real situation (for example, danger, but the animal, on the contrary, goes towards the predator). From the point of view of physiology, B. Porshnev asserts that the transformation of apes begins with the inhibition of habitual instincts and reflexes; why this happens, he could not explain. I assume that the starting point here is paradoxical behavior.

- The trigger for the formation of archaic culture and man was the process of resolving anthropological problems, namely, the need to understand what death, illness, dreams, and cave paintings of humans and animals invented by archaic man represent. These problems were resolved through the invention of the schema of the soul. Now, the narrative of the process of human origins.

III. From Hominids to Humans

Briefly first. During prehistory, primary, small collectives of hominids fall into catastrophic living conditions (forced to descend from trees and live in the savannah among predators). As I show, only those collectives survive that transition to "paradoxical behavior," that is, they begin to act according to the leader's commands, which are no longer signals (characteristic of animals) but signs. A necessary condition for sign behavior on the part of the other members of the collective is strict adherence to the commands, which presupposes the recreation of imaginary situations, perceived, however, as real (in semiotics, they can be interpreted as prototypes of denotations). The unusual (in biological terms) behavior of the collective allows for survival. Since such semiotic behavior is non-biological and reveals an effect (survival), and is also signified by the leader and understood (represented) by the other members of the collective as conditioned by events of real reality, such behavior can be considered "proto-social."

Evolution charted a peculiar roadmap for human origins: hominids increasingly resorted to paradoxical behavior, signals were displaced by signs, proto-social behavior turned into social behavior, and sign behavior transformed the biology of hominids. After about a million years, this process is completed: the behavior of transitional beings (now more like humans) becomes completely sign-based and social.²² Now, in more detail, with clarifications of the concepts of sign, schema, and tool (as the first technology).

Let us imagine the following situation. A community of apes encounters predators: lions (tigers, cave bears). The leader of the apes notices that there is nowhere to run: on the right and left are sheer cliffs, behind them are buffaloes. And so, like Tito, for a moment he goes, as it were, "mad": instead of giving a signal (cry) of alarm and flight, he makes the exact opposite – "all is calm." And oddly enough, the predators, struck by the unusual behavior of the ape pack (they should run away, but stand calmly), retreat, leaving in search of more normal prey.

Why do the apes stand still, how is this possible when danger is obvious? This is possible if the "calm" signal ceases to be a signal, disconnecting from its native situation. In addition, the apes must be able to actually imagine the danger situation as a calm event, otherwise they will still run away. It turns out that they must go mad: seeing one thing, imagining and seeing the exact opposite; hearing one thing, not believing their ears. But you, dear reader, are the same, for example, at this moment you are in some room, but in reality you are living through completely different events: traveling through time, reflecting on the origin of man, etc.

In normal, ordinary behavior, as I said above, signals are part (element) of the event. An alarm signal does not mean the alarm itself; it is precisely the first part of the complex behavior (event) of the animal (fleeing from predators). In paradoxical behavior, however, a clash of two events occurs in the psyche of the apes: on the one hand, they see real danger, on the other, they are forced to follow the leader's signal, which reports that there is no danger (after all, we formulated the hypothesis that the leader has strong authority over the members of his pack). In such situations of paradoxical behavior, which were widespread in those times, the animal had to, as it were, "step out of itself," imagine the familiar event in the form of another, often opposite, one.

²¹ Seton-Thomson, E., "Animal Stories." Moscow: Pravda, 1983. P. 271.

²² Rozin, V.M., "Cultivated Man: Introduction to Anthropology." Moscow: MPSI Publishing House; Voronezh: MODEK Publishing House, 2003. Pp. 29-40.

The Sign. As a result, the signal ceases to be perceived as part of the event; it is now correlated with new behavior (situation, object), while maintaining a connection with the old ones. The distance and tension between these three elements (the signal, the new situation, and the old situations) are ultimately resolved in such a way that a sign appears.

The mechanism of sign formation can be represented as follows. A connection must arise between the sign form and a specific object (situation); in this case, the signal "calm" enters into a connection with the situation of danger. The necessity (and effectiveness) of such a connection is established retrospectively. It is important that this connection is not organic (natural), but, so to speak, social: it is conditioned by communication and the will of the subjects (the leader's authority). In psychological terms, a necessary condition for the formation of a connection between a sign form and an object is a kind of technical activity of the subject, aimed at redefining the situation (so the danger situation had to be understood as a calm, safe event).

The signal is now not a signal, but a sign of the new situation; it denotes, expresses some event. And the context of the sign is different – not part of the event, but communication. Now the members of the community intently watch what signal-sign the leader will give, and the leader signifies every new paradoxical situation as some event. From this period onwards, the signal-sign entails the representation of a specific situation in which new behavior is brewing. In communication, reality is doubled: once it is communicated by the leader giving the signal-sign, and another time it is realized in the specific signified behavior.²³

How did the apes manage to go mad so successfully? Mainly because they were under the authority of the leader, and also because they connected the calm signal with the new situation, that is, they began to denote this situation, and finally, because they managed to imagine the danger situation as a calm event. That is, in a paradoxical behavior situation, a sign is formed based on the signal. Unlike a signal, a sign is not the triggering part of a situation, but rather denotes it. Unlike a signal, understood within the space of biological behavior, the sign begins to exist in the space of communication, which is defined by the tense relationship between the leader and the other members of the pack.

Communication is constituted not by the real situation in which the animal finds itself, but by the leader's cry-sign, his authoritative influence, but also by the activity of the collective members, who managed to connect the sign with a specific situation through its re-presentation. Simultaneously with the formation of the sign, the first social relations and what can be called the germs of the human psyche take shape. Indeed, the behavior of apes oriented towards signs and sign communication is effectively the first social relations, and the activity of re-presenting one situation into another based on signs is the first acts of the human psyche. On their basis, imagination is born. Both aspects of activity (sign behavior and re-presentation of situations) as an interruption of biological behavior and the discovery of a new reality can be interpreted as the beginnings of psychotechnics.

Collective, joint actions with "natural tools" (stones, sticks, animal bones, etc.) likely also contributed to paradoxical behavior. Let us imagine the following quite plausible situation from the same time. A pack of apes is smashing some fruits with stones. Suddenly, a tiger leaps out from behind the bushes. The leader, out of fear, instead of a danger signal, calls to continue smashing the fruits. Hypnotized by the leader's authority, the pack members continue their work; paws with stones are seen flashing, and several stones hit the tiger's head. From pain and surprise, the tiger gets frightened and disappears. Later, in a similar situation, upon the leader's signal, the apes quite amicably throw stones and sticks at the predators. The effect of such actions for the members of the "community" was unexpected and strange: instead of one event, another resulted: they managed to obtain food, drive away predators, and change the threatening situation in a favorable direction. It can be assumed that the signals that triggered such joint actions also became signs, but not only of new technical behavior, but also of the tool-objects associated with it.

The Tool. The manufacture of tools is preceded by the comprehension of "useful natural effects." First, a small case study. It can be assumed that primitive man early discovered the possibilities of a stick, resting it on one stone and slipping it under another; it turned out that by pressing on the free end of such a stick, one could

²³ Let us recall St. Augustine's definition of a sign. "Now approaching the study of signs, I say the opposite: let no one pay attention to what they are, but only to the fact that they are signs, that is, what they signify." "For a sign is a thing that affects the senses, beyond the species, causing something else to come to mind... And we have only one reason for designating, that is, for imparting a sign—to extract and transfer into the soul of another that which produces in the soul what creates the sign" (Augustine, A. Anthology of Medieval Thought. Vol. 1. St. Petersburg: RHGI, 2001. Pp. 66-67).

lift a heavy load that could not be lifted with bare hands. Initially, this was an incomprehensible useful effect for primitive man, and in this sense, it was not yet a tool. Such a stick becomes a tool when a person, on the one hand, remembers his actions and learns to repeat them, and on the other hand, finds an explanation, for example, that in the stick resides a creature friendly to man (a force) that, if asked and given offerings, will help lift the heavy load.²⁴

Two necessary conditions for the manufacture of tools can be mentioned. Firstly, it is mediation, i.e., the identification of a preliminary action (in order to obtain the desired tool, one must first do this and that – for example, find a specific stone, split it into flakes, process them, etc.). Secondly, the invention (construction) of certain schemas that allow understanding why these preliminary and quite specific actions are necessary.

As I show, a schema is a semiotic formation (narrative or graphic) that is created (invented) by an individual to solve problems (resolve a problem situation); the schema defines a new reality that allows for understanding and acting in a new way.

A necessary condition for the formation of schemas is signification, that is, the substitution in language of one representation for another. However, the main thing in schemas is not the ability to act instead of the designated object, but to define a new vision and organize activity. New vision and understanding are conditions for new actions.

It can be assumed, and my research confirms this, that each time progress in the development of human activity was associated with the invention of new schemas. And also in the case of tool manufacture. For example, for a lever, the schema might have been as follows. A spirit resides in the stone, helping the person. But in hard stone, and even better, in sharpened stone, the spirit is very strong and ready to help better than other stone spirits. The strong spirit loves it when a person performs certain actions: finds it (finds material of hard rock), asks for help (addresses the spirit), helps the spirit get out of its shelter (splits the stone into flakes), helps it gather strength (sharpens the flakes).

It is known that some species of animals (monkeys, crows, ants, etc.) have learned to use "natural tools" (stones, thorns, leaves, etc.). But these are not tools in the proper sense: they are not conceptualized and are not guided by schemas. Why did hominids begin to widely use fire, stones, bones, and other objects? Is it not because they were situated in two realities – semiotic and natural? Some natural effects could be noticed by observing the surrounding world, but a significantly larger number began to be noticed through the prism of schemas and actions with them. Before the invention of a schema, during an eclipse one could only see the disappearing disk of the sun or moon in the sky, but afterwards, a jaguar devouring this luminary. Actions to drive it away suggested themselves. It was precisely schemas and the events read into them that dramatically expanded the zone of observation and search, intertwined, of course, with imagination and hallucinations. The latter only helped; more important were the organization of collective actions (including technical ones) and the real effects (the eclipse ended, they managed to survive, obtain food, drive away strangers, and so on and so forth).

I will make two remarks. The first concerns the nature of manufactured tools. Unlike natural tools, which man finds in nature, manufactured ones represent the first artifacts, and they differ from schemas in the following respect. In the ancient world, man did not realize that he invented, created schemas like tools. Schemas were perceived as an integral state of the world in which man lived, and of himself. Tools, however, had to be made. The second remark concerns schemas.

Man, of course, did not begin creating schemas that help make tools immediately; possibly not before the Neolithic. They were likely preceded by "image-schemas," i.e., man remembered and re-presented, without fixing in language, specific actions and their sequence. As, for example, we see in small children. The literature describes cases, and I myself observed them with my children, that sooner or later, a child notices how a toy he has dropped is brought back into the playpen by the mother. And soon he deliberately throws the toy out of the playpen, forcing the mother to bring it back again and again. In doing so, the child not only expands reality but also gradually learns that the mother can be controlled. And, by the way, judging by the fact that he laughs every time, he gets great pleasure from it. Here, the schema resulted from the child first remembering the sequence of actions (dropped the toy, the mother came and returned it to the playpen), then realizing that throwing the toy out is the same as dropping it, and finally inventing a new action – he began to throw the toy out precisely so that the mother would return it. It is difficult to describe the specific content of the invented image-schema, since it is grasped in memory precisely in figurative form.

²⁴ It is known, for example, that tools in the ancient world were understood as living beings; they were charmed, and sacrifices were made to them.

IV. From Chrysalis (Hominids) to Butterfly (Human)

Let us complete the process of explaining the origin of man. In approximately the logic considered here, communication, signs of natural language (words), imagination, and memory, which help create signs and use them to denote various situations and objects, are formed. The more often primitive individuals resorted to paradoxical behavior, the more signals turned into signs and the more effective their behavior became. Eventually, the process logically comes to its completion: paradoxical behavior becomes the main one (so to speak, normal), completely displacing the old forms of signal behavior. Situations, actions, or objects that for some reason do not receive signification now cease to exist for the community altogether. The system of sign behavior is constantly becoming more complex: the formation and use of signs generates the need for subsequent signs, these for others, and so on.

But what happens to the apes that have embarked on the path of paradoxical and sign behavior? They are forced to adapt to new conditions, to change. Only those individuals survive that begin to orient themselves not to signals and events, but to signs; those for whom "temporary madness" on a semiotic basis (i.e., imagination and representation) become the norm of life; those who learn to work with signs (create them, understand them, etc.). It is precisely adaptation to new conditions that dramatically changes the natural processes of ape development as a biological species. New types of limb movements, new types of sensations, new actions and operations in the psyche are formed. It can be assumed that biological evolution and the formation of the species *Homo sapiens* must have proceeded, as with all inhabitants of our planet, that is, under the influence of the usual microevolutionary factors: natural selection, gene mutations, their combination, etc.

A number of researchers suggest that in the prehistoric period, when man was forming, the mutation process could have been accelerated by increased radiation background or some other reasons. However, according to modern data, approximately every tenth individual is already a carrier of a new spontaneous mutation. As for shifts in the variability of behavior and conditions of natural selection, the variability was conditioned by the transition to sign behavior, and selection by the complex living conditions of transitional forms and the same transition to sign behavior.

Thus, the formation of new bodily units in connection with sign behavior entailed a corresponding biological transformation. The latter transformed literally all aspects of the organism's vital activity, from motor actions and representations to sexual behavior. Apparently, the leader, using his new role as the organizer of sign behavior, imposed sexual intercourse on females not only during the normal biological period for such intercourse (estrus), but also beyond its limits. Accustomed to acting in a real situation as if it were imaginary, the females agree to such a violation, so to speak, for "systemic reasons." The resulting biological pathology of behavior is fixed on a mutational basis (that is, becomes the norm), since it supports the general tendency of the organism to change towards semiotic behavior.

Above, we said that the need to adapt to communication, to work with signs and tools, to act jointly transforms the biological substance of the ape, creating on its basis a transitional form. This is no longer an ape, but not yet a human, but a special changing, adapting being (hometams), undergoing metamorphosis. Judging by paleontological research, by the end of the Quaternary period, the adaptation of transitional forms is completed, i.e., their corporeality (physiology, organs of the body, external appearance, actions of the senses) now fully corresponds to communication, the requirements of joint activity, and sign behavior. The prerequisites for the first ("archaic") culture are being formed. But its genesis is a topic for another study.

V. Conclusion

The analysis carried out in the article shows that the classical Darwinian model, despite its heuristic value and extensive factual material, is unable to satisfactorily explain the emergence of human consciousness, language, and sociality, since it reduces anthropogenesis to intraspecific biological processes. The author demonstrates that understanding the origin of man requires a transition to a different methodology, implying the recognition of a plurality of reality levels irreducible to each other, and taking into account the role of random factors, crisis situations, and semiotic innovations.

The central conclusion of the work is the thesis that the decisive step in anthropogenesis was the formation of sign behavior, which acted as the crystal around which a new integrity – man – was built. Paradoxical behavior, initially arising as a failure in instinctive reactions, opened up the possibility for redefining situations, creating imaginary worlds, and collective regulation of actions through communication. This entailed not only a mental but also a bodily transformation of hominids, fixed by microevolutionary mechanisms, but guided no longer by biological expediency, but by the logic of semeiosis and social interaction.

Thus, the origin of man appears not as a continuation of animal evolution, but as its interruption and qualitative transformation, in which the biological becomes material for a new – cultural – mode of being. The concept proposed by the author, uniting data from paleoanthropology, semiotics, psychology, and philosophy, does not reject natural scientific facts but places them in a broader context where the leading role is played by the sign, communication, and technology as ways of constructing reality. This allows not only to explain the emergence of man but also lays the foundations for the study of archaic culture as the next stage of anthropogenesis, which opens up new horizons for interdisciplinary research.