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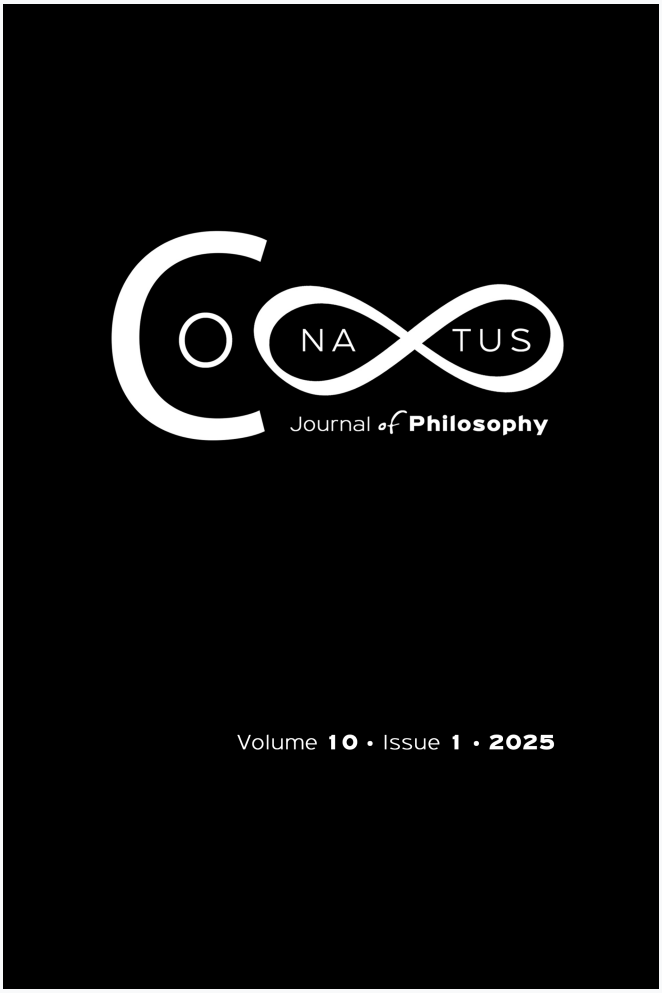

Objective Foundations of Ethics and Prospects for Its Development: Information and Communication Approach

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Objective Foundations of Ethics and Prospects for Its Development: Information and Communication Approach

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Abstract

The paper considers the objective foundations of ethics as a system providing self-regulation of society. An information and communication approach to the study of the laws of the formation of ethical norms and the interpretation of ethics as a specific transpersonal information structure is proposed. It is shown that the ethical system can be analyzed on the basis of a neural network model of society, which proves the possibility of the emergence of transpersonal information objects of various types, including those responsible for the functioning of ethics. Moreover, the thesis is put forward and substantiated that human evolution will take place in the direction of the formation of ethics as a third signaling system. There are no other regulators of socio-natural human behavior. In this direction, humanity will need to reach the level of macrocivilizational subjects and later to the level of self-identification as a human civilization with a single ethical system or coordinated at the level of intercivilizational integration.

Keywords: *ethical system; neural network model; transpersonal structure; model; signal system; information and communication environment*

I. An ethical system and the prospects for its objective research

The problems of ethics have attracted the closest attention of philosophers, moreover, in modern conditions, in connection with the transformations of the world order, they acquire a new sound. On the other hand, challenges to the very nature of humans acquire an essential character. In particular, this applies to the problems of transhumanism,[1] immortalism,[2] gender identity,[3] etc. The emerging problems are fundamental, and the task of establishing objective patterns that determine the emergence and evolution of ethical systems, as well as the task of formalizing such patterns, is very acute.

An ethical system develops in the process of interaction of people in society. Like any of the natural languages, it ontologically functions in the information and communicative social environment as a system integrity.

An ethical system means a system of historically determined moral norms and principles that have been formed in a particular society. In society, they regulate relations between people, although ethical norms are not always codified. It is obvious that these principles have quite objective grounds, although they are formed in the process of social interaction of specific people (various subjects) for a long time. It is in this general and simplified sense that we will use the concept of "ethical system" further in the article. As a generalization, it is quite theoretical, but as an objective entity it has a practical and applied character. The specification of the varieties of ethical systems in line with the research conducted in this article seems unjustified, since the very foundations of the emergence and existence of ethics as such are considered. This, among other things, determines the validity of using the term "ethical system" as the one with an appropriate degree of generality.

Ethics as a philosophical reflection considered, first of all, the following fundamental existential problems: the criteria of good and evil; the meaning of life and the purpose of humankind; freedom of will; due and its relationship with the natural desire for happiness.

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[1] Egidijus Juozelis, "Religious Dimensions in Transhumanist and Posthumanist Philosophies of Science," *Conatus – Journal of Philosophy* 6, no. 1 (2021): 125-133.

[2] Donovan Van der Haak, "Death Anxiety, Immortality Projects and Happiness: A Utilitarian Argument Against the Legalization of Euthanasia," *Conatus – Journal of Philosophy* 6, no. 1 (2021): 159-174. See also Akhat Bakirov et al., "To the Question of the Practical Implementation of 'Digital Immortality' Technologies: New Approaches to the Creation of AI," in *Proceedings of the Future Technologies Conference (FTC) 2022, Volume 1*, ed. Kohei Arai, vol. 559, *Lecture Notes in Networks and Systems* (2023).

[3] Katharine Jenkins, "Amelioration and Inclusion: Gender Identity and the Concept of Woman," *Ethics* 126, no. 2 (2016): 394-421. Also, Georgios Tsitas and Athanasios Verdis, "Proposing a Frame of Ethical Principles for Educational Evaluation in Modern Greece," *Conatus – Journal of Philosophy* 6, no. 1 (2021): 135.

Ethics as a set of unwritten rules is designed to resolve conflicts and problems of various levels that arise permanently in society. This is the main significance of the ethical system. Its flexibility is the main advantage in social relations. Some of its rules may eventually be fixed in legal codes. Here they become clearer in definition and execution, but at the same time they lose the flexibility that is necessary in the culture of social communication.

The noted features of the ethical system are very similar to the natural language of communication. The same ontological information and communication status, the same flexibility in everyday communication, a similar fixation in grammar.

These systems, like many others, are transpersonal structures (in relation to science as a transpersonal information structure, this term is disclosed in)[4] although its direct carriers are specific members of society, or rather, society as a system integrity.

The first interesting results of the formalization of the ethical system were obtained by V. A. Lefebvre. In particular, this allowed him to identify two different ethical systems that different peoples adhere to. In one system, the union of good and evil was evaluated as evil; in another system, the union of good and evil was evaluated as good.[5]

At present, tools for the formal description of the ethical system are proposed, allowing for a subsequent transition to quantitative research. These tools are based, in particular, on the consideration of society as a neural network.[6]

II. Ethics as a transpersonal information and communication subsystem of the noosphere

Any communication between individuals physically resolves into the exchange of signals between the neurons of their brain, connected with sensory organs. As follows from the modern theory of neural networks,[7] the memory of neural networks depends non-linearly on the number of elements included in it. In the process of communication between individuals, a com-

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[4] Ibragim E. Suleimenov et al., "Dialectics of Scientific Revolutions from the Point of View of Innovations Theory," *WISDOM* 24, no. 4 (2022): 25-35.

[5] Vladimir A. Lefebvre, *Algebra of Conscience: Second, Revised Edition* (Reidel, 1982; expanded 2nd ed., Kluwer, 2001).

[6] Ibragim E. Suleimenov et al., "Artificial Intelligence: What Is It?" in *Proceedings of the 2020 6th International Conference on Computer and Technology Applications (ICCTA 2020)* (Association for Computing Machinery, 2020), 22-25; Ibragim E. Suleimenov et al., "Neural Networks and the Philosophy of Dialectical Positivism," *MATEC Web of Conferences* 214, no. 02002 (2018).

[7] Ibragim E. Suleimenov et al., "Distributed Memory of Neural Networks and the Problem of the Intelligence's Essence," *Bulletin of Electrical Engineering and Informatics* 11, no. 1 (2022): 510-520.

mon neural network arises, the memory of which exceeds the total memory of these individuals taken separately. Consequently, an additional segment of the information space arises, which is only indirectly connected with the memory of individuals. Moreover, the exchange of signals between neurons in a common neural network leads to the appearance of non-rivial information objects – transpersonal information structures. The mechanism of their appearance is completely analogous to the appearance of human consciousness, for instance, it is also associated with the exchange of signals between neurons, but since such an exchange takes place within a common network, the resulting information structures relate precisely to the transpersonal level of information processing. It is appropriate to emphasize that the conclusions of the theory of transpersonal information objects can be made very clear. For example, such a system as a university can also be considered on the basis of a direct analogy with a neural network,[8] in it is shown that any voting Council with a sufficient density of horizontal connections is converted into a direct analogue of Hopfield neuroprocessor, etc. It should also be noted that the approach correlating with the one proposed in the works cited above is also reflected in the current literature.[9]

The conclusion about the existence of a transpersonal level of information processing also clearly correlates with modern trends in the application of neural network theory in the natural sciences at the level where they are adjacent to philosophy. Thus, in it was demonstrated that the Universe as a whole can also be considered as a neural network, which is completely consistent with the understanding of the "complex" proposed in.[10]

The main idea of our statement is not only to fix the transpersonal nature of the ethical system, but also to prove the possibility of its scientific research on an interdisciplinary basis, for instance, in parallel by means of philosophy and information theory.

The ethical system, the essence of which is revealed through the theory of transpersonal information objects, is an important (framework) component

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[8] Ibragim E. Suleimenov et al., "University as an Analogue of the Neural Network," *E3S Web of Conferences* 258, no. 07056 (2021): 07056; Ibragim E. Suleimenov et al., "Voting Procedures from the Perspective of Theory of Neural Networks," *Open Engineering* 6, no. 1 (2016): 318-321.

[9] George A. Mashour et al., "Conscious Processing and the Global Neuronal Workspace Hypothesis," *Neuron* 105, no. 5 (2020): 776-798; Panagiotis Kormas et al., "Implications of Neuroplasticity to the Philosophical Debate of Free Will and Determinism," in *Handbook of Computational Neurodegeneration*, eds. P. Vlamos, I. S. Kotsireas, and I. Tarnanas, 1-19 (Springer International Publishing, 2022).

[10] Yelizaveta S. Vitulyova et al., "Interpretation of the Category of 'Complex' in Terms of Dialectical Positivism," in *IOP Conference Series: Materials Science and Engineering* 946, no. 1 (2020): 012004; Vitaly Vanchurin, "The World as a Neural Network," *Entropy* 22, no. 11 (2020): 1210.

of the emerging noospheric reality, which can be characterized as an information and communication environment. Otherwise, it can be argued that at the present stage the noosphere has already been converted into a human-machine system, an important component of which is telecommunications networks.

The new quality of the noosphere leads to the accelerated formation of new transpersonal information objects[11] and today it is more than important to make this process manageable, which returns to the basic thesis of this work – the consideration of ethics as one of the transpersonal information structures that perform the functions of a regulator of social behavior.[12]

Remembering the hopes of V. I. Vernadsky, which he pinned on the mind of mankind, today we can talk about these ideas of an outstanding naturalist in a different perspective. As an educator and humanist V. I. Vernadsky believed in the rational nature of humans, which should change the ethics of their behavior and, as a consequence, the social structure of the world.

> The idea of a single state unification of all mankind is becoming a reality only in our time, and that, obviously, is becoming only a real ideal, the possibility of which cannot be doubted. It is clear that the creation of such unity is a necessary condition for the organization of the noosphere, and humanity will inevitably come to it.[13]

This, in fact, belief in the idea of progress of great Enlightenment figures, unfortunately, did not justify itself. It burned down in two world wars, when the scientific and technological achievements of mankind were used to destroy millions of people, as well as in numerous conflicts of various kinds, which continue at the present time.

However, qualitative changes in the noosphere inspire certain hopes – if, of course, it adequately disposes of the resource that a consistent theory of transpersonal information structures creates.

III. Ethics in the context of the coevolution of human and nature

There are objective reasons for this. Namely, there is every reason to believe that the ethical evolution of humans is not the result of random processes.

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[11] Almaz S. Bakirov et al., "Internet Users' Behavior from the Standpoint of the Neural Network Theory of Society: Prerequisites for the Meta-Education Concept Formation," *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences* XLVI-4/W5-2021 (2021): 83-90.

[12] See Julian Savulescu and Evangelos D. Protopapadakis, "'Ethical Minefields' and the Voice of Common Sense: A Discussion with Julian Savulescu," *Conatus – Journal of Philosophy* 4, no. 1 (2019): 125-133.

[13] Vladimir I. Vernadsky, *The Biosphere and the Noosphere* (Airis-Press, 2004), 324.

This is a natural consequence of objective laws reflecting the peculiarities of the coevolution of man and nature, in particular, the shells of the Earth. The first attempts to establish the laws of coevolution of living and inert matter were made by J. Lovelock, who put forward the concept of Gaia as a kind of "superorganism" in which biota plays the role of one of the regulators. Discussions around Lovelock's concept continue to this day[14] and the question of whether Gaia can possess certain forms of consciousness is also debated.[15]

The utilization of the theory of transpersonal informational structures and neural network theory to analyze the interaction between society and dormant matter has enabled us to understand the regulatory functions of Gaia's rational component at a higher level.

It is crucial to note that both Vernadsky and Lovelock assert that human civilization, as the intelligent component of Gaia, is a transformative force for the Earth spheres. Vernadsky likened the outcomes of human activity to geological disturbances on a smaller scale. Consequently, the concept of co-evolution implies that humans exercise regulatory functions on a global scale, which necessitates a different perspective on the transpersonal information structures that regulate human social behavior.

As more and more powerful and effective technical means appear at a person's disposal, ethics becomes more and more important, and already as a factor of coevolution of living and inert matter. Continuing Vernadsky's logic, it can be argued that the transformations of ethics become events of a planetary scale.

In order to reveal this thesis consistently, the stages of human evolution in the context of transformations of its interdependence with nature are briefly considered.

According to this criterion, human evolution has undergone (or is undergoing to one degree or another) five "optimizations" ("gastronomic," "mechanical," "demographic," "mnemotic," "gerontological,") each of which can be considered from the standpoint of coevolution, understood by Lovelock, and with positions of transformations of transpersonal information structures.

The first ("gastronomic") stage was associated with the development of fire. The possibility of cooking food subjected to heat treatment can be interpreted as a physiological optimization, in which part of the functions performed by the gastrointestinal tract was "outsourced" which led, among other things, to the evolution of the jaw and intestinal tract).

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[14] Jaime A. T. Da Silva and Panagiotis Tsigaris, "The Relevance of James Lovelock's Research and Philosophy to Environmental Science and Academia," *Frontiers of Environmental Science & Engineering* 17, no. 3 (2023): 1-2; Tim Radford, "James Lovelock at 100: The Gaia Saga Continues," *Nature* 570, no. 7762 (2019): 441-443.

[15] Dorion Sagan, "James Lovelock and Consciousness: An Obituary," *Journal of Consciousness Studies* 29, nos. 11-12 (2022): 226-231.

From the point of view of the theory of transpersonal information structures, this stage is associated with the formation of ancient mythology, which surprisingly reproduces the same plots (despite the fact that the peoples who created this mythology were often significantly geographically dispersed).[16] A classic in this respect is the myth of Prometheus, who gave fire to people. Transpersonal information structures, which are "read" according to ancient myths reflecting this historical period, act as a kind of active principle with which a person – or his "representatives", such as Prometheus – can enter into real interaction. This translates into the emergence of innovations that initiated the further development of civilization (potter's wheel, sail, sustainable fire production systems, etc.).

The second ("mechanical") stage is associated with the optimization of muscle work. The domestication of animals, and most importantly, the creation of mechanisms for the use of external natural forces, can be interpreted as the transfer of a significant part of heavy physical labor "to outsourcing." In this historical period, a new specific form of transpersonal information structures associated with abstract thinking appears. Without moving to such a level of understanding of physical reality, it is impossible to formulate the laws of mechanics even at the most primitive level. It is not by chance that mechanics as a science was born much later than geometry. Humanity first had to generate and perceive the corresponding transpersonal information objects.

We emphasize that abstract thinking is obviously not inherent in cultures that are even at the highest stages of barbarism, this is an achievement of civilized peoples. Even the simplest forms of logical thinking are not characteristic of primitive cultures.[17] At the same time, abstract thinking cannot appear – much less develop – as something individual. An appropriate environment is needed. Hence the thesis that abstract thinking, even of an individual, can exist only as a transpersonal information structure and is realized through its projection onto the consciousness of an individual.[18]

The third ("demographic") stage is expressed in the optimization of population reproduction. Unlike the first two, it cannot be considered already completed, however, a demographic transition has obviously occurred in developed countries, reflected by official statistics: low birth rate with low mortality, including infant mortality.

This transition is also obviously associated with transformations of transpersonal information structures. With high infant mortality, the only way to preserve the population is to ensure a high birth rate.

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[16] David J. Wong-MingJi et al., "Cross-Cultural Comparison of Cultural Mythologies and Leadership Patterns," *South Asian Journal of Global Business Research* 3, no. 1 (2014): 79-101.

[17] Lucien Lévy-Bruhl, *Le surnaturel et la nature dans la mentalité primitive* (Presses Universitaires de France, 1963).

[18] Bakirov et al., "Internet Users' Behavior," 83-90.

The desire to ensure a high birth rate in one way or another permeates any religion or ideology formed before the 20th century. The ban on abortions, the subordinate position of a woman, whose main function in the eyes of society was childbearing, categorical rejection of any other forms of marital relations – all this is a reflection of the fact that the transpersonal information structures formed before the 20th century were focused precisely on the quantitative reproduction of the population.

The roots of such transpersonal information structures go back to the times when they were formed on the basis of individual clans or tribes. For that historical epoch, the value of an individual's life was negligible compared to procreation.

Currently, the situation is changing dramatically. Modern medical achievements allow us to interpret placental pregnancy, breastfeeding, etc. as a kind of biological prejudice, or rather, a social atavism. Reproduction of the population is moving from quantitative to qualitative, which cannot but cause the transformation of those transpersonal structures that are responsible for the reproduction of the population.

The following two stages are considered ("mnemotic" and "gerontological") partly implemented, partly manifest themselves in the form of emerging trends.

The prerequisites for the implementation of the first of them are obvious. The simplest forms of intellectual (more precisely, not related to physical labor) activity can already be transferred to digital technologies, which is partly implemented in practice through the creation of appropriate artificial intelligence systems. There is no longer any doubt that the very existence of "office plankton," for instance, small clerks engaged in obviously useless work are determined only by the imperfection of legislation and problems easily solved by information logistics. Nevertheless, it is the "office plankton" that largely determines the structure and content of the modern information space. People who really have nothing to do at work spend time on online social networks, forming relevant requests and an information agenda.

Any significant economic crisis, however, will certainly lead to the fact that society will easily sacrifice this ballast. Accordingly, a change in the social fabric is predicted, and, consequently, the accompanying transpersonal information structures.

The least obvious is the content of the "gerontological" stage of evolution. On the one hand, the thesis of ensuring "digital immortality" sounds more and more clearly, and, as shown, for example, in this issue is partly solved already at the existing level of information technology development.[19]

However, even if we exclude the question of a drastic increase in life expectancy (which is quite expected, even if we do not take into account

[19] Bakirov et al., "Practical Implementation," 25.

the achievements of nanotechnology), the "gerontological" revolution in the formation of transpersonal information structures has already largely occurred. Here is the evidence.

IV. Modern consequences of coevolution and possible prospects

Transpersonal information structures cannot but be visualized (or personified) to one degree or another, albeit with noticeable distortions. Otherwise, they will remain not perceived by the ordinary consciousness. Such structures in the era of the Neolithic revolution were perceived through the images of Ancient Gods, totems of the genus, etc.

In Modern Times, such structures could not but transform, as well as their personification. The "avatar" of atavistic tribal structures became the head of the family, personifying and defending the corresponding set of values, and, consequently, the corresponding set of informal ethical norms.

Visualizing (or personifying) transpersonal information structures to some extent is essential, as without it, these structures would be imperceptible to ordinary consciousness. In the Neolithic era, these structures were perceived through the images of Ancient Gods, clan totems, and similar visual representations.

In modern times, the personification of transpersonal information structures has undergone significant changes. In the past, the head of the family represented the avatar of tribal structures and upheld a specific set of values and ethical norms.

Until the mid-20th century, the corresponding transpersonal information structures were relatively stable, which was determined by the nature of the age pyramid reflected in numerous studies on demography.[20]

So, at the beginning of the 20th century, the age pyramid of Belgium had the appearance characteristic of a patriarchal society. The population belonging to the older age groups was significantly lower than the corresponding indicator for groups aged about 30 years.

By the end of the 20th century, the situation in the EU countries had changed drastically. The number of different age groups in the age range from 0 to 80 years remains approximately the same.

In such conditions, there is simply no place for the "heads of the family." Indeed, as observations of the customs of societies in which patriarchal traditions are strong show, the "aqsaqal" was valuable for society, first of all, as a source of information (knowledge, life experience, etc.). This attitude towards the older generation also supported the existence of appropriate transpersonal information structures.

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[20] John R. Gillis, *Youth and History: Tradition and Change in European Age Relations, 1770 – Present* (Elsevier, 2013).

This role of "aqsaqal" is now lost. Moreover, it is becoming increasingly obvious that the classical monogamous family no longer meets the needs of society, if only due to factors related to the transformations of the return pyramid and an increase in life expectancy.

Indeed, there are a very significant number of formats of activity (and critically important for the existence of civilization) that require the acquisition of high qualifications, and, consequently, a very long period of study. So, in such an area as medicine or science, a person becomes wealthy on average by the age of 35. Biologically, this corresponds to the age of a grandfather or grandmother: individuals of our species become reproductive by the age of 17.

In fact, this means that the classical monogamous family has already been significantly transformed. A young couple, for example, focused on an academic career, will not survive without the support of the older generation. If we take into account that even in those countries where traditions are strong, tribal relations are becoming more and more weakened, this means that we are dealing with a three-age family. Its peculiarity, unlike classical patriarchal families, is that not one, but two generations are in the position of children requiring care and guardianship.

The considerations expressed, however, are mainly illustrative. They are designed to emphasize that ethics is a flexible transpersonal structure that arises and develops not by itself, but as a coevolutionary component of the biosphere.

It is not difficult to prove this statement in modern conditions. Ethical norms that correspond to the era of maximum stimulation of childbearing are now a thing of the past. It is not the quantity that becomes important, but the quality of the human resource. Accordingly, ethical norms are also changing dramatically, which is clearly visible on the homosexual agenda.

However, such transformations – in accordance with the ideas of coevolution – cannot but correlate with the evolution of the Earth's spheres. Humans have become a factor of a planetary scale, accordingly, the norms (both formal and informal) that set the vector of development of society also take a planetary scale.

Summing up, even a brief overview of the stages of evolution, highlighted in accordance with the criterion formulated above, shows that following (more precisely coherently) objective changes in social life, that is, the change of Homo ontology and information and communication interaction, the ethical system also changed. This is especially evident in the example of family and marriage relations.

Currently, humanity is at the point of bifurcation. Its principal feature is as follows. In terms of information and communication, humanity has previ-

ously evolved through a qualitative transition from the first signal system to the second. Here is the reminder of the essence of this evolution.

Signaling systems are systems of conditional connections that combine the first (sensory) and second (conceptual) signal systems in the brain, providing adequate adaptation to the environment. Both systems work in interaction, perceiving signals from the outside world, and the first signaling system is in humans and animals, while the second signaling system is only in humans. The concept of a "signal system" was introduced by I. P. Pavlov. In 1932, he defined the concept of a "signal system" as central to his teaching about the laws of the brain. The principles of "signaling" act starting from the simplest organisms and then become more and more complicated in the process of evolution. The ability to respond in a timely and adequate manner to the "signal" of the environment is a matter of survival. To meet the vital needs of the body, almost any natural agents (sound, smell, visual image) can serve as signals, so the first signal system common to humans and all living organisms is formed. The qualitative difference between humans and animals lies in the appearance in the process of evolution of the second signaling system, generalized signaling-speech. The first signal system is described by I. V. Pavlov as follows:

> This is what we have in ourselves as impressions, sensations and representations from the surrounding external environment, both common and from our social, excluding the word, audible and visible. This is the first signal system of reality that we have in common with animals.[21]

For him, the second signaling system is a system of conditioned reflex connections in the human brain, where the conditional stimulus is a word, speech. It arises on the basis of the first signal system in the process of communication between people. It is the second signal system that is the regulator of higher nervous activity, the basis of written and oral speech, abstract-logical thinking.

During the evolution of the animal world at the stage of formation and initial development of the Homo sapiens species, a qualitative modification of the alarm system occurred, providing active and collective adaptive behavior of a person to the surrounding world, both natural and social. Using the second signaling system, people have learned not only to communicate and transmit information to each other, but also to accumulate it, process it, store it and transmit it from generation to generation, first orally, and then in writing.

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[21] Ivan V. Pavlov, *Complete Works*, vol. 3, bk. 2 (1951), 335-336.

In his work *On the Beginning of Human History* the famous paleopsychologist B. F. Porshnev carried out a deep analysis of the process of formation of a person, his speech and consciousness.[22] The biopsychological and social conditions of the formation of brain structures (neocortex) and the formation of languages have been subjected to in-depth analysis by anthropologists and linguists since the end of the 19th century in connection with the study of Sanskrit by European science and with the advent of comparative linguistics.

Human speech communication is not just the perception of signals (words), it is the understanding of their meaning and meaning. Speech as a second signaling system acts as a semiotic system of meanings. The second signal system and the memory are one. Thanks to speech, the human world "doubles," the word allows you to mentally operate with objects even in their absence. Human consciousness carries out a holistic perception of the surrounding world in terms of concepts.

The above brief excursus into the history of the evolution of the signal system was necessary to draw attention to its fundamental importance. Developing this evolutionary line, we assert that a third signaling system is being formed – ethics as a transpersonal structure. Just that transforms humanity into a fundamentally new format – Homo Deus.[23] Otherwise, it will disappear, self-destruct, and natural evolution will look for new ways of development.

Homo Erectus (labor) – Homo Sapiens (labor, speech, sociality) – Homo Deus (continuation of evolution – a new materiality is added – information and communication environment, transpersonal structures – outsourcing of intelligence, regulator – ethics as a transpersonal structure). A qualitative transition will take place in this direction, and a new ontology of humanity will be based on this.

There is nothing to derive the social from, except from the biological, but it does not come down to it. This is the first antinomy. From the social, a third signaling system will be born – the ethics of human behavior. This is the second antinomy. Their solution lies in a neural network model that explains the formation of transpersonal structures.

Other regulators of socio-natural human behavior are not visible. In this direction, humanity will need to reach the level of macrocivilizational subjects and later to the level of self-identification as a human civilization with a single ethical system or coordinated at the level of intercivilizational integration.

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[22] Boris F. Porshnev, *On the Beginning of Human History: Problems of Paleopsychology* (Aleteya, 2007), 207.

[23] Yuval Noah Harari, *Homo Deus: A Brief History of Tomorrow* (Vintage, 2017).

Author contribution statement

Both authors have contributed equally to the conception and design of the work, the drafting and revising of the manuscript, and the final approval of the version to be published.

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