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Humanity in the Context of Biological and Psychological Heritage: From Maslow to Paleogenetics

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Abstract

The article examines the nature of humanity through a synthesis of psychological theories and contemporary data from paleogenetics. Classical psychological theories do not account for the genetic diversity of modern humans. Meanwhile, modern achievements in paleogenetics pose the problem of revising many models of human behavior and nature. A theoretical, comparative analysis of works by classics of psychology and articles from the search systems PubMed, Google Scholar, and e-library was conducted, as well as a descriptive analysis of modern paleogenetic studies on the sequencing of hominin genes. The research hypothesis suggests that differences are conditioned not only by social factors but also by the biological heritage from various hominin species. The study's main results are presented in a critique of Maslow's concept of the hierarchy of needs, which cannot be viewed as universal. The theory ignores the biological diversity of humans, who have inherited up to 6% of their genes from Neanderthals and Denisovans, which may influence behavior. Biological heritage explains the variability in human needs. Cultural differences also alter the "hierarchy" of humanity. It is shown that humanity cannot be reduced to a single model, as it depends on genetics, culture, and context. It is emphasized that the evolutionary approach explains such manifestations in different groups of people as aggression, creativity, or altruism. However, while there is no direct evidence of a link between specific genes and psychological traits, the hypothesis requires further research. Humanity is the product of a complex interaction between biology (genes of ancient hominins) and the social environment. Psychological theories must integrate paleogenetic data for more accurate models of motivation. Interdisciplinary research at the intersection of psychology, anthropology, and genetics can yield new analytical material.

Keywords: *humanity, human nature, needs, genetics, paleogenetics, Neanderthals, Denisovan human, Homo floresiensis.*

Introduction

The Problem of Humanity in Philosophy and Psychology.

Humanity as a complex biopsychosocial phenomenon remains a subject of interdisciplinary research uniting such sciences as psychology, genetics, archaeology, and anthropology. Classical psychological theories have traditionally viewed humanity through the prism of universal social and cognitive mechanisms, ignoring the influence of biological heritage. However, modern discoveries in archaeology and paleogenetics, demonstrating the contribution of genes from Neanderthals, Denisovans, and other ancient hominins to the DNA of *Homo sapiens*, cast doubt on these universal models. This article investigates humanity

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through a synthesis of psychological concepts (Maslow, Frankl, Fromm) and paleogenetic data, proposing a revision of traditional ideas regarding motivation, behavior, and the variability of human nature.

The problem of humanity is a multifaceted and complex topic with various aspects of study. The question of the essence of man and the measure of humanity, and the methods of measuring it, touch upon fundamental aspects of such sciences as philosophy, ethics, psychology, sociology, as well as art in all its forms and manifestations. It is studied in philosophical (E. Fromm, M. Heidegger, I. Kant, J.-P. Sartre, A. Camus), psychological (V. Frankl, C. Rogers, A. Maslow, S. Freud), artistic (F. Dostoevsky, L. Tolstoy, A. Solzhenitsyn, A. de Saint-Exupéry, R. Bradbury), and ethical (H. Jonas, M. Gandhi, D. Bonhoeffer) literature. Researchers of this problem are not limited to the outstanding and profound thinkers listed above. Given the limited scope of any article, we will not present a historical excursion into the problem here. But we will briefly note that from a philosophical position, Erich Fromm analyzed human nature, distinguishing between material and spiritual forms of human existence [14]. Martin Heidegger [24] viewed the problem of human essence through the prism of the finiteness of time. Immanuel Kant touched upon the question of humanity as a category of ethical consciousness [30]. Jean-Paul Sartre saw the existential essence of man in the realization of genuine human freedom [56]. Albert Camus [5] saw humanity and the absurdity of human existence in the meaning of human life. We will dwell in more detail on the psychological aspects of the problem in scientific literature, leaving the artistic and ethical aspects to the relevant specialists.

Viktor Frankl, who survived severe suffering in Nazi concentration camps, in his work "Saying 'Yes' to Life: A Psychologist in a Concentration Camp" investigated human resilience and the meaning of life under the extreme conditions of a fascist concentration camp, where a person remained human to the extent of their humanity [12].

Carl Rogers, who grew up in a strict religious and moral atmosphere, in a family with dogmatic religious views, was a rather unsociable, even lonely teenager, who "found" himself and other people due to his education and diligence. It was through the acceptance of himself and others that he showed how a person reveals his or her humanity [52]. He believed that "the individual has vast resources for self-understanding, for altering his self-concept, his attitudes and his self-directed behavior within himself — and that these resources can be tapped if only a definable climate of facilitative psychological attitudes can be provided" [51].

Relevance

Relevance of the study is due to the theoretical gap, empirical discoveries, and practical significance of the problem. Psychological theories do not account for genetic diversity inherited from various hominin species, which limits their explanatory potential. Data on Neanderthal and Denisovan genes (for example, FOXP2, associated with speech) require the integration of biology into psychological models. Understanding the biopsychosocial foundations of humanity is important for personality psychology, ethology, medicine, and ethics, especially in the context of cultural differences and individual behavioral patterns.

Methods and Material of Research.

Theoretical analysis of classical psychological theories (Maslow, Frankl, Fromm) from the perspective of modern paleogenetic achievements and their critique were applied in this work. A comparative review of modern paleogenetic studies on the genome of Neanderthals, Denisovans, and *Homo floresiensis*, and their influence on modern humans were conducted, as

well as an interdisciplinary synthesis of data from anthropology, neurobiology, and psychology to explain the variability of human behavior. The research was based on the works of classics of psychology (Maslow, Frankl, Fromm, et al.), as well as a number of articles on the indicated problem in the search systems PubMed, Google Scholar, and e-library, using the keywords "humanity," "human nature," "needs," "Neanderthal," "Denisovan human," "Flores man," "paleogenetics."

Results of the Research.

Maslow's Theory and its Limitations.

In studies of human nature, Abraham Maslow came to a number of important ideas. He asserted that people have reached such a moment in their biological history when they begin to develop themselves and bear responsibility for their own evolution, which means selection, and consequently-choice, decision-making, and evaluation. Man is never limited by what has been achieved; he always strives for more in everything. The natural and necessary development of society contributes to the growth of the human being, the formation of his personality; self-actualization leads to an increase in the "productivity" of each individual [38]. In "Toward a Psychology of Being," the motivating factor for a self-actualizing person is the "Values of Being" [39]. These are values that healthy people develop for themselves naturally and which are not imposed by religion or culture. Values that are important for self-actualizing people include truth, creativity, beauty, goodness, wholeness, aliveness, uniqueness, justice, simplicity, and self-sufficiency.

According to Wilson, [67], Maslow was the first to proceed to the creation of a truly comprehensive psychology that... "stretches from the basement to the attic." He accepted Freud's clinical methods without accepting his philosophy. Aesthetic, creative, and religious motivational drives are such basic and integral parts of human nature, as the drive for dominance or sexuality. If their universality is less obvious, it is only because *few people reach that level where these motives come to the forefront* (emphasized by me). A logical question arises here – why not everyone, but only a few people reach this level? On the other hand, Maslow himself writes that "...(I) started this work, trying to understand great people, the best representatives of humanity" (cited in Hall M.H [25]), and not ordinary people? Maslow's research sample included only "successful" people (Einstein, Roosevelt), and he built his theory on human nature based on such a sample [43; 65]. Modern studies [61] demonstrate that the satisfaction of needs does not always occur sequentially: even in conditions of poverty, people can experience a need for creativity or spiritual development.

In the development of his theory on human nature, Maslow "moved" toward transpersonal psychology, where the focus shifts from human needs and interests to cosmic ones [39]. However, from our point of view, in this movement, we should sort out the human being himself, understand the foundations of such enormous diversity in the hominin family, the genus *Homo*, and the species *Homo sapiens*, which poses the question to us: is the Human a single species? We pose such a question based on two important scientific achievements of modern human sciences: firstly, the sequestration of the modern human genome showed that *Homo sapiens* is a carrier of genes from different human species – at a minimum, Neanderthal, Denisovan, and Flores man; secondly, the diversity of theories and concepts about man claiming universality, yet ignoring the very fact of human biological diversity (at least, we assume this and will attempt to substantiate it). In doing so, we proceed from one of Maslow's principles, who wrote that "...the psychology of life should be checked in the laboratory that life provides..." [40].

Genetic Heritage: Ancient Humans and Their Contribution to Modern Man.

Modern achievements in paleogenetics dictate that modern man is a carrier, to one degree or another, in various ratios, of at least three ancestors of modern man [1; 20; 42; 58]. Y.N. Harari notes very figuratively that approximately 70,000 years ago "...one of six unremarkable human species called *Homo sapiens*, which played a small role in the planet's ecosystem, less than gorillas, fireflies, and jellyfish, turned into the master of the planet and the nightmare of the ecosystem" [26]. One of these human species was the Neanderthal, another - *Homo soloensis*, then *Homo denisova*. New human species appeared - *Homo rudolfensis*, *Homo ergaster*, and finally, *Homo sapiens*. But he is very different, which can be explained by the admixture of genes from ancient hominins and social evolution. In other words, we are not "pure" *Homo sapiens*: our DNA is inherited from Neanderthals, Denisovans, and Flores man, and possibly other species. For many millennia, these species existed simultaneously, not replacing one another, until finally, in the struggle for existence, "victory" went to *Homo sapiens* [26].

The evolution of the genus *Homo* can be understood in the context of two main branches of human evolution – biological and cultural. As Weber notes [66], fossil remains of hominins over the last seven million years and the increasing number of artifacts in archaeological studies demonstrate a progressive increase in brain size and cultural development, which began approximately two million years ago. Against the background of gradual biological and cultural evolution, quantum leaps in time were observed. Thanks to their increased adaptability (taming fire, creating tools), humans stepped off the canonical general biological evolutionary path and turned into a symbolic species. After this, a new task arose before man – development in the name of life or, as Weber defines it [66], "intentional evolution." It is important to note that chronologically these quantum leaps correspond to data on cranial volume, which are used as an indicator of cognitive activity.

At the beginning of the 21st century, new paleontological and paleogenetic discoveries appeared, which showed how mistaken we were in our ideas about the human race [42], and we changed the established views on anthropogenesis. Discoveries in modern genetics and paleogenetics (sequencing methods, comparative genetic analysis of nuclear and mitochondrial DNA of "forefathers") allowed us to assume that modern man is not monophyletic, that is, he does not have one, but more than one ancestor, each of whom contributed to his formation. These include the Neanderthal, the Denisovan, and the Flores man. If modern man inherited the biological properties and characteristics of ancestors, then it can be assumed that his mental activity also relies on the components of the psyche of each of the ancestors. And this psyche differed from the one that functions today. What man was like in his physical parameters, we see from fossil artifacts hidden under layers of earth. What the human psyche was like, we see and judge by psychological artifacts, to which we attribute those mental manifestations that surface from under the layers of the neopsyche, creating certain forms of maladaptation, inadequate cognition, and reflection of objective reality.

Since 2006, extremely interesting studies on the sequencing and comparative genetic analysis of mitochondrial and nuclear DNA of ancient hominins have been carried out. The results turned out to be revolutionary in their significance and forced us to think not only about the taxonomic position of new species in the system of the genus *Homo*, but also about what their genetic contribution is to the origin of modern man [6; 16; 48]. The first comparative genetic studies of Neanderthal nuclear and mitochondrial DNA, performed under the leadership of Svante Pääbo, showed that this is a parallel dead-end branch not leading to modern man. Their evolutionary paths diverged approximately 460–470 thousand years ago, and 28–30 thousand years ago Neanderthals ceased their existence on Earth [44; 45]. It was assumed that all branches of anthropogenesis disappeared, leaving their trace only in the bowels of the earth.

But this is not entirely true. The trace of ancestors is also noticeable in the human psyche. Studying the psyche as a phenomenon having its own history of development and formation, just like man as a biological object has his own history of development, we viewed psychopathological manifestations as historical artifacts, adequate in actual time and space, but having acquired a pathological character in the present time, which aligns with Jackson's theory of dissolution [59; 60]. If the biological evolution of the animal world is based on the self-reproduction of hereditary substances, then human evolution is based also on the self-reproduction and transmission of achievements of the mind ("self-reproducing mind") [19]. Only one of the many representatives of the genus *Homo* managed to grow from an animal into a human. This was *Homo sapiens*. He was the only one who managed to go beyond the limits of biological evolution and stand on the path of psychosocial evolution. The main direction of *Homo sapiens* evolution was cephalization: 1) increase in brain size, primarily the neocortex, and 2) expansion, improvement, and differentiation of brain functions. As a result, all representatives of ancient phylogenetic branches existing alongside the Cro-Magnon in time and space ceded their place to him [50]. Studies of the Neanderthal genome conducted by S. Pääbo [44; 45] showed that the genome coincides by several percent with the genome of modern man. The material for this study was human bones from the valley of the German river Neander [20; 33], remains of a human of 38,000 years antiquity discovered in the Croatian cave Vindija [21], remains of a male who lived 43,000 years ago in the Spanish cave El Sidrón [35], and remains of a child aged 60–70 thousand years from the Mezmaiskaya cave in the Krasnodar Territory [18] and a number of other regions [15; 49]. S. Pääbo and his group deciphered the sequence of Neanderthal mitochondrial DNA, then the full deciphering of the mitochondrial genome was completed. Finally, quite recently, researchers completed the full sequencing of the nuclear genome and deciphered five mitochondrial genomes [44; 45]. Then reports appeared about the deciphering of approximately 60% of the entire Neanderthal genome [2]. To determine how similar modern humans are to Neanderthals, scientists took genetic material for research from modern people from different regions of the Earth (South Africa, West Africa, China, France, and Papua New Guinea). It turned out that in people of European, African, and Oceanic origin, the genome coincidence with the Neanderthal was 1–4%. This is sufficient to confirm the fact of interbreeding of early modern humans with Neanderthals.

In 2010, materials of a comparative study of the mitochondrial genome of the "Denisovan" human with the genomes of 54 modern people, one ancient Sapiens aged about 30,000 years, six European Neanderthals, and two Neanderthals from Central Asia were published [42]. The obtained results turned out to be sensational: the mitochondrial DNA of the Denisovan human differed from the mitochondrial DNA of modern man by only 385 nucleotides (the size of the entire mitochondrial DNA molecule is 16,560–16,570 nucleotides). The difference of the Neanderthal from *Homo sapiens* constitutes 202 nucleotides. Neanderthals differ from Denisovans by approximately the same amount, as from *Homo sapiens*. According to paleogenetic data, the Denisovan human was neither *Homo sapiens* nor *Homo neanderthalensis*, that is, it must be admitted that the Denisovan human (or *Homo altaiensis*) is a second species of extinct hominins after the Neanderthal for whom the full mitochondrial and almost full nuclear genomes have been sequenced. At the same time, the habitat of *Homo altaiensis* overlapped with the range of Neanderthals and Sapiens both in space and in time of existence [42].

Even more unexpected results were provided by comparisons of the *Homo altaiensis* genome with the genomes of 938 modern people representing 53 different peoples of the world. An admixture of Denisovan nuclear "genes" in the amount of 4.8±0.5% was found in the modern population of Melanesia, inhabitants of New Guinea, in the populations of Oceania, Southeast Asia, among Australian Aborigines, Polynesians, Fijians, Eastern Indonesians from various

islands (including Flores), and Filipinos. These facts testify to the possibility of "metisation," that is, the physical mixing of different hominins.

Practically complete sequencing of the Neanderthal nuclear genome showed that the genome of Neanderthals and modern people differs by only 0.16% [21]. The difference seems insignificant, but it is quite substantial, since precisely these differences made the hominid a human. In *Homo sapiens*, 78 single-nucleotide substitutions in genes were discovered which are absent in Neanderthals, as well as five purely "sapient" genes that exist exclusively in the human genome, and mutations that were in Neanderthals but are absent in humans [4].

The diversity of forms of manifestation of humanity observed by us in clinical and psychological studies, confirmed, on the other hand, by numerous and sometimes contradictory anthropological and archaeological findings, willingly or unwillingly forces us to assume that modern man had more than one ancestor. Modern man, biologically represented by one species – *Homo sapiens*, psychologically manifests himself as a sufficiently diverse, sometimes contradictory individual. This fact alone forces us to assume that he is the result of the interbreeding of several "forefathers," especially since there are strong grounds to assume that ancient human species did not die out as a result of some catastrophes, and their "disappearance" is connected with assimilation with *Homo sapiens*. Most likely, they simply did not withstand the competition from more advanced Cro-Magnons, and by interbreeding with them, left modern man a part of their genes. The Neanderthal and Denisovan human did not disappear completely, but "moved" into the Cro-Magnon. We cannot yet speak affirmatively in this aspect about the Flores man, although there are already some assumptions.

Genes and Functions: Neanderthal in the Genotype of Modern Man.

A gene was extracted from the nuclear DNA of the Neanderthal that is responsible for speech development in modern man, and it turned out to be exactly identical to the human gene [7; 34]. The "archaic" gene FOXP2, inherited from Neanderthals, is associated with speech and social learning: studies show that this gene affects the function of the basal ganglia and cortex, which are responsible for articulation and language comprehension [9; 10]. In people with mutations in FOXP2, speech disorders are observed (for example, dyspraxia, dysarthria).

Studies by Zeberg H. et al. [68] showed that the Neanderthal gene SCN9A increases pain sensitivity in modern people. Neanderthal variants of the DRD4 and COMT genes (associated with dopamine) can influence the propensity for risk and novelty seeking; a link is shown between DRD4 alleles and risky behavior in different populations; in carriers of "archaic" DRD4 alleles, impulsivity is demonstrated more often [41].

In Europeans, Neanderthal alleles of SLC6A4 (serotonin transporter) are associated with an increased risk of depression [57]. Non-African people inherited on average from 1.5 to 4% of their genomes from Neanderthals. But their influence on human traits is unknown. According to Simonti C.N. et al. [57], individual Neanderthal alleles correlated with clinically significant phenotypes in persons of European origin. These archaic genetic variants were associated with separate health conditions affecting the skin, blood, and depression risk.

It is known that defects in the UNC13D gene cause a severe and often fatal disease called hemophagocytic lymphohistiocytosis. Variants in the MOGS gene, p.(Asn943Ser), were registered in patients with this disease and are associated with defects in glycosylation in the immune system, influencing susceptibility to infections. Zhou Z. et al. [70] suggest that these three variants could lead to increased susceptibility to severe diseases and, possibly, contributed to the extinction of Neanderthals after exposure to certain infections. These results show that remnants of Neanderthal admixture continue to influence human brain function today in ways that align with anthropological conceptualizations of Neanderthal phenotypes. This and other

research, based on the newest scientific discoveries in the field of ancient DNA study, open the opportunity to look at an ancient lineage that existed in the distant past.

Denisovian Human in the Phenotype of Modern Man.

One of the important studies regarding the systematization of knowledge about the Denisovian human is the work of Sankararaman S. et al. [54]. This study created a map of Denisovian ancestry in the genomes of modern people and also gave the first estimate of the time of admixture with Denisovans [47]. The identification of Denisovian DNA in the genomes of modern people provided an idea of the time and migration paths of ancient people in Asia and Oceania, as well as the contribution of archaic DNA to the physiology of modern people. The most famous example of the influence of Denisovian variants on the phenotype of modern man is a small segment on chromosome 2, which is found in 80% of Tibetans and is almost not detected in other populations. From the entire global database of genomes of different peoples, they were met only in two representatives of Chinese nationalities. But the most interesting thing is that these same "Tibetan" alleles were found in a fossil specimen of a Denisovian human. This means Tibetans preserved the heritage of Denisovian people, obtained by them from the offspring of mixed couples. It encodes EPAS1, a transcription factor induced by hypoxia. It is believed that this segment helped people adapt to life at high altitudes in conditions of hypoxia [28]. Adaptations to low temperatures are facilitated by the WARS and TBX15 genes, identified in Denisovians and present in practically all Inuit of Greenland and in some other populations [69]. Up to 5% of their genome Papuans owe to Denisovians, whose remains were identified only in Siberia and Tibet. But, unfortunately, the biological and evolutionary significance of these introgression events remains poorly studied [64]. These inherited genes of Altai ancestors exert a paradoxical influence: some of them can provide protection against viral infections, others are associated with autoimmune/autoinflammatory diseases.

Studies by Gittelman R.M. et al. [17] showed that Denisovian genes are associated with increased synaptic plasticity, which suggests a possible link to creative abilities, large advantages in adaptation of Denisovian and Neanderthal genes in modern people. Results show that hybridization between modern and archaic hominins provided an important reservoir of advantageous alleles that allowed adaptation to the environment outside of Africa. Thus, in indigenous peoples of Siberia (with Denisovian admixture), unique problem-solving strategies were discovered. These loci are enriched with genes associated with immunity (such as OAS1/2/3, TLR1/6/10, and TNFAIP3), and also cover genes (including OCA2 and BNC2) that influence skin pigmentation phenotypes.

Thus, this is not the entire list and analysis of articles on the study of the Denisovian human, but our task was to demonstrate the influence of one of the ancient hominins – the Denisovian human – on *Homo sapiens*, especially in Oceania and Southeast Asia.

Flores Man in the Genotype of Modern Man.

Sufficiently controversial and scant evidentiary data exist regarding the Flores man. Much is at the level of hypotheses. Direct evidence of introgression of *Homo floresiensis* genes into the DNA of modern people is absent, but there are studies of their unique traits. Analysis of the genome of the Flores man revealed mutations in the GHR gene (growth hormone receptor), explaining dwarfism. But in modern people, these mutations were not found [62]. Genomes of Flores pygmies show a complex history of admixture with Denisovians and Neanderthals, but do not testify to gene flow from other archaic hominins. Modern people bear traces of recent positive selection covering the FADS gene cluster (fatty acid desaturase), likely associated with

diet, and polygenic selection acting on standing variation, which contributed to their short stature phenotype. That is, on the island of Flores, several independent cases of insular dwarfism of hominins occurred.

However, recently it has been argued that several characteristics of *Homo floresiensis* correspond to dwarfism and testify to developmental delay in modern people (*Homo sapiens*) – myxedematous endemic cretins [3]. The skeletal and dental morphology of *Homo floresiensis* was compared with clinical and osteological indicators of cretinism, as well as with traits that are claimed to be associated with myxedematous endemic cretinism in LB1 and LB6. Morphological and statistical comparisons did not reveal distinctive skeletal and dental indicators of cretinism in LB1 or LB6 of *Homo floresiensis*. Brain mass, skeletal proportions, epiphyseal fusion, orofacial morphology, tooth development, pituitary fossa size, and paranasal sinus development, cranial vault bone thickness, and hand and foot dimensions – all this distinguishes him from modern people with the indicated cretinism.

Thus, the Flores man does not reveal a direct genetic contribution to *Homo sapiens*, but his unique evolution is being studied. The problem of its research, rather, lies in the fact that his remains are discovered in the tropics, where due to climatic conditions DNA is poorly preserved. From the above, the conclusion is important for us that all paleogenetic changes that played a crucial role in the formation of modern man, all his organs and systems, allow confirming the fact of hybridization of different human species.

Thus, genetics shows that modern man did not have a single ancestor. All representatives of fauna and flora have a multitude of species. Following the logic of global evolution, the question seems logical: why should man be represented by only one species? At least, if today only *Homo sapiens* exists, this does not mean that his ancestor was the only one. But, as noted above, up to 4% of their genes the modern population of Eurasia inherited from the Neanderthal, which turned out to be a dead-end branch as a species, but as genetic information continued existence in the DNA of Europeans and Asians. However, in the modern Eurasian, genomes of another species were also identified – the Denisovan human, belonging neither to modern people nor to Neanderthals. The contribution of the Denisovan human to Eurasian genes turned out to be more modest, however, in modern Melanesians and the population of New Guinea, his share reaches 6% [1].

Data from Neurosciences and Neuroanatomy.

The fact of interbreeding of ancient hominins with *Homo sapiens* and the transmission of their genes by inheritance is supported by data from modern neurosciences, however, these data need further research. Using magnetic resonance imaging in a large cohort of healthy people of European descent, Gregory et al. [22] showed that the "Neanderthal share" in the origin of Europeans manifests in the morphology of the skull and brain: this manifests in the shape of the skull, resembling the forms of known cranial remains of Neanderthals, especially in the occipital and parietal bones; this and similar results in the brain (volume of gray and white matter, sulcal depth, and gyrification index), which are localized in the visual cortex and intraparietal sulcus. Similar works provide ideas about the neurobiology of human ancestors and suggest that genetic variations obtained from Neanderthals are neurologically functional in the modern population.

Neuroanatomical differences in brain volume and structure have been revealed. Neanderthals had a large brain (up to 1600 cm^3), but a different cerebellar shape. This could influence social behavior and coordination [46]. Modern people with a high share of Neanderthal genes show differences in white matter structure; the thickness of the cortex of the cerebral hemispheres is associated with archaic genes [23]. Studies link Neanderthal genes with increased reactivity of the amygdala to threats, which may explain increased anxiety in some

populations [63]. It has been suggested that Neanderthal genes could influence the mirror neuron system responsible for empathy [29]. Neuroscience studies have demonstrated physiological mechanisms of mirroring at the level of individual cells and neural systems that support cognitive and social psychological constructs. Neural mirroring solves the "problem of other minds" (how we can access and understand the minds of others) and makes intersubjectivity possible, thereby facilitating social behavior [29].

Psychological Consequences of Biological Diversity.

We do not know of even one author - philosopher, biologist, psychologist - who would not only assert, but even assume the polyphyletic nature of man. But, fortunately, there was Fromm, who identified two types of human. He wrote that there are people who "prefer to have," and there are people who "prefer to be" [14]. Between these people lies a huge abyss. These are not two sides of a coin. These are two completely different worlds prescribed to coexist in one space and time.

Our personal experience demonstrates that reactions to social patterns can vary depending on individual personality attitudes. Each personality determines its own attitude toward these patterns – accepts them, agrees, protests, or rejects. But do we have the right to judge others and expect something more than what exists in reality? They are what they are. And here a natural question arises: what are they? They must be like everyone else, like each of us? The answer can be one - of course not! After all, any personality according to Maslow represents an "integrated, organized whole. "Let us return from biology to psychology. And here we will debate with Maslow, the first proposition of whom states, as already noted, that "the individual is an integrated, organized whole," manifesting motivated behavior based on his needs [37]. The author identifies a hierarchy of basic needs, their dynamics, prerequisites, and features of satisfying these needs: 1) physiological (organic) needs; 2) safety needs; 3) needs for love and belonging; 4) esteem needs; 5) cognitive needs; 6) aesthetic needs; 7) self-actualization needs. Understanding these human needs, from our point of view, can lead us to an understanding of human nature, the definition of humanity, to the understanding of how much Human is in each human. Understanding needs is important in itself, the need has a completely defined value. But needs are important not so much in themselves as because of what they ultimately signify, that is, what their primary goals or consequences may be. As a psychiatrist, I cannot draw parallels here between the value of needs and psychopathology, namely with the psychopathological symptom. The symptom itself has a certain value, insofar as it indicates the presence of a deviation in health up to a pathological level. But no more than that. Although in a number of cases, a symptom may indicate or at least allow us to assume the nature of the brain lesion and the localization of the lesion focus. But the value of the symptom increases significantly in its dynamics, in symptomokinesis (symptom dynamics), which not only allows it to be evaluated more adequately, to determine its place in the structure and character of the pathology, but also to determine the ways and methods of overcoming it. That is, the desires and needs of people are very important in themselves, they testify to certain properties of the object under study, but they are no less important, if not more, [in terms of] the deep meanings of needs and desires that lead to certain goals or concrete actions and deeds characterizing one or another person. Thereby we approach the understanding and definition of humanity and its measure. First of all, it is necessary to determine what we understand or will understand when we speak of desires and needs. A conscious striving to possess something, to realize what is conceived, what has a particularly important significance fits into the definition of desire. We call a need a vague sensation of necessity for something, which is very important and significant for ensuring full existence and survival in certain conditions. This is what we need for the realization of our "life program." In fact, we are speaking about the motivations of people,

which can be both conscious and unconscious, as manifestations of primary goals, desires, or needs. But these unconscious primary desires of all people do not differ as much as their conscious everyday desires.

Throughout his entire life, a person is in a constant search for that which fully satisfies his needs. The problem is that full satisfaction never happens, at least for the majority of people. As soon as one desire is satisfied, another immediately arises, and so on. As soon as one level of needs is satisfied, this level rises and does not satisfy the person, a striving arises to satisfy this increased level. And so on to infinity or, rather, to the end. But these desires arise only under certain conditions. Maslow subtly notes that, firstly, the satisfaction of a person is a relative phenomenon, that is, he is actually never satisfied; secondly, human needs have a certain hierarchy. Only the satisfaction of lower needs pushes a person to needs of a higher hierarchy. And it is not necessary that, having satisfied one need in a high hierarchy, a person moves to the next. The transition may be conditioned, in Maslow's words, both by what "attracts" and by what "pushes"; new needs may appear as a result of new goals and needs. The further a person is from his primitive roots, the more he moves away from instinctive needs, the more psychological and socio-cultural needs appear. That is, without excluding the role of hereditary drives and biological needs, socially conditioned needs dominate in a person, which determine his behavior. The satisfaction of some needs, according to Maslow, can satisfy other needs, more hidden, deeper. Such "mimicry" (camouflaging) of behavior is conditioned by the influence of the social sphere of his existence: culture, aesthetics, morality, the role and significance of which for individual people can be polar different. Life circumstances and social perturbations (conflicts, losses, wars, crises) can "rewrite" the hierarchy of needs. And Maslow's theory does not take into account that extreme conditions can change motivation. Here the example of Viktor Frankl is appropriate, who survived in a fascist concentration camp because the key driving force in the situation of physical survival was the striving for meaning. This contradicts the idea that basic needs are always primary.

Maslow developed his theory within the framework of an individualistic society, ignoring cultural differences. Although Maslow's hierarchy of needs claims universality, cross-cultural studies show that in collectivist societies, the need for belonging and social harmony often dominates over self-actualization [27; 36]. For example, in Eastern cultures, the achievement of personal ambitions may be perceived as egoism violating group cohesion; in collectivist cultures, the need for social harmony often exceeds individual ambitions [27; 36]. This contradicts Maslow's theory of self-actualization as the pinnacle of human development. Furthermore, Maslow's theory ignores biological diversity: studies in this area testify that Neanderthal genes correlate with impulsivity, which casts doubt on the universality of "higher" needs [2; 21; 44; 45]. Many psychologists adhering to the theory of determination dispute Maslow's strict hierarchy [8; 53]. Their position is more flexible. They argue that basic psychological needs (autonomy, competence, relatedness) are equivalent and can be satisfied simultaneously. Furthermore, some researchers believe that evolutionary mechanisms (for example, reproductive goals) often redefine "higher" needs [31; 32].

And here in my opinion we approach the main question – in what way are all people similar and in what way do they differ from each other? After all, one genus and species of human lives on planet Earth, defined as *Homo sapiens*, which inherited genes of different hominins. If modern man inherited genes of ancient hominins, their needs may vary at a biological level. Maslow's hypothesis about a single hierarchy of needs for all contradicts paleogenetic data. For example, the presence of ancient genes associated with aggression and risky behavior [55] may explain why in some individuals the needs for dominance dominate, and not self-actualization.

Man is diverse in his manifestations and essence; there is much of the human and the animal in him. This is a biopsychosocial being. Hardly anyone will dispute this thought. But how much biological, social, and psychological principle is in a person? The answer to this question will

show the contradictoriness of approaches and assessments. We will have many supporters and no fewer opponents and adversaries.

Everything stated above is confirmed by vivid examples of how genetics explains historical and behavioral phenomena in different contexts. Aggression and wars the high level of violence in some societies possibly correlates with Neanderthal impulsivity. Note that this is not determinism, but one of the factors. Creativity and innovations in human history, such as the Renaissance in the Middle Ages, scientific revolutions, geographical discoveries, the unique art of navigation in the population of Oceania - at the basis of which, probably, lies the cognitive flexibility of Denisovans. Survival in extreme conditions – these are, possibly, Neanderthal genes responsible for resistance to cold; they helped modern man survive in the cold climate of Europe during the Ice Age; in modern northern peoples (Saami, Eskimos), a special metabolism of fats, also inherited from our ancestors. Cultural taboos - prohibitions on incest in different cultures are based, possibly, on instinctive avoidance of close kin ties, as a consequence of ancient hybridization of Neanderthals with *Homo sapiens*; complex systems of marriage rules among Australian Aborigines.

Discussion.

Perspectives of Interdisciplinary Research.

The question of human nature is not new; it has always interested thinkers and continues to interest them to this day. Man was considered a creation initially "good," committing evil exclusively under coercion. There were thinkers who held a completely opposite point of view – "man has an evil nature." In the ancient period, it was believed that there is *something* in man that constitutes his essence. This "something" was called "human nature," which they tried to explain and justify violence and evil, lies and meanness, greed and fraud. Who is right? Where is the truth? In this aspect, the concepts of Freud and Frankl are interesting not in themselves, but their juxtaposition, which fully reveals, in our view, the biopsychosocial essence of man. On one hand, the dominance of animal instincts, the dictate of the subconscious; on the other – faith in the social essence of man based on enormous personal experience. Freud's main theoretical position [13] is built on the fact that man is possessed by one fatal passion – the passion to destroy everyone and everything, and there are no alternatives to this. He viewed man as a destructive creature and considered his aggressiveness not a reactive manifestation to various triggers, but a certain immanent impulse conditioned by the very nature of man, his constitution. The nature of human destructiveness lies in his sexual instincts and instincts of the "Self," primarily in his narcissistic essence. From S. Freud's clearly hypertrophied point of view, sexual needs and hunger constitute a comparatively large share among all human motives. This is the essence of man, at least, of a part of humanity. In the basis of human existence, Freud saw a conflict between life and death: "death is the secret goal of life." This conflict is a natural development, initially embedded in the basis of everything living.

V. Frankl [11], not denying the zoological essence of man, all the same, based on his richest experience obtained in fascist concentration camps, believes that humane people exist and will always exist, but, possibly, they are in the minority. Moreover, every person strives to join this minority, trying to become a little better. Undoubtedly, the humane exists in each of us, since we all belong to the single genus *Homo sapiens*. But human potential in each of us will not become greater with time, since the selection of *Homo sapiens* went in the direction of cultivating an "obedient majority," content with satisfying its biological and social needs (to the extent of the development of that society in which each individual resides). One must proceed not from the hope for an increase in human potential, but admit that [people] are

divided, at least, into "humane" and "not very." In other words, there are simply people in whom evil of a passive-destructive character turns out to be stronger and preferable to good, and there are people in whom the constructive beginning (moral-ethical, creative, creative) dominates over evil. One can agree with Frankl or not, but one can understand him, considering the biography of the great thinker.

In our view, being right in their initial position, both one and the other are mistaken in one thing. For some reason, each of them views man as some averaged creature, and it is unimportant whether biological or social. At the same time, not allowing and not assuming at all that man can be heterogeneous depending on the ratio of these two beginnings in him. In the 20th century, no one knew this.

The present study has a number of strong and weak aspects. We attribute to the strong sides of the study, firstly, the innovative approach to the problem. This is the first attempt to link psychology with paleogenetics, proposing a new paradigm for understanding humanity. Secondly - a broad evidential base of the study: the use of modern genetic data and neurobiological discoveries. Thirdly - practical implications: the conclusions can be applied in clinical psychology, anthropology, and even education to account for biological factors in personality development.

To the limitations and weak sides of this work, from our point of view, one can attribute a lack of direct evidence, namely 1) weakness or absence of clear evidentiary correlations between specific genes and psychological traits (for example, the link of Neanderthal alleles with aggression remains hypothetical); 2) cultural specificity: the study focuses predominantly on Eurasian populations, ignoring the African and American genetic context; 3) theoretical disputability: Maslow's studies, however comprehensive they might be considered, are based on a limited sample (successful personalities), but alternative models (for example, self-determination theory) also require further verification.

Conclusion.

Thus, the combination of psychological theories and paleogenetic data allows us to assume that humanity is not a universal constant, but the product of a complex interaction of biological heritage and the socio-psychological evolution of man. The integration of paleogenetic data into psychological theories opens new perspectives for studying motivation, behavior, and cultural differences. Further studies should be directed at establishing specific mechanisms of the influence of archaic genes on modern psychological phenomena, which will require the collaboration of geneticists, psychologists, and anthropologists. The key ideas of the article emphasize its scientific novelty and interdisciplinary character, and also point to directions for future research.

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