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NEW IN SCIENCE ABOUT NATURAL PHENOMENA

A Novel Explanation for the Arrangement of the Universe–Solar System–Planets–Earth. Part 3

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The Universe is constructed in such a way that not only itself is immortal, but also all of its parts, in the form of living, blessed beings. There is no beginning and no end to the Universe, and thus no beginning and no end to life and to bliss.

Konstantin Tsiolkovsky

When we meet a fact which contradicts a prevailing theory, we must accept the fact and abandon the theory, even when the theory is supported by great names and generally accepted.

Claude Bernard

Abstract—New ideas are presented about the nature of the evolution of the Universe, which call for a deeper scientific understanding and reassessment of the existing views on the so-called Big Bang cosmological model. According to this model, the Universe has now been expanding for ~20 Ga, with the lightest elements forming during the first few seconds at $T \sim 10^9$ K as a result of nuclear fusion. These elements are H, D, and ^{3,4}He; at first, hydrogen turns into helium, and then helium transforms into carbon, oxygen, nitrogen, etc., up to iron group elements. The probability is examined of the action of attraction forces due to electromagnetic interaction of rotating charged baryonic particles, instead of the classical Newton theory of gravitation, i.e., the law describing gravitational interaction in classical mechanics. A discussion is provided of the nature and role of black holes in the Universe, which are seen as an integral and obligatory part of all physical structures of the Cosmos. So far, no theory has been able to fully describe the internal structure of black holes; however, as follows from the Planck and Boltzmann laws, these holes are a perpetuum mobile of evolution for the entire Universe, controlling the transformation mechanism through electromagnetic resonance oscillations of the entire cosmic ether (like the human brain), which propagate across all structures of the Universe. Space objects are Earth-like planets with a solid core, liquid mantle, and a hard crust, above which the atmosphere immediately begins; gas giants with no solid surface (a substantial part of them is the atmosphere, which at low altitudes turns into a liquid due to increased pressure, while there is no clear boundary between the liquid ocean and the atmosphere); and stars, all of which have a solid core and poles synchronized with black holes. Although our conceptions about the existence of dark matter and dark energy in the Universe still remain the most mysterious ones, we argue that the bulk of matter and energy is concentrated in cosmic-plasma electromagnetic fields (>95%). All stars and planets must be increasing in volume with time while retaining their angular momentum and position in space. Both space and time are equivalent to each other and are the most uncertain and multivector universal functions of the Universe. They change simultaneously and proportionally with the form of existence of matter, which inevitably leads to the emergence of a fundamentally new quality-life. Living beings evolve and acquire spirituality, i.e., the ability to cognize not only themselves but the surrounding world. However, space-time is an extremely complex system, yet to be understood by new generations of scientists: physicists, cosmologists, and others.

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Our concept of the electromagnetic Universe holds no room for the Big Bang. The main drawback of this theory (which has been in existence for over a century) lies with the fact that it does not answer the question: Where did the singularity, which had contained the entire mass of the Universe, come from? The electromagnetic Universe hypothesis does answer this question, as well as many others. This hypothesis, developed by us [1], rests upon three postulates: the Universe exists eternally; energy exchange occurs between all of its objects in the entire frequency range, from ultralow to superhigh frequencies; all events are cyclical in nature (galaxies are born from black holes and then collapse into black holes) and obey the laws of conservation of energy, charge, and mass. At the core of the electromagnetic Universe model lies a toroidal system in which numerous galaxies are held together by the single magnetic field of the Universe. The spiral toroidal magnetic field of the Universe is encompassed by the electromagnetic interaction of galaxies. Galaxy groups are separated by black hole regions, where galaxies collapse and are born (astronomers even have a term for these regions; they call them *stellar maternity wards*).

The ancient Greek scientist Archimedes first discovered that the circumference of any object divided by its diameter is a constant, which was called the number $\pi \sim 3.14$. This magic number bears direct relationship to cosmology, i.e., to the sizes of planets and stars and their orbits, and is a corollary of one of the main laws of the Universe–Planck's law of conservation of angular momentum, a fundamental law that describes the structure and functioning of the Universe. The second fundamental law of nature is the periodic law discovered by Dmitri Mendeleev; this universal law marked the discovery of the mutual connection of all atoms in the Universe [2]. In its current formulation, this law states: "The properties of chemical elements, as well as the forms and properties of simple substances and compounds formed by them, are periodically dependent on the value of the charges of the nuclei of their atoms." The nuclei of all chemical elements are composed of protons, which define the nature of the element, and neutrons, which form a set of isotopes of the element. As of today, we know over 3000 isotopes, both natural and artificial, ~ 280 of which being stable ones. For example, hydrogen has seven isotopes, and only two of them—protium and deuterium—are stable. Protium is believed to be the standard of stability throughout the Universe, being the most widespread nuclide: its content is $99.9885 \pm 0.0070\%$ of the total number of hydrogen atoms and among the isotopes of all chemical elements. Helium, the second most widespread element in the Universe, has nine isotopes; cesium and xenon have the largest number of isotopes, 36 each. The basic substances in space are interstellar gas components, which in turn form the nuclei of stars, planets, and other objects in the Universe by means of vibrational resonant nuclear proton-neutron fusion. According to Nikola Tesla, the main component is hydrogen (as a rule, when one talks of hydrogen, they mean light hydrogen, or protium), which serves as the original building block for the synthesis of substances in the Universe [3, 4]. The hydrogen content is 93.04 at % (74 mass fractions, wt %); that of helium is 6.9 at % (23–25 wt %); and the remaining gases are carbon, oxygen, nitrogen, and the remainder of cosmic dust and water. Despite the seeming emptiness of space, interstellar gas contains 99% of the total mass of the Universe.

All space is permeated by electromagnetic fields, which host the formation of baryonic (protons, neutrons, electrons, quarks) and photonic matter, which also have a quantum structure. Therefore, it is not possible that gravitation alone exists between bodies (baryonic structure). Any interaction in the Universe must be electromagnetic in nature. According to Einstein, the curvature of space in general relativity is nothing but the electromagnetic interaction of matter, which always has a spherical shape since it consists of one and the same charged and/or polarized matter.

The creator of nonequilibrium thermodynamics and statistical mechanics of nonequilibrium processes, Nobel Prize winner Ilya Prigogine showed that a substance that absorbs matter and energy from the environment can make a qualitative leap into a new level of complexity, in contrast to Gibbs' equilibrium thermodynamics [5, 6]. Together with Glansdorff, he formulated the general principle of evolution, i.e., the minimum entropy production in an open system, from which follows the minimum entropy in black holes [7]. To explain the third law of chemical kinetics, i.e., the compensation effect, which bounds the kinetic and thermodynamic (the activation entropy of chemical reactions) parameters of chemical reactions, V.V. Goncharuk applied Gibbs' thermodynamics (equilibrium thermodynamics for nonequilibrium catalytic processes). This discovery, highly appreciated by Prigogine, received the State Prize of Ukraine.

Matter cannot exist outside of motion and transformation of one form into another by resonant vibrations, their synchronization and self-organization. In galaxies, as well as the Universe as a whole, material baryonic objects such as stars, planets, comets, etc. are in a nonequilibrium dynamic state. Rotating relative to one another, they exchange energy in the form of light quanta and electromagnetic interactions. In these systems, entropy can only mark the direction of the process, i.e., the spontaneous evolution of these structures, as shown in [5].

It was found that the most stable nuclei are those for which the ratio between the number of protons and of neutrons is even. These are followed by nuclei with an even number of protons to an odd number of neutrons, then by nuclei with an odd number (protons) to an even number (neutrons) and, finally, an odd number to an odd number. This law of parity is fully consistent with Planck's law, i.e., the angular momentum in the nuclei of elements and the magnitude of the spin—orbit interaction. As of today, we know 165 stable isotopes (even-to-even), 56 isotopes (even-to-odd), 53 isotopes (odd-to-even), and only 8 isotopes (odd-to-odd), which together make a total of 282 isotopes in the Universe.

Our Galaxy, the Milky Way, which hosts the tiny Solar System, located between its giant nucleus and dark outer edge, is essentially a set of spiral diverging arcs so huge in size that it takes hundreds of thousands or even millions of years for sunlight to cover such a distance [8]. Five cosmic spirals—the Swan Arm, the Centauri Arm, the Sagittarius Arm, the Perseus Arm, and the Orion Arm—as well as endless cosmic objects revolve around the center of our planar Galaxy. The Solar System moves around the galactic center—the black nucleus of the Galaxy—in an almost circular orbit with a speed of ~254 km/s. It completes a revolution in one galactic year, i.e., 230 Ma. Each cosmic object is a huge solenoid, which serves as a reactor for energy production and transformation into material particles: protons, neutrons, and electrons. They serve as building blocks of the Universe, primarily, of hydrogen and helium, from which planets, stars, and other material objects are synthesized. This is a gigantic thermonuclear, nuclear, chemical, and biological reactor for the mutual transmutations of different types of matter and energy.

Interstellar matter predominantly absorbs short-wave radiation; hence the redshift of the light from distant stars. Considering that cosmic dust with a size of about $0.1-1.0 \,\mu\text{m}$ is essentially ice-covered particles of silicates and iron–nickel alloys (about one million tons of this dust falls to the Earth in one year), which absorb mainly the shorter-wavelength radiation spectrum of distant galaxies, we think it is misleading, to say the least, to draw from the observed redshift the conclusion about the recession of galaxies and the expansion of the Universe. The Universe is a strictly ordered stable structure.

The concept of "dark energy" and "dark matter," introduced by theoretical physicists to explain the so-called expansion of the Universe, has no physical sense. We observe almost complete semblance in the behavior of the nuclei of chemical elements and the nuclei in the centers of planets and stars. Being in a state of rotation, planets and stars generate sufficiently powerful electromagnetic fields with the formation of black holes along the magnetic poles of planets, stars, and all galaxies and the most powerful black hole of the Universe. No light can escape these black holes; only hard γ radiation is recorded—there are neither secrets nor mysteries.

The nuclei of all cosmic objects—from black holes, stars (including the Sun), planets, and other bodies—must have the temperature of the surrounding space, at which only plasma exists, which cannot have structured magnetism.

Black holes are an integral part not only of the Universe as a whole but also of each of its components. They are bodies composed of the most densely packed matter, which can exist in the form of short-wave γ -quanta and X-ray emissions, which can create matter of maximum density, exceeding by orders of magnitude the baryonic matter in the nuclei of chemical elements. The Big Bang, if there was one, should have led to an expansion of the singularity point that was equiprobable in all directions, i.e., to a spherical expansion, rather than an expansion in the plane that hosts galaxies and the entire Universe. The largest black hole at the center of the Universe, around which numerous galaxies with their own, smaller black holes revolve in spirals, coordinates all the objects in the observable space. Each cosmic object that rotates around its axis must, by definition, have its own black hole, i.e., electromagnetic poles. A complete anal-

ogy is our Solar System, where the black hole is located at the Sun's poles and coordinates the poles of each of the planets.

The temperature in the nuclei of the black holes of the Universe, galaxies, stars (such as the Sun, etc.), and planets must be the cosmic \sim 3 K, as predicted by Prigogine [6]. The temperature inside stars and planets must be increasing where solid cores turn into liquid ones and then, proportionally, into the lower and upper mantles (for planets). In solar-type stars, the temperature must be increasing with the decrease in the core density and pass into the photosphere, where it can reach thousands and even, in prominences, millions of degrees. On Earth-like planets, the temperature must be increasing in passing from the solid core to the liquid one and then in the lower and upper mantles and reach several thousand degrees, where nuclear fusion occurs, first of light and then of heavier chemical elements. The upper layers of the solar photosphere host the synthesis of light elements only, mostly up to the second and third periods of Mendeleev's periodic table. In the center of the Sun, with the rotation of its cold core, which is an order of magnitude denser than the Earth's one, electromagnetic fields reach a high stability, which keeps all the planets in their orbits, up to the Oort cloud, which also has a planar shape, smoothly turning into the outer boundary of the Kuiper belt.

These arguments find confirmation in such terrestrial phenomena as ozone holes in the Earth's atmosphere at the poles, which are due to hard electromagnetic fields arriving at the center of the poles and destroying the Earth's protective ozone layer. Another such phenomenon is Aurora Borealis (polar lights), which intensify with increasing solar activity and manifest themselves at the Earth's poles. The lights indicate the incoming energy of magnetic lines shaped as a "curtain," essentially a spiral vortex of high-energy electrons and protons in the form of a superelongated funnel, which descends with very high intensity towards the poles. During solar eclipses, the Earth's magnetic poles weaken, and solar activity may alter the direction and intensity of the Earth's magnetic fields and lead to an increase in the incidence and strength of earthquakes.

Plasma is like water; in passing into a solid state, it increases in volume and may cause destruction of the Earth's crust, i.e., to the occurrence of earthquakes. This phenomenon may also cause the emergence of kimberlite pipes, leading to an increase in the Earth's volume with the formation of diamond placers, which we observe on the Earth.

Therefore, all the galaxies and our Universe as a whole are of planar shape, and local black holes are formed at the center of these planes. These holes are generated by the rotation of massive space objects with a rotation axis perpendicular to the plane of the Universe. It can be argued that it is the black holes, which concentrate the overwhelming mass of matter with an incredibly high density, that control and coordinate the work of the entire structure of space.

A reversal of magnetic poles on planets, such as the Earth, can only occur in the case of a reversal of the poles on the Sun and in our Galaxy. It is the black holes, i.e., the electromagnetic poles of the Universe and of all galaxies, stars, and planets, that serve as a "system for controlling and coordinating the motion" of these cosmic objects. This structure can be compared with the human brain and bone marrow, which controls, through the nerve cells of the body, the electromagnetic impulses of the entire organism. All this is very simple and, at the same time, infinitely complex; this explains the functioning of the entire electromagnetic world of animate and inanimate matter, of inorganic and organic nature. Thus, black holes are the magnetic poles of matter, a cosmic mechanism that supplies energy to each individual structure of the single organism, i.e., the Universe. For humans, it is their brain that determines and controls their behavior.

The entire cosmic world, the entire Universe, our entire biological world from the eukaryotic cell to the human, which is governed by Mendeleev's law of periodicity of chemical elements and Planck's law of conservation of angular momentum, i.e., synchronization and self-organization, relates, one way or the other, to the electromagnetic nature of matter and its physicochemical properties and manifests itself, first and foremost, in the structure of atoms and molecules.

Life was brought to the Earth from space and from terrestrial volcanoes in the form of viruses (including corona viruses), i.e., cosmic dust consisting of basic chemical elements: H, C, O, N, and water (by which we mean not simple water but the water born in the bowels of the Earth and containing 150 mg/dm³ of deuterium, which forms special cluster structures in water with a size of $0.1-150 \,\mu$ m, strictly consistent with the size of biological cells). It is these viruses that gave rise to our unique but inevitable life [9, 10].



Fig. 1. Dependence of the physicochemical properties of water (a–c) and the lifespan of a cellular biosensor (d) on the deuterium content; the chemical mechanism underlying the formation of primal biological life from the simplest molecules H_2O and CO_2 (e).

The properties typical only of terrestrial water with this deuterium concentration are unique for the emergence of biological life (Fig. 1). Life and the emergence of biological cells are impossible at deuterium concentrations of <90-80 and >150-160 mg/dm³. No evidence has been found for deuterium in the nearest galaxies, available for research. It is this phenomenon that might hold the key to the secrets of the origin of life on the Earth.

During the tectonic activity of the Earth (the Cambrian period, ~8500 years ago), for which there are records of the origins of biological life (flora and fauna), an event of exceptional importance occurred— the founders of the ancient Sumerian civilization appeared on our planet. These people left rich traces of their activities—the most ancient writings recorded in petroglyphs and cuneiforms, as of yet not deciphered. Amazing rock images of people wearing spacesuits were found in the last century, when we flew, for the first time, in near space in spacesuits of the same type as those depicted in the images, and in cigar-

like spacecraft of the same shape, the meaning and design of which have only now become clear to us. It was only in the subsequent millennia (the fourth and fifth), when the Orb of Night—the Moon—appeared in the sky, as a result, as we argue, of the death of the fifth planet, Phaeton, located beyond Mars, that the conditions of life on the Earth changed radically. From that time onward, biological life was developing at an accelerating pace on the Earth, which at that time was a single supercontinent Pangaea, much smaller than today's continents; there were no oceans at all, and the planet Earth was almost half the size of the present one.

Evidence of the Sumerian civilization is found on all the continents, but humanity does not want or is not ready yet to become conscious of our past and of the fact that our life is not unique but is an inevitable law of the development of matter. Moreover, it turns out that life can be not only biological, based on carbon–oxygen–nitrogen compounds but also develop on a different basis, i.e., silicon–phosphorus–sulfur, of which the entire inorganic world consists. The mineral world around us also grows, matures, and dies. Without water, which is part of all minerals, without exception, it cannot exist, like the entire biological world.

The Sumerian civilization, which had come to the planet Earth before the collapse of their home planet, Phaethon, resembles ours in all respects. It gave a powerful impetus to the development of today's civilization, which has not yet realized the significance of those ancient events ~6000–7000 years ago (~4000–5000 BCE). The appearance of the Moon radically changed and accelerated the development of our civilization, taking into account that all cosmic laws (named after Planck, Boltzmann, Mendeleev) are valid for the entire Universe, not only for our galaxy, the magical Milky Way. The entire Universe is an all-encompassing unity of the most powerful, continually reborn electromagnetic interaction, which controls the most mysterious structures of the Cosmos—black holes—as the brains of the Universe, evenly located in its boundless space and, surprisingly, planar in structure, due to the properties and nature of the electromagnetic structures of this interaction.

The cosmic world is based on the principle that more highly organized matter absorbs (i.e., utilizes for its development) the less organized one. In the biological cycle, man represents the most highly organized structure; for physiological and, most importantly, intellectual development, importance is attached to all types of matter: biological, mineral, and spiritual. Our galaxy also consumes energy in the form of electromagnetic waves, which fill the entire cosmic space, which in turn represents the most energetic and structure-shaping form of matter.

Man is not an accidental creation of the Universe, being essentially capable of not only cognizing the surrounding world but also influencing it as the topmost form of its existence, once we become conscious of our being. We are turning from observers of the existing world into its transformers. We need not only material sustenance but also intellectual, spiritual one, without which the world loses its meaning. We cannot yet fully understand the purpose of our origin in this boundless world, but the most incredible and mysterious organ in the human body is the brain, which performs the same role as the black hole in the Universe. It improves with age, as its intellectual activity increases, reaching a maximum after 60–70 years of age. All outstanding scientists, writers, and poets created their greatest works of art and science at a venerable age. This age is marked by a sharp increase in the concentration of myelin (the "white matter" of the brain), contributing to a significantly higher rate of passage of signals between neurons, and, hence, to a qualitative increase in intelligence in humans. This fact does not require any additional justification.

Life that originated on the Earth has been constantly evolving to develop a powerful immune system that allows organisms to mutate and adapt to rapidly changing living conditions. Even under such critical circumstance as a war or release of supertoxic chemicals, nature finds a fitting response.

The Vietnam War, a most brutal one, in which supertoxic dioxin compounds were used for killing people, led to the opposite, amazing results. In the Mekong river valley in the Southeast Asia, one has recently discovered 163 completely new, mutant species of animals and plants—37 species of animals (3 species of mammals, 9 amphibians, 11 fish, and 14 reptiles) and 16 species of plants. Life on the Earth is indestructible [11–13].

Humanity is now making penetrative efforts to obtain knowledge about the cosmic world around us. The entire Universe is governed by the laws formulated by Planck and Boltzmann. Their essence can be put as follows. The wave vector characterizes the momentum of the particle; its energy corresponds to the oscillation frequency; and its phase is associated with the action. Planck's constant reflects the coefficient of proportionality between the energy of a quantum and its frequency. Boltzmann's constant establishes a

relationship between energy and temperature. However, it was Planck who postulated the proportionality of the wave vector of a quantum of light, its frequency and action. This is the main law of the Universe, from which one derives the geometric models of its structure and the direction of its development. But the constancy of the gravitational interaction constant (Newton's constant) is doubtful (one cannot yet measure it accurately since it depends on the geographical coordinates of the measurement site and the location of the Earth's solid core inside the liquid core and the position of the magnetic pole), being a function of the electromagnetic interactions of all objects in the Universe, which arise from the rotation of charged particles. Planck's law is formulated as the law of conservation of angular momentum.

Our world cannot be unique since precisely this is the signature of matter, both biological and spiritual. That is why the frequency oscillations of our brain are synchronized with those of the Earth, i.e., Schumann's oscillations, which are in resonance with one another. As the Earth develops, the magnitude of these oscillations shows a tendency towards increasing frequency. This is an extremely important factor in the development of the intellectual abilities of man, who was born and developed on the planet Earth. The emergence of life on the Earth is a natural and inevitable feature of the development of matter, rather than an exception to the general laws of its development, and humans are, most likely, not alone in the boundless cosmos. One cannot rule out the existence of a higher form of intelligence in the Universe, and we surely have space brethren beyond our sacred Earth. The cosmic string theory seems to be describing actual electromagnetic waves, i.e., the strings that govern all of space. These electromagnetic filaments, or strings, permeate all of space at speeds close to the speed of light and carry gigantic energies. They can take a variety of shapes; they can be closed onto specific stars and planets or be endless in space. Their function is to maintain and control the structural characteristics of all the galaxies, both their shape and size, and to feed the energy emanating from the black holes into the wonderfully harmonious system of the cosmos. They resemble neurons in the human brain. The world is organized rationally, by the same laws of the exchange of matter and energy. This is the core essence of our entire being, from micro- and macroworlds to giant galaxies and universes. Matter and energy cannot possibly disappear; they only pass from one form into another. Hydrogen, helium, and water are components of the ever-existing world. The Universe has no beginning and no end; it is an eternally transforming structure of matter-energy-space.

The formation and functioning of black holes is always accompanied by powerful X-ray bursts; i.e., galaxies are rearranged into new constructions. In those places where the solid cores of the former stars and planets (which differ only in size and force of attraction, turning into chemical compounds, with a gigantic increase in volume and a millionfold decrease in the density of matter in the mantles due to the development of electronic shells) burn out, an automatic decrease occurs in the electromagnetic forces of the space objects as well as an increase in the outflow of matter into outer space, i.e., into a black hole. Inside the hole, the planets and old fading stars (e.g., the Sun) find their death. Having passed through the magnetic poles of the black hole, matter (in the form of hard X-rays) begins to form a new interstellar gas, i.e., hydrogen and helium nuclei, which form new stars and planets at the points of concentration of force fields. This is precisely how the circulation of matter in the cosmos works, like the circulation of water in the oceans, where powerful standing waves emerge, which create and destroy everything in their path. Boltzmann's constant reveals the essence of the relationship between temperature and energy. Kirchhoff's law states that the ratio of its emissivity to absorbing capacity is the same for all bodies (black holes including) at a given temperature and for a given frequency and equilibrium radiation and does not depend on their shape and chemical composition. This is evidenced by the displacement of the Earth's magnetic pole due to the rotation of the solid core (which is decreasing in volume) inside the liquid one. The Earth's nonequilibrium state intensifies with the gradual transition of the solid proton-neutron core into a liquid state, which, in turn, shifts at the border with the lower mantle and then the upper one the Earth's center of gravity to the less dense upper mantles, thereby increasing the instability of rotation of the decreasing solid core. The Earth's magnetic poles, like those of all other planets, are determined by the relationship of the solid core's centers of gravity and its geographical position. These phenomena are rather strictly described by geochronology, a field of science that provides evidence that the Earth's magnetic field is decreasing with time [14, 15].

We proposed an explanation for how this process works, the one that inevitably occurs on all stars and planets in the Universe. The magnetic field of any space object is determined only by the state of the solid core (which is proton-neutron in nature), i.e., its size and density in relation to the different layers: the liquid core and the lower and upper mantles, which develop over time from the solid core. These regularities pertain directly to all the chemical elements in the Universe, whose structure and degree of stability

are noted above. The decrease in the level of magnetic fields can be used to estimate the age of space objects with high accuracy.

The validity of the proposed approaches is proven by the fact that all the known stars and planets, even their satellites, e.g., the Moon, exhibit volcanic activity and outpourings of liquid magma from under the outer solid crust or, in the case of Mercury, a boiling outer layer. Space volcanoes exist almost everywhere, even ice volcanoes on remote planets of the Solar System.

The age of the planets can be estimated quite accurately by the rate of decrease in the magnetic field. For the Earth, it is no more than 20000 years, which is amazingly consistent with the biblical chronologies. The known history of all mankind extends no more than 10000 years into the past. Yablokov defined "thinking as the action of the mind, and the mind is the highest level of self-knowing of matter" [16]. Whales have brain sections that humans do not, and dolphin brains exceed those of humans in the number of nerve cells. Dolphins can receive and transmit most sophisticated ultrasonic signals, more complex than human speech. Humans have sound, words, and phrases, i.e., three levels of speech, while dolphins have five [16].

The migration of the Earth's magnetic poles is associated only with the position of their generator, i.e., the Earth's solid core, which rotates inside the liquid core. The generator is of the same nature, i.e., an atomic proton—neutron nucleus. The orientation of these poles depends only on the position of the Sun's magnetic poles, which in turn depends on the analogous poles of the black holes of our Galaxy, the Milky Way, and the Universe, and here lies the essence of the entire coordinated control system of galaxies in the Universe.

Inside the Earth, there are completely different mechanisms of transformation of matter into energy and, vice versa, energy into matter. These processes occur in two stages: the first one is the phase transition of the solid core into a liquid one while the nature of matter is preserved; the second (very important) one is the transition of liquid nuclear material (protons and neutrons) into a liquid mantle (chemicals). The first stage leads to a decrease in the Earth's electromagnetic field. It is precisely at this stage that the basic synthesis occurs of, firstly, the light elements of the first and second periods in Mendeleev's Table, i.e., the transformation of nuclear matter into hydrogen and helium. Then, the resonant vibrations of the nuclei enable the synthesis of light yet stable elements such as carbon, nitrogen, oxygen, and neon, which begin to create the young Earth's atmosphere from carbon dioxide, nitrogen, ammonia, methane, and water, as is now happening on other planets: Venus, Mars, Saturn, Neptune, etc. On distant planets, the atmosphere consists mainly of hydrogen and helium. This is how the Earth's atmosphere was formed and continues to be formed. A sharp rise in the concentration of oxygen and water on the Earth was observed 4000–5000 years after the upper mantle, i.e., the Earth's crust and biosphere, had been formed, followed by the origin and development of life. It was during that period that crucial transformations occurred in the biosphere, and traces appeared of an unknown Sumerian civilization, which left artifacts preserved in the rock chronicles of our planet. These mysterious artifacts include ancient images on the Nazca plateau, which were discovered at the end of the twentieth century only. The perfect lines carved on rocks and the images of people (of unknown origin) and animals, including marine ones, testify to one thing only-they were created by another civilization, not ours, more than two thousand years ago (if we correctly estimate their age).

Huge amounts of water are still found at depths down to 410-660 km, where the lower mantle ends and the upper one begins, smoothly turning into the Earth's crust with a thickness of 5 to ~80 km. A gigantic release of water from the Earth's bowels took place five or six thousand years ago during the Noah's Flood, when the present continents formed from Pangaea, which constituted ~86% of the land. Before the flood, according to the Bible, water occupied one seventh of the land. Today, the continents occupy 29% of the entire surface of the expanded Earth, since its volume almost doubled and continues to increase to this day.

It is still unknown how long electromagnetic forces, or black holes, live and generate, but the works by Prigogine testify to an utmost stability of these forms of life in the Universe—an oscillating electromagnetic environment. The magnetic poles of the Earth, the Sun, and black holes generate radiation belts around themselves, which contain a huge mass of charged particles, protons and electrons. They play quite effectively the role of an umbrella that protects biological life on the Earth from exposure to powerful cosmic rays and solar radiation.

The inner sphere accumulates protons (at an altitude of about \sim 500 km), and the outer one accumulates electrons (\sim 40 000 km), which enable the existence of biological life. Everything is so contrived that intelligent life must have had all the conditions not only to appear on the Earth but also to develop effectively. It takes two to three days for the solar wind, a stream of ionized particles, to reaches the Earth, and 8 min 17 s for the sunlight, which enabled the emergence of life (the photons, from red to ultraviolet, are rays of life). The combination of sunshine, which is essential for life, and deadly radiation is amazingly intelligent, like the combination of life and death, and all of this together is called the Universe.

We consider the reversal of the Earth's magnetic poles unlikely while their migration around the Earth's axis of rotation is a necessary condition for the balance of terrestrial masses, which are born in the mantle. The matter itself, i.e., chemical substances, is born at the boundaries of the liquid–nuclear (by nature) core to form the "earthly firmament," which leads to a shift in the center of gravity and, as a consequence, to the migration of the magnetic poles. The most common substance not only on the Earth but also in space is water, which creates the effect of the continents sliding along the upper boundary of the mantle. The continents are born because of volcanoes, i.e., the molten mantle, which forms mountains. Therefore, it is no coincidence that the highest mountains ($\sim 8-9$ km) are located in the same place as the deepest depressions (~ 11 km) in the oceanic crust. Thus, the Earth's rotation along its geographic axis and the migration of the magnetic poles balance each other. This phenomenon is a consequence of Planck's law of conservation of angular momentum.

The fact that there are several continents on the Earth, rather than a single one, and they are located around the entire planetary sphere, creates a dynamic balance of power. The polarity of the Earth's magnetic field remains the same, while the continents are still migrating over the surface of the liquid mantle, which gives rise to new volcanoes, more than a thousand eruptions a year. This is a normal dynamical system; there have been no polarity reversals on the Earth and will never be, and two thirds of the continents are located in the Northern Hemisphere of the Earth, which is absolutely consistent with the same Planck law.

The Universe has no beginning and no end, being essentially a triunity of space—matter—time. Galaxies arise and vanish in black holes to be reborn as a *perpetuum mobile* of the evolution of the Universe. One can only attempt to estimate the lifetime of our Galaxy as a part of the Universe, in which a large black hole is a part of the general system of black holes, i.e., electromagnetic engines of the boundless Universe.

The Solar System, which is part of the Galaxy system, also has a small black hole—it is the magnetic poles of the Sun. Each planet of the Solar System has its own black hole—the planet's own magnetic poles, or the process of energy exchange, i.e., the transformation of one form of energy into another. Nuclear energy inside stars and planets is converted into the baryonic form, i.e., the chemical elements that give rise to inorganic and organic life forms. This is evidenced by the virtually unchanged structures of galaxies as they exist for a long time in strictly geometric structures with constant orbits of rotation of all their components.

Our Solar System is quite young—it is by definition difficult to estimate how long it took for the Sun itself to form until it flared up as a star. Likewise the formation of the planets continues to this day—Mercury, Venus, the Earth, and Mars possess sufficiently developed lower and upper mantles and developing specific geochemical structures of their atmosphere, firmament, and biosphere. Planets located at a greater distance from the Sun are only beginning to develop their lower and upper mantles as well as their atmospheres, which are composed mainly of hydrogen and helium with some methane, carbon dioxide, and nitrogen. Their example can be used to trace the sequence of origin, formation, and death of biological and other life forms in a geological format.

It is interesting to trace the development of the atmospheres on the Solar System planets. Mercury and the Earth have fairly close oxygen concentrations (42 and 21%, respectively); Venus and Mars have almost the same concentrations of carbon dioxide (96.5 and 95.4%) and nitrogen (3.5 and 2.7%). The next pair should have been the Earth and Phaethon, the vanished planet, presumably similar in mass to the Earth. The time of Phaethon's explosion coincides with the appearance of the Moon near the Earth, as follows from the records of the Sumerian civilization, which left a lot of evidence in the regions of today's Central Asia and Tibet. This fact has never been fully studied and understood.

As the Solar System and the Sun itself develop, various forms of life may appear on all the first four planets: Mercury, Venus, the Earth, and Mars. They possess all the necessary structures of typical planets—the solid and liquid cores with almost the same specific density, which give rise to two mantles (like

on the Earth), the lower one and the hot upper one with active volcanoes, in which the various minerals form as well as water, methane, carbon dioxide, nitrogen, oxygen, and their compounds. Their atmospheres consist of oxygen, nitrogen, carbon dioxide, and hydrogen, while those of the distant planets, which have no dense cores and virtually no mantles, consist of the cosmic gas hydrogen (from 80 to 96%), helium (from 3 to 19%), and methane (from 1.0 to 2.5%).

In [15–17], evidence is provided of the same isotopic composition of elements on the Sun and Earth, indicating the same formation mechanism. This fact might explain the traces of civilization on the early Earth, and we are now preparing for future migrations to other planets, where conditions for biological life are only emerging. From this perspective, estimates for the age of the civilization in the Solar System acquire a fundamentally new meaning.

One can estimate the age of the Earth not from the moment of its formation as a Solar System planet but from the time of origin of biological life in the Cambrian period, from the appearance of the first biological cells—prokaryotes and eukaryotes. It is neither feasible nor practical to try to determine the lifetime of our planet from the time of formation of the Sun, which flared up and expanded as its luminosity was increasing. The Earth's civilization is now ready to explore other planets and is preparing to settle on Mars, where life may continue. The age of the Galaxy, like life itself, which arose in water from viruses, depends on the choice of the reference point. Therefore, the Earth provides traces of ancient civilizations that arose in the Solar System and move over time to more distant planets. Life is a regular phenomenon, not a unique one. The mantles—the lower and upper one create through volcanic activity the Earth's crust and the oceans, and time is a conditional concept. Microflora (in the form of viruses) is always present in outer space in the form of the so-called cosmic dust. When it gets onto planets, it gives rise to life where it finds conditions for adaptation and reproduction.

This easily explains all the artifacts found on our planet. Since the entire Cosmos consists of the same baryonic matter, the laws of the development of life must be similar on all planets. Our civilization has many different approaches for estimating the age of the Solar System, Earth, and Galaxy. No absolute, independent way of determining the flow of time has yet been invented, except for the rotation of the Earth around its own axis and its complete revolution around the Sun. In this way, it is impossible to estimate the age of the Earth, let alone the Sun and the Galaxy. The most mysterious Biblical chronology claims that the earthly world is very young, up to two tens of thousands of years old [14, 18]. This chronology is fully consistent with the development of human civilization; however, there are artifacts that do not fit into our understanding of the world. Even the Earth's age estimates by radiometric methods based on rock formation data are not always convincing. Unless we know for certain how these rocks are synthesized and in what sequence chemical elements form at the boundary between the liquid core and the lower mantle, it makes no sense to discuss this problem. As of today, the official opinion prevails that the Earth's core is composed of an iron-nickel alloy [14]. The concepts of modern geophysical science about a "planetary embryo," essentially a "stone fireball" that formed hundreds of millions of years ago, and an atmosphere of carbon dioxide and nitrogen are, in our opinion, not entirely correct. Today, the atmospheres of distant planets consist of cosmic material—hydrogen and helium—and the planets closer to us have methane, nitrogen, and carbon dioxide as products of nuclear fusion occurring in the planets' mantles.

Radiometric methods for determining the Earth's age, despite their widespread use, are far from always consistent with the geological age and in reality exceed it by many orders of magnitude. The only method that gives reliable results for the age of biological objects on the Earth and agrees with the general cosmological concept and biblical sources is the radiocarbon method, which has made a real revolution in the concept of the age of our civilization, estimating it at ~50000 years.

The estimates for the Earth's age from changes in the magnetic field, the energy of which is constantly decreasing, are of the order of 20000 years [14]. This is the only independent and objective method for estimating the Earth's age, which relies on actual processes taking place inside the Earth.

Is absolute dating at all possible for the age of the Universe, the Solar System, the Earth, and our civilization? The existing creationist approaches, geological history concepts, and radioisotope, paleontological, and geochronological methods give very contradictory estimates. Therefore, in each specific case, one needs to apply different approaches since all these processes are, in fact, of a different temporal nature. The very idea of the so-called Big Bang as a starting point for the formation of the Universe itself and its constituent galaxies is doubtful—as pointed above, these are all processes of a different temporal nature. The Universe has always existed and always will. And the time of origination of the Solar System and the Earth with its structural and geological processes can be estimated as the totality of all geochronological events and creationist estimates, including radioisotope methods, with a necessary reference to the geological processes occurring on the Earth.

In the early stages of the formation of the Earth's cores (solid and liquid), mantles (lower and upper), and water, lighter chemical elements, up to iron, were the first to appear as a result of nucleosynthesis, followed by heavier elements. Within this approach, there is a chance to fairly objectively assess the temporal characteristics of certain geological events and the emergence of civilizations, where one of the key events that occurred on the emerging Earth is associated with the appearance of the Moon and the beginning of the formation, in addition to the firmament, of the atmosphere and biosphere, soil and water on one seventh of the surface. This is the fairly well-studied Cambrian period and the subsequent Ordovician, Silurian, and Devonian periods, when oxygen appeared in the atmosphere, followed by the rapid emergence of all types of cells from viruses in water: prokaryotes (nonnuclear cells) and anaerobic cells, and then the appearance of more complex and functional eukaryotes and aerobic nuclear cellular organisms, i.e., the origin of life on the Earth. These events took place 7000–8000 years before the current era. The major catastrophe that followed, i.e., the Flood, dated 5000 years ago, remained in the memory of all the subsequent generations, all the civilizations on the Earth. It was caused by the release of gigantic amounts of water from under the ground, the water synthesized in the mantle under the crust; it led to the formation of the oceans and the seven continents, and the size of our planet almost doubled. This was the largest reconstruction of the Earth's entire upper mantle and the beginning of formation of mountain ranges on all the continents, entailing a complete mixing of all geological deposits, beginning from the Cambrian period.

To this day, the synthesis of the various rocks continues on the border between the upper mantle and the crust. Every year, up to a thousand earthquakes and volcanic eruptions occur on all the continents with the outpouring of lava heated to several thousands of degrees, which turns into various minerals (basalts, carbonates, silicates): granites (Si, Na, K), regoliths [Fe, Ti], olivines [(Mg, Fe), SiO₄], zircons [Zr(SiO₄)], ringwoodites ([SiO₄] Mg, Fe), basalts (Si–Al–Fe), and a huge amount of water.

Mountains continue to grow too, since those ancient times, and sea depressions continue to appear. The abundances of chemical elements in the Earth's crust are rather low—it is composed up to 98% of eight elements only: iron, oxygen, silicon, magnesium, nickel, calcium, sulfur, and aluminum.

It is noteworthy that meteorites are composed of the same elements. This explains the false ideas that the Earth's core consists of an iron–nickel composite and has a transuranic nature.

The course of development of our planet shows that the key times marked by the rapid development of biological life on the Earth indeed took place in the Cambrian period, when, in a blink of an eye, almost all living beings appeared on the Earth. During this period, the planet was probably hot enough for biological development; nuclear fusion occurred at the border between the liquid proton-neutron core and the mantle, resulting in the production of a large amount of water and the formation of the Earth's crust and rocks, mainly from relatively light elements, as evidenced by the nucleosynthesis of chemical elements up to Fe (these are aluminosilicate-type minerals, carbonates, sulfates, chlorides, etc.). The contents of all the subsequent elements decrease exponentially by many orders of magnitude. This is especially true of radioactive transuranic elements, as they were the last to form. The naturally occurring chemical elements with atomic numbers >92 (U) are not found on the Earth. The quark content of uranium in rocks is negligible, i.e., more than eight orders of magnitude lower than that of carbon, nitrogen, and oxygen. The claims by Vladimir Vernadsky and other scientists that the Earth's core may consist of uranium, as well as iron and nickel, have not been proven. The nuclei of all the elements, without exception, consist of protons and neutrons, and the nuclei of all the planets and stars also consist of protons and neutrons, since the world develops most rationally-from simple to complex. Therefore, all the heavy radioactive elements in trace concentrations (six to eight orders of magnitude lower than lighter ones) appeared on the Earth quite recently in young rocks during the formation of mountains as a result of volcanic eruptions. Thus, it is not appropriate to estimate the age of minerals and the Earth itself using the radioisotope method. In outer space, there can be meteorites that consist of iron, nickel, and even water (frozen solid ice) as these are the most stable substances.

The assumption about the young age of the Earth, Mercury, and Venus is convincingly evidenced by the fact that the density of these planets is 5.25-5.5 g/cm³; the density of Mars is significantly lower

 (3.94 g/cm^3) , and the densities of other planets, which are in different stages of formation as their atmospheres are only beginning to develop, vary from 1.3 to 0.69 g/cm³.

Elements with an equal number of protons and neutrons are fairly stable, with one exception—the most stable element is protium. However, the greatest stability is demonstrated, as a rule, by elements with a multiple-of-four sum of protons and neutrons in the nucleus.

Water is unique. On our present planet, it occupies 71% of the surface, instead of 12.5%, as it once did on the more ancient planet. Why is it so unique? Water is always different. It can be liquid; solid, including in a crystalline state (ice, snow, frost, or liquid crystals on hydrophilic surfaces); amorphous, or gaseous, in a planar or chain form; aerosol-like, i.e., in the form of cumulus, cirrus, stratus, and other clouds, which serve as a natural umbrella for all the living beings.

Water is a prototype of the structure of the Universe; water can also contain black holes, i.e., funnels that absorb everything in it. The water cycle sucks into itself everything that it contains, throws it into an unknown abyss, and transforms it in an unknown way. Water is always in motion, even when it seems to be in a state of rest. This is an incomprehensibly complex state of matter, composed of tiniest water molecules of the various isotopic composition and unique structure, which creates a gigantic diversity of dynamic structures. Water, like the Universe itself, is boundless in space, enigmatic in its diversity and characteristics, being both the beginning of life and the source of the endless forms of life. We still know very little about the essence of life of water itself and those creatures that live in it. Moreover, the structure of water, when it is infinitely diluted, demonstrates an incredible memory, which explains the placebo effects and homeopathy. All biological objects are, in fact, bodies of water bounded with proteins, fats, etc. The properties of the endless cosmos, too, are defined by the presence of water.

Ordinary light is an electromagnetic wave, which includes infrared (thermal), visible (visible light), and ultraviolet radiation that comes from the Sun. Were there no light, then biological life, based on water, would be impossible. The quality of water defines our mental, physical, and physiological states. This is also where the concept of biological time comes from, meaning the lifetime of the various biological objects. Therefore, it is quite natural to attempt to determine time characteristics using biological clocks. The lifetime of mankind can be traced and estimated at ~10000 years by the signatures of its activities, and this is virtually an infant age for the Earth.

When the Pangaea supercontinent collapsed in the last millennium, the modern face of the Earth began to form, and this process continues to this day. New mountain ranges appear in the oceans between continents and even at the bottom of the Red Sea—the territory that was the progenitor of civilization on the Earth. This is a normal process in the life of our planet, like on all other planets, and it is important to review the historical dogmas as new results and knowledge appear.

One of the most important function of life is to understand what time is, in its essence, as time is characterized by one's knowledge of the world. According to Isaac Newton, time can be both absolute and relative; it is characterized by such attributes as continuity, uniqueness, uniformity, and isotropy (one of the key properties of time in classical mechanics and electrodynamics). Time is a universal parameter of any process, be it historical, geological, cosmic, or astronomical. Of particular importance is Biblical time as it reflects the epochs in the lifetime of humanity and correlates well with the known historical and cosmic events. Time is irreversible and independent of any external parameters; in the same way as matter, it has no beginning and no end, as these are mutually complementary parameters that do not exist without each other. As Prigogine noted, time and space are equivalent to each other and manifest themselves in four dimensions: past, present, future, and infinity. They both have no beginning and no end, like the entire Universe.

The *perpetuum mobile* of evolution is the black holes of the Universe, i.e., the closed cycle of the birth and death of new galaxies and the Universe. The magnetic poles of the planets and their migration are determined by the Sun's magnetic field, which is greater by several orders of magnitude than the planetary fields, and by the rotation of the planets' solid nuclei inside the liquid ones.

In the last years of his life, Tesla was moving ever further away from the canons of official physics. He saw etheric electricity as a liquid with transcendental forces that "condescend" to obey physical laws rather than a stream of discrete particles (or wave packets) obedient to the laws of classical mechanics, as stated by modern theory. He believed that, by studying the entire range of electrical vibrations between low-frequency alternating currents and light waves, we would inevitably come to realize the majestic cosmic symphony of the vibrating electric ether [3].

Fibonacci's famous Golden Ratio, which can be traced in all physical phenomena, is nothing but the law of electromagnetic oscillations, which obeys to and is described by Planck's law. The Fibonacci sequence manifests itself in the ratio of the masses of the planets and their radii; in the harmony of the human body, expressed in the paintings by Leonardo da Vinci (Mona Lisa); in the spiral coils of mollusk shells, fern sprouts, and cobweb patterns; in the arrangement of seeds in sunflowers and leaves on corn cobs; in the spiral movement of a hurricane; in funnel-forming water flows; in the length and width of a spiral; in the oscillation of any waves (their height and width); in the rhythms of the brain oscillations (α , β , γ , etc.); in the ratio of the masses of the planets and their distances to the Sun. This rule is a law that holds across the Universe—all the galaxies, all the famous mysterious black holes, even the DNA–RNA structure, all of them have a spiral shape.

The electromagnetic vibrations of the black holes of the Sun and the planets must be coordinated with one another. The nerve impulses of the brain must be coordinated with the vibrations of the nerve endings of the human ridge, from the crown (the upper part of the cranial vault) to the coccyx (the lower spine).

The brain is, in technical terms, a generator of electromagnetic waves, and no wonder that it resonates with the Schumann vibrations of the Earth. Even electroencephalography, the widely known medical science, detects and records the alpha rhythm of the human brain with a frequency of 8–13 oscillations per second, which corresponds to the resonant frequencies of the Earth's ionosphere.

The same analogy can be extrapolated to the lower forms of the animal and plant world. These dependences correlate well with the Titius—Bode law, which approximately describes the distances between the Solar System planets and the Sun (the average orbital radii) and the solar cycles [19]. This reasoning provides a basis for revising the physical foundations of the motion and distribution of stars and planets in the Galaxy.

The reversal (displacement and inversion) of the magnetic fields of the Sun, the Earth, and, probably, all other planets must correlate with changes in the magnetic fields of the galactic black hole of the Milky Way and the black hole of our Universe. A lot of water, hydrocarbons, and ammonia are formed on all Earth-like planets. These substances are released from volcanic eruptions and in the form of spring water from the mountains.

The Sun's solid core occupies ~20% of its radius [20] with a smooth transition to the liquid core and photosphere, in which we observe a huge amount of hydrogen and water vapor as well as carbon, oxygen, nitrogen, and even iron compounds. The highest temperature is recorded in the Sun's upper layers and in prominences, where it reaches millions of degrees due to thermonuclear "combustion" of hydrogen, rather than in the solar core, where the temperature is ~3 K (the surface temperature is ~6000 K). The Sun's upper layers, i.e., the corona, host reactions of thermonuclear fusion of hydrogen with the formation of helium, carbon, oxygen, nitrogen, and water, which are controlled by electromagnetic gravity. These processes in the new version of solar thermonuclear fusion are described in [20]. The author emphasizes the fact that one should not introduce complex laws to explain phenomena if they can be explained by simple laws. This argument fully applies to the above simple principles of describing the Universe and explaining how it works.

The most stable and widespread substances on the Earth and in space obey the Oddo–Harkins rule [21] for the average galactic abundances of chemical elements, which are always higher for elements with even atomic numbers and strictly correspond to the following series: H_2 (2/2); He (2/4); H_2O (10/10); O_2 (16/16); C (6/6); CO (14/14); CO₂ (22/22); NH₃ (10/10); CH₄ (10/10); Ne (10/20); Mg (12/24); Si (14/28); Fe (26/56); Ca (20/40); S (16/32) (the numbers in parentheses indicate the even number of protons and neutrons in the nuclei of these compounds). Scientists still do not fully understand the principle underlying the stability of the resulting nucleons; neither do they know why they have precisely these properties and in this order.

The structure and activity of viruses, as well as their mutations and influence on human physiology, obey the same law. The mechanism underlying the toxicity of viruses to other biological objects is still not known. Perhaps, this is the main principle of biological selection and adaptation of our organisms to rapidly changing environmental conditions, which we are not yet ready to evaluate. However, the fact that the human is changing into a different being is obvious. The decrease in the Earth's magnetic field is due to the decrease in the share of the solid core in the total mass balance because a part of this core passes into the liquid sphere as the planet grows older, and this liquid core further transforms into baryonic matter: water, terrestrial rocks, biosphere, atmosphere, etc. This process occurs on all planets without exception,

as evidenced by active volcanoes, and on their satellites (e.g., on the Moon and not only there), accompanied by an increase in their volume at a constant mass. Eventually, the planet will explode, as in the case of destruction of the celestial body Phaethon, which was discovered by the Titius–Bode calculations [19], and everything will start all over again. Since ancient times, man has been contemplating the the surrounding world as a single whole. For many centuries in the life of our civilization, this worldview had remained virtually unchanged until Copernicus pushed towards revolutionizing it. Still, fundamental changes in our understanding of the Universe took place only as late as in the twentieth, and even at the beginning of it, some scientists believed that the Milky Way was the entire Universe. We would like to conclude this cycle of works on the new conceptions of the Universe with a brilliant quote from Tesla: "My brain is only a receiver, in the Universe there is a core from which we obtain knowledge, strength and inspiration. I have not penetrated into the secrets of this core, but I know that it exists." This great scientist saw the cosmos as a single whole, united both materially and spiritually. He felt the power and values of the cosmic core, the values it sends across the Universe to maintain its harmony. He could not unravel the mysteries of the core, but he knew that it was the only correct understanding of the world around us [3].

We will only add that this cosmic core is, in our opinion, the mysterious black hole of the Universe and all its galaxies—the one of which nobody has yet gained a full understanding, a majestic being designed by the Creator of Nature.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

REFERENCES

- 1. Bushuev, V.V. and Kopylov, I.P., *Kosmos i Zemlya. Elektromekhanicheskie vzaimodeistviya* (Space and Earth: Electromechanical Interactions), Moscow, 2005.
- 2. D.I. Mendeleev. Periodicheskii zakon (Mendeleev's Periodic Law), Kedrov, B.M., Ed., Moscow, 1958.
- 3. Nikola Tesla. Stat'i (Nikola Tesla: Selected Papers), Samara, 2008.
- 4. Faig, O., *Nikola Tesla. Velikie izobreteniya i otkrytiya* (Nikola Tesla: Great Inventions and Discoveries), Moscow, 2014.
- 5. Prigogine, I. and Defay, R., Chemical Thermodynamics, London: Longmans Green, 1954.
- 6. Prigogine, I., *From Being to Becoming: Time and Complexity in the Physical Sciences*, San Francisco: W.H. Freeman, 1981.
- 7. Glansdorff, P. and Prigogine, I., *Thermodynamic Theory of Structure, Stability and Fluctuations,* Chichester: Wiley, 1971.
- 8. Hawking, S., *A Brief History of Time*, New York: Bantam, 1998; Hawking, S., *Black Holes and Baby Universes and Other Essays*, New York: Bantam, 1994; Hawking, S., *The Theory of Everything: The Origin and Fate of the Universe*, Beverly Hills, CA: New Millennium, 2002.
- 9. Goncharuk, V.V., Nauka o vode (The Science of Water), Kyiv, 2010.
- Goncharuk, V.V., Lapshin, V.B., Burdeinaya, T.N., Pleteneva, T.V., Chernopyatko, A.S., Atamanenko, I.D., Ul'yantsev, A.S., Uspenskaya, E.V., Samsoni-Todorov, A.O., Taranov, V.V., Nikolaev, G.M., Kavitskaya, A.A., Romanyukina, I.Yu., Prikhod'ko, R.V., Orekhova, E.A., et al., Physicochemical properties and biological activity of the water depleted of heavy isotopes, *J. Water Chem. Technol.*, 2011, vol. 33, no. 1, pp. 8–13.
- 11. Oparin, A.I., *Zhizn', ee priroda, proiskhozhdenie i razvitie* (Life: Nature, Origin, and Development), Moscow, 1968, 2nd ed.
- 12. Zavarzin, G.A., Specific evolution of prokaryotes, in *Evolyutsiya i biotsenoticheskie krizisy* (Evolution and Biocenotic Crises), Moscow, 1987, pp. 144–158.
- 13. Markov, A.V., *Rozhdenie slozhnosti. Evolyutsionnaya biologiya segodnya: neozhidannye otkrytiya i novye voprosy* (Birth of Complexity. Evolutionary Biology Today the Unexpected Discoveries and New), Moscow: AST, 2015.
- 14. Koronovskii, N.V., Obshchaya geologiya: Uchebnik (General Geology: Manual), Moscow, 2006.
- 15. Dubnishcheva, T.Ya., *Kontseptsii sovremennogo estestvoznaniya: Uchebnoe posobie dlya studentov vuzov* (Concepts of Modern Natural Science: Manual for Higher Education Institutions), Moscow, 2006, 6th ed.
- 16. To the 80th anniversary of Yablokov, Ekol. Pravo, 2013, no. 3 (51).
- 17. Bekman, I.N., Radioactivity and radiation, in *Radiokhimiya: uchebnoe posobie* (Radiochemistry: Manual), Shchelkovo, 2011, part 7.

- 18. Vagner, G.A., *Nauchnye metody datirovaniya v geologii, arkheologii i istorii* (Scientific Dating in Geology, Archeology, and History), Moscow, 2006.
- 19. Nieto, M.M., The Titius-Bode Law of Planetary Distances: Its History and Theory, Oxford: Pergamon, 1972.
- 20. Sobolev, V.V., Kurs teoreticheskoi astrofiziki (Course of Theoretical Astrophysics), Moscow, 1985, 3rd ed.
- 21. Nikanorov, A.M., The Oddo-Harkins rule and distribution of chemical elements in freshwater ecosystems, *Dokl. Earth Sci.*, 2009, vol. 426, no. 1, pp. 600–604.

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