

Review Article

Universe, Space, Infinity, God and our Earth

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Summary

The Universe is an ever-changing infinite system the laws and structure of which will never be fully known and understood by human beings. This situation is similar to that of mathematics in case of which it is impossible to reach its end because it is infinite. If the first law of thermodynamics and the special theory of relativity are valid in all Universe then it can be supposed that the Big Bang was not its beginning as something had to be before the Bang and something was necessary to be Bang, too. The components of the Universe are invisible and visible. The visible forms presumably will slowly disappear in the future as a result of energetic and material effects governed by the own rules of the Universe and by the effect of living creatures. Some of them will be transformed into black holes. The invisible energy ought to be existed further or all the Universe will disappear. If we are right, then the opinion of the religions that the Universe was formed by the God who has been the energy is acceptable.

The life of the Earth can be divided into two main periods: sterile and nonsterile. During the first one material conditions were formed. The second one started with the appearance of the first living entity. In consequence of the evolution finally appeared the human beings. Their life and activity have led to the present condition of the Earth. We think it is very necessary the fast and drastic decrease of reproduction of human beings and that of emission of heat, CO₂ as well as waste materials and to change our present lifestyle all over the World.

Keywords: *Universe, Infinity, God, Earth, Evolution, Climate Change.*

Preface

All living creatures exist in an environment which constantly exposes them with effects. These effects trigger responses – metabolic changes and active reactions – of the organism in a genetically determined way depending on its own development and characters. The simplest form of the response can be observed in the case of unicellular organisms – for example in case of an amoeba. It stretches its pseudopod out to move or to ingest the food grain. Advanced forms of the reactions can be seen in the cases of the more developed living organisms. The living creatures can not only react to the effects but also preserve the influences for life long or only for a shorter time depending on their inherited characters. The preserved impressions make up the consciousness. The higher form of the consciousness is coded in the nerve and/or brain cells as complex material relationships of permanent or short time either in inherited or in an adopted character. These relationships give the material base of the life that is the experiences, concepts, ideas as well as determine the personality, mentality and conscious or instinctive behaviors and reactions of a living creature.

Opinions about the Universe, Space and Time

Next, we shall try to present short history of development of knowledge as for the Universe, time, space, infinity, God and our Earth. All people who live in an environment want to know it including ancient persons also who already tried to discover their surroundings. They interpreted the events and the incomprehensible things on the level of their actual knowledge with celestial or earthly phenomena and the fortunate or unfortunate events with the actions of ethereal beings – good and bad spirits, God(s), devil(s), etc. – to whom they sacrificed according to the rituals in order to obtain their benevolence. These facts are the basis for all religions. Religion is a special product of the human consciousness and faith. It consists of all philosophical, scientific, moral etc. knowledge of that period of time when it was born and it is determined by the effect of the talent of the founder as well as his/her followers and by their characters as well as mentality, too. Therefore, each religion based on facts, beliefs and gives answers to questions of human life and coexistence as well as environmental problems and the character of the Universe, too. Each religion has its own earthly mediators – like wizards, prophets, priests, monks, bonzes etc. – who perform ceremonies in accordance with the liturgical requirements and have disseminated their dogma as well as have taught young people beside these at the early time they also cured patients. Our opinion is that the acceptance of the dominant role of the head of a family, of the leader of a tribe or a settlement, of the king of a nation, of the abstract God(s) basically is the same phenomenon as the herd leader position among the animals.

We believe that it is a useful idea to read not only the Genesis chapter of the Bible (1) from which everybody can get to know the supposed role of infinite God in the creation of the Universe – Fig. 1. and Fig. 2. - but the other parts also because from them people can become acquaint requirements of the human coexistence and moral out of which more are valid today, too. It is necessary to mention that in the time of birth of the Bible - which event had happened between 2 thousand years B.C. and the 5th century B.C. - the contents of it, was the best collection of scientific and moral knowledge.

Figure 1: The first page of the Genesis.

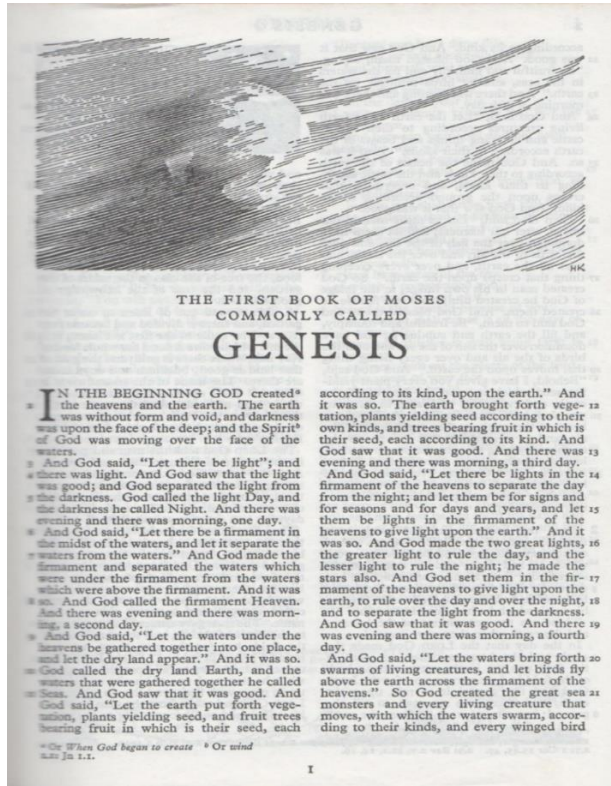


Figure 2: The second page of the Genesis.



In the next part of this paper, we shall use not only the thoughts of Simonyi (2) from his book - last pages of which are the most exciting for us because problems of the Universe are discussed there - but the most important ideas from the publications of other scientists, too. The quotations will be written with italic letters.

On the basis of our present knowledge one of the most important oldest summaries of natural science in Europe was written by Aristotle in his work entitled “Physics”. That work is an important collection of the philosophical ideas experience on environment, life, anatomy and biology. He tried to determine general causes of changes which govern all natural bodies of living and lifeless, as well as celestial and earthly, too. He thought that the structure of the cosmos consisted of concentric spheres, with the Earth at the center. – 3. Figure -. Aristotle stated that the Earth was round and believed that it was stationary and that the Sun, Moon as well as stars moved around it. The celestial sphere consists of the Earth, Sun, starts and objects. The objects in terrestrial sphere consisted of four elements earth, air, fire and water. The celestial sphere was made of the 5th element the aether. These elements determine the character and motion of the objects which are in connection with each other. The motion in case of earth and water is falling in case of air and fire is the rise. He stated that vacuum does not exist. On the basis of his theory the total space of the Universe is finite but that can endlessly be divided and outside the celestial sphere there is not space. That is, where there are not objects there is not space (2). His ideas had lived and were used for a long time and later were further developed by Ptolemy, Saint Augustine, Saint Gerard, Copernicus, Newton, Kant, Heisenberg, Einstein, Friedmann, Hubble, Hoyle, Wheeler, Penrose as well as Hawking. Finally on the basis of the results of their examinations and thinkings the “Theory of Everything” was borne.

Figure 3: Concentric spheres of Aristotle.



Ptolemy developed some parts of Aristotle's ideas and provided a reasonably accurate system for predicting the positions of the structures visible at night on the heaven, but the Earth remained at the center and was stationary.

According to Saint Augustine, God, the creator, is eternal. "Time was created by God together with the world, so time belongs to the world, and therefore there was no time before the existence of the Universe. For God, the procession of the Universe was given at once. So, there was not any sort of time before He created the world." (2). Augustine's conception was important because he viewed the Universe and time as a unity. He considered that both of them were God's creations. St. Gerard wrote in his book that "...the physica is the Father God because the divine substance created everything that exists, including the only-begotten Son of God, God begotten of God, by whom all things are accomplished." (3). Bishop Gerard used the word *physica* in the Aristotelian sense. His thought is important because he considered God as a creative substance, and with this, in our opinion, he could also suggest the identity of God and the Universe.

First Copernicus stated that the Sun was stationary at the center of the Universe. The Earth and planets moved in circular orbits around the Sun. His observations and theory were verified by Kepler and Galileo. Newton published a theory of how bodies moved in space and time. This theory also explained a new idea of universal gravitation. Newton suggested that every celestial body, in the Universe was attracted to every other body.

According to Kant the concept of space is one of the "antinomies", "... which cannot be answered, because two different arguments lead to different results. Space cannot be finite, because we cannot imagine that space has an end. Whatever point we reach in the space, we must always imagine that we can go even further. But space cannot be infinite either, because space is something that we can imagine, otherwise the concept of space would not have been formed, and we cannot imagine infinite space." (2). We think this is where the incomprehensible difference between space as an everyday human notion and space as the infinite Universe appears. This is one of the great contradictions between the finite human being and the infinite Universe.

Heisenberg wrote the following about questions related to the Universe: "... The question of the infinity of space and time can be raised in Einstein's general theory of relativity (4) and it may be partially answered on an empirical basis. If the theory correctly describes the relationship between the four-dimensional geometry of space and time and the mass distribution of the Universe, then astronomical observations of the spatial distribution of spiral nebulae can provide information on the geometry of the Universe as a whole. Then at least we can construct models, cosmological images about the Universe the outcomes of which we can compare with empirical facts." (2). From these lines, it can be concluded that Heisenberg was uncertain about the comprehensibility of the Universe, which may originate from the difficulties of interpretation of space and time.

Einstein was the first to apply his ideas of space and time plasticity to the Universe as a whole. In 1919, he devised a model for the entire Universe: a static, spherical, perfectly symmetric cosmos, with matter homogeneously distributed everywhere, reflecting a mix of Platonic perfection and of Ockham's Razor until 1931. Then finally, he understood importance of Hubble's observations of redshift in the light emitted by far long away nebulae. The change in Einstein's viewpoint resulted from a tortuous thought process. Although his first model was wrong it became the inspiration for all the work on modern cosmology that followed it, including the now widely accepted

Big Bang model, whereby the universe emerged from an event 13.8 billion years ago and has been expanding and cooling ever since. Black holes, gravitational waves, all of this follows from Einstein's general theory.

Nearly a century after his most famous work, Friedmann's equations have been extended to a Universe containing an inflationary origin, dark matter, neutrinos, and dark energy. Yet they're still perfectly valid, with no additions or modifications required to account for these tremendous advances. While we can all argue about the relative merits of Einstein, Newton, Maxwell, Feynman, Boltzmann, Hawking, and many others, when it comes to the expanding Universe, Friedmann's first equation is the only one you need. It connects the matter and energy that's present to the expansion rate today, in the past, and the future, and allows you to know the fate and history of the Universe from measurements we can make today. As far as the fabric of our Universe is concerned, this equation takes the crown as the single most important. (5, 6).

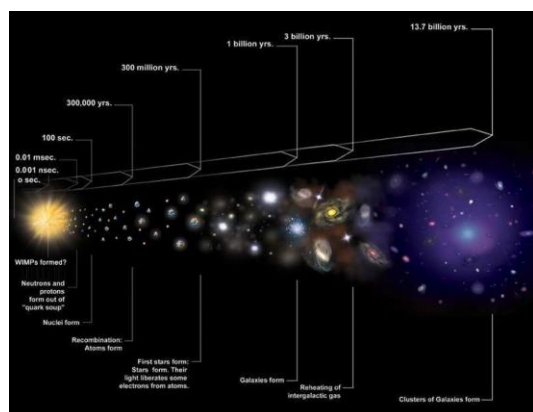
Our Sun and the nearby stars are all part of the Milky Way. For a long time, there was a consensus that the Milky Way was the whole Universe. However, in 1925, Hubble demonstrated that the Milky Way was not the only galaxy. He found many other galaxies with vast amounts of space between them. To prove the legitimacy of his theory, he had to identify how extensive these empty spaces were. One way to directly identify a star's distance from Earth is based on brightness. The brightness of a star is based on the star's luminosity and its distance away. Therefore, if we can identify a star's luminosity, we can use the apparent brightness to calculate the distances away. Hubble identified that the galaxies he observed all appeared red-shifted. Redshift is a key concept for astronomers. The wavelength of the light is stretched, so the light is seen as shifted towards the red part of the spectrum. This means each of these galaxies is moving away from us.

Hoyle proposed the steady-state theory in the 1940s. "Every cluster of galaxies, every star, every atom had a beginning, but the universe itself did not, Hoyle's best work may have come later in the 1950s when he teamed with Fulbright scholar William Fowler and Geoffrey and Margaret Burbidge to demonstrate that chemical elements heavier than helium were the product of nuclear reactions inside stars. The theory of nucleosynthesis was described in "Synthesis of the Elements in Stars", and it was his belief, and it is also my belief, that the standard Big Bang theory, which says that everything began at a definite moment in time and that there was nothing before that, this has to be essentially wrong, and that the universe has an infinite age and an infinite extent in space." (5, 6). Hoyle wrote in 1984: "I consider it highly improbable that a man evolved on this planet could have such a brain structure which is capable to fully understand the phenomena of nature in their totality." (2). In our opinion is not the human mind would not be capable of doing so, but because the infinity cannot be discovered and handled by man. There is another hypothesis, too: "Someone proclaimed that the world came into being from nothing, because nothing was unstable." (2). Interesting idea! But what does mean nothing and what is its essence? According to Hawking, "quantum cosmology has eliminated the need for initial conditions, the Universe has no 'origin', even though time in the past is finite."

The Big Bang/The Theory of Everything Penrose and Hawking worked together. Hawking told about his role. "I did my work between 1965 and 1970 when studied the events which happened after the big bang and the characters of

black holes, too. I showed that, according to general relativity, there must be a singularity of infinite density within the black hole. This is rather like the big bang at the beginning of time, only it would be an end of time for the collapsing body and the astronaut. At the singularity, the laws of science and our ability to predict the future would break down. However, any observer who remained outside the black hole would not be affected by this failure of predictability, because neither light nor any other signal can reach them from the singularity. When scientists talk about black hole singularities, they are talking about the errors that appear in our current theories and not about just a few scientists. When scientists and non-scientists talk about singularities as if they really exist, they are simply displaying their ignorance.” His opinion was „if we would discover the complete theory of the Universe, then we should all be able to take part in the discussion of why the universe exists. If we found the answer to that, it would be the ultimate triumph of human reason. For then we would know the mind of God.” (5, 6).

Figure 4: A visual history of the expanding Universe includes the hot, dense state known as the Big Bang and other events in time. (NASA / CXC / M. Weiss)



Quoting Simonyi again "Now we can really see how cosmology and particle physics are dependent on each other. Without particle physics, the Big Bang cannot be understood, and without knowledge of the laws of cosmology, the correctness of the basic assumptions of particle physics cannot be verified. To understand the life of the Universe from the Big Bang to the present, all the results of the physics of the 20th century, together with its total mathematical toolbar, must be used." (2).

Opinion of Szatmáry et al. from 2013 (7). “The Universe is either expanding at a slowing down rate or contracting at an accelerating rate. Observations of the Hubble have verified the expansion of galaxies. Since the slowing down expansion is valid for the entire history of the Universe, there must have been a point in the past with zero scale factor, infinite density and pressure, i.e., the Big Bang. It makes no sense to ask what was before it: the equations are singular; the evolution cannot be extended beyond the Big Bang into a more distant past. In the Universe, which was cooling due to expansion, the number of collisions of typical liquid particles decreased significantly, until finally this type of interaction became negligible. Such a liquid is called dust, and its equation of state is used for liquids. We saw that the Planck epoch succeeding the Big Bang was followed by inflation, then elementary particles, nuclei, and finally atoms were formed, which was accompanied by a decrease in radiation. The post-inflation era was

dominated by radiation, but during the decline it was already dominated by (baryonic + dark) matter that can be modeled as dust. Due to the gravitational pull, this dust clumped around the remaining initial perturbations of the inflation gene and after a period of time called the dark age, the first luminous celestial bodies were formed. The Universe remained dust-dominated until the cosmologically recent past, but at some time between $z=2$ and $z=1$ the density of dark energy became dominant. As a result, the Universe is currently expanding at an accelerating rate. The future fate of the Universe depends on what the dark energy is made of”.

What do we exactly know about the existing Universe at present?

First of all, it is necessary to mention that our present exact knowledge about the Universe is finite because it is a complex continuously changing infinite system which consists of temporal visible forms of matter and the nonvisible but measurable kinds of energy as well as the fully unknown dark matter and dark energy, too. The clip among these components is “the atom – smallest unit into which matter can be divided without the release of electrically charged particles. It also is the smallest unit of matter that has the characteristic properties of a chemical element. As such, the atom is the basic building block of chemistry. Most of the atom is empty space. The rest consists of a positively charged nucleus of protons and neutrons surrounded by a cloud of negatively charged electrons which are the lightest charged particles in nature and they have other intrinsic properties, too. One of these is called spin the other one is the magnetic moment. The behaviour of an atom is strongly influenced by these orbital properties, and its chemical properties are determined by orbital groupings known as shells. The electrically charged particles can be found inside of the basic components of an atom” (8).

Our previous opinion is verified by the next text below. Before 2012, when the first NASA Voyager 1 space capsule after more years long travel left our solar system and entered the interstellar space, it was believed that in this territory was only vacuum. In spite of this hypotheses the instruments of the space capsule measured increasing quantity of plasma/cosmic ray/flux. In November of 2018 the Voyager 2 confirmed the before mentioned result. So today we must accept the fact that the number of the high energy electrically charged particles have increased in the interstellar space instead of vacuum (9). Such particles have been emitted by our Sun, too. The name of this ray/flow is Sun wind and its particles together with the cosmic ones from the interstellar space have arrived at our Earth. Who does know what will be discovered in the future yet?

The visible forms may be active/living like our Sun semiactive like our Earth dead like our Moon or in the state of birth or death. These forms are the different celestial systems, solar systems, including our own solar system also, the Milky Way, the galaxies and their building stones: the different types of stars, the black holes, the planets, the minor planets, the comets, the meteors/meteorites and the microscopic cosmic dust which consists of small granules of carbon, iron, and iron-magnesium silicates. The essence of formation of a single visible form is only hypothetical.

The invisible forms are the wavelength-dependent radiations consisting of photons of electromagnetic origin, the strong and weak interactions between atoms, and the gravity. In addition to these, we must also mention the high energy cosmic ray/flux from interstellar space and/or our Sun, which in addition to the electromagnetic gamma radiation mentioned before, contains various particles-protons, electrons, helium and other nuclei - highly ionized

carbon, oxygen, nitrogen, silicon – as well as carbon monoxide and hydroxyl molecules further elementary particles- neutrino, pion, kaon, muon, tau and zeta, too. In the high energy cosmic ray/flux the proportions of hydrogen and helium is similar to that which is in the Sun. It is supposed that hydrogen and helium are the raw material for the formation of a visible celestial body. It seems for us that the high energy cosmic ray/flux/Sun wind are the byproduct of the metabolism of stars like the Sun. It is also necessary to mention the dark matter and the dark energy. It is supposed that the dark matter is in a dynamic connection with its own visible concrete matter and the dark energy is carried by its own dark matter. It is supposed that the gravity between two bodies may be influenced by their dark matter content. Their nature and role are not known yet (10,11).

The Life periods of our Earth

We started to deal with the problems of our Earth at the end of 1999. Since that time we published more works (12-21). Now in this review we summarize our thoughts. First of all, we deal with the life of our Earth, which was born 4.6 - 4.55 billion years in the past as a glowing pile of matter and energy in the Universe. It consisted of hydrogen and helium. The energetic conditions in the neighboring space of that time are unknown. We think that the high energy cosmic ray/flux from interstellar space and/or our Sun, which in addition to the electromagnetic gamma radiation contains various particles-protons, electrons, helium and other nuclei - highly ionized carbon, oxygen, nitrogen, silicon – as well as carbon monoxide and hydroxyl molecules further elementary particles-neutrino, pion, kaon, muon, tau and zeta, too might have role in the formation of our Earth. During that period of time the different forms of energy were effective only physical-chemical way.

The life of the Earth can be divided into two main periods. The first one was its sterile life which can be separated into smaller sections. The first section was its atomic evolution on the basis of the theory of Hoyle during which its constituent elements evolved. Hoyle's theory was cited by Marx György (22), too. Next section was the solidification of its surface between 4.3–3.9 billion years in the past. Only after that could fluid water appeared and, in consequence of the chemical evolution other substances and environmental conditions which were necessary for the appearance of the first living entity were formed in the ancient solution/sea by the effects of both the kinds of internal earthly energy and/or that of the external ones. We do not know what was the role of composition of the atmosphere and its pressure on the before mentioned processes. At the beginning it might be similar to the present atmosphere of our Sun. Therefore, we only show some sentences from The Encyclopedia Britannica “A complete reconstruction of the origin and development of the atmosphere would include details of its size and composition at all times during the 4.5 billion years since Earth's formation. This goal could not be achieved without knowledge of the pathways and rates of supply and consumption of all atmospheric constituents at all times. Earth's original atmosphere was supposedly rich in methane, ammonia, water vapor, and the noble gas neon, but it lacked free oxygen.” (23).

The second period is its nonsterile biological life which began with the birth of the first living entity presumably in an anaerobic milieu. It is supposed that the first living entity was born between 3.6–2.3 billion years ago and the appearance of photo-synthetic and oxygen-producing organisms might happen between 3 – 2.3 billion years before

therefore “It is likely that then started the first biological production of oxygen by these organisms and its eventual accumulation in the atmosphere.” (23).

This entity was a bordered temporary substantial structure/matrix which needed and could accept the external-electromagnetic, chemical or cosmic-energy and which was suitable to maintain a life-long continuous electron and ion transport that is its own metabolism and entropy, further was able to develop and change by mutation and had the ability of reproduction, as well as to use an organic carbon and other atoms for production of different compounds containing built-up energy further emitted CO₂ and other compounds of its own metabolism. The start of the life of the first living entity resulted in a decisive change in the former physical life of our Globe as the modification of the former balance of matter and energy has started. That was the first occasion when production of energy-containing compounds happened in a biochemical way that is the bioaccumulation of energy has started. Besides this decomposition and utilization of the substances of its surroundings as well as loading its environment have come into existence. If the biological life would not have appeared on our Earth, then the earthly circumstances would be similar to that of the Mars or the Moon—regular change of its temperature by Sun and so on—except those which are originating from its unique position in the space. If somebody wants to detect the marks of the biological life in the Universe then those substances/compounds have to be looking for which are the products of the metabolism of only a living creature.

The Effect of the Evolution

The environmental and energetic importance of the living entity has continuously increased due to its multiplication and evolution. The appearance of photo-synthetic and oxygen-producing organisms might happen between 3 – 2.3 billion years ago. Their appearance has meant a great step forward in the evolution because they were able to utilize and store the Sun’s photons on biochemical way and this was a quite new and significant form of energy storage. Further they helped the development of oxygen-demanding organisms, too. Another change was the appearance of warm-blooded organisms between 230 – 170 thousand years before because their metabolism significantly has risen the biological heat production and evaporation ensuring their own thermal equilibrium. Both processes have steadily increased in relation to the number of these organisms. The propagation of aquatic and terrestrial organisms on our Earth resulted in the accumulation of significant quantity of organic substances together with their energy. In consequence of the death of these creatures their substances and energy accumulated in the sediments of water bodies and due to various geological changes in the deeper layers of the soil also during millions of years. This process led to their removal from the natural material and energy cycle. Their absence together with other events — for example hits of meteors, strong volcanic activities and deeper geological changes etc. — which had happened and were natural ones affected not only the Earth’s climatic condition, leading to climate changes and ice-ages but also the extent of the earthly biological life. At present as the arriving energy of our Sun seems to be constant there is not any other possibility to explain the climate changes mentioned above as the removal of the substance and energy of creatures from the natural material and energy cycle. These stored organic substances and their energy content are the nonrenewable energy sources of today. When their substances are burnt then their carbon and other elements and energy — previously omitting from the natural material and energy cycle — have returned into that

cycle in the form of carbon dioxide, other gases, ashes and heat. They have resulted in the opposite processes which had happened as a consequence of their getting out from that cycle. This process is one of the main causes of recent climate change.

The effect of human life and civilization on the closed earthly systems

Further decisive change began with the appearance of conscious humans who realized the advantages of using fire. That event happened in East Africa 200 thousand years ago and they spread from there all over the world 50 - 60 thousand years before in the past. In consequence of the multiplication of human beings they have needed continuously increasing quantity of food, water and other substances, heat as well as accomodation and besides these their wealth accumulation desires have also formed. These needs could only be ensured with domestication of animals—the number of farm animals is of the order of billion at present—, transformation of natural environment for housing, agriculture, transport, industry and mining etc. These actions have meant the beginning of the destruction of natural conditions which process is still taking place today. That process because of the discovery of the first steam engine which happened in 1778 and the general development has turned into a continuously faster one, which has been even intensified by the over-optimism of the 1940s. The name of that process is Industrial Revolution. This is how we arrived at today when the number of the world’s population was 7,944,521,000 on 20th April 2022 and now is 7,993,210,376 on 2nd April 2023. The increase was 48 686 376 persons and that number is rising with acceleration by one in less than one second. Besides this, the substantial and energetic demands and effects of the present human and farm animal population (Table I.) are far greater and steadily increasing in comparison with the needs and excreta of those who lived or still living in natural tribal society (Fig. 5.). The needs of people and farm animals must be supplied with food, water and accommodation at least, and each person and animal emit carbon dioxide, heat, vapors and other excreta. The quantity of the needs and the excreta was calculated by us in our earlier papers (Table II., III.). The amount of those excreta is enormous which ought to be collected by people and must be neutralized by nature, too. And we haven’t even mentioned consequences of agriculture, industry, transport, space experiments, wars etc. as well as the heat effect of the fuels burnt (Table IV.) and that of the artificially collected, liberated or produced energy – by solar cells, wind-, water- and atomic power stations as well as that of flaming of hydrogen and of cremation of human and animal bodies. They all mean plus heat on the earthly environment besides the original energy of our Sun that is the natural heat balance is seriously changed. We tried to demonstrate the changings occurred on the Earth during the last 170 years (Fig. 5.). Their increasing tendency can also be seen on the graphs of the International Energy Agency (Fig. 6.,7., 8.). On the basis of these facts, it is totally meaningless to expect any improvement of the recent climate change the modification of which has now reached a very critical extent. (24-29).

Table I: Number of farm animals during the last decades.

| Point of Time | Animal species and their number x 10 ⁶ | | | | |
|---------------|---|-------|-----|-------|-----|
| | Oxen | Horse | Pig | Sheep | Hen |
| | | | | | |

| | | | | | |
|--------------------|--------|------|-------|--------|------|
| 1930th | 438,9 | 68,1 | 193,3 | 563,0 | - |
| 2000 ^{oo} | 1351,9 | 57,7 | 922,8 | 1065,5 | 14,3 |
| 2017 ^{oo} | 1477,0 | 57,6 | 977,6 | 1206,6 | 31,9 |
| 2020 ^{oo} | 1525,9 | 59,9 | 952,6 | 1263,1 | 33,0 |

Figure 5: Changings occurred on the Earth during the last 170 years.

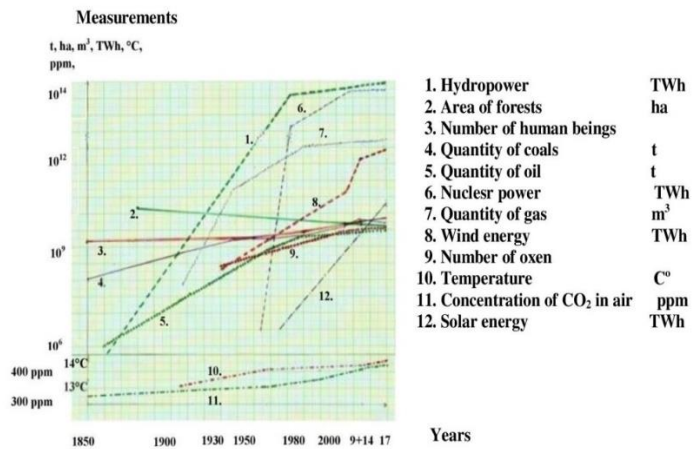


Table II: Needs and emissions of a human being (75 kg) in case of basic metabolism during one day.

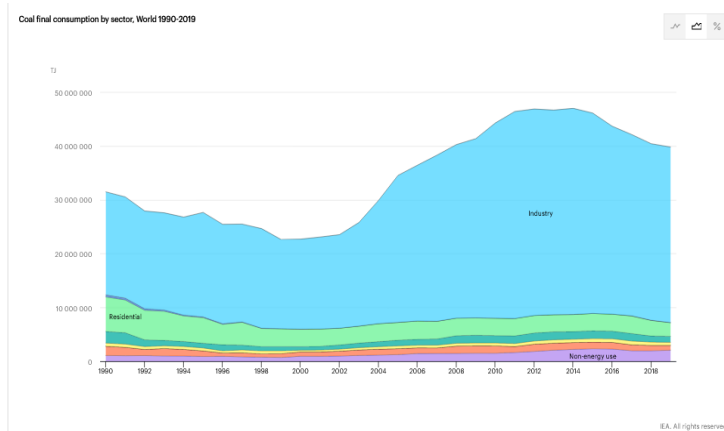
| Specifications | Years | 1860 | 2022 |
|-------------------------|--------|---|---|
| Number of man | 1 | 1.17x10 ⁹ | 7,944 x10 ⁹ |
| Needs | | | |
| O2 demand (ml/min.) | 250 | 2,9x10 ¹¹ | 1,98x10 ¹² |
| m ³ /day | | 2,9x10 ⁵ | 1,98x10 ⁶ |
| Energy by food (MJ/day) | 7,53 | 2,29x10 ⁵ | 1,14x10 ¹⁰ |
| Pproduction (W/day) | 88,6 | 1,03x10 ¹¹ | 7,03x10 ¹¹ |
| Drinking water (l/day) | 2-2,5 | 2,34x10 ⁹ - 2,9 x10 ⁹ | 1-5 8 x10 ¹⁰ -1,98 x10 ¹⁰ |
| Total water use (l/day) | 20-500 | 2,3x10 ¹⁰ -5,85x10 ¹¹ | 1,58 x10 ¹¹ -3, 97x10 ¹² |
| Generally use | 50 | 5,85x10 ¹⁰ | 3, 97 x10 ¹¹ |

| | | | |
|-----------------------|--------------|---|--|
| Emissions | | | |
| CO2 (ml /min.) | 192,1 | $2,24 \times 10^{11}$ | $1,52 \times 10^{12}$ |
| (m ³ /day) | | $2,24 \times 10^5$ | $1,52 \times 10^6$ |
| Heat (W/day) | 44,3 | $5,18 \times 10^{10}$ | $3,51 \times 10^{11}$ |
| Steam and water | ? | ? | ? |
| Urine (l/day) | 1,5 | $1,75 \times 10^9$ | $1,19 \times 10^{11}$ |
| Faeces (g/day) | 100-500 | 1.17×10^{11} - $5,85 \times 10^{11}$ | $7,944 \times 10^{11}$ - $3,97 \times 10^{12}$ |
| Communal waste | 0,4 (t/year) | $4,68 \times 10^8$ | $3,17 \times 10^9$ |

Abbreviation:

? = datum is unknown

Figure 6: Yearly quantity of coal used on the world by IEA.



Explanation: X axle= years; Y axle= TJ (terajoules)

Table III: Needs and emissions of a calf (75 kg) or a catle (600 kg) in case of basic metabolism during one day .

| Specifications Years | | 1930th | 2020++ |
|-----------------------------|---|--------------------|--------------------|
| Number of calf ^o | 1 | ? | ? |
| Number of catle | 1 | 4.38×10^8 | $1,52 \times 10^9$ |
| Needs | | | |

| | | | |
|---------------------------|--------------------|---|---|
| O2 demand (ml/min.)' | 390 | $1,7 \times 10^{11}$ | $5,92 \times 10^{11}$ |
| (m ³ /day)' | | $1,7 \times 10^5$ | $5,92 \times 10^6$ |
| Energy by food (MJ/day) ' | 7,84 | $3,43 \times 10^9$ | $1,19 \times 10^{10}$ |
| Catle (MJ/day) | 63 | $2,75 \times 10^{10}$ | $9,57 \times 10^{10}$ |
| Production (W/day)' | 87,85 | $3,84 \times 10^{10}$ | $1,33 \times 10^{11}$ |
| Catle (W/day) | 727,6 | $3,18 \times 10^{11}$ | $1,10 \times 10^{12}$ |
| Drinking water (l/day) | 26-110 | $1,13 \times 10^{10}$ - $4,8 \times 10^{10}$ | $1,67 \times 10^{11}$ - $1,67 \times 10^{11}$ |
| Total water use (l/day) | ? | | |
| Emissions | | | |
| CO2 (ml /min.)' | 311 | $1,36 \times 10^{11}$ | $4,72 \times 10^{11}$ |
| (m ³ /day)' | | $1,71 \times 10^5$ | $4,72 \times 10^5$ |
| Heat (W/day)' | 43,9 | $1,92 \times 10^{10}$ | $6,67 \times 10^{10}$ |
| Catle (W/day) | 363,8 | $1,59 \times 10^{11}$ | $5,52 \times 10^{11}$ |
| Steam and water | | | |
| 240 g/75kg/h' | 180' | $7,88 \times 10^{10}$ ' | $2,73 \times 10^{11}$ |
| 240 g/600kg/h | $1,44 \times 10^5$ | $6,3 \times 10^{13}$ | $2,18 \times 10^{15}$ |
| Urine (l/day) | 10-15 | $4,38 \times 10^9$ - $6,57 \times 10^9$ | $1,52 \times 10^{10}$ - $2,28 \times 10^{10}$ |
| Faeces (kg/day) | 10-30 | $4,38 \times 10^9$ - $1,31 \times 10^{10}$ | $1,52 \times 10^{10}$ - $4,56 \times 10^{10}$ |
| Methene (l/day) | 100-500 | $4,38 \times 10^{10}$ - $2,19 \times 10^{11}$ | $1,52 \times 10^{11}$ - $7,6 \times 10^{11}$ |
| Manure | ? | ? | ? |
| Sewage (l/day) | 30 | $1,31 \times 10^{10}$ | $4,56 \times 10^{10}$ |

Abbreviation:

? = datum is unknown; ' = datum belongs to the calf; ++ = FAO datum

Figure 7: Yearly quantity of gas used on the world by IEA.

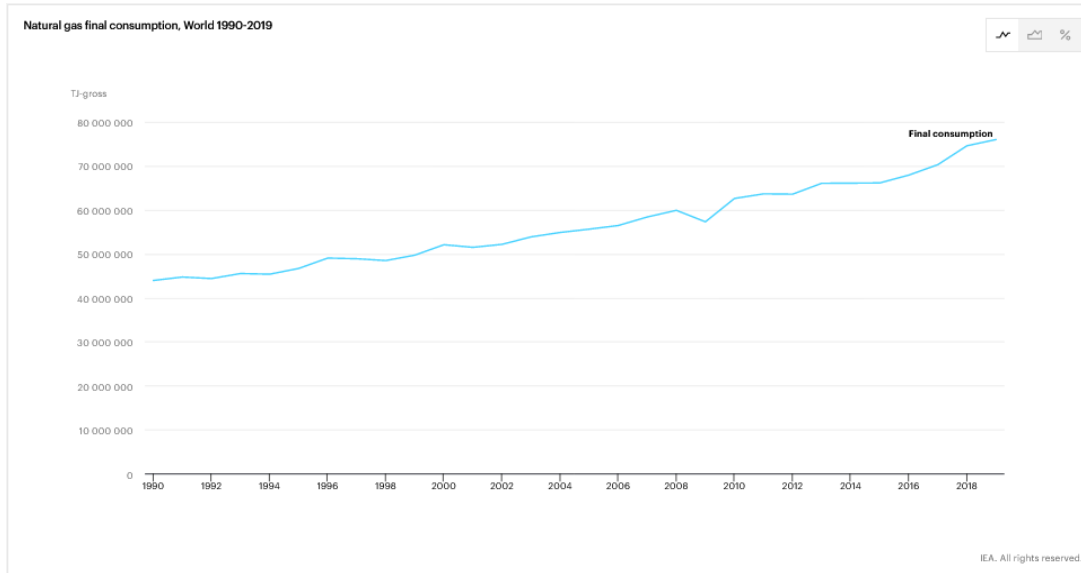


Figure 8: Forecast of yearly oil using on the world by IEA.

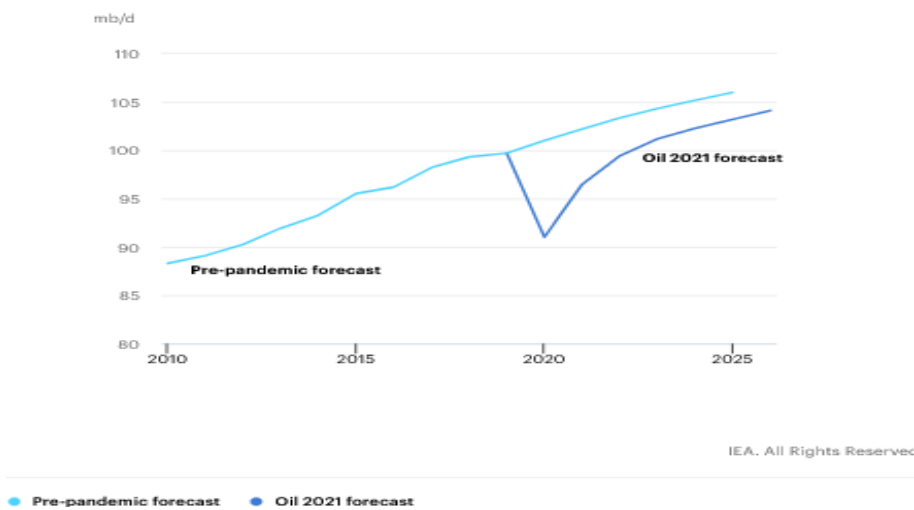


Table IV: Data to the Circulation of Energy and CO₂ on the Earth.

| Specifications | Mass of fuels as well as their average thermal values and the quantity of CO ₂ liberated from them in Years | | | | | | |
|-------------------------|--|---------|-------|------|---------|---------|------|
| | 1860 | 1935+37 | 1958 | 1980 | 2000+05 | 2009+14 | 2017 |
| Oil × 10 ⁶ t | 1 | 279,5 | 809,8 | 3059 | 3590 | 4117 | 4365 |

| | | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 40,5 MJ/kg | $4,05 \times 10^{10}$ | $1,13 \times 10^{13}$ | $3,27 \times 10^{13}$ | $1,23 \times 10^{14}$ | $1,45 \times 10^{14}$ | $1,66 \times 10^{14}$ | $1,76 \times 10^{14}$ |
| CO ₂ m ³ | $3,17 \times 10^9$ | $8,86 \times 10^{11}$ | $2,56 \times 10^{12}$ | $9,69 \times 10^{12}$ | $1,13 \times 10^{13}$ | $1,3 \times 10^{13}$ | $1,38 \times 10^{13}$ |
| <u>Coal</u> × 10 ⁶ t | 136 | 1280 | 1762 | 2805 | 5878 | 7823 | 7549 |
| 20,35 MJ/kg | $2,76 \times 10^{12}$ | $2,6 \times 10^{13}$ | $3,58 \times 10^{13}$ | $5,7 \times 10^{13}$ | $1,18 \times 10^{14}$ | $1,59 \times 10^{14}$ | $1,53 \times 10^{14}$ |
| CO ₂ m ³ | $3,12 \times 10^{11}$ | $2,92 \times 10^{12}$ | $4,05 \times 10^{12}$ | $6,45 \times 10^{12}$ | $1,34 \times 10^{13}$ | $1,79 \times 10^{13}$ | $1,73 \times 10^{13}$ |
| <u>Gas</u> × 10 ⁹ m ³ | - | 71 | 400 | 1531 | 2778 | 3479 | 3768 |
| 37 MJ/kg | - | $2,62 \times 10^{12}$ | $1,44 \times 10^{13}$ | $5,64 \times 10^{13}$ | $1,00 \times 10^{14}$ | $1,25 \times 10^{14}$ | $1,35 \times 10^{14}$ |
| CO ₂ m ³ | - | $1,34 \times 10^{11}$ | $7,60 \times 10^{11}$ | $2,90 \times 10^{12}$ | $5,27 \times 10^{12}$ | $6,61 \times 10^{12}$ | $7,15 \times 10^{12}$ |
| <u>All together</u> | | | | | | | |
| MJ/kg | $2,8 \times 10^{12}$ | $3,72 \times 10^{13}$ | $8,24 \times 10^{13}$ | $2,66 \times 10^{14}$ | $3,63 \times 10^{14}$ | $4,50 \times 10^{14}$ | $4,64 \times 10^{14}$ |
| CO ₂ m ³ | $3,15 \times 10^{11}$ | $3,94 \times 10^{12}$ | $6,88 \times 10^{12}$ | $1,9 \times 10^{13}$ | $2,97 \times 10^{13}$ | $3,76 \times 10^{13}$ | $3,81 \times 10^{13}$ |

Abbreviation: - = we do not know datum

Note: Some of the quantity of fuels originate from IEA. The others were collected and the energetic values were calculated by us.

Economic and military policy

A further serious problem is that all above mentioned event has happened in a closed system the substantial and energetic possibility of which are given and limited. The development of the present situation has been strengthened by a scientifically worked out Nobel Prize-winner profit-orientated economic system which is based on not only the wasting but also on the exploitation of the less developed countries by the more developed ones.

Besides these single countries have wanted to dominate on the world which requires production of immensely expensive and very dangerous military instruments and maintenance of the necessary military background and then we do not mention the effects of a war. In addition to these, there are unrealistic and unnecessary illusions about sustainable development, the conquest of Mars etc. and besides these for example there is an organized less than 10 minutes long travel into the space for a horrendous price of 134,000 dollars per person when large part of human beings on the world which is overpopulated is starving and living in dire poverty. Therefore, we think it is very necessary to change our present lifestyle all over the world and must immediately step back.

Our questions and opinion

The Universe is an ever-changing infinite system the laws of which will never be fully known and understood by human beings despite the enormous technological progress. With the help of that progress important development has been achieved in clarifying the essence of the Universe from the recognition of the elementary particles of the atom (for example quarks) till the measuring of distance of millions of light years as well as of different forms of energy. The situation of the Universe is similar to that of mathematics in case of which it is impossible to reach its end that is the infinity.

If the first law of thermodynamics which states that energy cannot be created or destroyed, but it can be transferred and the special theory of relativity are valid in all Universe then it can be supposed that the Big Bang was not its beginning as something had to be before the Bang and something was necessary to be Bang, too. The components of the Universe are invisible and visible. On the basis of the observations, it is probable that its invisible components are infinite as the visible forms formed only later sometime in the past. The Big Bang presumably might have happened 13.8 billion years ago. It is supposed that our Galaxy was born more than 10 billion years before and the age of our Solar System and that of our Earth existing in that System may be 5 - 4.75 and 4.6 - 4.55 billion years, respectively or a new star being born somewhere at present. It is not clear for us what was the cause that the point of birth time of visible forms is supposed to be different still in the same Sun system, too and what was the way of their formation because in the same period of time the gravitation had to be already present. The visible forms presumably will slowly disappear in the future as a result of energetic and material effects governed by the own rules of the Universe and by the effect of living creatures, too. Some of them will be transformed into black holes. The invisible energy ought to exist further, or all Universe will disappear. If we are right, then the opinion of the religions that the Universe was formed by the God who has been the energy may be acceptable.

The next problem is for us, that how and when did appear the ancient water and/or sea as well as other substances containing oxygen when it is accepted, that before the oxygen producing microorganisms the environmental circumstances were anaerobic? Our opinion is that the space can be interpreted in two ways. One of them is the absolute space which is the infinite Universe itself and the other is the concrete space used in its everyday sense, which is delimited and is only a part of the former.

Time also has a double meaning. Absolute time is the totality of all the manifestations of the infinite Universe, which is connected to their existence. The other one is the concrete time used in the everyday sense which is only a part of the absolute time. The length and measuring of it is determined by according to the actual need and method. As to the fate of the world population we think it is very necessary the fast and drastic decrease of reproduction of human beings and that of the emission of heat, CO₂ as well as waste materials and to change our present lifestyle all over the world. We must immediately step back.

Epilogue

Actuality of our review is supported by the sentences of the Newsletter of the International Energy Agency (30).

“Plus, surging electric car sales; the North Sea’s huge offshore wind potential; supporting energy efficiency in emerging economies; and more ...

Setting the scene for world leaders on critical areas for energy and climate.

Our Executive Director Fatih Birol addressed world leaders at the recent Major Economies Forum on Energy and Climate convened by US President Joe Biden, highlighting the critical areas where immediate action is needed to bring down emissions this decade quickly enough to keep the goal of limiting global warming to 1.5 °C within reach.

Aimed at galvanising efforts to tackle the climate crisis, the Major Economies Forum brought together leaders of Argentina, Australia, Brazil, Canada, Egypt, the European Commission, Germany, Indonesia, Japan, Korea, Mexico, Türkiye, the United Arab Emirates, and the United Kingdom – as well as the United Nations Secretary-General and ministers from China, France, India, and Italy. The event was chaired by US Special Presidential Envoy for Climate John Kerry.

Providing scene-setting remarks after President Biden’s opening speech, Dr Birol stressed to world leaders that the clean energy economy is emerging faster than many people think because of the rapid progress in technologies such as solar, electric cars and heat pumps – but that bolder action is still needed to avoid the worst effects of climate change. Dr Birol’s remarks and the IEA’s analysis were referenced by several leaders who also spoke during the event...”

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