



Eseje / Essays

On the Things to Come: Philosophical Anthropology

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O VĚCÍCH BUDOUCÍCH: FILOZOFICKÁ ANTROPOLOGIE

ABSTRAKT Filozofická antropologie, nahlížena z kosmické perspektivy a na evoluční úrovni, by aktuálně měla zaměřit vědecké a racionální úvahy na možnou budoucnost našeho druhu, připravujícího se na výpravy mimo náš nejbližší okruh materiálního vesmíru. Pokroky v nanotechnologiích a bioinženýrství umožní nejen další biotechnické vylepšení „lidského živočicha“, ale i jeho existenci na jiných světech. Pokud si lidstvo udrží dynamickou integritu a zájem vyvíjet se, bude náš druh směřovat svůj vývoj více a více ze současného stavu humánního *Homo sapiens* k trans-humánnímu *Homo futurensis* a nakonec k post-humánní úrovni existence v podobě kosmické nad-bytosti. Naši potomci dokonce mohou objevit formy života vzniklé v procesu exo-evoluce, včetně inteligentních bytostí, na vnějších planetách a měsících. Vzdálené kosmické nad-bytosti mohou dokonce dosáhnout nesmrtnosti s tím, jak budou obývat různé oblasti mezihvězdného prostoru. Jejich hodnoty, zkušenosti a světonázor budou nepochybně mimo naši představivost. Podobně jako u většiny druhů, které kdysi obývaly Zemi (včetně některých prehistorických forem hominidů), přirozené vyhytní našeho vlastního druhu či jeho potomků vždy zůstává znepokojivou možností.

KLÍČOVÁ SLOVA Kosmologie; evoluce; budoucnost; nesmrtnost; nanotechnologie; post-humánní; věda; trans-humánní; vesmír; světonázor

ABSTRACT Within a cosmic perspective and the evolution framework, philosophical anthropology now needs to focus its scientific and rational speculations on the possible future of our species as it prepares to venture elsewhere in this material universe. Ongoing advances in nanotechnology and bioengineering will allow for not only the further bio-technic enhancement of the human animal, but also its existence on other worlds. With both the will to evolve and dynamic integrity, our species will more and more direct its own evolution from its present human condition as *Homo sapiens* to a transhuman stage as *Homo futurensis* and, finally, to a posthuman level of existence as a cosmic-overbeing (human intervention resulting in emerging teleology). In fact, our descendants may discover life forms, including intelligent beings, on exoplanets and exomoons as a result of exoevolution. The distant cosmic-overbeings may even enjoy immortality as they inhabit different spheres among the stars; no doubt, they will have values, experiences, and a worldview far beyond our imagination. Of course, as with most of those species that had once inhabited our earth, including some prehistoric hominid forms, the natural extinction of our own genus or its descendants will always remain an alarming possibility.

KEY WORDS Cosmology; Evolution; Future; Immortality; Nanotechnology; Posthumans; Science; Transhumans; Universe; Worldview



Fig. 1. A modern philosophical anthropologist must acknowledge the awesome cosmic perspective, with its disquieting scientific implications and unsettling philosophical ramifications which hold that humankind exists within this material universe of seemingly eternal time, infinite space, and endless change (Illustration).

FOREWORD: A COSMIC PERSPECTIVE

During the past century, philosophical anthropology emerged as a metaphysical outlook concerned primarily with the essence of human existence in terms of relationships with symbols, pure consciousness itself, and rational beings themselves. Its themes of inquiry are grounded in naturalism (Feuerbach) or phenomenology (Husserl) or existentialism (Nietzsche). The metaphysical interpretations offered are always subject to change as a result of the continuously shifting conditions of human existence.

Taking the wisdom of John Dewey (1859-1952) seriously, modern philosophical anthropology must incorporate the influences of Charles Darwin on both the biological and sidereal levels of inquiry. Consequently, human existence needs to be understood within the evolution framework and appreciated within a cosmic perspective. Only by including the indisputable findings of the special sciences will a philosophical anthropology develop a sound and meaningful interpretation of *Homo sapiens* within dynamic nature. Of course, over the coming centuries, previous ideas and beliefs and values will be replaced by new conceptions of human existence as our species progresses beyond those outmoded worldviews of the past.

In ancient Athens at his Lyceum, the great philosopher Aristotle (384-322 BCE) offered the first systematic cosmology; a comprehensive worldview that dominated Western thought

for over 2,000 years. This Stagirite taught an interpretation of this universe that held the cosmos to be eternal in time, but finite in space. His conception of reality, as he saw it, was both earth-centered and human-centered. Moreover, Aristotle gave a model of this world that separated the celestial realm from our planet in terms of both ontology and motion. In fact, he had no awareness of changing forms or historical developments; as such, for him, the present is a monotonous continuation of the past that will stretch unchanged into the future forever. Aristotle claimed that experience reveals a static reality and, consequently, nothing new ever appears in the perfect heavens above or on our imperfect earth below.

Aristotle maintained that this universe never had a beginning and it will never have an end; nothing is ever created and nothing will ever become extinct. In this scheme of things, the human animal as a rational being occupies the privileged position at the top of a great chain of being or the terrestrial ladder of existence; a permanent hierarchy of fixed forms in nature that is discernible through empirical observation and critical reflection. Therefore, Aristotle's philosophical anthropology gave a special place to our species within this static reality. Although the father of biology and taxonomy, Aristotle could not have imagined the forthcoming shift from eternal fixity to pervasive change; although the founder of the scientific method, his closed viewpoint went unchallenged for centuries by other serious thinkers.



Fig. 2. In sharp contrast to Aristotle's fixed worldview with its earth-centered cosmology and human-centered biology, Charles Darwin's factual theory of organic evolution presented a scientific framework that links our human species to natural history in general, and to those fossil apes of a remote past in particular. Figure preparation Branko Milicevic (Illustrations).

With the coming of open inquiry and the use of scientific instruments during the Renaissance and Enlightenment and recent times, established facts and new concepts replaced the Aristotelian worldview with a remarkably different understanding of and appreciation for this universe and the human animal within it; the ideas of Giordano Bruno and Stephen Hawking, as well as the discoveries of Galileo Galilei and Albert Einstein (among other philosophers and scientists), have contributed to the replacement of the earlier peripatetic cosmology with our modern cosmic perspective. As a result, a new philosophical anthropology has emerged that places our species within an evolving and expanding universe of seemingly eternal time, infinite space, and endless galaxies. No longer does the human animal or planet earth occupy a privileged position in a self-sufficient reality that may even include at least eleven dimensions, alternate histories, and multiple different universes (a multiverse with each distinct universe having different natural laws and physical constants), as well as known comets, quasars, pulsars, asteroids, dark matter, dark energy, planetesimals, and supermassive black holes (dark stars or "frozen stars"). About our earth, the astronomer Carl Sagan (1934-1996) described it as being merely a "pale blue dot" within the eternal blackness of cosmic reality.

INTRODUCTION: THE EVOLUTION FRAMEWORK

Aristotle could never have imagined either that this material universe is an expanding cosmos of seemingly endless galaxies within an incomprehensible space-time and matter-energy framework, or that our species has emerged as a recent animal within a dynamic reality of changing forms.

Overcoming Aristotle's biology grounded in teleology and essentialism and the fixity of species, Charles Darwin (1809-1882) offered his counter-intuitive scientific theory of organic evolution that argued for the mutability of species in terms of empirical facts and rational arguments. He presented this dynamic worldview in his major work, *On the Origin of Species* (1859). Darwin had been greatly influenced by his five-year global voyage as a naturalist aboard the HMS *Beagle*, the pivotal writings of historical geologist Charles Lyell, and the population theory of Thomas Malthus. Especially significant was his five-week visit to the Galapagos Islands, where he witnessed the adaptive survival of unique life forms on this isolated archipelago (although the significance of this experience did not occur to him until after he had returned back to England in 1836). A convergence of facts and concepts within a geological perspective of earth history resulted in his envisioning the evolution framework in terms of natural selection

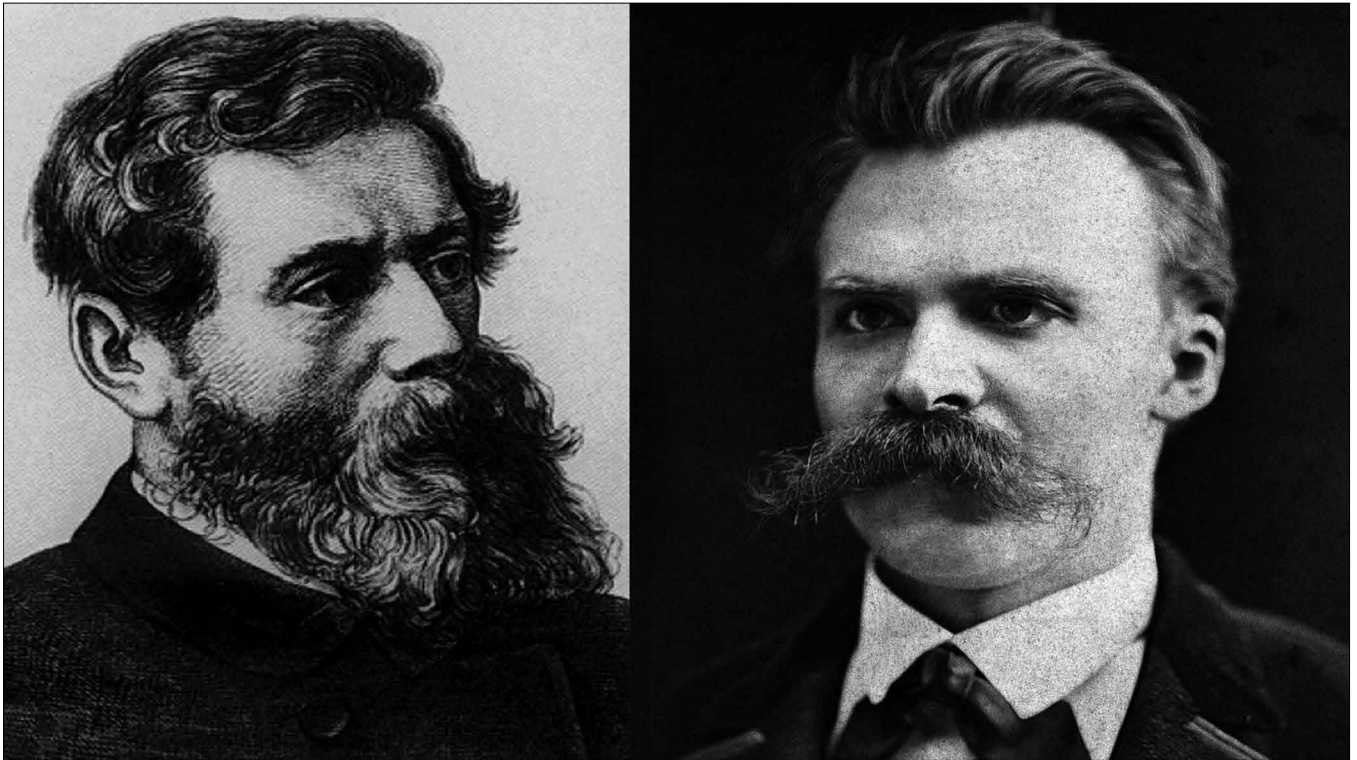


Fig. 3. A dynamic and naturalist philosophical anthropology had its conceptual beginnings in the critical thoughts of both Ludwig Feuerbach (left portrait) and Friedrich Nietzsche. Figure preparation Branko Mllicević (Portraits).

and common ancestors throughout the biological world over millions of years. This pervasive mutability of all species even includes the human animal itself.

Darwin offered established facts and convincing arguments for the close relationship between our species and the great apes, which he held differ merely in degree (rather than in kind) from the human animal and with which our species once shared a common ancestry in organic evolution. He even held that Africa would yield the fossil evidence for this common origin of humans and the four great apes or pongids (orangutan, gorilla, chimpanzee, and bonobo) that are now known to anthropologists. The recent emergence of our species in the bio-geological history of this planet challenged all earlier myths and beliefs that had maintained a divine creation for both the human being and our planet earth.

The consequence of his dynamic integrity, Darwin developed a scientific revolution in terms of organic evolution that radically changed the traditional conception of our species as presented by previous thinkers, particularly by religionists. It placed the human animal totally within this world, and it paved the way for the emergence of a naturalist philosophical anthropology grounded in science, reason, and a vast time framework in terms of geo-biological history. However, the fact of evolution is open to a wide range of different interpretations, from materialism and vitalism to spiritualism and mysticism.

Naturalists like Thomas Huxley in England and Ernst Haeckel in Germany were eager to defend the controversial evolution theory in both public lectures and academic publica-

tions. They were offering scientific evidence from studies in embryology and osteology to anatomy and physiology; today, evolutionists also include facts and concepts from research in comparative genetics and behavior studies. Concerning the emergence of our own species, paleoanthropologists continue to discover crucial fossil hominid specimens in Africa and Asia that date back millions of years, e.g., *Homo habilis*, and the later *Homo erectus*.

However, in order to sufficiently explain the mechanisms of organic evolution, Darwin himself could not have imagined the forthcoming paradigm shift from Lamarckian use and disuse to the chance mutations resulting from changes in the complex DNA molecule. Even so, in the middle of the last century, scientists finally acknowledged that both random genetic variation and necessary natural selection play a major role in the evolution of plant and animal populations, including human groups; this explanatory convergence became known as neo-Darwinism or the modern synthetic theory of biological evolution. Furthermore, some scientists and philosophers began to speculate on human intervention into the ongoing evolution of the human animal itself, even envisioning the future emergence of transhumans followed by posthumans.

ON HUMANKIND WITHIN NATURE

In terms of science and reason, the academic discipline of anthropology focuses on *Homo sapiens* within an evolution framework. Its interdisciplinary orientation and

intradisciplinary approach strive to present a comprehensive, naturalist and humanist view of humankind that encompasses both the bio-cultural and socio-historical aspects of our own species, including comparative linguistics and applied cross-ethnic studies. When empirical evidence is lacking, anthropologists resort to logical speculations on the origin, diversity, and future of humankind. To be relevant, the anthropological quest remains open to new facts, new concepts, and new perspectives. It is quintessentially a multidisciplinary undertaking, always incorporating relevant knowledge from the special sciences, e.g., geology and biology, as well as sociology and psychology.

An outgrowth of the Age of Enlightenment, philosophical anthropology offers conceptual interpretations of our species and considers the meaning and purpose of human existence, as well as the uniqueness of our species within nature. Unfortunately, these conceptual interpretations are often too abstract or too obscure to be of any relevance, or they even ignore the established facts and general ideas that are a crucial part of modern anthropology. It is necessary that philosophical anthropologists acknowledge the empirical evidence that is now offered by the academic discipline of modern anthropology.

In Germany, two naturalist philosophers had been especially significant in establishing philosophical anthropology on a sound foundation: Ludwig Feuerbach (1804-1872) and Friedrich Nietzsche (1844-1900). Each thinker was very critical of religious conceptions of the human being.

Turning away from theology in order to embrace science, Feuerbach called for a philosophical anthropology that accepts both the vast geological age of our planet and the factual theory of organic evolution within a pervasive materialism. As a naturalist and humanist, he held that this universe is independent of and prior to human experience. His secular viewpoint claimed that false theology should be replaced by a true anthropology. Feuerbach taught that all religious beliefs are merely a product of those wishes and desires that have their origin and existence only in the creative imagination of the human heart; for him, all theological entities, e.g., a personal God and the immortal soul, are ultimately grounded in human feelings and emotions, rather than in any metaphysical reality. Furthermore, Feuerbach stressed the importance of maintaining a cosmic perspective with its far-reaching scientific implications and philosophical ramifications and theological consequences for interpreting nature, life forms, and the human animal within this material universe.

Nietzsche is best remembered for his scathing criticisms of religious beliefs, particularly his bold statement that "God is dead!" Taking the history of different societies and their cultures seriously, he called for a re-evaluation of all values in light of scientific advancement and philosophical reflection and religious criticism. Nietzsche's own penetrating analysis of human experience resulted in his discerning the sharp distinction between a master morality and a slave morality within civilization; he held that the higher values are beyond the good and evil of the human herd. Essentially, Nietzsche

himself valued the creativity of superior individuals rather than the passivity of the mediocre masses. As such, his insights presented an existential philosophy of overcoming that challenges any "human, all too human" outlook of this world. In his metaphysical speculations, Nietzsche claimed this entire universe to be the dynamic manifestation of a will to power that results in this cosmos of endless creativity. From an ongoing process of evolving life forms, our species emerged recently in organic history. This naturalist philosopher saw the human animal as a temporary link between the fossil apes of a remote past and the overbeings of a distant future; an overbeing will be an entity as superior to our present species as the human animal is now superior to a primordial worm. Moreover, Nietzsche taught his colossal idea of the eternal recurrence of this same universe: finite in space but eternal in time, dynamic reality will repeat itself in the exact sequence of objects and events and relationships throughout all eternity. As he saw it, this endless repetition of finite cosmic cycles never had a beginning and it will never have an end. One may argue that this Nietzschean cosmology offered the human being a unique form of personal immortality.

Nietzsche's philosophical anthropology was a conceptual interpretation of our evolving species that went far beyond a strictly scientific understanding of and appreciation for the human animal. Even so, neither Nietzsche nor Darwin ever envisioned the possibility that our human species would enhance itself and venture into outer space in order to inhabit other worlds in this material universe.

THE WILL TO EVOLVE & DYNAMIC INTEGRITY

In their metaphysical speculations, Arthur Schopenhauer had written about reality as the will to live, while Friedrich Nietzsche later taught that existence is essentially the will to power; both philosophers had accepted an evolution framework. However, the modern challenge for our species is to embrace the will to evolve even further, i.e., to have the will to both overcome problems and to transcend the human animal by creating a superior being.

At the end of the French Enlightenment, the naturalist philosopher Nicolas de Condorcet (1743-1794) had presented a provocative view of human progress that speculated on the long-range influences of ongoing advances in science and technology and especially medicine on the future of our species. After outlining the ten major stages in the socio-cultural history of humankind, he argued for its further evolution to a utopian phase of ultimate perfection; a final stage would give equality and freedom to everyone on this planet. His optimistic vision even foresaw the eventual attainment of practical immortality, as a result of achieving an indefinite lifespan, for all human beings on the earth. With his creative and critical mind being open to the possibilities of science and technology and medicine, Condorcet was an exemplary naturalist philosopher whose bold claims about the future of human existence had demonstrated dynamic integrity. His astonish-



Fig. 4. In their enlightened vision of the human future, both secular humanists Nicolas de Condorcet (left portrait) and Marvin Farber anticipated an indefinite lifespan for the human being as a result of the application of ongoing scientific and technological progress. Figure preparation Branko Milicevic (Portraits).

ing speculations on the things to come offered a philosophical anthropology that will remain a challenge to both the natural and social scientists of the ages yet to come.

In the last century, Marvin Farber (1901-1981) represented dynamic integrity in his philosophical movement from idealism to materialism. In the early stage of his professional career, he devoted his scholarship to the academic school of phenomenology that had been established by the philosopher Edmund Husserl. However, phenomenology focused only on the activity of the interior realm of the human mind, especially pure consciousness with its intentionality and symbolic creativity. Unfortunately, despite Husserl's limited approach, phenomenology had been extended from a subjective methodology to an idealist metaphysics; an unwarranted shift from epistemology to ontology. Such a restricted view of reality would never be able to yield a sound and meaningful philosophical anthropology.

Farber wrote about those themes of inquiry within the philosophical quest, as well as the need for a plurality of methods in a naturalist worldview. As such, over time, he came to acknowledge the unavoidable value of both a cosmic perspective and the evolution framework. In general, his own orientation always stressed that the existence of this objective material universe is both independent of and prior to subjective human activity. Furthermore, a philosopher cannot ignore the scientific discoveries of Galileo, Darwin, and Einstein (among others). Inevitably, Farber accepted the incontrovertible truth of organic evolution, and he saw the emergence of the human animal as both a recent species in geological history and one that exists on this planet which is merely a speck in the immensity of sidereal reality.

In particular, Marvin Farber held that the sobering findings of anthropologists, especially in terms of discovering fossil hominid specimens and the results of comparative primate behavior studies, offered a striking confirmation for both human evolution and the remarkable similarities between our own species and the four great apes or pongids. In fact, in light of ongoing rapid scientific and technological advances, he also envisioned the human animal achieving an indefinite lifespan. In modern philosophy, Farber stood almost alone as an unabashed atheist and uncompromising materialist.

Like both Feuerbach and Nietzsche, neither Condorcet nor Farber ever envisioned the possibility that our human species would leave this planet in order to inhabit other worlds in outer space. In this one respect, despite embracing a cosmic perspective, all four philosophers upheld an earth-bound philosophical anthropology.

Before 1953, biologists knew the content of the DNA molecule. It consists of phosphate-sugar (deoxyribose) units and four bases: Adenine (A), Thymine (T), Guanine (G), and Cytosine (C). Analysis of the cell's nucleus revealed that these bases existed in four base pairs: A-T, T-A, G-C, and C-G. A specific sequence of three bases coded for one of those 20 naturally-occurring amino acids found in the cell's cytoplasm. The synthesis of amino acids resulted in proteins, the building blocks of life as one knows it on the earth. Usually, changes in the DNA information (genotype) result in favorable or unfavorable changes in the organism (phenotype). In short, DNA is the code of life or language of heredity throughout organic evolution on this planet. The RNA molecule carries the genetic information from the nucleus into the cytoplasm; in fact, the RNA molecule probably had emerged on

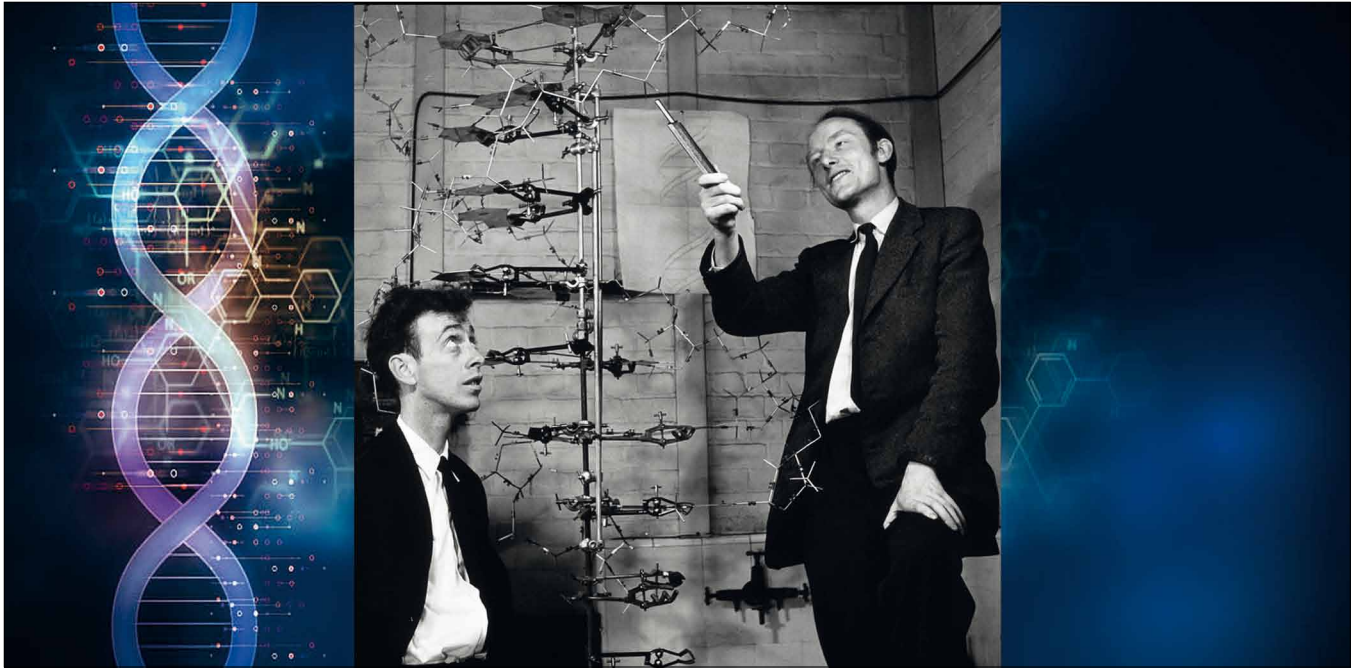


Fig. 5. In 1953, a major breakthrough was made in the science of genetics with the discovery of an accurate three-dimensional double helix working model for the DNA molecule by James D. Watson and Francis H.C. Crick at the University of Cambridge. Figure preparation Branko Milicevic (Illustrations).

the earth before the DNA molecule appeared. It is possible that at sometime and in someplace in this universe, the RNA and DNA molecules emerged at least once beyond the confines of this planet.

In 1953 near the Cavendish Laboratory at the University of Cambridge, scientists James D. Watson and Francis H.C. Crick announced to the world that they had discovered the 'secret' of life, i.e., they had successfully designed a working model for the DNA molecule. DNA is a long and complex double helix with sequences of paired bases (triplets) that code for amino acids. Through genetic editing, i.e., by deleting or altering or adding to the sequence of triplets, one could change the sequence of amino acids and thereby alter the resultant proteins. Consequently, these genetic changes caused minor variations or major alterations in an organism. Over time, the accumulation of such genetic mutations in gene pools could result in new varieties of plants and animals. In fact, continued genetic changes could produce new species or even new genera, etc. This process accounts for the evolution and adaptive radiation of all life forms throughout biological history on the earth.

Through human intervention using nanotechnology and bio-engineering, scientists themselves could now begin to change the human genome itself. Subsequently, desired characteristics will be selected and their genes altered, resulting in individuals that are specifically designed for enhanced health, senses, beauty, memory, longevity, and intelligence. Likewise, unwanted biological and mental characteristics will be eliminated from the human gene pool. In short, through ongoing bio-technic intervention and human direction, the process of organic evolution (including human evolution) is more and

more acquiring intentionality; as such, one may speak of an emerging phenomenology of life itself. Furthermore, the convergence of biology and technology will result in superior individuals. The creation of a bio-technic human being is reminiscent of the materialist stance that had been taken by the enlightened philosopher Julien Offray de La Mettrie (1709-1751). Our human species *Homo sapiens* will be capable of evolving itself into the future transhuman *Homo futurensis*, and this new species could even evolve itself into a new genus as the cosmic-overbeing yet to come. Moreover, also in the future, the ongoing evolution of designed machines will result in self-aware computers with superior intelligence. Perhaps such entities will one day replace our own species both on planet earth and in outer space.

EMERGING TELEOLOGY

Modern astronomy and cosmology have found no convincing evidence for a pre-established design or a pre-determined end to this material universe that favors *Homo sapiens*. As such, a human-centered teleological interpretation of dynamic reality seems unwarranted. In short, the emergence of our species was not an inevitable event in cosmic history.

Primate evolution has occurred on this planet for millions of years. Appearing out of the ground-dwelling insectivores after the extinction of the Mesozoic dinosaurs, the tree-dwelling primates underwent successful evolution. Throughout the Cenozoic era, their adaptive radiation resulted in the emergence and diversity of prosimians and monkeys and apes. Out of the fossil hominoids emerged a group of quasi-biped-

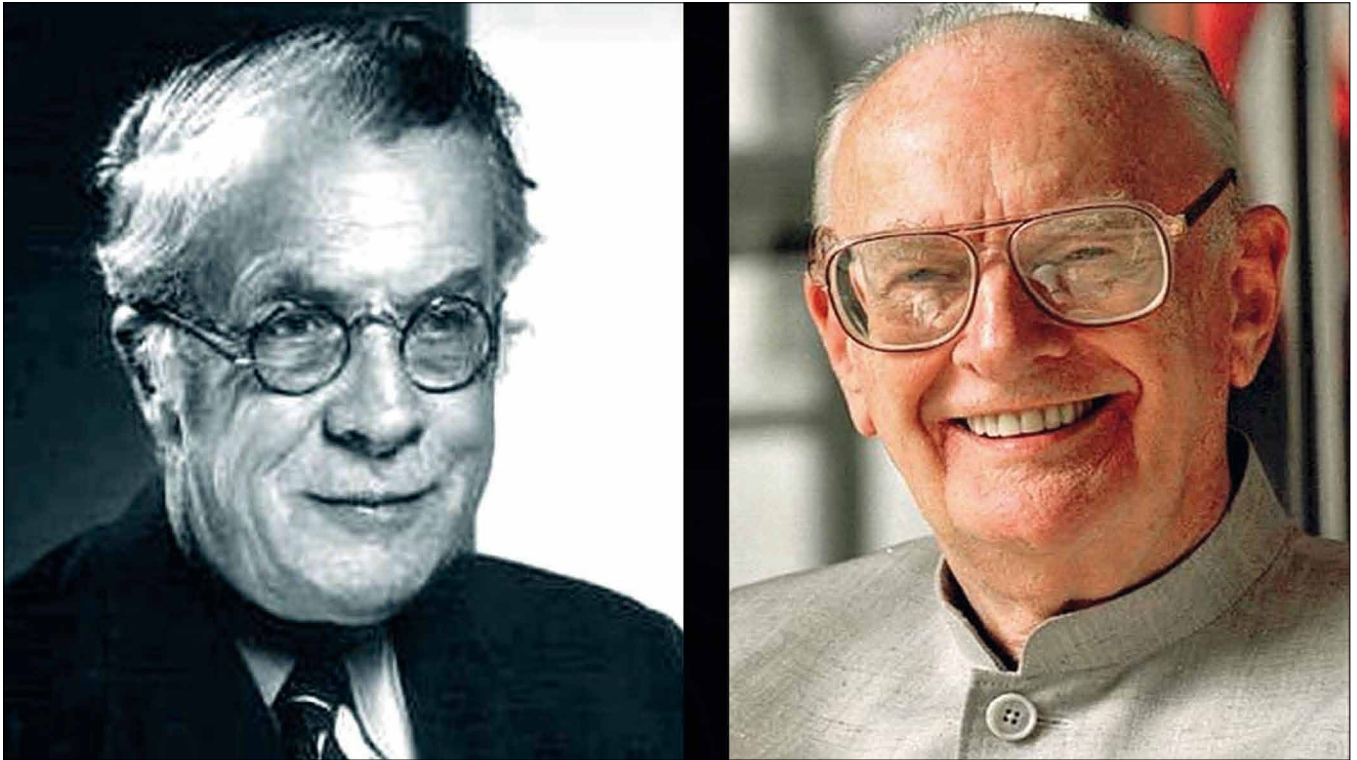


Fig. 6. The evolution-biologist Sir Julian S. Huxley (left portrait) and the science-fiction author Sir Arthur C. Clarke anticipated the emergence of transhumans or intelligent computers, respectively, as a result of human intervention in terms of enhancing our species or machines through the future application of advancing science and technology. Figure preparation Branko Milicevic (Portraits).

al pre-hominids, followed by a group of bipedal hominids. Over time, leaving the forests for life in the open woodlands and on the grassy savannahs, some species of these bipedal hominids became larger, bigger-brained, and omnivorous. At least one species learned to use bone and stone implements as tools and weapons (thus the territorial “killer ape” hypothesis). This *Homo habilis* form appeared as a result of the accumulation of those chance biological variations and selected behavior patterns that had favored ongoing survival over millions of years. Next, *Homo erectus* followed by *Homo sapiens* continued this process of successful hominization, although human selection began to play an ever-greater role in changing its own gene pool on a global scale.

The evolution-biologist Sir Julian S. Huxley (1887-1975) even imagined that, in the future, human intervention would be able to alter the genetic information of our own species in order to enhance it. Since human selection on the species level has resulted in desired plant and animal varieties, then human intervention on the genetic level could result in the enhancement of our own species; however, the 1818 Gothic tale of Dr. Victor Frankenstein warned one of the potential perils of irresponsible scientific research. And yet, even if this dynamic universe does not have a direction or goal, the human being is able to increase genetic intervention in order to give meaning and purpose to its own further evolution; thus, the human animal is becoming more and more the teleological being.

Ongoing human intervention through the future convergence of nanotechnology and bioengineering will result in designed human beings with enhanced health, senses, beauty, memory, longevity, and intelligence; Huxley referred to this forthcoming being as the transhuman. Likewise, the ongoing evolution of computers could accelerate the emergence of artificial intelligence. In fact, in the distant future, a computer could even have self-consciousness, as well as far surpass the level of human intelligence.

In his provocative epic story *2001: A Space Odyssey*, the incomparable science-fiction author Sir Arthur C. Clarke (1917-2008) had imagined remarkable things to come, e.g., from long-term suspended animation and interplanetary space travel to self-conscious machines and contact with superior intelligent beings beyond this universe, as well as the next quantum leap forward in evolution after fossil apes and our human species. Overcoming the life-threatening HAL 9000 super-computer, the astronaut Dr. Dave Bowman first experiences an astounding sidereal trip beyond infinity and then is transformed into an enlightened star-child; an entity representing a post-human. Clarke had established a philosophical anthropology that embraces both a cosmic perspective and the evolution framework. It has been speculated that, within this century, a computer will have the ability to evolve itself, thereby advancing far beyond the intelligence of our human species at a point in time referred to as a Singularity.



Fig. 7. Ongoing human intervention will enhance the entire nervous system and brain of our species, as well as expand artificial intelligence into impressive entities, as represented by the HAL 9000 computer in the epic science-fiction film *2001: A Space Odyssey* (1968). Figure preparation Branko Milicevic (Illustrations).

HOMO FUTURENSIS

With continued rapid advances in science and technology, one may anticipate the further evolution of both artificial intelligence and our species, eventually allowing for the integration of humans and machines. In the future, self-conscious computers may even surpass the intelligence of our species. As a consequence, machines will more and more contribute to and control a global civilization. Finally, computer intelligence will far surpass human intelligence at a temporal point that the futurist Ray Kurzweil calls a Singularity. Our earth will have become a planetary mind of unlimited power and unimaginable creativity; an emerging layer of thought circling our earth that the geo-paleontologist and Jesuit priest Pierre Teilhard de Chardin (1881-1955) referred to as a converging and involuting noosphere evolving toward a point Omega as its final destiny. However, in the middle of the last century, Teilhard could not have imagined our species taking cosmic journeys and colonizing other worlds. For this Jesuit priest, the final destiny of humankind (as he envisioned it) would be a mystical end-goal that will occur on this planet in terms of the formation

of a collective global mind as the result of evolving spirit. However, such a future Singularity or Omega event need not be restricted to only our earth, but may also occur on the moons and other planets of this solar system, as well as on other worlds elsewhere in deep space.

Moreover, in deep time, science and technology will allow for the bio-technical engineering of the human being into a new species that is far beyond the present organic limitations of *Homo sapiens*. As the transhuman species *Homo futurensis*, this superior being will enjoy an existence in deep space. And yet, even this new species may not be the final destiny of our genus. *Homo futurensis* may engineer itself into a new genus that is superior to itself. One may refer to this new genus as a cosmic-overbeing; in the Nietzschean framework, a future entity as superior to *Homo sapiens* as our species is now superior to the primordial worm. Of course, one cannot imagine the nature of such a sidereal being. If they endure for thousands and thousands of years, then what conceptions of space, time, change, and matter will make up their awesome world-view? In fact, before the end of this universe, these god-like cosmic-overbeings may even enjoy immortality among the stars as their ultimate achievement.



Fig. 8. Continuing advances in nanotechnology and bioengineering will no doubt greatly alter the DNA molecule, resulting first in the enhancement of our human species *Homo sapiens* and then in the design of a transhuman species *Homo futureensis*. Figure preparation Branko Milicevic (Illustrations).

EVOLUTION & EXOEVOOLUTION

During the past four billion years, life forms have been changing on this planet. The fossil record in rock strata reflects the creative process of organic evolution throughout the geological column of earth history; in general, plant and animal species have become both more and more complex and incredibly diversified over this vast period of time. Within the emergence and adaptive radiation of the primates, the fossil arboreal great apes gave rise to the terrestrial photo-hominids, which later gave rise to the true hominids; the fossil record of this planet has recorded a general sequence from *Homo habilis*, through *Homo erectus*, to *Homo sapiens*. Today, our spe-

cies is a transitional link between past-time and future-time. In this current Anthropocene epoch, *Homo sapiens* is literally enjoying its day in the sun between our fossil ape ancestors of the remote past-time on earth and our sidereal descendants yet to emerge in the distant future-time of this universe. Humans venturing into outer space began with two spectacular achievements: on 12 April 1961, the Soviet cosmonaut Yuri Gagarin was the first person to journey into outer space when his Vestok spacecraft made a complete orbit around our planet; and on 21 July 1969, the American astronaut Neil Armstrong became the first human being to walk on the surface of our moon. Still, beyond the solar system, this universe offers an unlimited number of other worlds to discover for scientific research, philosophical reflection, and human colonization.

In the decades to come, huge nuclear-powered space vehicles will take our species to the other planets and moons; certainly, Leonardo da Vinci would be both amazed and pleased. Just as our earliest hominid forms left the tropical forests to evolve in the open woodlands and on the grassy savannahs, our future existence as bio-technic entities or later cosmic-overbeings will require adapting to and evolving on exoplanets and exomoons, as well as living inside artificial worlds.

Eventually, occupied by *Homo futureensis*, permanent space cities and artificial planets will orbit our sun. In time, some massive space cities as microcosms will leave our solar system in order to visit the stars; since these journeys will probably take many human generations, most if not all of their passengers will never have been on the planet earth.

The age and size and uniformity of this material universe makes it very probable that there are countless exoplanets and exomoons throughout the cosmos that now harbor life forms, including intelligent beings, similar to those organisms on our planet. Such entities could have existed, do exist now, or will exist even if our human species never discovers them; even so, it is also possible that life emerged and evolved in alternate universes independent of this one. And yet, one may ask: Why has contact never been made with any intelligent beings existing among the stars?

It remains reasonable to assume that life as we know it on earth has also emerged on other worlds in the billions of galaxies (each with billions of stars and planets and moons) strewn throughout this material universe. Furthermore, as on the earth, these organisms would have evolved over eons of time. Consequently, one may speak of exobiology (astrobiology) and exoevolution. However, the number of evolutionary steps that would have to be repeated elsewhere over time in order to result in a human-like being is staggering to our human imagination. And yet, it is conceivable that intelligent beings have emerged on other worlds. It is possible that wise extraterrestrials far superior to our species are either disinterested in the human animal, or that they themselves have become extinct. Of course, contact may still occur in the future. If an encounter should ever be made with sidereal intelligence, then it would be a singular event that radically changes the conception of our own species within this physical reality.



Fig. 9. Soviet cosmonaut Yuri Gagarin (1934-1968) and American astronaut Neil Armstrong (1930-2012) boldly represented the things to come in terms of exploring this universe. Figure preparation Branko Milicevic (Illustrations).



Fig. 10. In the future, huge nuclear-powered space vehicles will carry humans, supplies, instruments, and computers, etc., to the other planets and moons of our solar system; leaving the earth, our species will have become the cosmic ape of outer space. Figure preparation Branko Milicevic (Illustrations).

Likewise, such an encounter would be a humbling but thrilling (if not an alarming) experience for the human animal. However, as of yet, no radio contact has been made with cosmic aliens and no artifact has been found that represents the remain of a technological civilization from elsewhere in this

universe. Nevertheless, one must remember that the absence of evidence is not evidence of absence. Or, other than the four sentient great apes on this planet, perhaps the human being is in fact the only intelligent species in a cosmos that is utterly indifferent to it.



Fig. 11. In order to inhabit extraterrestrial surfaces, enormous machines will terraform planets and moons so that their environments will become hospitable for the adaption and survival of our species on these other worlds. Figure preparation Branko Milicevic (Illustrations).



Fig. 12. In the distant future, massive space cities will take colonies of humans and later transhumans into outer space; first among the planets and moons of our solar system, and then on interstellar travels into the far regions of those exoplanets and exomoons that exist around the other stars of this Milky Way Galaxy and in endless other galaxies far beyond it. Figure preparation Branko Milicevic (Illustrations).



Fig. 13. Stretching the imagination of a philosophical anthropologist, one may envision the emergence of a cosmic-overbeing as a new genus that will result from the ongoing evolution of a transhuman being into a posthuman entity; such an advanced form of existence may even enjoy immortality throughout this universe (Illustration).



Fig. 14. In the immensity of this material universe, one may imagine life forms and intelligent beings with technological civilizations existing on exoplanets and exomoons throughout the sidereal depths of cosmic reality (Illustration).

Needless to say, at least our future descendants in outer space will represent life forms existing beyond this planet. In fact, time and distance could even result in the adaptive radiation of *Homo sapiens* or *Homo futurensis* throughout this cosmos.

FUTURE COSMIC-OVERBEINGS

Quo vadis, Homo sapiens?

Until recently, human evolution has been a process due to the interplay of genetic variation and natural selection or human selection. Although complex, the evolution from *Homo habilis* to *Homo sapiens* had essentially taken place in Africa. Along the way, however, the emergence of our own species could have been thwarted by any natural catastrophe that wiped out the hominid gene pool. And yet, our species has survived to spread around the earth, aided by cultural

innovations, e.g., the use of implements and fire, as well as collective social behavior and symbolic language as articulate speech.

In a neo-Enlightenment, with its rapid advances in nanotechnology and bioengineering, ongoing human intervention will be able to design the DNA molecule in order to enhance our species for existing both on this planet and on worlds beyond the earth. As a result, *Homo futurensis* will be capable of living in outer-space cities and on human-terraformed (geo-engineered) worlds far removed from those jungles, woodlands, and savannahs of Africa that had honed the emergence of our species over endless thousands of years.

Of course, there will be extraordinary and unimaginable progress in science and technology during the centuries to come. Eventually, further advances will allow for the emergence of cosmic-overbeings as sidereal creatures far beyond the coming bio-technic *Homo futurensis* stage of hominid evolution. In fact, there may be no limit to the progress that these future



Fig. 15. Just as the last mass extinction on this planet caused the end of all the dinosaur species, it always remains a possibility that a future mass extinct on the earth will result in an end to our own species. Figure preparation Branko Milicevic (Illustration).

entities may achieve in their journey from planet earth to the endless galaxies. No doubt, they will value their existence over non-existence while pursuing their ultimate destiny: encompassing reality as immortal entities. These cosmic-overbeings will exist between the Big Bang and the Big Crunch of sidereal history, i.e., they will exist between two unfathomable eternities: the eternity of the past and the eternity of the future (inhabiting this universe which exists from a past space-time singularity to a future space-time singularity). Or, they may eventually experience the expansion of this universe until it burns out, ending in total darkness. If this cosmos should eventually collapse into nothingness, then the only thing that these entities will have hoped for is that the eternal recurrence of this same universe is true.

SPECULATIONS ON THIS UNIVERSE

The pioneering work of Werner von Braun (1912-1977), among others, contributed to the designing of both manned and unmanned probes, as well as rockets and robots and vehicles, for exploring outer space with the desire to send human beings first to the planets and moons within our solar system, and then eventually to elsewhere in this universe. Motivated by both scientific and philosophical curiosity, this cosmic quest continues, although economic constraints have slowed down ongoing progress considerably. With the implementation of awesome geo-engineering projects, enor-

mous machines will be used for terraforming the landscape of the red planet Mars, thereby making it both hospitable and self-sufficient for enclosed surface and underground human settlements. Future nuclear-powered starships will take our species and intelligent computers to other cosmic spheres; such projects will extend the spatial existence of *Homo sapiens* and its descendants, should the survival of our species on earth be ended by a nature-caused or human-made terrestrial catastrophe.

On 4 October 1957, the former Soviet Union (USSR) had successfully launched the world's first artificial satellite *Sputnik 1* into an orbit around the earth. This singular event had contributed greatly to opening up the vastness of this universe for exploration by our species. In the future, there will be incredible scientific and philosophical breakthroughs that will overcome those immense challenges that now prevent interstellar and intergalactic travel among cosmic systems. Eventually, in a new age of exploration to come, nanocrafts that ride on laser-induced light-beams will seed this universe with information sent by cosmic-overbeings, thereby creating a galactic civilization of unimaginable intelligence.

The dinosaurs survived and thrived on this planet for over 140 million years. And yet, at the end of the Cretaceous-Tertiary mass extinction, all of the species had completely vanished; only fossils and birds are left to convince one that dinosaurs once dominated the earth. Likewise, the ongoing evolution of *Homo sapiens* is no guarantee that it or its descendants will exist forever; *Gotterdammerung* always awaits the evolution

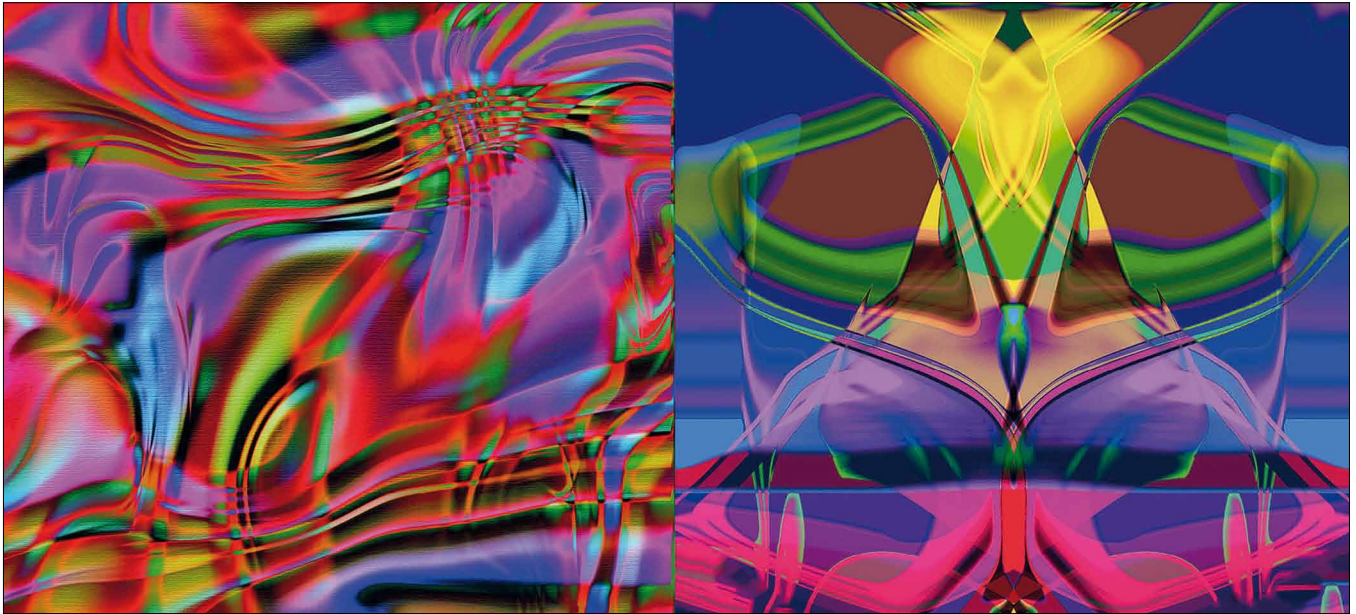


Fig. 16. While experiencing this evolving universe, *Homo sapiens* has created and its descendants will continue to create concepts and beliefs and values as a result of using abstract thought; no doubt, the future ideas of *Homo futurensis* and the following cosmic-overbeings will be far beyond the ability of the imagination of our present species to envision them. Figure preparation Branko Milicevic (Illustrations).

of life. In fact, other intelligent beings and bio-technic entities and galactic civilizations may have existed in the past without leaving any trace. For sure, any direct or indirect contact with alien intelligence would radically alter forever any human-centered philosophical anthropology.

CONCLUSION: EXPERIENCE & HUMAN VALUES

A modern philosophical anthropologist must develop a conception of *Homo sapiens* that sees the existence of our species as a recent event in cosmic history. The ontological status of the evolving human being is merely that of an emerging animal within this dynamic material universe; a temporary link between the fossil hominid *Homo habilis* of the remote past and the designed hominid *Homo futurensis* of an age yet to come. During this process of hominization, bipedal *Homo sapiens* has created cultures, including languages, to help it adapt to and survive in precarious environments. Implements, both tools and weapons, have been crucial in elevating our species above the monkeys and apes. Subsequently, the human being has been able to dominate this planet in terms of science and technology.

With its ever-widening experiences, *Homo sapiens* created systems of concepts and beliefs and values as adaptive mechanisms to ensure ongoing survival. In light of the increasing facts and expanding horizons from the special sciences, e.g., biology and astronomy, spiritual values are more and more being replaced by secular values. Our own species is no longer held to occupy a special place within this natural world. The evolution framework, especially the changing DNA molecule, clearly links human beings with all

the other life forms throughout earth history; in fact, most of these other species are now extinct.

Nevertheless, one other possibility is that humankind may become extinct before it establishes itself in outer space. In the process of evolution, extinction is the rule, rather than the exception; a stark realization of this sobering fact is that all of the trilobites and ammonites and dinosaurs that ever existed on this planet have completely vanished due to mass extinctions. In fact, it is argued that the biosphere is now undergoing a sixth mass extinction primarily caused by the global interference of our own species itself. Even our extraterrestrial descendants will risk extinction as they venture throughout the black depths of this endless cosmos.

AFTERWORD: MATERIAL REALITY

With the emergence of *Homo sapiens*, at least once in physical reality this universe became aware of itself. With the use of science and technology and reason, humankind is more and more able to understand and appreciate this material cosmos and the place of humankind within it. Even so, our species does not exist in any special frame of reference.

Through the ongoing evolution of scientific instruments like the microscope and telescope, as well as outer-space probes and vehicles, our species has vastly expanded its horizons into both the microcosm and the macrocosm. With advances in nanotechnology and bioengineering, the human being will more and more enhance itself. As our bio-technic descendants leave planet earth to fulfill themselves among countless galaxies (each with its exoplanets and exomoons), future generations may succeed in the quest for immortality. Even so,



Fig. 17. A philosophical anthropologist must acknowledge that evolving humankind exists in a material universe that had a past beginning and will, presumably, have a future end; neither this planet nor our species has a privileged place within this cosmic reality (Illustration).

they will remain limited to the spacial constrains and temporal limits of physical reality itself.

Finally, extending the wisdom of anthropologist Margaret Mead (1901-1978), human beings will require species responsibility as they evolve beyond cradle earth in order to fulfill a cosmic destiny. Their future challenges will be staggering, e.g., overcoming cosmic radiation and gravitational changes, and communicating among colonies that involves overcoming distances measured in endless light-years, as well as enjoying a sidereal existence as immortal entities without succumbing to boredom or lethargy. Because of the incomprehensible distances among the stars in the Milky Way Galaxy, not to mention the greater distances among the billions of galaxies (each with billions of stars), space itself is the quintessential impediment to both interstellar and intergalactic travel. Perhaps there are holes or tunnels in this cosmos that will allow beings to journey among star systems in tens or hundreds of years, rather than in thousands or millions of years; or, even traveling through time itself within this universe or to alternate universes may become possible. Eventually, these forthcoming cosmic-overbeings may create their own multi-dimensional and virtual-reality universe! No doubt, they will still be encountering unforeseen challenges while adapting to and existing within seemingly endless space-time with all its things to come.

NOTES

Some of those ideas and opinions that are expressed in this essay were first presented by me in lectures given for the Faculty of Philology at the University of Belgrade, especially in my 2019 MasterClass on Bruno, Darwin, Nietzsche, Einstein, and Teilhard de Chardin. I remain very grateful to Dean Professor Dr. Ljiljana Markovic for graciously making all these academic opportunities available to me throughout my frequent stays at this university with the permanent status as a distinguished visiting professor. During our summer 2018 visit to Greece, my dear friend Professor Branko Milicevic took the impressive photograph of us at Aristotle Park that is used here in Fig. 18.

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AUTHORS

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Milicevic, Branko (26. 8. 1988, Krusevac, Serbia), founder of his BM Studio, is a professor at a Photography School in Belgrade where he is presently dedicating himself to becoming a professional photographer and cinematographer. He has authored entries for the two catalogs *King Kong & Symbolism* and *Nietzsche & 2001: A Space Odyssey*; both academic works were published by the University Library of Belgrade. His interests include art, film, music, ballet, opera, and travel, as well as computer technology; two of his favorite motion

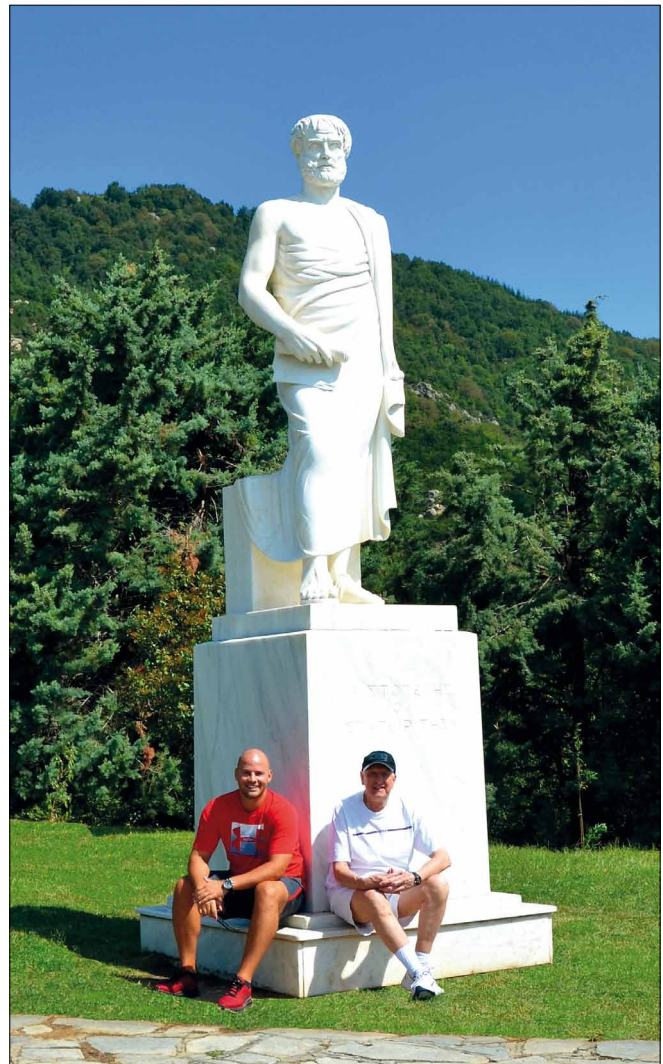


Fig. 18. Branko Milicevic (left) and H. James Birx at Aristotle Park in Stagira near Ouranopolis, Greece, on Thursday 06 September 2018. Photo Preparation: Branko Milicevic.

pictures are *Avatar* (2009) and *Things to Come* (1933). Recent travels have taken Milicevic to Austria, Egypt, Germany, Greece, Italy/Sicily, Macedonia, Poland, Portugal, Romania, and Spain; his photographs of the ancient monuments in Athens and Rome have appeared on posters and in articles or books for the Faculty of Philology at the University of Belgrade and the interdisciplinary journal *Anthropologia Integra* from Marsaryk University in Brno, Czech Republic. As both guest author and art editor, Milicevic wrote the essential essay for the book *Frankenstein: Critical Reflections* (Belgrade: Belpak, 2018). He is the recipient of several achievement honors for his distinguished photographic contributions. Professor Branko Milicevic is a partner (financial contributor) to Frank Frost's forthcoming two-hour documentary special *The Evolution of Teilhard de Chardin* for PBS international television, for which he photographed relevant sites in Cairo and at Giza, as well as in both Memphis and Saqqara.

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