

The Idea of Evolution in Transhumanism

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Abstract: In this paper I focus on a use of an idea of evolution in transhumanist discussions about technologies, human enhancement, and a concept of posthuman. Charles Darwin's evolutionary theory stands at the origin of transhumanist thought and provides a theoretical foundation for many contemporary transhumanists. However, in the paper I argue that the idea of evolution used by these writers mostly cannot be interpreted as direct continuation of Darwin's notion of evolutionary theory. The text is divided into three sections. The first section deals with Kurzweil's term of evolution of our universe heading to the singularity. In the second section, I point out a metaphor which occurs in some transhumanist texts – the comparison of childhood and adulthood to natural and conscious evolution. The last section focuses on connection between the notions of progress, evolution, and human enhancement.

Keywords: evolutionary theory, extropianism, human enhancement, posthuman, singularitarianism, transhumanism.

Introduction: The Evolutionary Origin of Transhumanism

In 1957, Julian Huxley published an essay *Transhumanism*, which can be considered as the beginning of a school of thought and the movement of the same name. In the essay, Huxley mentions a change of position of humans in nature, a change which came with the modern scientific discoveries and theories, especially Darwin's evolutionary theory. He points out how, thanks to this new knowledge, man started to realize a huge field of possibilities opening up to him, not only in terms of mastering of nature, but also himself. According to Huxley, a new era thus began – the era of rebirth and transcendence of humankind – for which he proposes the term *transhumanism* (see Huxley 1959, 13-17).

Darwin's evolutionary theory thus stands at the origin of transhumanist line of thought, as it does for many other social theories. However, Charles Darwin in *The Origin of Species* (1859) initially presents the theory of evolution as an explanation of the origin of all organisms and later in *The Descent of Man* (1871) even humans. According to Darwin, until then most thinkers understood the living organisms as "immutable productions" that "had been separately created." (2009, xiii) He establishes his theory on the principles of natural selection, variations, and heredity. As Tim Lewens mentions (see 2018, 4), Darwin postulates the principle of natural selection as an explanation of the process of change, or precisely as an answer to the question "How have all those exquisite adaptations of one part of the organisation to another part, and to the conditions of life, and of one organic being to another being, been perfected?" (Darwin 2009, 48) Thus, the evolution can then be defined as "... the natural process by which new species emerge as the

modified descendants of pre-existing ones.” (Kampourakis 2014, 1) Therefore, evolutionary theory explains the unity of all living things and also their diversity.

Transhumanism is based on the historical reflections on the process of evolution, and it also holds the Enlightenment principles of progress, individualism and rationality. The term *trans*-humanism indicates a focus on the concept of human; however, by seeking new ways to improve human conditions, it develops the concept even further and beyond its commonly understood limits. Even contemporary transhumanists adhere to Darwin’s theory of evolution, for example, Max More states: “With the 1859 publication of Darwin’s *Origin of Species*, the traditional view of humans as unique and fixed in nature gave way to the idea that humanity as it currently exists is one step along an evolutionary path of development. Combined with the realization that humans are physical beings whose nature can be progressively better understood through science, the evolutionary perspective made it easy to see that human nature itself might be deliberately changed.” (2013b, 10)

Thanks to the shift to the dynamic concept of nature and man, man is no longer understood as a final and finished product. In fact, according to transhumanists, human evolution is just at the beginning, and it is going to continue as a conscious and technology driven process. Man is thus the first earthly creature who is aware of its origin and limitations, thereby gaining the opportunity to transcend them (see Cordeiro 2019, 69-70). As a creature produced by evolutionary processes, he realizes that he has natural abilities that allow him to discover completely new possibilities of his future evolution.

Historically, the theory of evolution meant the definitive loss of man’s prominent position in the hierarchy of nature as a creature significantly different from the rest of the animal kingdom. Instead, man has become a part of it, one of many sharing a common ancestor. A human is then just an animal, undergoing natural changes of evolution and is not static with all his advantages and disadvantages. The realization of man as a part of dynamic nature is important for transhumanism, because just as science makes it possible to understand and reshape nature around us, it is possible to reshape human nature. Transhumanists thus propose to take control over our evolution and change ourselves according to our own ideas and preferences: “by thoughtfully, carefully, and yet boldly applying technology to ourselves, we can become something no longer accurately described as human – we can become posthuman.” (More 2013b, 4)

Transhumanism arises from the evolutionary theory combined with strong rationalism and belief in progress. They believe that progress is not only technological, but (according to some of them) also the human history and even the entire history of the universe is undergoing progressive growth. This is why the term evolution is often commonly understood as progress or gradual improvement, often in social or evaluative sense.

Transhumanists recognize the idea of evolution not only at the level of biology and species, but they see the results of evolutionary processes in all

aspects of the history of the universe and human civilization. When accepting this premise, even transhumanism itself can be identified as a result of evolution; transhumanism as the school of thought whose arrival was preceded by a series of events (for example the evolutionary success of the human species, the process of development and crystallization of ideas and knowledge, and many other key changes in society). Thus, according to the words of its representatives, transhumanism is based on evolutionary theory, and also, further developing their own interpretation of history, it is also essentially a product of evolution itself. We could even develop this idea a bit further and say that the current strong growth of transhumanism in contemporary society represents another evolutionary process, again in the sense of progress, as an improvement of human society and its individuals.

In the following sections, I will focus on a few ideas that have already been partially indicated. In the first section, I will deal with Kurzweil's reflections of universe's evolution leading to singularity, which can be found in his book *The Singularity is Near: When Humans Transcend Biology* (2005). In the second section, I will focus on an interesting metaphor appearing in transhumanist thought, the metaphor of childhood and adulthood compared to natural and conscious evolution. The last section will then cover my considerations about the connection of the terms progress, evolution and human enhancement. Based on these three sections, a goal of my paper is to show the ways how transhumanists use the evolutionary theory and I will try to argue that the notion of evolution in transhumanist ideas is rather specific and need to be understood as different from the notion of evolutionary theory found in biology.

The Evolutionary Story of Humanity

Although the theory of evolution is essentially a biological theory (i.e. it talks primarily about biological organisms), since its postulation, the idea of evolution has been applied to many areas of reality, especially areas concerning humans, societies and their values. So is often the case with transhumanism as a continuation of enlightenment principles – although it is primarily oriented towards the idea of posthuman as the next evolutionary stage of man, its evolutionary considerations do not end with that concept.

Raymond Kurzweil is a representative of such type of transhumanism, which extends technological considerations to humanity as a whole, human species, and even to the entire universe. Along with that, it also expands the transhumanist application of evolutionary theory using both explanatory and evaluative notion of evolution. In his book *The Singularity Is Near: When Humans Transcend Biology* (2005), Kurzweil offers a narrative about the direction of the history of the universe and evolution towards the technological singularity – hence the term *singularitarianism* used for this branch of transhumanist thought. The term singularity then represents “[...] the culmination of the merger of our biological thinking and existence with our technology, resulting in a world that is

still human but that transcends our biological roots. There will be no distinction, post-singularity, between human and machine or between physical and virtual reality.” (Kurzweil 2008, 17-18)

Kurzweil divides the history of universe and the evolutionary process towards the singularity into six epochs. The first epoch began with the formation of the universe, elementary physical particles and chemical elements. Carbon as a good carrier of information was a prerequisite for the transition to the second epoch of biology and life. Thanks to the storage of information in DNA, organisms, which were able to process and store information from the external environment were gradually created, the nervous system and the brain developed and the third epoch began. With a high ability to process information, find patterns, and think abstractly, men began to create the first types of primitive technology, tools, which gradually became more complex and efficient, until men were able to create modern computer and communication devices. Thus, in the fourth epoch, technology itself acquired the ability to receive, store and process information. The fifth epoch is going to begin with the singularity – the connection of human and machine intelligence. All of this is eventually going to result in the sixth epoch, in which the universe will become ‘conscious’ with this shared intelligence (see Kurzweil 2008, 22-29).

In Kurzweil’s cosmic narrative, evolution is characterized as a gradual transition from inorganic to organic and then to technological. Man plays an important role in the narrative as a link between biology and technology, which makes the whole process very anthropocentric. For Kurzweil, even mastery of fire or the use of stone tools by our ancestors are the parts of technological evolution which is a continuation of biological evolution. He adds that even though early technological creations were characterized by slow progress and the pace of their spread among individuals, technological progress gradually increased until the state we observe today, although the acceleration has not stopped (see Kurzweil 2008, 46). According to Kurzweil, technology is thus a product of evolution, just like human consciousness, abilities and knowledge. Any further technological progress is a part of evolutionary progress.

According to Kurzweil, all technology – from primitive tools to artificial intelligence – is an integral part of the evolutionary process. Kurzweil thus uses more general notion of evolution which does not include only biological evolution, but also cultural, social and technological. He identifies important evolutionary milestones, among them not only the birth of a galaxy or multicellular life, but also, for example, the creation of the first script, democracy or a letterpress (see Kurzweil 2008, 28). By choosing the milestones of evolution, Kurzweil shows that there is indeed progress in this narrative of biological-technological evolution, thereby legitimizing its ultimate goal – the singularity.

The models that Kurzweil presents to us are based on the assumption that the process is moving towards a specific goal, namely the technological singularity. It is heading there with such certainty that Kurzweil can identify a law that

governs this process, namely the law of accelerating returns. As a result, the law creates a directional trend characterized by exponential growth. Growth or progress is made possible by the fact that evolution works indirectly, that is, by creating certain methods of information processing that it will use to create the next level, the next epoch (see Kurzweil 2008, 16). As a result, it is “the evolution of patterns [of increasing order] that constitutes the ultimate story of our world.” (Kurzweil 2008, 22) Kurzweil repeatedly demonstrates this trend using examples from information technology, especially the well-known Moore’s law.

As Stephen Lilley (see 2013, 63) points out, it is precisely by describing the culmination of technological innovation that transhumanists give an impression of inevitability of (evolutionary) progress. As we can see with Kurzweil, human history is divided into successive levels of progress. Usually, it is progress in the sense of human abilities and technologies to control nature and get out of dependence on it. According to Lilley, some transhumanists support the idea of inevitability of progress by presenting evolution as a ‘steamroller,’ meaning that it crushes everything that cannot adapt to the never-ending change. Thus, in order to survive, we must move forward, evolve, and innovate. Therefore, progress is inevitable for us, because without progressing, we would die out.

David Sanford Horner (see 2008, 405) also criticizes the idea of inevitability appearing in Kurzweil’s work. He even accuses him of a naturalistic fallacy when he claims that Kurzweil turns the original descriptive evolution into a prescriptive narrative, that is, based on the description of the past development, he predicts the next development – in this case, it is mainly the exponential progress of technology. Horner further argues that Kurzweil presents singularity as a desired goal for all the humanity. Singularity is thus supposed to function as a moral directive for social and individual decisions, which can be seen as a highly problematic assumption.

Essentially, Kurzweil’s evolutionary narrative can be therefore described as teleological, with the event of singularity as its *telos*. Although biology and nature were often thought about as teleological throughout the history, mainly because of complexity and apparent ingenuity of the universe and life, during the period of nineteenth and twentieth century, the concept of teleology has become quite unpopular among scientists. Instead, Colin Pittendrigh in 1958 established a term *teleonomy* as an alternative to Aristotelian causal purposefulness. Ernst Mayr then specified the term: “The teleonomic process or behaviour is one which owes its goal-directedness to the operation of a program.” (1974, 140) Teleonomy has become a way how to speak about purposes in evolutionary biology without referring to Aristotelian ultimate *telos* and metaphysics. Instead, with teleonomic way of thought, a purpose lies in an organism itself (see Drescow and Love 2023, 106-108).

In Kurzweil evolutionary narrative *telos* drives the whole universe from the very first physical particles to the rise of AI. He states: “It was the fate of bacteria to evolve into a technology-creating species. And it’s our destiny now to evolve

into the vast intelligence of the Singularity.” (Kurzweil 2008, 256) Kurzweil thus presents a deterministic narrative of the universe with man and technology in the main roles.

Kurzweil's *The Singularity Is Near* is dealing not as much with biological evolution as other kinds of evolution – namely social, cultural and technological. So is mostly the case with other transhumanists. Their notion of evolutionary theory is highly influenced by the enlightenment principles of rationality, progress and individualism, thus making it more concerned with social and anthropocentric aspects of reality rather than using bare biological explanations of evolution.

However, the elements of anthropocentrism, determinism, and an emphasis on progress for the better, as found in Kurzweil, are not uncommon in various variations of evolutionary reasoning. Stephen Jay Gould (see 1990, 43-45) points out that these are often the consequences of the hierarchization of nature in terms of its evaluation at the expense of understanding its true diversity. At the same time, according to Gould, this hierarchization provides a person with comfort and a sense of the existence of meaning in the universe. Narratives like Kurzweil's evolution of singularity then arise in such cases when “[...] we wish to assert human centrality in a world that functioned without us until the last moment, we must somehow grasp all that came before as a grand preparation, a foreshadowing of our eventual origin.” (Gould 1990, 45)

While Kurzweil uses scientific terms ranging from molecular biology to information technology, the evolution he presents is not essentially biological. It is very anthropocentric and we can even think of it as a story to help men to find themselves in the complexity of existence and reassure them that everything is going in the right direction. However, this is not a religion, for which similar stories are typical, but rather a story of science fiction, which draws on current scientific knowledge and technologies, which it subsequently flips into what it presents as desirable results of the future. However, *The Singularity is Near* is not written as a work of fiction, so it might be more accurate to compare it to metaphysics, for Kurzweil exposes what appears to be a transhumanist structure of the universe and reality. Deep metaphysical aspects emerge from a combination of selected topics from physics, astrophysics, geology, biology, philosophy, and technology into quite speculative grand theory.

Transhumanism as Evolutionary Adolescence

Unlike singularitarianism, extropianism has individual at the center of the interest. In the context of evolution, extropianists mainly emphasize the need to take evolutionary processes into one's own hands and free oneself from the undesirable consequences of their biology. The idea of conscious evolution forms the basis of the transhumanist project of transforming human to *posthuman*. Posthuman is supposed to arise as a result of an application of various technological and medical means to man. Technological progress and modern

medicine are supposed to be the main tools of human-driven evolution. However, the specific form of posthuman as a result of technological improvement is not clear – it could be a new biological species, a cyborg, even a purely digital entity. The main concerns of individual improvements are to be the areas of physical and cognitive abilities, emotional experience, and finally health and life expectancy (see Ranisch and Sorgner 2014, 7-13).

Although it is not clear what exactly posthuman is to represent, it is supposed to be radically different from today's humans; so that it is possible to truly say that there is a different species, a different evolutionary product to human. A certain intermediate stage is often represented by *transhuman* as a primary result of a controlled evolution. Thus, we can think of it as a connection between human and posthuman, it refers to the transcendence of man, similar to the term transhumanism itself (see Ranisch and Sorgner 2014, 10).

In 1999, and after revision in 2009, More published a text called *A Letter to Mother Nature*. The text became sort of a manifesto of transhumanist movement and extropianism. More expresses dissatisfaction with the imperfect biological foundation of man, whose natural evolutionary development lags behind the requirements of today's society and mindset. For that reason, according to More, it is necessary to take evolution into one's own hands and thus free oneself from unhappy living conditions and biological limits (see More 2013a, 449).

In the text, More considers the results of *Mother Nature*, i.e. natural evolution, to be insufficient, so the transhumanist idea of conscious evolution is supposed to be a continuation that will correct the deficits that have arisen. Conscious evolution is really meant to be the continuation of natural evolution – it continues to be completely natural, because the prerequisites for it arose from the evolution of *Mother Nature*. More wrote: "What you have made us is glorious, yet deeply flawed. You seem to have lost interest in our further evolution some 100,000 years ago. Or perhaps you have been biding your time, waiting for us to take the next step ourselves. Either way, we have reached our childhood's end." (2013a, 449) More expresses disappointment that evolution is not progressing fast enough for our biology to keep up with the development of our society. However, at the same time, it indicates that this stagnation could be a challenge for man to start shaping his own evolutionary destiny. The metaphor of childhood thus develops the metaphor of nature as a mother, but at the same time, it indicates the continuation of natural maturation of humanity from a child tossed by biology to a reasonable adult who can shape his life according to his own will.

We can find a similar use of the metaphor of childhood in Nick Bostrom's text *Why I Want to be a Posthuman When I Grow Up*, in which the very title suggests that the author feels like a child in a certain sense. He further develops this idea by considering the possible changes of human identity during the technological improvement of man and his transformation into posthuman. He compares this transformation to maturation – the transformation that a person goes through during adolescence. Bostrom points out that adolescence is a process as radical as

the transcendence to posthuman, it involves the acquisition of skills and knowledge, as well as significant changes in the area of personal identity. Adolescence in this sense can therefore be called the improvement of a child into an adult (see Bostrom 2008, 125-126).

However, at a first glance, the transhumanist use of the analogy of adolescence with evolution does not seem entirely correct. On the one hand, the terms adolescence and maturation represent the development of an organism-individual, that is, development that takes place in a relatively short time from fertilization to adulthood. On the other hand, evolution is an incomparably longer and more complex process of formation of a species, or even of life as such. Nevertheless, the thought connection of these two processes is not necessarily erroneous, or even unique. This connection forms the basis of entire branch of biology called evolutionary developmental biology, or *evo-devo* for short.

Evo-devo is based on the idea of the close connection between the development of individual organism and evolution of species, while this connection works both ways. As stated by Arthur Wallace (see 2021, 4-5), from the evo-devo point of view, the development of an individual is shaped by evolutionary principles in such a way that the individual can adapt to the prevailing environment and its conditions. The specific development trajectories of a given period then guide the evolution. The development of individual is relatively easily predictable, or more precisely quasi-predictable, thanks to the number of repetitions of very similar, although not completely identical, development processes of other individuals within the given species. Evolution, on the other hand, contains an element of historical chance (such as fall of an asteroid), and it is a highly unpredictable process.

The idea of close connection between evolution and individual development, which forms the core of evo-devo, indicates an increased ontological emphasis on organism-individual in the evolutionary process. However, the specific forms of possible connection between evolution and individual, or a collective of individuals, remain the subject of debates. For example, one of the approaches emphasizes the role of individual as acting organism, a self-determining individual. With its specific behaviour, it modulates the evolutionary pressures that act on it, thereby affecting population dynamics (see Baedke 2020).

Although extropianists do not explicitly refer to evo-devo when talking about posthuman state as our adulthood, it is interesting to explore such thought connection. In extropianism, we can find very similar approach emphasizing the principle of so-called morphological freedom, according to which the degree and form of technological improvement is fully dependent on an individual and their own wishes regarding their body and life. According to Anders Sandberg's definition (2013, 56), "morphological freedom is an extension of one's right to one's body, not just self-ownership but also the right to modify oneself according

to one's desires," and, as such, it is derived through several steps from a basic human right – the right to live.

The right of morphological freedom also fulfils an ideological and socio-legal role important for the transhumanist emphasis on individualism. As Sandberg states (see 2013, 56), morphological freedom ensures that individual has full power over their own body and over the degree and form of possible technological improvements. At the same time, however, it is also supposed to guarantee full social tolerance of any individual decisions about the improvement or non-improvement of their body. It thus forms the basis for the possibility of coexistence of ordinary technologically unimproved individuals with improved individuals, i.e. transhumans or posthumans.

The right of morphological freedom is also important for the conceptual connection of extropianism with evolution or evo-devo. Morphological freedom can be understood as the possibility for individual to make life decisions, which can subsequently influence the evolutionary direction of the entire human species, i.e. a similar concept with which evo-devo works. The development of individual in transhumanism does not end with adulthood, but continues with the enhancement of their physical, cognitive, and emotional possibilities through technological improvement. This development subsequently brings new opportunities to influence evolutionary processes.

Individual decisions on the method and degree of implementation of technology in one's body and life are thus to lead to conscious evolution, the form of which depends on the individual preferences and will. In this way, extropianism extends its considerations from the level of individual to the level of the entire human species. Returning to the transhumanist comparisons of childhood and adulthood, the transhumanist conception of our evolutionary adulthood is indeed characterized by responsibility, not just individual's responsibility for themselves, but essentially for the entire human species. On the contrary, our evolutionary childhood was characterized by a certain form of powerlessness over one's own destiny, when evolutionary processes were controlled by natural selection.

However, there is no place for natural selection in transhumanist conscious evolution. According to transhumanists, the new level of evolution in the form of technological improvement will take place through the conscious and rational decisions of individuals. These decisions are to be guided by individual self-formation preferences, although the consequences of this self-formation are to affect the entire human species. Even though some of these consequences really could be desirable results of improvement, it would be naïve to assume that technological improvement will not bring with it some unexpected consequences – positive or negative.

Therefore, we can say that the idea of consciousness in extropianist notion of evolution is kind of naïve. It does not seem probable that we could be able to consciously anticipate every consequence of our evolutionary decisions, even with highly enhanced cognitive skills. Needless to say, even now in our

unenanced state while doing basic day-to-day decisions, those are often less conscious than we tend to think for we are very much influenced by our biology, hormones, mood, even the current trends, etc. Although transhumanists try to fundamentally limit these influences on our lives or at least gain control over them, for now, it is still important to keep them in mind when talking about consciousness of evolution. Furthermore, in evolutionary process, the environment plays an important role, too. Therefore, to anticipate the outcome of our evolutionary decisions means also to anticipate the changes and influence of the environment. Such complex process could then easily trigger changes similar to so called butterfly effect.

Moreover, while individual development is considered to be a relatively predictable process due to the great number of repetitions of the process in other individuals of the same species, development enriched with transhumanist 'maturity' becomes a new, unique, individual process. A greater number of options for technological improvements will lead to different decisions about their selection, which will lead to different development and outcomes for each individual. Thus, by enhancing humans, the originally predictable development of individual becomes unpredictable too.

Interestingly, the strong emphasis on individual is one of the main differences between contemporary extropianism and Huxley's historical considerations. As Alison Bashford (see 2013, 160-162) points out, Huxley, based on his education in evolutionary biology, focused almost exclusively on the entire population, or more precisely on humans as animal species, while he attached almost no importance to individual himself. According to Bashford, the current transhumanist emphasis on individual and their freedom of choice is mainly a consequence of the effort to distance themselves from the association with eugenics, of which non-racist version Huxley was a strong supporter.

For extropianism, however, there are relatively radical evolutionary changes with unpredictable consequences taking place through extended development at the level of the individual. Conscious evolution is supposed to be rational and targeted, but it becomes unpredictable and is guided by partial individual whims of self-creation of one's own identity. Extropianist conscious evolution is not as much conscious as it is responsible, and the responsibility lies as a burden on the shoulders of individual who is supposed to guide the entire evolutionary direction of humanity. Unlike the concept we can find in evo-devo, however, it has in its hands much more powerful and faster means of influencing evolution, the rational predictability of the future consequences of which is uncertain. The transhumanist evolution is unpredictable as same as biological evolution. The consciousness of transhumanist evolution thus appears only as an illusion.

Enhancement, Evolution and Progress

Among many, the idea of evolution is often being associated with the idea of progress as an advance of complexity, i.e. from simpler to more complex, or advance of value, i.e. from worse to better. For transhumanist considerations, value progress is essential, as can be seen in the efforts to transcend human into posthuman. The technological improvement of man is supposed to lead to progress in terms of the quality of life, but also in the scope of man's abilities and possibilities, and consequently to progress of the entire humanity. The advancement of human to posthuman, i.e. to a being conceptually placed at a higher level of the evolutionary hierarchy of nature, is supposed to occur along with technological enhancement. The ideas of evolution, progress and enhancement are thus closely connected and they together form the basis of transhumanist theory and social movement.

Transhumanism is characterized by a very strong belief in ongoing progress, of which transhumanists find evidence not only in technological innovation and the history of human societies, but also in the entire universe, inorganic and organic life. Kurzweil's singularitarianism presents progress as inevitable, while extropianists tend to be more cautious and point out that wrong steps can also lead to regression in human society. In both cases, however, the concept of progress is in the centre of attention as a desirable tendency in a certain direction for the better, and therefore it is understood as appropriate to support and maintain it in the interests of humanity. Although transhumanists are quite clear about the existence and nature of this progress, many others find the concept itself as problematic.

The idea of evolution as progress is deeply rooted in the historical views of the Western mindset as an image of a hierarchy of nature, at the top of which man stands. In evolutionary biology, however, there is no absolute consensus on whether evolution can be understood as progress. In fact, such a way of thinking is rather scattered.

Stephen Jay Gould claims that the view of progress in biological evolution is the result of a misunderstanding of evolutionary processes. Gould (1990, 32) describes life and evolution as "a copiously branching bush, continually pruned by the grim reaper of extinction" in contrast to a ladder as an image of linear progress. According to Gould (see 1990, 28-35), the iconographic representation of the ladder as a progression is typically used in the context of evolution mainly because the idea is easy to understand and has a strong impact. He also points out that such iconographies reinforce a comfortable opinion on inevitability and superiority of man. The deep entrenchment of these portrayals in society and culture then contributes to misconceptions about evolution as progress.

Representation of evolution as a tree, or more abstractly as an inverted cone, is another typical but erroneous iconography of evolution, according to Gould (see 1990, 36-39). In this representation, life begins as very simple and limited, but gradually develops upwards – to more complex and better, higher ranks are also

associated with higher value. However, according to Gould, this idea ignores the countless possibilities of evolution in all directions, and also stagnation and possible extinction of species.

We can find the understanding of evolution as progress in Kurzweil's great narrative about the fate of the universe and in extropianist efforts to enhance man to a new evolutionary level. Linking the ideas of evolution, progress and enhancement through technology forms the core of transhumanist rhetoric. Technological enhancement practiced through individual morphological freedom is currently conceptually motivated mainly by the correction of 'mistakes' that occurred during natural evolution. These errors primarily include susceptibility to physical and psychological pain, inevitability of aging and death, limited physical and cognitive capacities, and so on. By removing these mistakes, the life of individual will improve, and then, perhaps, the entire society as well. It is technology that is meant to be means to a new, better posthuman, and as such, according to transhumanists, it has already proven itself in the past as means to improve and simplify human life.

However, as Phillippe Verdoux (see 2009, 50-54) points out, although most transhumanists accept progress as a fundamental dogma of their philosophy, the transhumanist understanding of the history of human societies from which progressivism derives is flawed and unfounded. According to Verdoux, the illusion of history as progress arises from the emphasis on various technologies as solutions to problems. The higher the number of problems solved by technology gives the impression of more progressive history. However, Verdoux also points out that technology is often the cause of the emergence of new problems, which again creates the need for new technological innovation. This fact further enhances the impression of the progressive direction of humanity towards a better future, although in reality it is often a solution to a problem that did not even exist until recently due to non-existence of the technology that caused them. According to Verdoux, transhumanists ignore the fact that many times we actually take a step back – to the state before the invention of the given technology.

Furthermore, Verdoux criticizes transhumanists by pointing out their hasty generalizations when it comes to comparing the quality of life of our ancestors in different time periods and the contemporary man of modern society. Typically, transhumanists state that with increasing technological progress, the quality of life and health of individual also increases, and thus basically the more distant past without technologies equals the worse quality of life. However, Verdoux points out that from an anthropological point of view this correlation does not apply, because it was actually during the times of human civilization and its achievements when the living conditions of ordinary people were in certain periods much worse than in the pre-civilization period – a typical example would be the Middle Ages. We can talk about improvement in life conditions occurring roughly from the nineteenth or twentieth century, especially in the area of average life expectancy. Therefore, Verdoux argues that bad life conditions arise more

often from the existence of civilization itself and its problems, than from a lack of technology (see 2009, 56-57).

Thus, technology does not always lead to an improvement in the situation – to progress. Even the radical implementation of technology into the body and life in the form of human enhancement does not automatically mean an improvement in the quality of life of individual or society. Transhumanist techno-optimism is based on the assumption that technological innovations generally simplify life, solve problems and thus move our civilization towards a better tomorrow. However, transhumanists ignore the problems that arise from the availability of new technologies.

Similarly, the understanding of evolution as progress is problematic, whether it is Darwinian biological evolution or social evolution associated with technological development and human culture, as can be found in transhumanist thought. Progressivism interweaves the entire transhumanist theory, which thereby acquires a significant dose of optimism. Consequently, this is attractive in the context of transhumanist social movement. Technological improvement of man promises a better tomorrow and the solution of individual and social problems. However, the idea of progress on which these promises are based is the result of a selective and often misinterpreted understanding of evolution of human history, and the history of technology, which often ignores the various missteps of humanity or faulty theories.

Besides the connection between the ideas of progress, evolution, and human enhancement, we can consider one more concept that is also important for transhumanism. The idea of progress is closely associated with the idea of perfection, which ideally happens to be the final result of progress. However, such considerations evoke utopianism, from which transhumanists try to distance themselves and reject such objections as a misunderstanding of their theory. As More states, utopia as a static state is rather an antithesis of the ongoing transhumanist endeavor. According to More, the very term ‘extropy’ expresses the idea of “a never-ending movement toward the ever-distant goal of extropia.” (2013b, 14) Nevertheless, the idea of perfection represents the central point of transhumanism, although only as an abstract unattainable destination, but all the more important: “Rather than seeking a state of final perfection, we will continue to pursue new forms of excellence according to our own values, and as technology allows.” (More 2013a, 450)

Excellence understood as such is thus not the ultimate goal of progress, but rather functions as a motivation for it. Because, as extropianists argue, there is no such final destination of progress as perfection or utopia, we can acknowledge it as a similar to ‘blindness’ of a natural Darwinian evolution. However, it is difficult to imagine the idea of perfection to be the motivation for such evolutionary processes, if its main mechanisms are based on random mutations, trials and errors, for the motivation of evolution of life is survival. On the other hand,

perfection as a driving engine of transhumanist evolution is again a sign of anthropocentric value approach to the notion of evolution.

Conclusion

The category of evolution occurs in several contexts in transhumanist considerations. First of all, it is a starting point of the theory of transhumanism and human enhancement – thanks to Darwin's evolutionary theory, human became a variable creature, and according to transhumanism, that fact opened up possibilities for further evolutionary development, which could lead to even better evolutionary results, i.e. to a better form of man.

Technologies have become an integral part of transhumanism, and at the same time have also become a part of evolutionary development for transhumanists. In Kurzweil's conception, evolution is presented as the metaphysical carrier of the plot of the great narrative of the universe. This narrative is anthropocentric and deterministic; Kurzweil unfolds evolution through the lens of information technology. Living organisms are thus just a slightly better carriers of information on the way to the singularity.

In this social type of evolution, technologies are increasingly becoming a part of people's everyday life. According to extropianists, it is only a matter of time before their impact on humans will be so radical that they will change our bodies and lives enough to speak of a further evolutionary level – of posthuman. However, this evolution will not be governed by the evolutionary principles of natural selection, heredity and variation, but according to extropianists, the whole process lies in the hands of individual. Yet, the idea of consciousness of transhumanist evolution seems like an illusion. Evolution in transhumanism mainly considers fundamental individual and social changes that will be brought about by free and unguided use of technological improvements motivated primarily by self-determination and creating one's own identity. However, the consequences of such processes are likely to be far-reaching and unpredictable. Attributing the responsibility for them to individuals and claiming that they make conscious evolutionary decisions seems highly problematic.

Furthermore, in the background of all these transhumanist ideas, there is a strong uncritical progressivism. Thanks to this, not only evolution is understood as progress, but the direction of progress is also emphasized in the context of technology and human enhancement. Because of the dogma of progress, transhumanist views about the direction of our future seems very optimistic and attractive to the general public. Although it is possible to identify different periods of progress in human history or to characterize various aspects of evolutionary process as progressive, understanding progress as a universal principle of history or evolution is rather problematic. Therefore, transhumanist ideas could appear uncritical and overly optimistic.

As we could see, transhumanists refer to evolutionary theory and work with it in various ways, however, evolution in their concept is highly influenced by the

principles of progress, rationality and individualism, the idea of mastering the nature and the pace of technological progress. Although Darwin's theory of evolution forms the starting point of transhumanism, the way in which transhumanists work with the category of evolution is not a biological theory of evolution. In the light of enlightenment principles, transhumanists focus on social evolution describing mostly non-biological processes characterized by various types of change. It is therefore important to keep that in mind, while evaluating the notion of evolution in the transhumanist considerations of evolving into posthuman or the arrival of the singularity, because simply understanding it as the continuation of biological evolutionary theory could be rather misleading.

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