Editorial

Transhumanism: From dream to nightmare

Le transhumanisme : du rêve au cauchemar

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Transhumanism is a philosophy that aims to break free from all limits. It advocates individual freedom, self-satisfaction without constraint and follows the hyper-individualist philosophy of Ayn Rand whose thinking was developed in several successful books such as *The Fountainhead*, *The Virtue of Selfishness*, and in particular, *Atlas Shrugged*. It can be summed up by "I don't know if I have the right, but who could prevent me". For Ayn Rand, altruism is the absolute enemy, the only behavior to advocate is selfishness [1–3].

Based on this philosophy of behavior, transhumanism developed in the second half of the 20th century by taking advantage of the spectacular advances recorded in biology and computer science in order to overcome our bodily limits by suppressing diseases, improving our physical and intellectual performances, prolonging life beyond the possible and ultimately striving towards immortality and in the wildest delusions, abolishing man in favor of the post-human [4].

At this stage, two questions should be asked: will the crossing of these limits as desired and prophesized by transhumanists be scientifically possible in the near future? Will that be a good thing and for whom?

The answer to the first question involves distinguishing what essentially arises from biology such as the treatment of diseases and/or their eradication and the increase in physical performance via genomics from what corresponds to the increase in intellectual performance for which a digital contribution will be essential.

The deciphering of the human genome, unparalleled technical and intellectual performance, completed in 2001 and since then continued by the sequencing of thousands of other human genomes and those of species more or less distant from the phylogenetic point

of view has taught us that the number of genes was much smaller than we imagined and was limited to only some 25,000 genes encoding proteins. Furthermore, we have believed that all the nucleotide sequences outside of these coding genes (98% of the total) had no other function than that of filling. Francis Crick, Nobel Prize winner for the discovery of the double helix structure of DNA, designated them all as selfish DNA, the ultimate parasite [5].

Since we know this is not the case, tens of thousands of nucleotide sequences encode RNAs of all sizes, called miRNA, lncRNA, snRNA etc. which are not translated into proteins but act as RNA to regulate gene expression either by regulating the expression of a given gene through the level of its transcription into messenger RNA or by modulating the functioning of messenger RNA. The complexity of the system as a whole is enormous owing to the number and variety of these non-coding RNAs, the inventory of which is far from being complete and by their combinatorial mode of action which means that the expression of many genes if not all protein-coding genes is regulated by a different combination of several non-coding RNAs [6].

Believing or leading others to believe, as propagated by transhumanists, that the modification of the sequence of a protein-coding gene would lead to the improvement of a particular physical performance is for the vast majority of genes a lure or even a lie. It is known that the mutation of a nucleotide to another that causes an amino-acid change or the alteration of the level of expression of a gene can cause pathological disturbances and that the elimination of certain deleterious alleles can have beneficial consequences. This is how some countries like Cyprus have been able to eradicate thalassemia from the Cypriot population. However, it should be specified that the elimination of these deleterious alleles in the population was performed by elimination of the genomes carrying these alleles, i.e., eugenic practices and not by molecular engineering that modifies the only allelic sequence in question as in a transhumanist perspective. It has also been observed that the nucleotide sequence of several alleles expressed by certain top athletes could deviate from that expressed by the majority of us and the case of the Finnish founder Eero Mäntyranta who naturally expressed an abnormally high rate of erythropoietin and won seven Olympic

medals is a good example. However, to suggest that his exceptional physical performances were only due to a high-level of EPO and that this same mutation introduced by molecular engineering into the genome of another person would immediately confer on the latter the same physical properties is an extreme simplification of biology.

In reality, we are far from being reducible to our genes and considering that the modification of the nucleotide sequences of some of them could *ipso facto* modify our physical properties, providing ourselves interesting properties such as those dreamed by the proponents of transhumanism is not tenable, except perhaps for some particular genes. Modifying the expression level of a particular protein by altering the sequence of certain non-coding RNAs is no longer realistic since we are far from knowing the number, nature and combinatory logic of those governing the expression of a given protein. Finally, limiting ourselves to the strict nucleotide sequence of the genome we inherited and professing that an in-depth, even perfect knowledge of the latter as we would hope to have in a few decades to interact with its program would again be a mistake. Indeed, throughout our lives, the genome that we inherit at birth is the object of innumerable mutations produced during cell replication or resulting from the deleterious effects of the chemical and physical environment. Moreover, many nucleotides of the genome as well as several amino-acids of the histones which surround the latter carry methyl groups and other adducts which modify and regulate the activity of the whole. These adducts, which together constitute the epigenome, result from the normal activity of the genome under the effect of various enzymes but also from the effects of the environment. Considering the complexity of interaction between the protein-coding genes, the non-coding RNAs and the epigenome, it is obvious to any biologist that the transhumanist dream of increasing human physical capacities by manipulating the genome is an illusion.

Human longevity like that of all animals is a complex phenomenon, prominently variable from one species to another, in which apart from pathological problems, the part played by the alleles that we inherit is certainly important but not unique. Furthermore, while population studies benefiting from an exceptionally long longevity have pointed out some beneficial alleles, in particular, those of the *APOE* and *FOX3A* genes, it would be naive to believe that a

handful of alleles could be enough to confer unusual longevity. However, it is the project of Google with several of its subsidiary companies – Google Genomics, Verily or Google Calico – to sequence the genomes of thousands of individuals with the hope of identifying the most relevant alleles to benefit from greater longevity.

Increasing intellectual capacity through the use of neural implants is an entirely different issue. This direction of research is not new. The first experiment, widely publicized, although disputed by some, was carried out by José Delgado in 1962, who with an implant in the brain of a bull, managed to remotely control the animal's reactions. Moreover, beginning in the 1990s, benefiting from advances in electronics in particular, these sorts of experiments continued with Kevin Warvick and the Cyborg 1.0 project. In his book, *I Cyborg*, he predicted the coexistence of two populations: the augmented humans and the others constituting a subspecies. Today, the Singularity University, located on the NASA campus in Silicon Valley, is developing a very avant-garde vision. Created in 2008 by Peter Diamandis and Ray Kurzweil (who is director of engineering at Google), libertarians and transhumanists, it is supported by GAFAM whose objectives beyond doing business are to invest in all fields of life whether they are of the order of intimacy with the accumulation of data on our habits or biology with the development of connected objects providing information on the state of our health. With this level of intrusion into our lives, the majority of the population is straying more and more from the ideal of individual emancipation and liberation in a logic of rationalization and control for the benefit of a small number as it developed in the 1960s. From respected and respectable businesses, we have entered a world of disproportionate, hegemonic and dangerous ambitions.

Singularity University organizes seminars and houses numerous companies whose objective is a fusion of man and machine where no limit of any kind is imposed and where ultimately, in an assumed post-humanist vision, present-day man disappears.

So while the increase in human physical capacities via genetics is unlikely and in any event would be limited, it may not be the same with the increase in intellectual or behavioral capacities through the use of neuronal implants. The pursuit and the acceleration of the results acquired in this area would challenge and oblige us to answer

this question: is the development of transhumanism and its objective of pushing all limits desirable and for whom?

First of all, it is obvious and indisputable that the improvement of physical and mental health, the treatment or even the eradication of all pathologies is the prerogative and the honor of medicine and is in no way a transhumanist project. In reality, it is likely that the abusive appropriation by the supporters of transhumanism of these subjects is a deception or even a swindle in order to facilitate the adhesion of a large part of the population to their philosophy [7].

As much as it is desirable by the reasoned use of scientific results to relieve humanity of the evils which strike it and therefore that states promote the development of research and directly or indirectly via insurance systems assure the payment of medical acts, it is not possible to ask them to subsidize payments for acts aimed at increasing certain physical or intellectual characteristics to satisfy certain human desires.

Consequently, these possibilities for improvement would remain the responsibility of the applicant. Only wealthy people could benefit from them, creating a caste of supermen/superwomen dominating the plebeians as Kevin Warvick prophesized in his project Cyborg 1.0. This totally undemocratic and unequal vision is not meant to frighten the proponents of transhumanism who, on the contrary, like Ayn Rand who divides people into “makers” and “takers”, fully embrace it. Only the creators of wealth are worthy of interest, the others, the “takers”, are profiteers, parasites, looters who deserve no consideration. Moreover, didn’t Fukuyama predict in his book *The End of Man: The Consequences of the Biotechnical Revolution*, that equality will be the first victim of transhumanism? Mathieu Terence wrote in his essay *Le Transhumanisme est un Integrisme* (2016) that transhumanism would be the worst thing that could happen to humanity [8].

In fact, if we take interest in the personalities of most of the great players in Silicon Valley, we can observe that they seem to be only passionate about making as much money as humanly possible without, outside of a small circle of collaborators, consideration for the hundreds of workers they employ.

Another equally serious potential danger underlies the development of neural implants if it is not strictly controlled by a competent and independent state authority. Like the first experiment performed by José Delgado, who succeeded in controlling the reactions of a bull, as well as other experiments subsequently performed remind us, the development of neural implants by firms such as Google, Neuralink or others would open the door to the introduction of implants with all kinds of algorithms. These could increase the intellectual capacities of the carrier but also allow the manufacturer to control the will of the carrier, a very frightening prospect.

Conclusion

By advancing tempting announcements concerning the eradication of diseases, the transhumanist approach is trying to convince as many people as possible to support its philosophy. However, claiming to increase human capabilities by modifying the sequence of one or more genes is scientific deception [9]. Even if it has been observed that a number of high-level athletes benefit from one or more particular alleles, it is erroneous to believe that replacing some alleles with particular alleles would be enough to provide these individuals with new abilities. Believing this is ignoring the complexity of the genome structure and gene regulation even if some exceptions can occur. In any case, if such a development were possible, it would be contrary to the most basic ethics. Only wealthy people could have access, thereby creating a caste of superior individuals who could extend their dominion over others.

Pursuit of the dream of immortality is just as fallacious. Death is contingent on life. An eternal life would not only be impossible because of demographic problems unless new births were suppressed at the same time, but would be a source of impossible neurosis. If the only way out were to die by accident, either one would be paralyzed by fear or one would commit suicide owing to boredom with a safe and tasteless eternity.

Even more dangerous would be the use of neural implants to increase intellectual capacity or modify the behavior of the transplant recipient. This approach has enormous potential and above all is not utopian, not in the realm of dreams. Its fulfilment might be for

tomorrow (in this regard, look at the recent results obtained by Neuralink, an Elon Musk firm). However, in addition to the danger of creating a caste of superior individuals, there is the danger of the manipulation of grafted individuals who may become the slaves or robots of those who created the implant.

Faced with such prospects, it is urgent and imperative to become aware of the danger which threatens humanity and to take the necessary measures to prevent this drift. This is not a question of limiting research on neural implants for therapeutic purposes for the treatment of pain, epilepsy, dyskinesias to name a few examples, but their use must be strictly supervised at a state level.

In France, in its Opinion 212, the Consultative Ethics Committee for the Life Sciences and Health (CCNE) warns against the risk of achieving a social class improved by the use of drugs that only the wealthiest could acquire. In addition, as the CCNE indicates, the widening of the field of medicine to biomedical neuro improvement of healthy subjects would involve a major risk of distortion of health priorities, a risk which could only worsen if public resources were engaged. Conversely, in the United States, the Food and Drug Administration (FDA) still limiting its purpose to drug use, develops a different position when it declares that it takes drug use as part of the health field and therefore within its competence. In doing so, it encourages the use of products or devices capable of increasing the cognitive functions of healthy subjects.

In the face of such risks, it is urgent and imperative that the United Nations, the WHO and all governments take a clear stand against the drift of transhumanism and promote laws to regulate its development. In any case, we cannot be satisfied with the opinion expressed in the last sentence of CCNE Report 212: “More than ever, an ethical watch which monitors the human conscience vis-à-vis technical rationalities is essential, not as a brake on the development of techniques, but with a view to their articulation for human use, to the debate they generate and to the often lacking information which accompanies their appearance”.

In this context, it would be the honor of France to promote an international meeting during which doctors, scientists and politicians would decide on a moratorium on the development of transhumanism. During this time, an in-depth reflection would be carried out to assess

the possible advantages and dangers that the use of techniques capable of increasing the physical and intellectual capacities of human present and the possible conditions for the resumption of these as it was the case in 1975 in Asilomar at the advent of genetic recombinations.

Disclosure of interest

The author declares that he has no competing interest.

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