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# Transhumanism — Robotics Interactions

## SUMMARY

Thinking wrong that the humanistic ideal has already been realized, transhumanism is promoting the liberation of man by progressive overcoming of his own biological boundaries in order to improve his physical and mental abilities, as well as his life extension. From interaction between biomimetic robotics and transhumanism augmented man was born. But a smart management application is still missing, that one for a future society, in which men and supermen will live together and which would allow technological improvement to everyone and halt the accelerated process of deepening socio-economic inequalities. That's the reason why the transhumanism is often experienced as an opponent and competitor to humanism, same as the new technology development which is often perceived as the goal in itself - as a phenomenon which is not in the service of the real needs of social development. Consequently, It is urgent to move from simple thinking (speculations, preferences and beliefs) to the complex one: proposing hypotheses and solutions, creating relationships and observing interactions, seeking criteria, relying on verified facts and self-correction practices.

## KEYWORDS

transhumanism, biomimetic robotics, augmented man, demiurgic power, complex causality

## INTRODUCTION

If the researchers want to gather the data from the interaction between biomimetic robotics and transhumanism, they have to leave their Cartesian reductionism: thinking that the world is equal to the sum of its parts, and that the thinking mind (ego cogitans) is separate from the objective world (res extensa). Indeed, until we radically shift our thinking, and our thinking about thinking, humanity will continue to replay 'déjà vu' scenes. It means, we have to approach today's globalized and highly technological world like a whole that can be more and less than the sum of its parts. Then we have to adopt the concept of complexity [1], which is an appropriated transdisciplinary philosophical frame that supports the systemic approach to research and innovation and enables linking and organization in the whole of humanistic, scientific, technological and artistic knowledge.

## ORGANIZATION AND RELATION THE ELEMENT - THE WHOLE

The notion of interaction is at the origin of the idea of organization. But the interrelations that produce various random encounters (interactions) can turn into an organization only under certain conditions. This path to transformation can be seen as a natural mutation because it is not due to an "organizing principle" that precedes the organization. It is a question of a change that is born "in and through catastrophe" (in and through disorder) and that defines the organization as "the arrangement of relations between components or individuals, which produces a complex unit or system, endowed with unknown qualities at the level of the components or individuals, which guarantees the constancy of the system" [2] (of the whole). It means: organization binds, transforms, produces and maintains; introduces the "notion of emergence" to designate "unknown qualities" and defines the relationships between the whole and the parts in the following terms:

"The idea of complex unity will take density if we sense that we can not reduce the whole to the parts, neither the parts to the whole, nor to the multiple, nor the multiple to one, but that we must try to think together, in a complementary and antagonistic way, the notions of the whole and its parts, of one and of various." [3]

In other words, in a complex unit, the whole is more than the sum of the parts because of emergences - qualities or properties of a system, which are novel in relation to the qualities or properties of the components considered separately or arranged differently in another type of system. For example: the stability of an atom makes that it differs from the particles which constitute it, as well as specific properties of a human society make that it is impossible to reduce it in a sum of the individuals who compose it, or in the result of their actions. But, the fact that the whole is more than the sum of the parts implies its opposite, so that the whole is also less than the sum of the parts. Indeed, due to organizational constraints, some properties disappear within the system. The organization develops specializations and hierarchies, but in parallel also develop repressions and constraints on the creative potentialities of the elements.

In the relation element-whole of a complex unit, on the one hand we must distinguish the complementarity between parts, and on the other hand the antagonism between parts. The parties have their own identity and participate in identity of the whole. The organization establishes the complementarities between parties that imply the constraints. Consequently, the antagonism stems mainly from these complementarities. Its rooting in the system is deep because the organization incorporates the affinities that create the bonds between the elements, as well as repulsive forces that ensure the essential maintenance of differences between components. [4]

Biomimetic robotics is scrambling to mimic this complex natural agonistic-antagonistic game in the frame of equality that hinges on the humanist ideal of inalienable human dignity or, more and more, on a humanist ideal which calls for transcending the self in order to make room for a universal and generous energy.

# HUMANISTIC APPROACH OF BIOMIMETIC ROBOTICS

The humanistic ideal in past century was to liberate human from the predominant struggle to secure material existence in order to dedicate himself to art, science, learning, and creation. Transhumanism starts from the false assumption that the humanistic ideal has already been achieved and goes further. It offers human's liberation by progressively overcoming his own biological limits to improve his physical and mental abilities and extend life expectancy. It is clear that the underlying foundations of transhumanism are distorted. Since the humanistic ideal has never been realized, the accelerated technological progress of the past decades, which theorizes transhumanism, is perceived as an opponent and a competitor to humanism.

Some research structures, such as Versailles Engineering Systems Laboratory, cling to the original humanistic idea while designing different devices which scope of application is mobility in general, and particularly for persons whose mobility is temporarily or permanently restricted, or for robots in order to ensure a balance in human-machine interaction.[5]

Hydoïd [6] is a real-life humanoid robot whose purpose is to contribute to improving the understanding of locomotion, the phenomenon of human motion. Humanoids on a Hydraulic Drive [7] can accomplish full spectrum of heavy and useful tasks, replacing people in environments that require them.
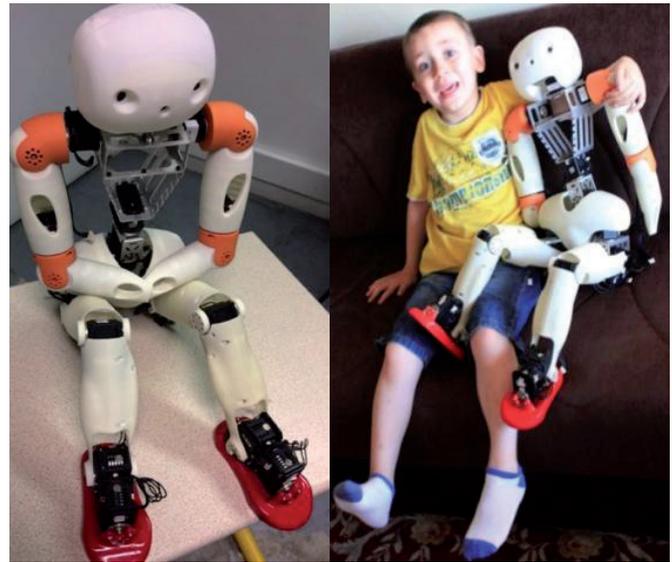


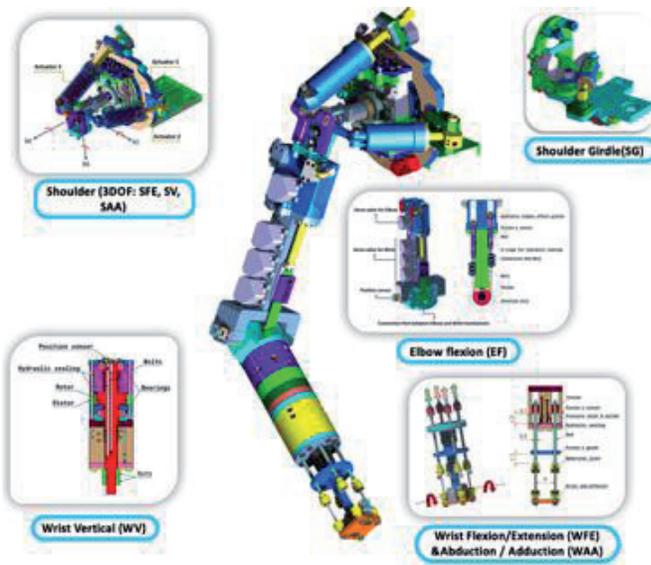Figure 2 : Robot HOPALALA, source of picture LISV-Paris-Saclay



Figure 1 : CAD design HYDROïD (left) and its prototype (right), source of picture LISV, Paris-Saclay.

HOPALALA is an open platform humanoid robot that users can adapt to their own needs. Hopalala is the fruit of joint efforts in developing an open platform of humanoid educational robots that will be used in primary and secondary school education. Its design allows the alternative introduction of different types of sensors (light, temperature, contact, proximity, distance, pressure, navigation / position, acceleration, IMU sensor - Inertial Measuring Unit).

Project SANDYC: the development of lower extremities for adolescents with spinal cord injury. Problem to resolve: all existing exoskeletons are primarily intended for adults where human body characteristics are set in terms of size and physical properties, which is not the case with adolescents who can still grow. Therefore, in collaboration with SANDYC, in 2014, an industrial project for the development of the lower extremities of the teenagers has been launched, enabling them to move around and around the house.
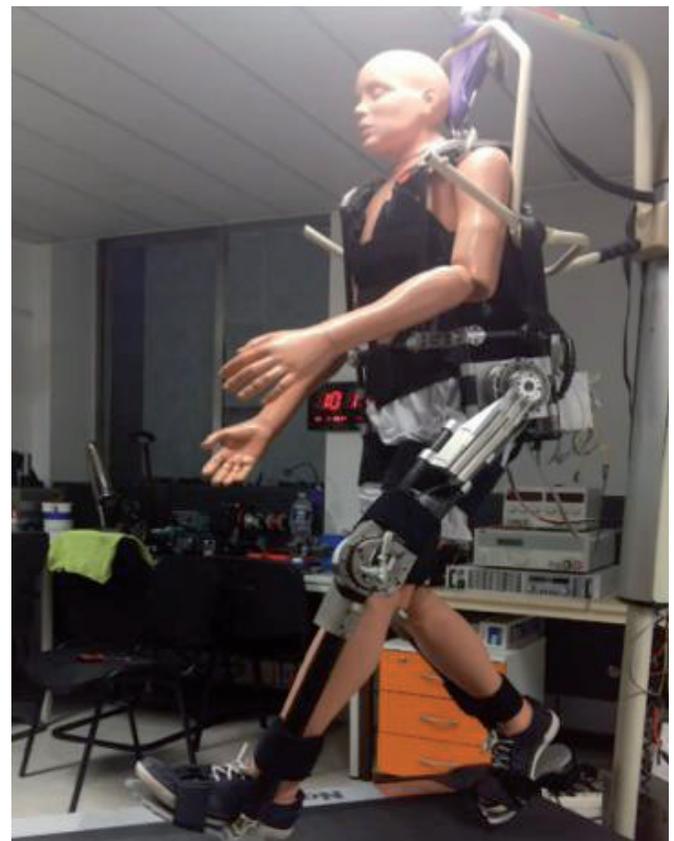


Figure 3 : first prototype of the lower extremities of the exoskeleton, source of picture LISV Paris-Saclay

The ESTA and CEREBRAPTIC projects of the EADS Foundation are related to the study of new interface models from the point of view of linking commands and taking into account physiological signals that allow characterization of user states [8].

Figure 4 : Brain-computer interface, source of picture LISV Paris-Saclay

The Virtual Armchair Project (FUI Ile de France with EDF and CEREMH, 2014/2018) was developed as a result of the FUI AccesSim project focused on assessing the virtual reality of urban accessibility. So it's a virtual reality simulator for learning wheelchair mobility [9].



Figure 5 : Platforms Accessim and Becape Eco

Humanistic robotics disregards transhumanistic ideal – Augmented man, but agrees to repair human defects, and thereby accept willy-nilly to play transhumaniste game. Indeed, the way to increase abilities of handicapped persons is often also the way to increase capacities of all persons.

# TRANSHUMANISTIC APPROACH OF BIOMIMETIC ROBOTICS

Transhumanistic ideal is augmented man. Transhumanists are convinced that it is necessary to liberate man from his biological vulnerability, to stop the phenomenon of aging, and to improve his abilities, especially those of the brain, which would become more powerful than it is the case today.
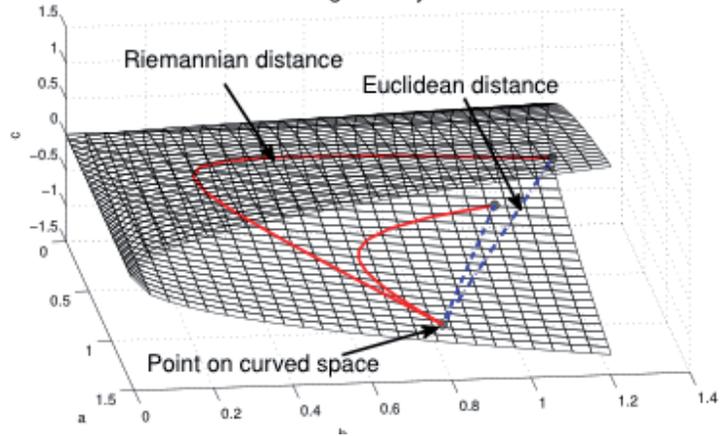


They are expecting hypothetical uploading or reconstitution of the complexity of the human brain, as well as transfer to the computer (dematerialization in Cloud or re-implantation in robot) of the most perfect system of interconnected 100 billion cells. With this aim in mind they launched two major projects: the American Human Cognome and the Swiss Blue Brain, in parallel with Singularity University project of Larry Page, a guru of artificial intelligence who enjoys the support of Google and NASA. This University's mission is to train students, entrepreneurs, and governments to recognize the benefits of new technologies, as well as to promote the concept of singularity by which human civilization will experience technological growth of higher order by about 2060. At that time, the developed intelligence would be superior to natural human intelligence, thanks to NBIC (nanotechnology, biotechnology, computing and cognitive science) and the principle of individualism, taken from the philosophy of liberal political thought and the free market economy.

Since liberal transhumanism is directed at an individual, but individuals are not considered as a part of a whole (of society), a new superman is born. Like Elon Musk, who is ready to colonize Mars, and thus inaugurate a new "post-humanist type of man" – superman, more intelligent and then superior to man. The profile of this augmented men, whose intelligence would increase proportionally to his bank account growth, is alarming; as well as a kind of intelligence we can buy, and maybe use against non augmented men with a thin bank account. Therefore, the vision of the future inhabited by the "posthumanist kind of man" reminds us of the fatally unhappy interpretations of Nietzsche's superman of the past, such as Hitler's übermensch, which seeks the extermination of all «undermen» and despises men who do not believe in supermen›s existence. Likewise, because transhumanists did not develop a smart human resource management application that would be able to govern men and supermen and insure technological improvement for everyone, it is not clear how to stop the accelerated process of deepening socio-economic inequalities that followed the last 30 years of work on augmented man. This concern has, of course, increased since Kurzweil predicts that the man himself will become an application capable of repairing his own damaged matter. According to him, man is on the path of mastering «the application of life » and the damaged «human matter» will no longer automatically mean the disappearance of the human spirit with it [10].

# INSTEAD OF CONCLUSIONS

Highly technological environment defines augmented man, consequently the development of artificial intelligence that Marvin Lee Minsky defines as the design of computer programs that perform actions that humans are still doing better, because these tasks require high-level mental processes such as: perceptive learning, memory organization and critical reflection. So today's key question is how the augmented man will use the demiurgic power he might possess if his product - artificial intelligence [11] - can really master high-level mental processes that are today a feature of natural intelligence. So it is no coincidence that some opponents of transhumanism, among which the most active historian Francis Fukuyama [12], blame the movement to promote the most abundant form of inequality - the one that will exist between "man" and "superman". For Fukuyama, the possibility of transforming human beings using technology is only a stretch to the limit of technical utopias inherited from Francis Bacon (New Atlantide, 1622). Philosopher Jean-Claude Guillebaud [13] adds that transhumanist militancy is marked by immaturity because it reflects hatred of the human body, its weaknesses, suffering and imperfections. - in short, hatred of all what makes from man a man.

The contemporary world is undoubtedly more complex than transhumanistic ideal - Augmented man with his selfish wish to improve his abilities [14]. Nevertheless, Cynthia Fleury, a philosopher, notes: "We are not only living in the world of machines that have nothing human, but we are also living in the world of people who behave like machines"[15]. People persistently refuse to move from simple thinking (speculations, preferences and beliefs) to the complex one: proposing hypotheses and solutions, creating relationships and observing interactions, seeking criteria, relying on verified facts and self-correction practices. [16] The transition to complex thinking implies a certain effort, which occurs only after systematic acquisition of knowledge, in an adequate environment.

The complex thought is supported by a special form of circular (complex) causality, where there is not only an unbroken chain between effects that affect the causes and causes that affect effects, but there is also the perpetuation of that chain, because the effects themselves produce causes. For example, scientists are at the same time a product and a producer of transhumanism. Transhumanism learned scientists the transhumanist language, by which scientists have become themselves the producers / teachers of that same transhumanist language. The fact that the product is a producer has therefore enabled the inertia of transhumanist culture and the transfer of the transhumanist language from generation to generation of the scientists. Even more, thanks to this principle of recursivity, the generations of scientists can exist. Reproduction is therefore a manifestation of recursivity.

It is clear that it is easier to reach the logic of the machine then to reach complex causality.

However, if transhumanists really want that their thinking become a recognized philosophical concept like humanistic one, then they must abandon the simple causation in which the same causes always produce the same effects, making appear the development of new technologies as the goal in itself, far away from real needs of society. By incorporating the principles of complex thought, especially of recursivity, transhumanism would have reached the stage of the Information Age and became the producer of new norms of humanistic culture.

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