

THIRD GENERATION REPLICATORS: AN OVERVIEW OF THE BLACKMORIAN TEMES CONCEPTION

REPLICADORES DE TERCEIRA GERAÇÃO: UMA ANÁLISE DO CONCEITO DE TEMES DE SUSAN BLACKMORE

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Abstract: This article aims at presenting the theoretical foundation of the temes, the third generation replicators proposed by Susan Blackmore. Blackmore's hypothesis is grounded on the premise that a novel evolution process is presently taking place on earth, in which the copy, variation and selection of information are carried out directly by the machines, and no longer by the genes and memes alone, thus bringing about an evolutionary algorithm in a different complexion. Naturally, a large part of Blackmore's theoretical foundation stems from Richard Dawkins's memetic theory, to which memes would be able to account for the cultural evolution pertaining to human beings. By scrutinising the notions of memes and temes, based on the battle of the replicators' scenario imagined by Blackmore, this article intends, ultimately, to ponder upon the human condition, especially in regard to its relationship with the construct of the cyborg, at a moment in which the temes all but determine the merging of man and machine.

Keywords: Temes. Memes. Cyborgs. Susan Blackmore. Richard Dawkins.

Resumo: O objetivo deste artigo é apresentar os fundamentos dos temes, replicadores de terceira geração propostos por Susan Blackmore. A hipótese de Blackmore tem por premissa a ideia de que um novo processo evolutivo atualmente ocorre no planeta Terra, em que a cópia, variação e seleção das informações são feitas diretamente pelas máquinas, e não mais apenas pelos genes e memes, deflagrando, portanto, um algoritmo evolucionário em diferentes bases. Naturalmente, grande parte do embasamento teórico de Blackmore vem da teoria memética de Richard Dawkins, para quem os memes podem explicar a evolução cultural própria dos seres humanos. Ao se cotejarem as noções de memes e temes, pretende-se, ao fim, com base no cenário de batalha dos replicadores imaginado por Blackmore, discutir a condição dos homens, sobretudo a partir da figura dos ciborgues, no momento em que os temes parecem determinar a fusão homem-máquina.

Palavras-chave: Temes. Memes. Ciborgues. Susan Blackmore. Richard Dawkins.

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1. Introduction

Blackmore's perspective on temes may be understood as an updated version of the 'Frankenstein Syndrome', which consists on the belief that robots and artificial beings might pose a serious threat to humanity. This is due to the fact that Blackmore

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proposes that a new process of evolution could be presently taking place on earth, in which replication, variation and selection of information would be stored and processed by machines, instead of living cells, producing, ultimately, artificially intelligent systems able to select what technologies should be developed and which should be ignored – and that would utilise mankind as a mere scaffold, in order to achieve the next level in the scale of evolution, in which purely organic life would be rendered disposable.

Bearing the consequences of such proposition in mind – both theoretical as well as practical, this article aims at specially conveying Blackmore's reasoning on the issue. It is also important to highlight that the foundations of the memetic theory lie on the memetic theory. This theory was originated in the propositions of Richard Dawkins, to whom, in the closing chapter³ of his 1976 book, *The Selfish Gene*, there exist cultural replicators, named memes. It is from this very point that there springs the necessary argument for the perspective that it is the memes who are responsible for the cultural evolution of mankind. Therefore, before getting to the memes per se, it is necessary that we delve into Dawkins's memetic theory.

Lastly, once Blackmore's five theoretical possibilities regarding the fate of earth have been presented - especially with the battle of the replicators' scenario, this article aims at a philosophically engaging the fate of mankind, particularly regarding the cyborg construct.

2. The foundations of the memetic theory

For Dawkins (2007, p. 330), memes are the autonomous replicators that explain the cultural evolution of mankind, sharing with the genes the responsibility for the behaviour of the *Homo sapiens*. According to Blackmore (2009), meme is 'that which is imitated', or anything which is copied when people perform a process of imitation. Thus, memes encompass songs, anecdotes, habits, skills, technologies, scientific theories, phoney medical treatments, financial systems, organisations and, in short, pretty much everything that belongs to the human culture. In this context, the proposition of the present subtopic is venturing into the realms of the memes and

³ The first edition, published in 1976, ended at Chapter 11 (Memes: the new replicators). Subsequently, from the 1989 edition, Chapters 12 (Nice guys finish first) and 13 (The Long Reach of the Gene).

describing them based on the guidelines offered by the memetic theory, which developed specially from the studies that were published during the late 1990's.

Dawkins (2007, p. 37) considers that the intellectual 'coming of age' of a planet can only be reached when the reason for the existence of intelligent life is understood. In such scenario, human beings would – in case they were visited and enquired by creatures from outer space – be able to answer to the visiting aliens, based on the Darwinian Theory, the reason why we exist, what the human being is – and what the meaning of life is – without the need to resort to superstitious explanations. By the way, it is Dawkins (2001, p. 417) himself who speculatively claims that the principle of natural selection could not only be applied to life on earth, but to the whole universe as well.

When writing "The Selfish Gene", Dawkins (2007, p. 38) wanted to demonstrate the synthetic view of the Darwinian evolution, which states that all forms of life, regardless of their being bacteria, viruses, plants, animals or even human beings, are but machines crafted by the genes. Thus, the genuine basic unit of the natural selection would take place at the genetic level.

Despite the importance of the genes, Dawkins questioned whether it was possible to admit the existence of some other replicator on earth that operated in a similar way to the genes, making use of the same evolutionary algorithms applicable by the natural selection, but that would be able to explain human behaviour from the standpoint of cultural evolution and grounded on a different foundation than those of sociobiology and evolutionary psychology. In other words, Dawkins realised that the Universal Darwinism was too encompassing a theory to be confined to the strict context of genetics. It was from this point forward that the memes came into being, precisely as an alternative proposition to the unchallenged dominance of the genes.

3. The imitation process

One of the premises adopted by Dawkins (2007, p. 325) was the reflection upon whether there would be any reason by which the human species could be, amongst all other species that have ever existed⁴, considered unique and singular. Verily, Dawkins came to the conclusion that one could categorically affirm that the reason by which

⁴ Daniel Dennett (1995, p. 86) provides us with an interesting piece of data in his book 'Darwin's Dangerous Idea': for every surviving species there are a hundred already extinct.

Homo sapiens differs from all other species lies in the extraordinary ability of imitation. Allowing that some animals do demonstrate a talent for imitation, such as the apes and the birds⁵, Dawkins (2007, p.327) states that only human beings show what imitation is truly capable of.

According to Dawkins (1999, p. xxi), imitation was the key factor that set human ancestors apart from the other species. This hypothesis lies in the idea that imitation might have been the basis for the theory of evolution of the human mind and the explosive inflation of the brain, including what that which is understood by individual consciousness. In Blackmore's (1999, p. 3) view, the ease with which human beings perform imitation has rendered them unable to see the simple fact that the imitation is what, ultimately, make *Homo sapiens* special.

As stated by Eva Jablonka and Marion Lamb (2010, p. 197), there are three modalities of learning that made up the behavioural inheritance system, imitation being one of them. The first modality occurs by the transference of substances that influence the human behaviour, such as, for instance, those related to the varieties of food to which children are exposed in the early stages of their lives and that will shape their food preferences as an adult. The second modality is the social learning without imitation, in which there is an apprehension through behavioural imprinting acquired in a given moment in the beginning of one's life, which determines the exposition of individuals to species-specific stimuli and that will have an influence in the reproductive habits, in the tactics utilised to avoid predators and in the choice of shelter, for example. In the imitation process, however, an inexperienced individual not only learns what need to be done, but how it should be done as well: her part is active within this process.

According to Mithen (2002, p. 123), if a chimpanzee comes across another one inserting a wooden stick into a termite house and licking the tip of the stick afterwards, and thus, starts doing the same thing, it is unlikely that it takes place as an act of imitation, in the sense that the chimpanzee is not fully aware of the purpose of the action and the means to carry it out. It is much more plausible the sticks and holes simply got his attention. For Mithen, this is the reason why there has been no record of

⁵ Dawkins (2007, p. 86) gives us an example of the bird *Philesturnus carunculatus*, that lives in the islands of New Zealand. The repertoire of songs of this bird was not genetically inherited and was made up of up to nine melodies. Every male hatchling, through imitation, had its own repertoire of songs, some imitated from birds of neighbouring territories. Besides, sometimes it was possible to spot the appearance of a new song, which occurred when a young bird probably committed a mistake while aiming at an old song.

technological advances amongst the chimpanzees, given that every generation needs to struggle in order to reach the technological level achieved by the previous one⁶. Human beings, on the other hand, as noted by Jablonka and Lamb (2010 p. 213), do not aimlessly imitate, for the decision of imitating another individual is oriented towards goals and inferred reasons.

Thus, the foundations of the memetic theory have been established in this context where the cultural evolution of the *Homo sapiens* gained its own momentum when this species developed the capacity to understand the mind of other living beings in a fairly sophisticated way. Dawkins' (2007, p. 329) view is that the theory to be used in order to understand the behaviour of mankind should be rewritten considering yet another replicator, much more recent and aggressive, that appeared when humans learn how to imitate⁷.

4. The meme concept

Dawkins (2007, p. 300) aimed at creating a new name for this recently identified replicator, with the objective of conveying the idea of a unit of cultural transmission, or imitation unit. Thus, the word *meme* has been created because it resembled the word gene and because it had a certain connection with the word memory. Curiously, Dawkins acknowledged, from the 2nd edition of *The Selfish Gene*, that the word 'meme' turn out to be a good instance of meme itself⁸, for it has been repeatedly utilised ever since, including by the Oxford English Dictionary.

⁶ Although there has been no record of technological advances amongst other primates besides *Homo sapiens*, Jablonka and Lamb (2010, p. 217) mention the example of a young female macaque named Imo, who decided to dip her potatoes into a nearby river before eating them, once the potatoes were covered with sand. The other monkeys began to ape her actions, plunging their own potatoes into the river as well. Hereafter, the scientists saw the practice of potato washing being spread through the whole macaque colony.

⁷ The debut of the memetic theory can probably be credited to this quotation of 'The Selfish Gene': the gene, the DNA molecule, is by a chance the most common replicating entity on the planet. There might be others. If they do exist, provided that some conditions be met, they will tend, almost inevitably, to become the foundation of an evolution process. [...] I think that a new type of replicator has appeared recently in this very planet. It is right in front of us. It is still in its infancy, floating in the whimsical breeze in its primordial soup. It is, however, already achieving an evolution change at a pace that would the old gene panting far behind (DAWKINS, 2007 p. 329).

⁸ When writing the foreword for Susan Blackmore's book, 'The Meme Machine', Dawkins states some reasons why the word meme is, itself, a meme. According to him (1999, p. xv), it is possible that the meme, for being monosyllabic, might be used to create other words, amongst which we may mention: memepool, memeticist, memoid, memetic population, meme complex, memetic engineer, metameme, memplex.

According to Aunger (2002, p.17), the meme concept bears two distinct lines of thought. One of them considers memes as microbes – position held by Richard Brodie and Aaron Lynch. In such case, memes are equivalent to a flu virus that, by causing its hosts to sneeze, infects those around in the vicinity. Thus, memetic would be the cultural analogue to the pathogens that spread over populations, for the ‘mind virus’ metaphor understands the memes as parasites, since they make use of physical, chemical and mental processes of other organisms for their own transmission. Furthermore, memes must overcome the other memes previously existing in a hosting mind and then induce them to transmit the dominant memes to new potential hosts. The consequence of such interpretation, according to Aunger (2002, p. 18), is the inexorable conclusion that it is not the human beings that possess ideas, but, on the contrary, it is ideas that possess human beings, forcing them to act in a way that is beneficial to the interests of the parasite memes.

The other line of thought is the one that suggests that the memes are like genes. However, while genes are DNA replicators, the memes are culture replicators. This view claims, therefore, that cultural evolution cannot be explained without resorting to a novel replicator, even if adjustments are required in order to explain the memes via genetic theory, given they do not share identical characteristics. Richard Dawkins, Daniel Dennett and Susan Blackmore are the champions of this second line of thought. Susan Blackmore (1999, p. 8) is of the opinion that, in particular, imitation is a kind of replication and the memes are the units of imitation⁹. It is for this very reason that she regards that the key point - necessary to understand the widespread presence of the memes - is the extraordinary imitation carried out by the *Homo sapiens*. Given that imitation in large scale became possible, “Pandora’s Box” was opened and the memes were released, which allowed, in turn, in the first place, that the human brain became a host to meme, allowing, additionally, that the memes rapidly took control of the human mind in a supposedly irreversible domination process.

The anthropologist Robert Aunger (2002, p. 1) cites the example of when he was conducting a field research in the heart of Africa, and came across local people who believed in witches that could attack human beings and devour their brains in their

⁹ Blackmore’s meme concept may be expressed as everything you have learned by imitation from someone else is a meme. [...] This includes all the words in your vocabulary, the stories you know, the skills and habits you have picked up from others and the games you like to play. It includes the songs you sing and the rules you obey. [...] Each of these memes has evolved in its own unique way with its own history, but each of them is using your behaviour to get itself copies (BLACKMORE, 1999, p. 06).

sleep, turning them into zombies, doomed to live homeless in the woods, wander aimlessly in the night and forced to have sex with animals. In many cultures around the globe, according to him, similar stories are told. Aunger proposes that these strange beliefs are but examples of memes capable of perpetuating themselves somehow, serving their own egotistic interests.

Presently, as highlighted by the American physicist Aaron Lynch (1996, p.17), memetic offers an explanation for the ideas that permeate the economy, sociology, politics, psychology, communication sciences, cognitive sciences, philosophy of mind, folklore, family planes, sexual orientation, religions and beliefs, in a general sense. Even possessing a theoretical foundation, the philosopher Daniel Dennett (2006, p. 371) points out that many still wonder if ‘memes really exist’, given that people cannot yet grasp what kind of object a meme might be. For the disbelievers, Dennett suggests they might equally ask themselves what the word *cat* is made of. According to Dennett, words are products of human activity; they can appear in any means of communication and can jump from one medium to another in a process of replication. Notwithstanding, its status as a real thing, such as occurs with the word *cat* is not questioned simply on grounds of being abstract. The same concept should be applied to memes. In the same line of thought, Blackmore (2010) draws out attention to the fact that there is nothing mystical or abstract about the memes. For her, everything that is copied through culture is a meme, by definition. Thus, young adults wearing their trousers ripped at the thighs, wearing nose rings or listening to a given band based on the fact that other young adults do it as well demonstrates the concrete existence of the memes. Therefore, Blackmore’s (2010) understanding is that one cannot apprehend the existence of institutions, money, railways, bicycles, furniture or days of the week, for instance, as being abstract, because these are all pieces of information that are codified in a certain type of matter and energy, and that can be copied. The core definition of a meme, in this perspective, boils down to ‘that which can be imitated’ or ‘that which can be copied’ by means of replication.

One of the consequences of adopting the concept of meme as being a replicator, accepting, in this view, the Dawkinsian position in particular, is that the memes can make use of the conceptual foundation that has been utilised by the molecular biology for a very long time to explain the working of the genes. Furthermore, besides memes and genes, there are other replicators, such as the prions and the computer viruses,

whose methods of replication may help to systematise the mapping out of the memetic replication process.

5. The foundation of the memetic theory

Susan Blackmore (2009) is known to refer to human beings as the “Pandoran species”, for it was the human beings that, through the process of imitation, have released a second replicator (the meme) and initiated a process of memetic evolution in which the memes compete to be selected by the humans and then, get copied again and again in an endless cycle. Imitation, as understood in the Blackmorian perspective, is not only a secondary skill, but the core of a new kind of evolution, in which a different replicator can be created from the very vessel of propagation of the former replicator. Such is precisely the case with the memes, which, while being replicators themselves, arose from the machines created by the genes for their own protection and proliferation. Blackmore (2009) believes that this sort of evolution produced the complexity of the design that one can see in modern life. The issue, however, is that now, in the 21st century, the “Pandoran species” is finding itself before the eruption of yet a third replicator, the memes, which utilise the meme machinery to set into motion a new process of replication.

According to Blackmore (2009), today’s computers, most of which are connected amongst themselves over the internet, are starting to carry out the critical steps in order to give rise to a novel evolution process. This is due to the fact that these computers store large quantities of data and with high fidelity. Even if, up to now, the largest part of the variation and selection of information is still done by human beings, there are plenty of examples of computer programmes that recombine old texts and autonomously create new content – additionally providing quoting references and footnotes. Notwithstanding, the mechanisms of artificial intelligence of the internet search engines, such as those currently in use by Google and Yahoo!, allow the system to select, within the myriad pages and in compliance with the internal algorithm, what information, theoretically, would be the most relevant for the user. In this sense, to Blackmore (2009), the memes would be the digital data that is stored, copied and selected by the machines themselves. Furthermore, this process diverges radically from the way in which cells copy chunks of DNA or from the way in which humans copy

memes. The information, by itself, is also different, consisting of highly stable digital information, stored and processed by machines instead of living cells.

Blackmore (2009, 2014) takes the view that human beings like to fancy themselves as the designers, creators and controllers of this emerging world. When the first e-mails started to be sent, it looked like a necessary substitution of the format of the outdated letters and fax transmissions. In the same way, the advent of mobiles represented a novel and more convenient way to communicate. Notwithstanding, Blackmore proposes that one ponder about the present stage of development of the smartphones, arriving at the conclusion that a substantial number of people clings to such devices as if their whole life were contained therein. From the point of view of the memes, the beneficiaries of such changes are the latest machines that copy, recombine, store and spread data. In this perspective, mankind is merely the scaffold from one replicator to the next, rendering *Homo sapiens* ever less relevant in the scheme of the planet – thus mankind manages the energy supply to feed an ever growing number of inventions which, in turn, provide more amusement, games, communication and information; a world, Blackmore (2009) claims, where human beings are ultimately worth only what benefits their machines yield.

In order to apprehend the full extent of the memes concept, the thought process must abide to the same order as that utilised in the contextualisation of the memes in regard to their relationship with the genes. Even though, in the struggle between genes and memes, the genes have managed to survive, one can discern that the human body, at first uniquely the vessel for the propagation of the genes, has become an ever more suited machine for the new replicators, the memes. It was from this, in Blackmore's view, that human beings, previously only vessels for genes, became effective meme machines with the advent and development of the imitation.

In turn, the range of vessels for the memes displays all inventions and technologies that increase the fecundity, fidelity and longevity of the meme – comprising printed mediums, long distance communication systems, sound and image recording systems, computers and, more recently, the internet. It is precisely in this transition, in which information started to be copied, varied and selected exclusively by the machines, is that the memes emerged and, repeating a process that took place in the gene-meme relationship the vessels for the meme became meme machines. Consequently, one can assert that there are presently three different replicators: the genes, the memes and the memes. The memes transformed the vessels of the genes

(human beings) in meme-replication machines, as equally the memes utilised the vessel of the memes (devices, gadgets, book and computers) in meme machinery.

One of the most noteworthy consequences of the influence of the memes is the transformation of the biosphere of the earth in a technosphere ruled by computing, hardware and software. In Blackmore's (2014) vision, mankind has been outsourcing ever more prominently to the machines, albeit unknowingly, their mastery of the manual skills. As Ray Kurzweil (2014, p.19) points out, the intelligent algorithms took over the control of a vast part of the important operations in the everyday life of mankind, amongst which the monitoring of frauds in credit cards, the landing and taking off of aircrafts, the industrialisation of products with a smart design, the control of factory supply levels, the assembly of products in robotised plants and so forth, replacing what, until just a while ago, was the exclusive charge of human intelligence.

On the other hand, according to Blackmore (2009), individuals are getting ever more hooked on television, videogames, computers and smartphones, copying and transmitting memes and memes, resorting, at times, to drugs and stimulants, in a process that, supposedly, would be anti-natural, but that percolates many niches in modern society. As stated by Blackmore (2009), the machines and technological devices are constantly improving, in a trajectory that encompasses nanotechnology and that grounds itself in massive systems to which may be bestowed the capacity of self-repairing. If ever machines become self-replicating, such as in the novel 'Press F for Frankenstein', by Arthur C Clarke, it will be a harbinger that the memetic evolution is on its way.

Blackmore (2010) is of the opinion that it is necessary to highlight that the memes, such as those existing in websites and high technology devices, differ radically from the natural memes spread by the human beings, such as spoken words, skills, songs, art and religion. The data that the machines copy is not comprised of speech or human actions, but, as can be apprehended, digital data competing for space in servers and high fidelity electronic networks. From the moment in which the processes of copying, variation and selection be carried out exclusively by machines, the third replicator will be fully released. But the most important issue at hand is that the memes, being the latest replicators, will override the genes and the memes, in such a way as to form a new layer of evolution. Mankind, which believed to be creating intelligent tools for its own benefit, will be but a vessel for the next level of the evolution process. According to this line of thought, the release of a new kind of replicator is a dichotomic

event, for, at the same time in which it propels evolution forward, threatens any form of life unable to adapt itself to face this new challenger.

6. The battle of the replicators and the cyborgs

The arrival of replicators is an event that deserves to be heeded, for the replicator, precisely as its name anticipates, will multiply egotistically whenever there is an opportunity to do so and despite the consequences. Blackmore (2010) proposes that the replicators may be categorized in levels, in a scale that starts at R1 and develops in arithmetical progression. On earth, the only planet in which evolution process can be known beforehand, R1 is related to genes, R2 to memes and R3 to memes. There might be, elsewhere in the cosmos, different replicators, what doesn't alter the outcome at all. Strictly speaking, the logic is that the subsequent replicator emerge from the vessels of its predecessor, copying a different kind of information with variation and selection.

Thus, R1 is the first level of replication, and it is that capable of making some kind of life form possible, possibly having evolved from a yet simple replicating substance, or from self-copying molecules. As reported by Blackmore (2010), R1 may be present in countless planets or galaxies, given that it conforms to the first stages heading toward the appearance of living creatures. On Earth, the genes have performed this function for billions of years.

R2, in turn, arises from that living form created by R1. As previously observed, genes create vessels, and these vessels become the machinery for copy of the memes. According to Blackmore (2010), there are three possibilities to consider when one analyses the surging of R2: the first is that R2 could appear in the "Pandoran species", but might not be able to give rise to a new evolution scale. This might occur, for instance, due to the fact that R2 is so lethal that would end up killing the individuals that did not succeed at acquiring the new abilities to be copied, rendering the rest of the population only with R1, or, differently, the case in which the environmental conditions of the planet do not supply sufficient differential advantage for R2 to thrive; the second possibility is that in which R2 would ultimately kill the "Pandoran species" that had released it. In such case, the recently developed information replication skill might be so intense from an energetic standpoint that it would burn out all the resources of the "Pandoran species", or that the copied things became they themselves, lethal, considering, also, in a different analysis, that when transforming the R1 vessels in R2

machines, the R2 replicators would end up creating a deadly environment for all the individuals of the “Pandoran species”, without exceptions. Blackmore (2010) believes that the threats of the meme involve, for example, high demands of energy to support a large brain and the dangers of death at birth for a species that walks on two feet and that, therefore, possesses narrow pelvis; the third possibility, which can be verified on earth from this line of thought, is the emergence of R2 that stabilizes and co-evolve with R1.

Regarding this issue, Blackmore (2010) speculates that the controversial debate over the fact that human beings are the only remaining species to stem from the hominid lineage could hold the answer to the issue of the replicators. This is due to the fact that the Neanderthals, as well as other related species, might have had a transformation generated by the R2, but that proved fatal, for eventually rendering the head of the foetus too large for its own safety at birth, or for having induced the copy of dangerous traditions and that endangered the species.

Concerning R3, it is the replication which emerges from the vessels developed by R1 and R2. In this regard, Blackmore (2010) understands that the scenario is still too fresh to allow for any forecasting about the future of a planet simultaneously bearing three replicators. Nevertheless, some possibilities are presented for planet Earth. Firstly, a catastrophic scenario is conceivable, in which the memes take over the control of the planet from the hands of mankind and kill off all life as a by-product of the overutilisation of resources, climate changes or nuclear accidents. A different scenario would be the annihilation of human beings, memes and genes, but with the survival of the genes, which would then reboot the evolution process, given the elasticity and variety of DNA-based life. Alternatively, there would be the possibility of the survival of the memes alone, provided that, in a world harassed by changes, the memes were able to create self-repairing and human-independent machines. The fourth scenario portrays a symbiosis amongst the three replicators, which would co-exist in harmony. Blackmore (2010) argues that this is the present panorama, even if, being a very recent phenomenon, cannot be assessed as to how stable the system might be in the present configuration. There would be, ultimately¹⁰, a possibility of merging between the memes and the memes, originating the cyborgs and the artificial intelligence era per se.

¹⁰ Blackmore (2010) mentions yet another scenario, in which a fourth replicator, R4, would utilise the vessels belonging to R3 to unleash an evolution process in an interplanetary scale. For the sake of the scope of the theme, the analysis of such process has not been carried out.

In this regard, the “image of the cyborg invites us to rethink the issue of human subjectivity; its reality forces us to reposition it” (TADEU, 2000, p. 13). For Bruno (2012, p. 119), “it is not the body, bare or natural, that establishes the mediation or the threshold between man and the world, but a body that is crisscrossed and modulated by the technique”. Rodney Brooks (2003, p. 248-249), head of the laboratory for Artificial Intelligent at the MIT, estimates that the first half of the 21st century will witness the merging between flesh and machine, without the possibility of changing back for the *Homo sapiens*, having in mind the high level of technology that would already dominate the human society. In this context, Santaella (2004, p. 31) visualizes a philosophical and cultural rupture that would arise with the advent of the cyborgs, in the sense that would be an ontological transformation of mankind, marked by the blurring of the line between the living and the non-living, between the natural and the artificial. Furthermore, the myth of the vampires, so well-known in literature and cinema, would summarise, as João Teixeira (2010, p. 63) proposes, the human condition at the present time, humans who, in order to avoid death would seek a liaison with the inorganic, creating a half-breed. Such situation would reveal, in the perspective of Regis (2012, p. 196), the new understanding of the word technique: “the technologies of information and communication mediated by a computer are the means for the constitution of the human being”. Anyway, it seems to be Tadeu (2000, p. 13) who was the most efficient at summarizing the issue: the era of the cyborgs would mark the end of the human singularity. “Kaput. The end of the privilege” (TADEU, 2000, p. 14).

As João Teixeira (2009, p.63) points out, “to try and halt the progress of artificial intelligence is the same as trying to prevent a Boeing from taking off by using clubs and stones”. In the future stage in which bodies will be made of inorganic matter and the neural networks will no longer be constituted by neurons – but silicon or some other element will be in use instead, philosophy faces the issue of machines that, by solving enigmas, seem to converse, think and have an awareness of the world. This hypothesis turns away from the tradition that considered conscious life as a unique and original capacity of the human beings.

Similarly, the advent of the cyborgs suggests a scenario in which the will no longer be a clear threshold between men and robots, making it difficult to tell apart human from non-human, or, alternatively, creating castes of humans that distinguish themselves from one another by the condition of having the means to resort to the resources of artificial intelligence. Furthermore, it is also interesting to analyse that a

robot could then be a subject entitled to rights. For the time being, the legal criteria apply only to that which possesses life through birth, what leads, naturally, to the complete privation of rights and obligations of the machines, having in mind the impossibility of stating that a robot can be born in the same way that organic beings do.

Blackmore (2014) stresses that the notion of self would change as well, under this new perspective, in the sense that the individual, in many occasions, would cease to be an indivisible unit, becoming, instead, an “avatar” that would coexist simultaneously in several websites and forums, at times presenting contradictory or stereotyped profiles. As for the issue of death, if one’s but were to be repeatedly and gradually substituted by robotic parts in procedures that, in extreme cases, might get to the point of replacing the very brain by artificial networks, it would become impossible to know for certain, legally speaking, if the individual would be alive just because it would be claiming to be, or if the substitution of the brain might mean the death of the natural body. In these cases, the legislation would have to be able to establish clear guidelines about what comprises the term “death”, even if eternal life were an excellent alternative to be considered – particularly with the possibility of a backup for the content of the artificial brain.

For Teixeira (2010, p. 12), earth will soon be surrounded by cyborgs and robots, forcing humans to develop a parabiosis¹¹ with machines. The temes concept may still lack the empirical foundation, in the scientific apprehension of the term, but Blackmore’s merit is the demonstration of the need for juridical-philosophical solutions for the temetic scenario – specially the cyborgs, an issue that the “biomachine” of the future will have to come to grips with.

7. Final considerations

Blackmore (2009, 2010, 2014) holds the hypothesis that the temes were released when machines acquired the ability to copy, to vary and to select the information and that, even in a very incipient way yet, could be visualized in the growing computing power of programs which autonomously create content, as well as in human beings’ dependence on the internet and digital worlds. In this sense, Moravec (1988, p. 04) argues that sooner or later machines will be capable of taking care of its own

¹¹ A parabiosis consists on a symbiosis, in a specific place, of specimens from different species.

maintenance, reproduction and self improvement without the need of human help. More than that, to Kurzweil (2007, p. 20) “machines will accumulate knowledge by itself, venturing into the physical world, taking advantage of the full range of services and media information, and being able to share knowledge each other”.

Under these circumstances, memes could impose on human beings a necessity – and not just a possibility – to merge with machines, in which cyborgs would be the most remarkable example. If such scenario would come to reality, Katherine Hayles (1999, p. 283) mentions that the prospect of becoming a posthuman would evoke a sort of terror, relatively easy to understand, in the sense that humans could be replaced by machines as the dominant category of the planet, joining the dinosaurs as a species that once mastered Earth, but which has now become extinct. The *Robot sapiens*, then, in the nomenclature coined by Fátima Regis (2012, p. 192), could stamp the notion of the man’s obsolescence, the man whom would be replaced by a being with body implants and brain chips, half man, half machine, and wherein death would not be made more present, mainly by the possibility of mind backups inside a computer.

Perhaps this point is the one that contains the biggest amount of ethical dilemmas: an infinite being could be considered as human? How justify altruism if eternal life is an option? Is not the knowledge of death the one that gives meaning to life? The continuity of man as cyborgs would determine the end of human nature? All these enchantments and challenges present themselves with the memes and the cyborgs. One last time, it is difficult to project seeking answers that could solve the puzzle. However, it is clear the need to start some reflection and observation about the subject, especially if Blackmore’s hypothesis, eventually, becomes feasible.

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