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Artificial intelligence scholars question wheter there is na overvaluation of machines without regard human intelligence: na invitation to reflection

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ABSTRACT

We seek to raise questions about Artificial Intelligence starting from the ideas of researchers as Dennet, Crevier, Dreyfus, Minsk, Virilio, who aim to relate the implications of such technological movement and its variations in current days. The reports are disturbing for a society in which technology depends on other markets, therefore, being servant. Considering this, we are guided by the thoughts of those scholars the facts reported in the work lead us to a main question, which is both sensitive and disturbing, as well as potentially emblematic: In addition to agile allies, could Artificial Intelligence also take on contours that would make us our opponents? Such questioning is not new. Discussed at a time when knowledge was beginning to emerge from the pastoral moorings to evidence the reason and lift a mediator: the man. At that moment, a reconfiguration and appreciation of other knowledge arose. From dark days to less obscure ones? It seems to us that the question asked becomes legitimate given the power relation that is formed when a system composed of aluminum, steel and, supposedly, “mind”, which looms over our lives, is so called being.

KEYWORDS: Artificial Intelligence. Smart machines. Organisms.

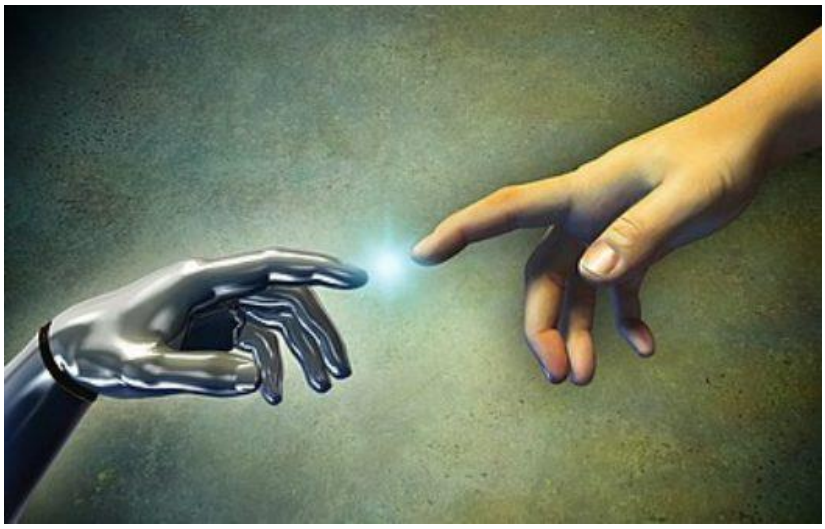
LOPES, A. A. Artificial intelligence scholars question whether there is an overvaluation of machines without regard human intelligence regard human intelligence: an invitation to reflection. **R. Tecnol. Soc.,** Curitiba, v. 14, n. 34, p. 144-158, out./dez. 2018.

INTRODUCTION

Long before Alan Turing[1] conceived his noted test, which theoretically would be able to distinguish a human being from a computer, that is, from an algorithm or software, Rene Descartes - considered by many the founder of Modern Philosophy – had already written critically about these oppositions between the human and the mechanic, and the possible ways to differentiate one from the other quite clearly.

Four hundred years from now, with vigorous sagacity, he stated in text that if there were machines capable of copying our actions and behaviors, one by one, in a complex and to some extent articulated in their own terms set, "as it would be morally possible", he said - we would still always have at least two very secure ways to recognize that they would not be truly human.

Figura 1 – Creature and creator



Source: Design products & applications website[2].

According to Rene Descartes, (a) it would be impossible for them to articulate coherent verbal discourse, which is the fruit of self-conscious reflective thinking - as we humans do most easily, every day, all the time; and (b) even more unlikely, would these machines be able to update their knowledge and understanding about themselves and the world continuously, from a sensitive, subjective and self-organized point of view, to the point of interacting with us without any embarrassment – equally and so as to still convince us, ultimately, that they are really intelligent and alive.

In view of that, Descartes (1850, p. 33-34) emphasizes that:

> for we may easily conceive a machine to be so constructed that it emits vocables, and even that it emits some correspondent to the action upon it of external objects which cause a change in its organs; for example, if touched in a particular place it may demand what we wish to say to it; if in another it may cry out that it is hurt, and such like; but not that it should arrange them variously so as appositely to reply to what is said in its presence, as men of the lowest grade of intellect can do. The second test is, that although such machines might execute many things with equal or perhaps greater perfection

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> than any of us, they would, without doubt, fail in certain others from which it could be discovered that they did not act from knowledge, but solely from the disposition of their organs: for while reason is an universal instrument that is alike available on every occasion, these organs, on the contrary, need a particular arrangement for each particular action; whence it must be morally impossible that there should exist in any machine a diversity of organs sufficient to enable it to act in all the occurrences of life, in the way in which our reason enables us to act.

What Rene Descartes makes clear in his famous Discourse on Method is that – according to his understanding and considering the historical perspectives of his period context – it would be impossible to exist a machine capable of reproducing the phenomenon of human consciousness in all its complexity and much less still the spoken, articulate and intelligent verbal discourse.

For this, it would be necessary to have an immense complexity of properties, faculties and peculiarities, without which life, consciousness and intelligence cannot occur. What he had already understood quite clearly is that the human mind cannot solve an indefinite number of situations while a machine has only a very limited set of programmed states, which are bound to prove itself incapable of providing appropriate responses to all the situations it (supposedly intelligent machine) will find in the "world around it". In fact, the biggest and perhaps unsolvable problem that a supposedly thinking machine needs to overcome, to then be classified as such.

As Dreyfus (1979, p. 216) conveys it, "For a computer, which must take up every bit of information explicitly or not at all, there could be no outer horizon [of understanding]". It is possible, since such programs and machines, that is, our cybernetic-informational systems, are irremediably unrelated to events, to time, to everything, which constitutes a natural and structuring limiter of their own ontological conditions.

VIRTUAL ENTITY

With AI, we seek to emulate the extraordinary phenomena of life, consciousness and intelligence, and this happens mainly through the creation and development of new computational systems and algorithms that are increasingly sophisticated, complex and powerful, which step by step are, one way or another, imitating - with the greatest possible reliability, and according to the state of technology at the moment - our sensory, motor and body systems.

It is a large and multifaceted mosaic under construction: some research groups work with the old and the difficult problem of the recognition of image patterns, which for humans is already very well resolved bio-evolutionary in our vision and cognition, but for the machines it is also much more complicated and complex to try to emulate; other groups strive to improve and recognize voice standards and translations - programs that listen to and talk to their users; others are engaged in developing general solvers of specific problems, such as in games and theorems, for example; others with the replication of human vision and perception in an artificial environment, thus copying these skills and abilities in a cybernetic-informational environment; others with a progressive understanding of

how these complex processes occur in the human brain, so that they can emulate, reproduce, and control them; still, others with self-organization and collective intelligence distributed in the systems themselves; or with massively parallel and quantum computing, and so on.

Therefore, a good example of this type of explicit and determined search is accessible in this account by Dennett (1996, p. 16), the director of the Center for Cognitive Studies, at TUFTS University, in USA:

> Lab at MIT, Rodney Brooks and Lynn Andrea Stcin have assembled a team of roboticists and others (myself included) to build a humanoid robot, named Cog. Cog is made of metal and silicon and glass, like other robots, but the design is so different, so much more like the design of a human being, that Cog may one day become the world's first conscious robot.

Among other things, the Cog robot is programmed to direct your cameras and lenses - that is, your vision - according to the movement of bodies and objects in your surroundings, reacting and focusing on any moving targets that enter your sensitive detection field. Being tracked in this way, according to Daniel Dennett (1996, p. 22),

> Is an oddly unsettling experience, even for those in the know. Staring into Cog's eyes while Cog stares mindlessly back can be quite "heart stopping" to the uninitiated, but there is nobody there – not yet, in any case.

It is noted that Dennett's "yet" reticence denotes a certain promise for the future, or at least a belief of that author that someday there will be someone there. Dreyfus (1979, p. 99), referring to Minsk - but this structural criticism also applies to Dennett -, states in a teasing way that the majority of the researches in AI part conceptually:

> Can be seen to follow from a fundamental metaphysical assumption concerning the nature of language and of human intelligent behavior, namely that whatever orderly behavior people engage in can in principle be formalized and processed by digital computers.

When, in fact, this is not the case in neurophysiology and neuroscience, for example. To this day, there is no concrete evidence to suggest that there may be a language or code capable of translating the essence of the living being, for the complexity of the living being in manifestation is so great, so far fetched, and still mysterious to us, that hardly someday a formal logical language will be able to transcribe it in all its fullness.

Such a translation or decoding can simply be impassive in these terms, that is, unfeasible according to the formal logic, which makes it inappropriate to speak of the human body as a kind of machine or even a computer. Algorithms and formal logic itself deal with quantities, whereas life and biology are based on qualities (MINSK, 1975).

NEW ARCHTYPES

Nevertheless, it is quite probable, and even understandable, that such mental processes do not respect and indeed ignore the rigid laws and precepts of physics. Living beings, as we know, and especially humans, when faced with any day-to-day situations, express in their thinking and common thought an infinity of properties concerning to reflection and action related to the situation in which depends, (or may depend) - especially in bioevolutive competitive injunctions that are usually harsh and fierce - their own survival (MINSK, 2006).

The living human consciousness in order to manifest itself must necessarily be as Dreyfus informs us (1979, p. 270),

> They seem to be using global perceptual organization, making pragmatic distinctions between essential and inessential operations, appealing to paradigm cases, and using a shared sense of the situation to get their meanings across.

Moreover, in fact, paradoxical as it may seem to the physicist and also to the philosopher, the meaning (or meanings of something) is only part of the reality perceived and processed by the human conscious brain in each moment, since even the lack or absence of a given situation's meaning (being, object or thing) may play an important role as the driving force in the search for that same meaning and sense that is for now non-existent or not conceived.

Figure 2: Illustrated silhouette of a man made of sprockets

Source: Dreamstime collection[3].

The master key that we humans have to face and resolve these situations seems to be the ability to - promptly - contextualize and decontextualize subjects, beings, objects, places and situations, according to the needs and the contingent circumstance of momentum (DREYFUS, 1979, p.23).

We make decisions or come to very important and complex conclusions, involving endless variants and alternatives, without even realizing that such Herculean ability and aptitude are being manifested. From the Biomolecular level to the general physiological constitutions, there are so many properties and adaptations bioevolutively necessary to the life of the organism that it becomes really difficult to accept the idea that they can be reproduced with harmony and perfection in a cybernetic-informational environment, in order to be able to safely state that you are dealing with a living, intelligent and conscious being in the form of a robot or computer (MORAVEC, 1988).

Still, many competent and respected researchers long ago within the academy believe that machines will, in fact, one day in the future, think, even if this is otherwise than the moist, biological, and synaptic systemic form that supported and still supports all intelligent thinking (BUTTON et al 1998) and conscious existing in the globe until then.

However, we cannot forget that, as Button et al (1998, p. 40) writes, there are other important issues involved, since:

> Many of us are supposedly attached to the notion that the machine cannot think because it guarantees our sense of superiority, and this kind of arrogance would be seriously impacted if it could be shown that the machine can actually think, understand, be conscious, etc.[4]

It is salutary to point out that a computer should never possess an element that is proper to a human being: the emotion. Thus, it is significant to intuit that such an instrument, when we think it is a machine, its ability to interact with the human is predetermined.

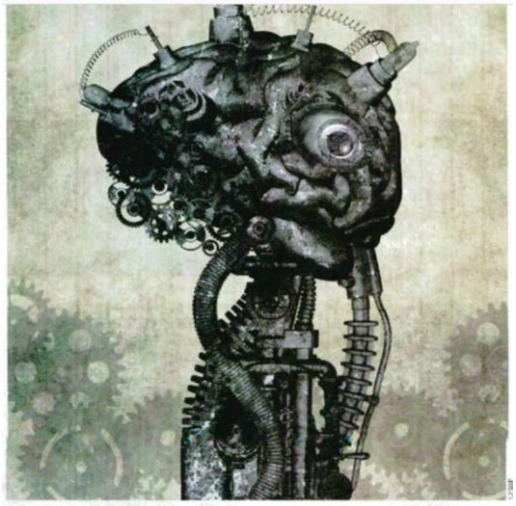
MINERAL REASONING

In fact, nothing would oblige a thinking computer to do it in the same way as ours. This brings us to the disturbing question: if a computer or robot programmed to imitate human sophistication does it very efficiently, then could it be considered human too? Everything leads one to believe the answer is no, since it would not know what it does, what it imitates, and especially why it does it. Besides, the main inspiration and model for most engineers working with AI is the functioning of the human brain itself (DREYFUS, 1979).

To understand that this important and complex organ is seen (and understood) by many theorists predominantly and erroneously - as a machine, that is, as a supercomputer, and this, in fact, has been leading some researches to true “dead ends”, since these projects and researches end up colliding with properties, abilities and capabilities, specific and unique to living beings, gifts and hyperspecialized replicates from an evolutionary point of view, which machines can hardly reproduce, because a brain (human, for example) definitely is not a computer (MAFFESOLI, 1995).

Following the thinking of Edgar Morin (1993), every living organism is a machine that needs, to keep being alive, the trinomial matter / energy / external information, without disregarding the use of its genetic patrimony. We compute the outside information to ensure our survival. Every structure of the world, be it a cell, a great vegetable or animal organism, functions as a computing machine. We create autonomies and dependencies to stay alive. We are “machine-beings”.

Figure 3 – Molded body?



Source: Kimbrell (2003)

Although, Dreyfus (1979, p. 123), points out that

> In the period between the invention of the telephone relay and its apotheosis in the digital computer, the brain, always understood in terms of the latest technological inventions, was understood as a large telephone switchboard or, more recently, as an electronic computer.

In this sense, this brain model was correlated with works in neurophysiology that learned that the neurons cause an explosion of electricity somewhat "all or nothing". This explosion was considered as the unit of information in the brain corresponding to the "bit" of information on a computer. This model is still uncritically accepted by virtually everyone who is not directly involved in the work of neurophysiology, and becomes the basis for the naive assumption that man is a walking example of a successful digital computer program.

Moreover, what is happening is that our mathematical mind, our predominantly technical way of seeing and understanding the world that circumscribes us, our own horizon of comprehension, and our natural reflexive capacity are more comfortable when we think of the inert , the inorganic, the acephalic (BUTTON et al, 1998), since these dimensions are classifiable, reproducible, measurable, because, in fact, within the non-biological sphere, a minimum of control of the possible variables involved is obtained. In the living not, because there are so many possible variables involved that it is impossible to rationalize.

AN INCREASINGLY PRESENT CHIMERA

It is important to emphasize that with AI (i) we are not only in search of machines that are somehow self-conscious and as intelligent as we are, we also seek (ii) sufficient technical capacity and computational power to (at some point) support the manifestation of consciousness itself, be it human or not, and (iii) even though it may somehow be kept in order.

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Many important theorists who develop AI - as Dreyfus informs us (1979, p. 163) - are based on epistemological assumptions:

> […] that the nervous system is part of the physical world [i] and that all physical processes can be described in a mathematical formalism [ii] which can in turn be manipulated by a digital computer [iii].

In this way, it becomes important to realize that this type of thinking and hegemonic logic is the result of erroneous and subsequent misinterpretation of the living, intelligent and conscious, that reassemble the very history of Philosophy. "Leibniz5 envisaged "a kind of alphabet of human thoughts" (DREYFUS, 1979, p. 183-184) whose "characters must show, when they are used in demonstrations, some kind of connection, grouping and order which are also found in the objects".

The empiricist tradition is also dominated by the idea of isolated elements of knowledge. For Hume6, the whole experience is formed by impressions: atoms of experience insolated and determined. Thus, the intellectuals and empiricist schools converge on Russell's7 logical atomism, and the idea reaches its full expression in and the idea reaches its fullest expression in Wittgenstein's8 Tractatus, where the world is defined in terms of a set of atoms of facts that can be expressed in logically independent propositions. Dreyfus (1979, p. 127), radically contrary to this mere hypothetical possibility of emulating life, consciousness and intelligence in non-biological surroundings, informs us that:

> The difference between the "strongly interactive" nature of brain organization and the noninteractive character of machine organization suggests that insofar as arguments from biology are relevant, the evidence is against the possibility of using digital computers to produce intelligence.

As a further matter described by the same author (1979, p. 129),

> Usually no argument is given for this new dogma that man is an information-processing system functioning like a heuristically programmed digital computer.

Dreyfus (1979, p. 130) still provides us with the following postulation:

> "Information processing" is ambiguous. If this term simply means that the mind takes account of meaningful data and transforms them into other meaningful data, this is certainly incontrovertible. But the cybernetic theory of information, introduced in 1948 by Claude Shannon9, has nothing to do with meaning in this ordinary sense. It is a nonsemantic, mathematical theory of the capacity of communication channels to transmit data. A bit (binary digit) of information tells the receiver which of two equally probable alternatives has been chosen.

Roughly speaking, for a computer, processing information does not mean also processing meanings and senses. Even if the mind did process information, adds Dreyfus (1979, p. 131), "in Shannon's sense of the term, and thus function like a digital computer, there is no reason to suppose that it need do so according to a program.

Consequently, says Dreyfus (1979, p. 156),

> Although man is surely a physical object processing physical inputs according to the laws of physics and chemistry, man's behavior may not be explainable in terms of an information-processing mechanism receiving and processing a set of discrete inputs.

In this sense, the brain remains the maximum unbeatable jewel of the bioevolution of life, consciousness and intelligence in the animal world. For it is precisely it, with its unusual power, who will supply the systemic needs of the extraordinary mind which it itself embodies, supplying to the mind all that it will need in its complex and intricate interface with the world around it.

According to the researcher Denett (1996, p. 56),

> The task of a mind is to produce future, as the poet Paul Valéry once put it. A mind is fundamentally an anticipator, an expectation-generator. It mines the present for clues, which it refines with the help of the materials it has saved from the past, turning them into anticipations of the future. And then it acts, rationally, on the basis of those hard-won anticipations.

ALTRUISTIC IDEOLOGY

> Transforming the living being that is the human being into a factory of selfishness had been the task of biology. In the late 1970s, the experts of this discipline discovered that game theory was ideally suited to explain the Darwinian model of survival, that is, struggle for advantage, maximization of benefit, and opportunities for procreation. The British biologist Richard Dawkins first formulated in 1976 his thesis that living beings are no more than machines of survival and service of selfish permanence (SCHIRRACHACHER, 2014, 121-122)10.

Since the 1950s there was already a convention whereby, roughly speaking, the self-organization of markets amounts to the self-organization of living beings. Cybernetics, economics, and biology had been sustained in that decade. It is independent of each other, laying the foundations for the new universal theory, in which “information”, from genetics to informatics technology, passing through financial markets has become the dominant principle (KUNZRU, 2000).

Therefore, if we ignore for a moment any previous history of Artificial Intelligence (AI) dating more than two pairs of centuries ago, with the first automata of eighteenth-century Europe, and what indeed takes shape in the late twentieth century, we could say that everything began "erroneously" - in fact - during the Second World War, with the dominant belligerent paranoia of the time (SFEZ, 1995, p.23), and which was definitively consolidated with the end of it.

Roughly, since both sides possessed sufficient nuclear arsenals to destroy several Earth planets equal to ours, a brutal set of attempts to anticipate tactical moves by the transformer opponents of each other (Soviet Union and USA) began. Profoundly transform the course of postwar societies, including Postmodernity itself (ALVES, 1993).

SOME CONSIDERATIONS

How to make a computer "understand" what it means to have sense or make sense? Many predictions in this regard were made by respected researchers and theorists of the

MIT11 and congeners all over the world, and almost all of them ended up not being fulfilled in time, given an exacerbated optimism, on the one hand, and on the other hand, structuring and drastically obstructive practical difficulties.

As Dreyfus informs us (1979, p. 39), "These empirical difficulties, these failures to achieve predicted progress, never, however, discourage the researchers, whose optimism seems to grow with each disappointment".

Yet, even in the face of conceptual and practical obstacles, there are several interesting possibilities emerging in this context of technological developments in AI. One of the promising hypotheses involving this symbolic relation in all things necessary to consciousness is known in the AI field as a hypothesis of physical symbols system, and it makes reference to the representative context which, roughly speaking, has just been described:

> Our minds do not have direct access to the world. We can operate only on an internal representation of it, which corresponds to a collection of symbols structures. These structures can take the form of any physical pattern. They can consist of arrays of electronic switch inside a digital computer, or meshes of firing neurons in a biological brain. An intelligent system (brain or computer) can operate on these structures to transform them into other constructions. Thought consists of expanding symbol structures, breaking them up and reforming them, destroying some and creating new ones. Thus, intelligence is, therefore, the capacity to process symbols. It exists in a scope that is not supported by the physical system (hardware). Intelligence goes beyond this system and can assume different forms. (CREVIER, 1993, p. 43).[12]

We are led to believe again that new perspectives and horizons also open up here, that is, there seem to be technical alternatives in the attempt to emulate these very important properties, and that perhaps in the future it will be possible to overcome the formidable obstacles there are today in search of a genuine artificial intelligence, that in fact deserves this predication of intelligence.

Consequently, it all still depends on an at least fragile epistemological assumption, that all human knowledge could (or can) be formalized, that is, that everything that can be understood by a human being can also be expressed in logical relations and binary language, or, more exactly, as Dreyfus (1979, p. 120) writes, "in terms of Boolean13 functions, the logical calculus which governs the way the bits are related according to rules".

Crevier also points out that (1993, p. 291) "[...] researchers started to consider seriously the possibility that their machines might some day wake up to conscious thought and feelings". This brings us to another fundamental question in this analysis, which is to find a competent and reliable method of verification that can finally compare human intelligence and artificial intelligence.

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In this sense, it is already possible - with relatively simple structures and technical systems - to make machines exhibit behaviors that at first sight could be considered as coming from living and intelligent beings, even if, in the end, they are nothing more than sophisticated mechanisms and systems articulations, which cannot be considered or classified as really intelligent or alive, since it has no way of being aware of itself.

In addition, observing the signs of time and technoscientific evolution itself, it is possible to conclude that the hypothesis of a cacotopian future for humanity against AI remains open. In the words of Moravec (1988, p. 11), "We are very near to the time when virtually no essential human function, physical or mental, will lack an artificial counterpart". The author14 continuous:

> A post-biological world, ridden by thinking machines in continuous self-improvement, would be as different from our world of living beings as ours is from the world of inanimate chemistry that has proceeded bare and with unprecedented speed.[15]

We cannot forget that the scholar, philosopher and strategy specialist, the French Virilio (1996) considers speed as a value from the advent of the political revolution, which not only produces faster but also destroys faster. In order to justify his idea, the author makes use of the term "Dromology" (study of speed), emphasizing that the logic of the race would be explicit in a theoretical conception capable of articulating speed and politics with the entrance in the world of the equivalent-speed to equivalent-wealth.

The same author (1996, p. 92) maintains that nanotechnology is propitiating a colonization of the body, producing even a microphysical invasion of the body and thus appearing as a last resort, or a cutting edge resource, to domesticate man. According to him, there was a change in the space occupied by cutting edge technologies, which ceased being the universe without borders of the planetary environment to occupy our organs.

In general terms, for that loss, or more precisely, non-absence, emphasizes an exclusive decline in the absence of real-time teletechnologies' range that results inevitably in the intraorganic intrusion of the technique and its micromachines within the living.

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Inteligência Artificial Academicos questionam se há uma superavaliação das maquinas sem considerer a inteligência humana: um convite à reflexão

RESUMO

Buscamos refletir sobre Inteligência Artificial a partir das ideias de pesquisadores como Dennett, Crevier, Dreyfus, Minsk, Virilio que procuraram relacionar as implicações de tal movimento tecnológico e seus espectros nos dias presentes. São relatos perturbadores para uma sociedade cuja tecnologia é dependente de outros mercados, portanto, serviçal. Mediante esta constatação, nos orientamos pelos pensamentos daqueles estudiosos para suscitar que os fatos relatados no trabalho nos levam a uma pergunta central a qual se apresenta tão sensível quanto inquietante, além de potencialmente emblemática: Além de ágeis aliadas, as Inteligências Artificiais também poderiam assumir contornos que nos colocariam como nossos adversários? Tal questionamento não é novo. Discutida numa época cujo conhecimento estava começando a sair das amarras da pastoral para evidenciar a razão e erguer um mediador: o homem. Naquele momento a história se reconfigurava e a valorização de outros conhecimentos surgiram. Dos dias sombrios para os menos obscuros? Parece-nos que a pergunta feita se torna legítima dada a relação de poder que se forma quando um sistema composto de alumínio, aço e, o que se supõe, "mente", que paira sobre nossas vidas passa a ser chamado de ser.

PALAVRAS-CHAVE Inteligência Artificial. Máquinas inteligentes. Organismos.

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NOTES

[1] Logical mathematician, cryptanalyst and English scientist (1912-1954).

[2] Available at http://www.dpaonthenet.net/article/58571/Skin-deep--building-touch-sensitivity-into-human-interactive-robots.aspx Accessed on July, 2017.

[3] Available at: https://pt.dreamstime.com/imagens-de-stock-royalty-free-homem-máquina-image1745139 Accessed on July, 2017.

[4] Translated from the Portuguese version of the book.

[5] German mathematician (1646-1716).

[6] British empirist (1711-1776).

[7] Gaulish mathematician, logician and philosopher (1872-1970)

[8] Austrian philosopher who went through math, language and mind (1889-1951)

[9] Mathematician and Electronic Engineer, considered the father of information theory (1916-2001).

[10] Translated from the Spanhish version of the book.

[11] Massachussets Intistute of Technology

[12] Translated from the Portuguese version of the book.

[13] In formal theories of truths, a truth predicate is a predicate on the sentences of a formal language, which formalizes the concept that is normally expressed by saying that a sentence is true.

[14] Idem (p.15)

[15] Translated from the Portuguese version of the book.

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