

A natural artificial intelligence? Some notes on the computational biomimicry of human intelligence

¿Una inteligencia artificial natural? Algunas notas sobre la biomimesis computacional de la inteligencia humana

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ABSTRACT

This article introduces the case that it does not seem plausible that AI can come to be presented as interchangeable with human intellect, as if its processes could pass as natural, as much as our intellectual exercise of understanding reality is. The paper shows that even though AI reproduces the structure of human knowledge yet misses subjectivity. And in that sense, strong AI could not overcome human knowledge, because it is not able to see itself as an active spectator of itself, nor protagonist or responsible for its actions. Though some think that the human being's own lies in a dynamic combination of different characteristics such as vulnerable corporeality, autonomous rationality, and interdependent sociability. It is of no interest to AI to imitate our biographical temporal vulnerability, although it would be interested in imitating rational autonomy; and it does not need interdependent sociability either.

Keywords: Artificial Intelligence, Naturalism, human subjectivity, intelligence

RESUMEN

Este artículo introduce el caso de que no parece plausible que la IA pueda llegar a presentarse como intercambiable con el intelecto humano, como si sus procesos pudieran pasar tan naturales como lo es nuestro ejercicio intelectual de comprensión de la realidad. El documento muestra que, aunque la IA reproduce la estructura del conocimiento humano, aún pierde la subjetividad. Y en ese sentido, la IA fuerte no podría superar al conocimiento humano, porque no es capaz de verse a sí misma como espectadora activa de sí misma, ni protagonista ni responsable de sus actos. Aunque algunos piensan que la propia del ser humano radica en una combinación dinámica de diferentes características como la corporeidad vulnerable, la racionalidad autónoma y la sociabilidad interdependiente. A la IA

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no le interesa imitar nuestra vulnerabilidad temporal biográfica, aunque sí le interesaría imitar la autonomía racional; y tampoco necesita la sociabilidad interdependiente.

Palabras clave: Inteligencia artificial, naturalismo, subjetividad humana, inteligencia

Introduction

According to Aristotelian tradition, there are different ways to distinguish between natural and artificial beings: natural understood as being that possesses the principle of movement and rest in itself *versus* artificial that has the principle of movement and rest in the human being. And when the artificial tries to imitate the natural, sometimes it tries only to reproduce the natural, but other times it tries to complete or perfect it.

Nowadays it is difficult to establish such a clear criterion to differentiate natural from artificial beings, especially since it is not the same to distinguish natural from artificial when we are talking about the process than when we refer to result.

For medicine, for example, human artificial intervention is required to achieve the synthesis of the active ingredient that triggers a natural reaction that restores health to the body. Today it is possible to carry out artificial reprogramming of cellular activity, and the artificial life concept is in common use in biotechnology. How natural can it be considered transgenic food? Or how natural is the presence of fish genes in strawberries, or luminescence in fluorescent cats by the introduction of jellyfish DNA inside?

Aristotle said that since there is nothing artificial that is not integrated with something natural, the limits of the natural and its potentialities establish the scope of the artificial: we cannot make scissors with paper because they would not cut, but we can grow ears or aortic valves on the skin of a rodent because for this it is only necessary to grow tissue within another tissue.

From its beginnings Artificial Intelligence (AI) set out to go beyond human cognitive abilities through its imitation, it focused its mimesis on the operations of calculation and logical deduction, with the intention of making it difficult to distinguish whether our interlocutor was a real human, or an intelligent system able to disguise its artificial identity.

There is a classic distinction between weak artificial intelligence (which encompasses all the advances that AI has introduced into our daily lives) and strong artificial intelligence (which seeks to equal and even surpass human

intelligence); and yet this distinction does not always start from a clear definition of what is meant by intelligence.

Artificial intelligence strong and weak

AI refers, beyond an imitation of human calculation processes, the study and imitation of the way in which human solve problems through processes of symbolic information.² AI does not include non-symbolic numerical information processing systems but implies the ability to address and solve problems through experience gained from complex patterns. From its beginnings, AI awakened the expectation of reproducing intelligent processes according to that human solve problems. Therefore, the first scope of AI application were strategy games, and later resolution of logarithmic problems, logical reasoning, simultaneous translation of languages and automatic reading of texts, image recognition, as well as artificial neural networks and expert systems.³

On the other hand, in the field of computer programming, AI has achieved great indisputable goals, especially in expert systems and its ability to make logical deductions according to changing learning contexts, in which different criteria for information processing are used. Today expert systems have multiplied their functionality: they are able to diagnose, monitor, plan and interpret information. In other areas such as speech recognition, simultaneous translation or image identification, better results for AI are still being sought. That is weak IA. But strong AI implies the development of intelligent machines with scopes like or greater than those of human intelligence, but without understanding the operations and processes it executes. AI could pose as natural intelligence, but, to this day, hardware has only been able to emulate cognitive structure, while software emulates the process.⁴

From artificial computing to *natural* AI

Sometimes, to contrast human and artificial intelligence, more emphasis is placed on the distance between AI and human intelligence rather than com-

² ALFONSECA, M., "Inteligencia Artificial", en VANNEY, C.; SILVA, I.; FRANCK, F. (Eds.), *Diccionario Interdisciplinar Austral*, 2016. URL=http://dia.austral.edu.ar/Inteligencia_artificial

³ MORENO-DÁVILA, J., "Inteligencia Artificial", en SEGURA, A. (Ed.), *Historia Universal del Pensamiento Filosófico*, Ortuella, España: Liber, vol. 7, 2007, pp. 781-797.

⁴ MELLO, P., "Intelligenza Artificiale", en TANZELLA-NITTI, G., *Dizionario Interdisciplinare di Scienza e Fede*, Urbaniana University Press, 2002, vol. 1, pp. 771, 768.

paring the scopes of each of them. The difference between them is not those computers only do what a human program indicates, but what differentiates us is the nature of the exercise of our intellect; that is, there is a qualitative difference between AI and humans, impossible to eliminate by biomimicry.

The first artificial imitations of human intelligence reproduced logical demonstrative reasoning from universal mathematics and the assumption that human rationality was but part of that mathematics, such that the automation of calculus would only have to reproduce those rational processes to emulate and eventually supplant natural intelligence. This suggested that any problem or logical approach could be calculated or reduced to a computable algorithm.

With the miniaturization of electronics, logic machines emerged over arithmetic calculators. With feedback and self-organized systems, computers in their modern form made their way as logical-symbolic operators. Subsequently, expert systems surprised by their ability to emulate humans specialized in a certain subject and became able to solve all kinds of problems by justifying the resolution process: they managed to acquire information based on theories and accumulated experiences. There were able not only to acquire, process, and store information quickly, but also to select and discriminate the most significant according to the issue to be solved, from the identification of the context of the problem and its elements and through the understanding of the symbolic language. That is communication.⁵

In the case of artificial neural networks, it was not necessary to program them, but from trial and error and the analysis of the particularity of each case, the system was able to solve problems in a human way. That is, learn from experience, make a process more flexible, quickly generalize, identify, and assume failures in the process of acquisition, management or increase of knowledge, etc. Gödel's theorem stated that there were truths that the machine could not reach while human intelligence yes could. But identifying how IA imitate human does not mean having found a way to be intelligent in a human way. The limitations can also occur in humans. It is therefore essential to find out if there is a use of thinking that is only human, and if it is possible that it is imitated by AI so that it can seem natural. That is, if the machine can really think and not just acquire, store and process information; abilities in which they are indisputably superior to humans.

If we notice how the human neural network operates, we will notice that it adjusts its semantics through learning: from children the human explores, plays, rehearses, corrects by contrasting his body with the environment that

⁵ DE ANDRÉS, T., *Homo Cybersapiens. La inteligencia artificial y lo humano*, Pamplona: EUNSA, 2002, p. 39.

surrounds him, facing another everything: it reveals a joyful, irritable, dissatisfied, excited, serene, quiet emotional intelligence. But when language appears, with its words and symbols, contact with reality is not carried out directly, through the external senses; neither only in a sentimental or emotional way, but through formal signs and symbols, which only have the semantics and feelings that we assign to them.

In that sense, both the human being and a computer manipulate symbols, although the human knows that he only deals with signs and symbols. When animals deal effectively with information, they survive, but they do not know what they know, and therefore there is no room for radical rectification of their action because if they tried they would put their survival at risk. In human mental reflection, on the other hand, we stop, we consider whether the ideas we formulate on a particular issue are the right ones, and if not, what is the way to adjust them.

Through the knowledge we know, that is, through the reflective awareness of our ideas, we warn that information is only information. And when that happens, the signs and symbols of language and communication are shown as a reality that refers to something external (intentionality). When the human being asks a question, he knows that the questions are only questions, that he will have to adjust, correct, or suspend them because he knows that what has been achieved through the answers is not all the information to be acquired, and this can only be achieved by an exercise of consciousness.

Machines and animals are intentional and require and acquire information. While in the human intellect there is much more than that. In animal intentionality the fundamental thing is to adapt to reality; he can only do what comes to his mind, to ensure survival.

But human intelligence goes beyond that. It does not stop at conclusions. If it only prompted answers and not new questions it would fail in an anthropological sense because asking is a healthy sign of knowing how to put in parentheses what is already known to explore more. In this way, our reflective ability by which we possess, master, or direct our information (and we know that it is only information), is combined with curiosity that leads us to new questions about each reality and the set of realities.⁶

Human intelligence does not just solve problems: it creates them and gets into more trouble; not because it wants to complicate existence, but as a way of recognizing the complexity of the world around it in all its aspects. The human mind finds and continues in its discovery. Being human means thinking and

⁶ DE ANDRÉS, T., *Homo Cybersapiens...* pp. 133, 175.

carrying out projects, considering new possibilities, because when discovering that ideas are only ideas, the human being warns that there is more reality than thought. If AI did the same thing, it would have to be called natural.

Therefore, intelligence manifests itself as a faculty that finds connections and meaningful interactions with the intention of contributing, enriching, increasing, or varying the understanding of real interactions.

In this sense, it does not seem that computer neural networks operate in the human intellectual way, since it advances in the identification of computer connections, without the need for a useless reflection on why there is what there is; they operate what there is and according to what there is, without further questioning.

Rationality versus understanding

Rational skills advance, become more efficient, change, evolve, without requiring thought: and AI seems to be primarily concerned with the imitation of those rational skills and disengage from intellectual habits; so difficult to imitate, because it requires conscious reflection.

The modes of reasoning, i.e., rational skills, are methods of knowledge, but not of thinking. Asking questions about the known goes beyond rational skill itself, which is what computer science and cybernetics all about are. Asking myself questions about these methods of acquiring and processing information, leads me to a meta-science, a meta-logic, a meta-mathematical, which allows me to possess and direct reason (always instrumental) and its results. Reason requires to be directed, while the intellect directs and allows to act well or to run well. That is, to think wisely, sensibly, with the increase in the capacity to understand what this entails.

We were born trying to want to understand how realities differ from each other but also how relate and interact. The exercise of this effort becomes habitual and makes our intelligence ready to know and understand the world in front of it.

That turns our mind into a free intelligence that invents, dominates, harmonizes, directs, rational skills, and turns them not only into skills for obtaining information but into a source of understanding. Therein lies our peculiarity, in our ability and interest to understand, not just to learn to conclude.

The social character intrinsic to our nature implies not only the mutual dependence between humans to communicate but also for the mastery and enrichment of our cognitive operations, which are not achieved in solitude and

without dialogue, which is only achieved with the development of culture. We can therefore say that a great difference between intelligent machines and a man lies in our ability to cultivate dialogue as a basis for acquiring intellectual habits that allow us to conquer the freedom of thought; because rational machines do not actually possess the knowledge they imitate and reproduce, nor do they have the freedom to know.

AI reproduces the structure of human knowledge but misses subjectivity. And in that sense, strong AI could not overcome human knowledge, because it is not able to see itself as an active spectator of itself, nor protagonist or responsible for its actions.

Some think that the human being's own lies in a dynamic combination of different characteristics such as vulnerable corporeality, autonomous rationality, and interdependent sociability. It is of no interest to AI to imitate our biographical temporal vulnerability, although it would be interested in imitating rational autonomy; and it does not need interdependent sociability either.

Conclusion. How *natural* can AI become?

It has been suggested throughout this text that it does not seem plausible that AI can come to be presented as interchangeable with human intellect, as if its processes could pass as natural, as much as our intellectual exercise of understanding reality is.

It has been mentioned as reasons the difference between the human capacity of acquisition, processing, and increase of information, called rationality (which would be imitable and widely surpassable by rational machines), with respect to the intellectual skills that are exercised to understand reality, not just go from one premise to another syllogistically, because AI does not require understanding to compute, manage or optimize the information that is generated in its processes.⁷

Perhaps we have come to think about the possibility of strong AI by identifying thought with brain functioning. Neuroscientific knowledge of the brain operability of the human being is carried out from the perspective of the third person; while the most intimate of our mental operation, that which is only self-transparent to the subject in which it occurs, belong to the perspective of the first person. In the first-person dimension, we know ourselves

⁷ VELÁZQUEZ, H., "¿Qué tan natural es la inteligencia artificial? Sobre los límites y alcances de la biomimesis computacional", *Naturaleza y libertad*, núm. 12, 2019, pp. 245-256.

to be self-conscious, self-reflective, self-organized in a biography by which we notice that we know we exist, we know who we are and what we do. This is not in the AI scenario because to work it does not require a biographical singularity of the information processing it produces. The same can be said for expert systems and artificial neural networks.

From the perspective of the first person, we show ourselves and receive others, we coexist and penetrate the intimacy of the other and manifest the intimacy that constitutes us from within. This knowledge is reached from the perspective of the second person.

When AI seeks to emulate, overcome, and supplant the unique character of the human being, it reduces those two perspectives to one through the naturalization of knowledge. It is a reductionism of human wealth from the perspective of the third person.

And when we forget the individual, unique, unrepeatable character of each of us, we are facing a reductionism of the second person, which is intended to be possible in the latest developments of AI.

And in this way, it is that from different exercises of reductionism (curiously fruit of intellectual operability) is that we have blurred the scope, limits, and realistic expectations of the variants of AI. Understanding this (not only inferring it), calibrating it, weighing it, can help us avoid false reductionisms, but also unwarranted fears. AI will continue to give us tools to not depend on our limited discursive capacity, but it will still be at our disposal to be taken in its true social, cultural, and technological dimension, and for this, there is no biological mimesis that is enough.

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