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Language, Internal Motions, Public and Personal Meaning

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Abstract

The computer revolution has caused humans to share algorithmic formal mathematical languages with computers. As a result of this sharing, we humans increasingly share our knowledge and emotions with computers. However, there are other languages whose semantics express the personal meaning of internal motions which go beyond the formal meaning, and which humans cannot share with computers. I intend to distinguish the formal languages of mathematics and computers from the personal languages of metaphysics and religion and show some of the interrelations and connections between both languages.

Keywords

public semantics, personal meaning, formal and metaphysical languages, (e)motions, internal motions.

1. Languages of sign and languages of symbol

In the book 'Mathematics and Religion' (Leach 2010), I distinguish between the public meaning of the languages of sign and the personal and community meaning of the languages of symbol. The languages of sign are the languages of mathematics and computer science and the languages of symbol are the languages of metaphysics and religion. Both languages – of sign and of symbol – differ from each other by their semantics. While the semantics of the languages of sign are formal and have primarily a public meaning, the languages of symbol have a largely personal and community meaning, dependent on the inner motions of the subject that uses these languages.

For example, $2 + 2 = 4$ is a sentence written in a language of sign. Another example of a sentence in a language of sign is the statement of physics $f = ma$, where f represents the force applied on a body, m the mass of the body

and a represents the acceleration that the body undergoes when the force f is applied to it. On the other hand *God creates the Universe* is a sentence stated in the personal and community language of symbol. The sentence *God creates the Universe* has a different meaning for a Christian believer than for an atheist.

Not a complete separation between both languages

The division in languages of sign and symbol does not produce two classes of language clearly differentiated by their semantics. The semantics of both languages have formal public aspects and symbolic aspects, with a personal and communal meaning. Indeed, the formal languages of mathematics are the most characteristic representatives of the formal and public languages of sign. Nevertheless, the processes of mathematical discovery and creation – by which these languages acquired their semantic and syntactic value – have many personal aspects that depend on the subject who discovers and creates a new mathematical construct.

Yet this division is justified because mathematical constructs, once they have been created, always claim to have a public semantics, i.e. they claim to have the same meaning for everyone. In contrast, metaphysical and religious languages always have a personal and community meaning related to the inner motions of the user (by inner motions I understand inner movements, which affect the very personal identity of the subject that uses those languages).

Formal languages and human thinking

Although the public semantics and the personal meaning of a statement cannot be totally separated from one another, I will try to show that we can outwardly characterize each one of these by the type of language we use to express them. I intend to show that while we express public meaning through the semantics of formal-mathematical languages, we express the personal meaning of internal motions by means of other broader languages, which I call symbolic metaphysical languages.

Formal languages and technology

To justify my position I rely on the difference between computer and human languages. Particularly I rely on the difference between the formal semantics of computer languages and the personal meaning of human languages. The public formal semantics of a computer statement always remain the same, regardless of the beliefs (Seitz and Angel 2012) of the subject who either enunciates or understands them. In contrast, the personal meaning of a specific human statement can only be understood in relation to the inner motions and transformations experienced by the subject who either enunciates or understands this statement.

The languages of sign and computer technology

The public meaning of the formal languages of mathematics has recently become particularly important because these languages are, by their public and objective nature, suitable for computer technology. The importance of information technology in today's culture is, among other causes, at the origin of the current cultural movement that we may call *technological positivism.* We may consider technological positivism as the present evolution of the philosophical movement of the early twentieth century called *logical positivism.*

From logical positivism to technological positivism

A philosophical shift about which there is, in my opinion, still insufficient reflection is the transformation that logical positivism has experienced in the twentieth century, evolving into what we may call technological positivism.

In the early twentieth century, the foundational program of the mathematician David Hilbert (Hilbert and Bernays) intended to reduce all mathematical systems to a single system, whose statements could be deduced by finite methods from a finite set of evident axioms. Many mathematicians had at that time the metaphysical belief that such a system existed and this belief was supported by those mathematicians who followed so-called logical positivism advocated in a special way by the philosophers of the Vienna Circle (Schlick 1918). Hilbert's program for the foundation of mathematics intended to meta-mathematically prove this belief. Nevertheless, the *incom-*

pleteness and *undecidability* theorems of Gödel (Gödel 1931) proved that this metaphysical belief cannot be mathematically proven.

Following recent developments of formal languages in mathematics and computer sciences, we may say that logical positivism has been replaced by what we might call technological positivism. Technological positivism no longer seeks to demonstrate the existence of a single system covering all formal systems. Technological positivism is plural and it admits the existence of a plurality of formal systems. Technological positivism is based in the current development of technology. Although nowadays we know that there is no a single formal system unifying all formal systems, mathematical experience and the technological development of computing show us that the plurality of formal systems can – like an immensity of bottomless formal pits – increasingly grow in number and size. Technologically we can develop for each particular circumstance, and for each particular problem, a formal system suitable for tackling this particular problem. And so, during the 20th century a transition from logical positivism to technological positivism has occurred. The logical positivism of the early twentieth century intended to achieve a logical control of the formal systems, while the present technological positivism seeks – in a more plural and practical way – technological control of our ability to know and manipulate reality.

Open questions

Information technology and the underlying technological positivism have reintroduced old questions, already raised in 1950 by Alan Turing (Turing 1950): Can AI (Artificial Intelligence) systems completely simulate human thought? Is there any essential element of human thought that cannot be imitated by artificial intelligence systems? What is the relationship between the formal semantics of computer systems and the personal and community meaning of metaphysical and religious beliefs?

In the last decades humanoid robots that mimic human behavior and are able to capture human emotions and show some kind of empathy with humans have radicalized these open questions with the more far-reaching question: Can a computer become aware of human emotions?

2. Two different approaches to the problem of consciousness

My position in this paper is that there are two different possible approaches to the problem of consciousness, and that each one of them corresponds to a different view of the problem of the relationship between science and theology. I will call these approaches the *algorithmic* approach and the *intuitive* approach. The algorithmic approach uses only formal languages of sign and the intuitive approach uses these and also personal languages of symbol.

The hard problem of consciousness

The philosopher David Chalmers (Chalmers 1995) points to the hard problem of consciousness. We can define the hard problem of consciousness by saying that it is the problem of explaining the uniqueness of the phenomenal experiences of our human consciousness. These unique phenomenal experiences are often also called 'qualia' (Nagel 1974). For Chalmers, and for many others, this problem persists even when the performance of all the relevant functions of our mind is explained.

The difference between the languages of sign and the languages of symbol that I maintain in this paper helps, in my opinion, to clarify the difference between the hard problem and the easy problems of consciousness. The easy problems are of public character and can be formulated in a language of sign, whereas the hard problem has a personal and community character and needs to be formulated in a language of symbol.

Easy problems are easy because they may be solved by specifying in a formal and public language of sign the mechanisms that perform them. 'Qualia' are across the border that separates the mental states whose cause can be specified by mechanical processes, and mental states whose cause cannot be specified by a mechanical language.

I maintain that beyond that boundary mental states can only be fully described by a symbolic personal language. Qualia can only be mechanically specified from the outside by a formal and algorithmic language, whereas to describe them from the inside we need to use a symbolic language. For example, the redness of the color red can only be mechanically specified from the

outside as produced by a certain wavelength whereas to describe it from the inside by internal characteristics, which make it a personal unique experience, we need to use a personal and symbolic language. To distinguish these two possible descriptions of an emotion, I will use the word emotions to denote the mental states whose cause can be mechanically described and can be imitated by robot through a formal algorithmic language and I will use the word (e)motions, or simply motions, to denote mental states, also called 'qualia' by some authors, which cannot be fully described by a mechanical language. The word motion adds movement and purpose to the meaning of the word emotion, while the word emotion indicates change and movement without purpose.

The hard problem of consciousness can be formulated as follows: How is it possible that electrical or chemical signals in the brain, that can be explained in a formal and objective language of sign, give rise to a subjective conscious experience that can only be expressed with a language of symbol?

This problem can be answered in two different ways, depending on how you think of the relationship between the emergence of consciousness and the computing system of the human mind:

1. The emergence of consciousness can be explained by the complexity of the computing system of the human mind 2. The emergence of consciousness cannot be explained in terms of computation, however complicated it may be, because human consciousness has certain characteristics that cannot be explained only by the algorithmic processes of AI.

In this paper I defend the second response. To do this I start from the assumption that the language with which we explain the emergence of consciousness has a semantics whose characteristics cannot be imitated by a computer while, problematically, the first response starts from the assumption that human thinking can be imitated in all its characteristics by a computer.

How can we characterize human thinking?

The answer to the question of what the specific characteristics of human thinking are is becoming seemingly more complex than in the last century, due to the exponential growth of AI. Currently humanoid robots increasingly mimic not only the mindset of humans but also the very human way

of feeling and experiencing emotions. Will there come a day when humanoid robots will help us to overcome our current way of human thinking?

In several films and science fiction writings it is hinted that this day will come and that it will come sooner than we expect. This is hinted not only in science fiction movies, but also in academic centers. An example is the Singularity University.

3. The language and the specific features of human motions

In this third part of the paper I postulate the existence of a symbolic and personal language with which we can express our consciousness of personal identity. The personal language of symbol that I postulate is not limited to communicating how subjects of consciousness 'are', but what purpose they is seeking to achieve and what drives them to it.

The conscious and free drive of a person towards an end is a characteristic feature of internal human motions. We can say that internal motions cause the movement of the subject towards an end, and so they are expressed by the final causality present in the actions of the human subject. The meaning of metaphysical and religious languages is characterized by their expression of the meaning of internal motions. In contrast, formal languages cannot express the final causality that moves the subject to act. For example, when in a formal language we say that A occurs because of the fact that B occurs we are establishing a causal relationship between the two events A and B. When this causal relationship is represented in a formal language by a formula, then the semantics of this formula can only represent one type of causality, and we cannot differentiate between efficient and final causality

Formal languages and motions

The languages used by a computer are characterized by their formal semantics, which are mechanical and public. Therefore, it is independent of any particular meaning it has for any particular human subject that uses these languages. This independence means that it can only describe objectively the personal emotions of the subject, treating them as objects separate from the

subject's intentions. In this paper I argue that the semantics of metaphysical language has a particular meaning for each subject and for each community of subjects.

The information revolution has made humans share more and more information with computers, and communication between humans and computers has become increasingly fluid. As a result of this information exchange computers are increasingly incorporated into human activity.

However, in this paper I will defend the existence of other languages whose semantics express the meaning of internal personal motions whose meaning goes beyond the purely formal meaning, and which humans therefore cannot fully share with computers.

The Hypothesis of human consciousness

More and more often, in different circumstances and for different reasons, friends who work in the world of computing and neuroscience have asked me directly or indirectly the following question: Are we really refined human robots? And more and more I'm convinced that the answer to that question depends on my faith in humans. Faith in the human person makes me perceive essential skills that constitute the human being. I will take as a starting point belief in the specific value of human thought and consciousness.

Human thinking and consciousness

In this paper I have briefly explained some of the reasons why I think that even if a machine that we can call a humanoid robot may completely mimic the thinking and behavior of a real human being, it cannot, however, assess our inner motions with the personal awareness and responsibility that characterize us as human subjects.

Emotional awareness and empathy

It is a fact that imitations of human thought and human decisions made by machines are becoming more and more perfect. This perfection leads many to think that, although until now computers have not quite come to pass the Turing Test, it seems that we can predict they soon will. The inventor

and futurist Ray Kurzweil predicts that computers will pass the Turing Test in the near future, in the year 2029. Beyond the Turing Test, there are currently humanoid robots, which are distinguished mainly because they show two capabilities that until now were considered specifically human and not characteristic of robots: self-awareness, and empathy with human emotions.

These new capabilities of robots lead us to ask more clearly the question: Is there any difference between the awareness and empathy that a robot can show and human conscience and empathy? And if there is, what is the difference? We know that the self-awareness of a robot, and the awareness it has of its actions, come from the knowledge that the robot has of its own program and the knowledge it has of the decisions it can take, according to its program. Moreover, the ability of the robot to perceive human motions and react to them with empathy comes from the sensible perception it has of emotions and the knowledge it can achieve of the mechanisms governing these emotions.

What is the origin of human consciousness and empathy? With which means can a robot imitate human consciousness and empathy? Can the awareness and empathy of a robot and human consciousness and empathy become equal?

While some believe that in the future there will be no difference between human consciousness and the possible consciousness of a computer, others believe that between humans and robots there are insurmountable differences. Among the various descriptions of the difference between human consciousness and the possible future of computer awareness the thought experiment of Searle's Chinese Room seems especially interesting (Searle 1997).

The experiment of the Chinese Room needs to be interpreted not as a mere empirical experiment but as a fact that allows Searle to express his belief in his personal conscience. This experiment allows Searle to show his belief in the difference between his real human consciousness – which leads him to say he does not know Chinese – and virtual computer awareness, which can only communicate through virtual means and has passed the Turing Test.

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