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Understanding consciousness: Need for a sound and reasonable starting point

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Abstract

When I began to analyze the starting point of various authors in the field of neuroscience, I realized that this has already been done by others who have dedicated themselves to it for a long time and who have done so certainly better than I could do it. Therefore here I will but draw from these authors who, in my opinion, have made this issue clearer. So many answers have been already given, but they are submerged in an ocean of repetitions, ambiguity and partial truths. They are neither underlined, nor put in the right evidence. What is most lacking seems to be a love for the truth which is stronger than our prejudice. At the end of this paper, I shall report on my own personal position as a provocation to the discussion.

1. The problem of consciousness

In the history of Western thought, one of the most representative philosophical movements identified with the problem of consciousness, understood and approached it as "the consciousness that man has of himself", that is, the main road leading to the complete and certain understanding of man. This trend began with Plato when in the *Phaedo* he affirms that the soul grasps the truth only when it is independent from the senses. This topic is taken up by Plotinus: "You can see the wisdom and the justice without leaving the soul; the soul sees them in itself, reflecting on itself." [1] The theme of self-reflection is fundamental, especially in the work of St. Augustine, who applies the method in a radical and coherent way. Self-reflection allows us to grasp in our inner self "a presence that is deeper than ourselves". This attitude will mark the Western philosophy and theology until the advent of Christian and atheist existentialism, Husserl's phenomenology, and many currents of modern spiritualism. *"Noli foras ire, in te ipsum redi, in interiore homine habitat veritas"* – "Do not go outside, return into yourself, in the inner man dwells the truth" [2]

Edmund Husserl closes his *Cartesian Meditations* by quoting this last sentence of Augustine and, in all his strenuous efforts, he remains faithful to Augustine's exhortation. In fact, Husserl called his meditations "Cartesian", since he saw in Descartes the resurgence of Augustinian themes. The Cartesian *cogito* is the immediate, clear and infallible certainty the ego has of his inner life in *interiore homine*.

In line with Descartes' thought is Sartre, the most "Cartesian" among the modern philosophers, who maintains that "...the consciousness of being is the being of consciousness..." [11]; or "For it existing and being conscious of existing is one thing". In other words, the great ontological law of consciousness is the following: the only mode of existence of consciousness is to be conscious that it exists [11], which means that the specificity of human existence is the consciousness to exist.

The scientific psychology of the turn of the '800 to '900 (with Franz Brentano, William James, Wilhelm Wundt) believed that consciousness was the central problem of scientific psychology and, consequently, it had to be tackled as such. Wundt and his school tried to develop an experimental methodology that would allow the scientific study of consciousness: this method was based on introspection. Many psychologists of the time believed that the royal road that leads to consciousness was that of introspection, but introspection, despite the efforts of Wundt's school, still remained somehow subjective and, as such, could not meet the criteria of scientific objectivity. The reaction to this concept still based on introspection led, at the passage from the XVIIIth to the XIXth century, to the birth of behaviorism.

2. Artificial intelligence and philosophy (H. Dreyfus)

The advent of computers has fueled the discussion among the authors who study the philosophy of mind. According to Thomas Nagel, the introduction of computers is part of the reductionist programme that dominates the current work in philosophy of mind [4]. This programme is completely misleading and is based on the assumption that a particular conception of objective reality exhausts the reality itself [4].

> *In the end, I think, it will be evident that the ongoing efforts, in order to understand the mind by analogy with computers that can perform superbly some of the same outside tasks of conscious beings, constitute enormous waste of time. The real principles underlying the mind will be discovered, if they ever will, only by a more direct approach.*

The most radical philosophical critique of computer science and artificial intelligence is Hubert Dreyfus's. His main work, *What computers can not do: The limits of artificial intelligence*, dates back to 1972 (II ed. 1979) and still retains its validity. There, Dreyfus performs a critical analysis of the theoretical foundations of computer science. According to Dreyfus,

these fundamentals are derived from a philosophical tradition of the Western world that goes from Plato to the neo-empiricists; he moves from philosophical positions inspired by the philosophy of Heidegger and Merleau-Ponty.

The assumption that man works as a computer, that is, as a facility that processes symbols, implies the following postulates:

1. *organic postulate:* according to which the neurons process the information according to discrete steps, using the biological equivalent of the process on/off;
2. *psychological postulate:* according to which the mind is seen as a device that works on bits of information according to formal rules. Empiricists and idealists would, according to Dreyfus, have set the stage for this thought pattern, defined as data processing, a third-person process in which the elaborator's involvement is not an essential part;
3. *epistemological postulate:* which states that all knowledge can be formalized, that is to say that everything that can be understood can be expressed in terms of a logical relation, more exactly, in terms of the Boolean function, the logical calculus that governs the ways in which the bits are related according to rules;
4. *ontological postulate:* as any information you enter the computer must be in bits, the computer - model of the mind - assumes that all relevant information concerning the world, all things essential to the production of intelligent behaviour must be analyzed in principle as a set of specific elements independent of the situation. This is an ontological presupposition according to which what exists is a series of events logically independent of each other.

The four conditions are considered by scholars of artificial intelligence and cognitive simulation as axioms that guarantee the results, while they are in fact only possible hypotheses. None of the four postulates is justified on the basis of empirical or theoretical arguments.

Dreyfus debates and criticizes all the postulates and demonstrates that these are derived from a conception of the mind that is intended as a device capable of calculating, based on clear rules, according to a sequence of distinct steps, a series of data that he defines atomic and neutral. This view, Dreyfus says, is a tidal wave produced by the confluence of two powerful currents:

- the Platonic reduction of reasoning to explicit-rules and the reduction of the world to atomic facts to which these rules can be applied without risk of interpretations;
- the invention of the digital computer, an information processing device that formulates calculations in accordance with explicit rules and evaluates data in terms of logical elements independent of each other. In our culture, the computer seems to be the paradigm of logical intelligence.

There are also three areas necessarily neglected by scholars of cognitive simulation and artificial intelligence which are necessary to explore as underlying all intelligent behavior. These areas include:

1. the role of the body to organize and unify our experiences of objects;
2. the role of the situation that provides a backdrop against which our behaviour can be ordered without rules;
3. the role of the goals and needs.

Those who accept the epistemological premise, according to which human behaviour must be transcribed into the formal language of a heuristic program for a computer, have to develop a theory of intelligent behaviour that will not resort to the fact that man has a body, because the computer does not have the body. In thinking that we can do without the body, these authors follow the Western tradition, ranging from Plato to Descartes, which states that the body is not at all essential to intelligence and reason. If the body appeared essential to intelligent behaviour, we should wonder whether the body can be simulated in a computer program. If this is not possible, the project of artificial intelligence is doomed to failure from the start. Computer technology can successfully deal with the ideal languages and with abstract logical relations[1]. What computers exclude is that sort of intelligence we share with animals and that has survived the simulations of machines. When the human mind recognizes objects in space or time, it does not proceed enumerating a list of isolable, neutral specific features. In other words, the mind does not proceed from atomic elements to totality, but grasping the parts in a whole. The notes of a melody have value because they are perceived as part of a melodic series and not vice versa, and the same applies to the elements of a sentence. The meaning of the details is determined by our perception of the whole: these are the teachings of *Gestalt* psychology and phenomenological philosophy.

In conclusion, the pattern recognition is relatively easy for a computer if the pattern is defined by few specific traits, but in the case of complex models, the computer does not work. According to the phenomenology of Merleau-Ponty, humans recognize complex patterns thanks to a capacity that is actively and organically linked with the body that responds to the environment by virtue of the continuing sense of its operation and its goals.

At this point, Dreyfus introduces a fundamental concept of the philosophy of existence: the situation. According to this concept, every thought, every action is understood from a specific human commitment with the world and history.

[1]It should also be pointed out that computers, however sophisticated, do not understand the concept of infinity as all their operations always give finite numbers.

The situation or context is the human mode of being in the world and the situation makes it possible to conduct orderly, but not subjected to formal rules. The open-structure problems, unlike the games and tests, have three levels of difficulty:

- they determine what facts are possibly relevant;
- what facts are actually relevant;
- among them, which are essential and which are not essential.

First, in a given situation, not all facts are possibly relevant: some are, but most of them are irrelevant. Since the computer is not in the situation, it must deal, at a time, with all facts as possibly relevant. Dreyfus states that we are at home in the world and we can find our way because it is our world, produced by us as context by our practical activity. The world or situation allows us to aim at the meaningful objects it contains. As a field of experience, it is structured by our tasks and is linked to our goals that, in turn, correspond to our social and individual needs that have created the world.

The world is the place of history and in history cultural revolutions are carried out (the Greek civilization, Christianity) that change not only the visions of the world, but also what Kierkegaard calls the spheres of existence; in addition, the changes also involve the conceptual level.

The cultural revolutions show us, as Pascal had first realized, that the boundaries between nature and culture are not clearly defined. Instinctual needs can also be modified and even the paradigms may change; therefore, human nature is not fixed forever; human nature is very malleable and could also be about to change. If the computer paradigm becomes so strong that men begin to think of themselves as if they were digital devices, made on the model of artificial intelligence machines, then, since the machines can not be like men on the grounds that we have shown, humans can gradually become like machines: "The risk is not the advent of the superintelligent computer, but of intellectually underdeveloped human beings" [5].

If we reflect on the mind of man, we can not exclude the aspect of always being in a context, and, therefore, experience is already in situation, in a situation where the facts have already been interpreted. This theory also suggests the final state in which human beings are: it depends on their projects, which in turn are a function of their body and their needs and these needs are not fixed once and for all, but are interpreted and become crucial because of the cultural background and the changes of human self-interpretation. Then we can understand why there are not facts made with a built-in meaning, or fixed human forms of life that can be formalized.

In other words, computers are not in a context and do not have a body, while the intelligence of human beings is always in a context and is conditioned by the fact that man has a body, "What distinguishes men from computer, no matter how cleverly they are designed, is not an abstract, universal, immaterial soul, but a concrete, specific, material body" [5]. Human intelligence is always in situation and this implies an original background of beliefs, namely, common sense. These beliefs are not objectively measurable, and therefore can not be formalized or simulated; the intelligibility and the intelligent behaviour must be related to the common sense of what we are, this means necessarily a kind of knowledge that can not be made explicit if we want to avoid the infinite regress.

3. McGinn's controversies

According to McGinn, it is only in the 90's that the problem of consciousness reappears on the scene. Then, the philosophers admit that the philosophical problem of consciousness is real and not the result of mental confusion, while the neuroscientits are beginning to build neural-mind connections and recognize that the brain is the seat of consciousness. At this point, there is a problem: once admitted that consciousness is a peculiar phenomenon in the natural world, we must find a place for it in our scheme of things and give an explanation of its nature. How does consciousness fit into the scientific world so laboriously built in the seventeenth century? How is it related to a physical world consisting of atoms, space, force fields? How can the brain bring consciousness into existence? This raises disturbing issues, once you stop to deny the existence of consciousness. But there was a reason for this denial: consciousness is threatening. It appears as an anomaly in our conception of the universe; it is a site where our mental models of understanding are no longer valid. How - Colin McGinn wonders - can an objective science of nature, which studies the particles and their modes of aggregation, find a place for the subjective phenomenon of consciousness? How can some brain cells build the experience of seeing red or the emotions of despair? May consciousness exist out of the accessible world of the natural sciences? May the dualism of body and mind, long rejected, be the correct position? Has the ghost that haunts the machine returned? Or worse, is perhaps the car a masked ghost? May consciousness be phantomly rooted in the matter or is matter, perhaps, less material than we think? McGinn believes that the renewed interest in consciousness represents the next major phase of human thought.

We now begin to deal with an aspect of nature we do not understand. It is unclear whether our efforts will be successful. Obviously, there is no unanimous consensus on the issue of consciousness, on the contrary, there is a radical difference of opinions. McGinn illustrates this difference in referring to two books: John Searle's *'Mind, Language and Society'* and Paul M. Churchland and Patricia Smith Churchland's *'On The Contrary'*.

Searle believes that consciousness is fundamentally irreducible to the terms of neuroscience;

according to Searle, neurophysiology as a whole is unable to provide an adequate explanation of the true nature of consciousness, although the neuronal processes form the basis of conscious activity. Searle also believes that consciousness is the fundamental problem of science and the philosophy of mind. The Churchlands sway, however, between negationism (eliminativism) and the claim that consciousness is completely reducible to neurophysiology. The difference between the two positions is very large, comparable to that which divides the darwinists and the creationists. For his part, McGinn does not share any of the two positions, particularly with regard to their foundations.

Searle defines its own solution to the problem of mind/body with the term "organic naturalism" and summarizes his position in these words: "consciousness is caused by brain processes and is the highest manifestation of the brain system." [6] The idea is that third-person phenomena of the brain (neurons and their activities) operate to cause high-level subjective processes that have what Searle calls first-person ontology, i.e. processes that exist as they are experienced by a conscious person or subject. It is a fact of neurobiology that certain brain processes can lead to states of consciousness: we should accept these facts without the metaphysical implication that traditionally marks them.

According to McGinn, this conception is deceptively simple. The conscious processes are different from the standard physical processes taking place in the brain and are defined by their subjectivity. They are also biological processes for three features. These processes (1) occur in an organic system, unlike computer programmes, (2) result from processes of natural relationship and not from an intentional design, and (3) are genetically based rather than learned or acquired, as opposed to the knowledge of history or to typical performances in certain skills. In addition, brain alteration modifies states of consciousness and brain function is a precondition for the existence of states of consciousness. Finally, states of consciousness are the high level properties, in the sense that "they do not belong to the isolated primary components of the brain, but result from a combination of these elements into a complex organism." [7] The question - McGinn wonders - is as follows: "Is really this the solution to the mind/body problem?" Searle in fact likens consciousness to other high-level macrophenomena that are composed of lower-level micro-phenomena, such as solid and liquid states, digestion, photosynthesis, and these phenomena are, according to him, fully explicable on the basis of micro-processes that underlie them. For McGin, consciousness, however is something that goes beyond the neurophysiological facts which determine it. Consciousness is not reducible to its physiologic/causal bases.

While it is easy to understand the relationship between the state of the molecules and certain physical states, in the case of consciousness, however, we are faced with a mode of inexplicable dependence, unique in nature: the dependence of subjective facts from objective facts. But how can this happen? Suppose that the visual experience of red is caused by a number of neurons that discharge in the occipital cortex. The question is this: how can a subjective

experience depend on the activity of simple electrochemical cells? What a cell has to do with experience? Searle does not say anything about the concept of supervenience, and the omission is crucial. The notion of supervenience implies that the conscious mental state of a subject is completely determined by physical states of the brain. But another problem immediately arises: what is determined in accordance with the supervenience? What's in the neurons, that enables them to determine consciousness? Searle has no answer to the central question, or rather he does not even raise the problem, but he merely makes statements.

In fact, Searle asserts that it is a fact of nature that consciousness is produced in this way, but does not explain how the subjective consciousness may result from transactions carried out by a small (sic!) number of gray cells grouped together. Searle might respond to these objections by saying that it is a purely scientific problem and not a philosophical or metaphysical one. And in fact he has done all the philosophical work when he developed his own theses – it is now up to the empirical science to discover the actual mode of dependency that links consciousness to the brain. But a similar response has no value: in fact, it does not really matter whether we label the problem "scientific" or "philosophical", the fact remains that a theoretical problem is still unsolved, "a problem we do not have the slightest idea of how can be solved."

We do not know how neurons have the ability to generate a conscious episode. Neurophysiologists find correlations between brain states and states of consciousness, but nothing in neurophysiology begins to explain this correlation. There is not even an explanation why organisms with brains are capable of sensations or feelings. Philosophers are interested in this problem as opposed to the mechanical problem of how to derive the liquid state by water molecules, as the problem related to consciousness is a conceptual one, because it seems to test our conception of the mind and the brain.

The concepts of consciousness and brain seem inherently inadequate to allow an explanatory theory linking them together. Consciousness is not an observable phenomenon at all. We can not see someone's conscious state, even if we looked inside their brain, watching the brain cortex and biochemical reactions, because states of consciousness are not the kind of things that can be observed. The underlying brain processes are apparently observable physical events, and this feature distinguishes consciousness from other high level phenomena and remains once we confidently assert that consciousness is a biological phenomenon of high level. McGinn responds to Searle's assertion saying that this is the beginning of the problem, not the end.

Even Searle's arguments on intentionality are questionable: McGinn properly defines intentionality as the ability of the mind to have objects, to have a meaning or content, to go beyond itself. Intentionality is what makes an animal to be a semantic one. Searle has done much to emphasize the importance of intentionality and said very sensible things on the subject, but

he is a philosopher and has an innate resistance to admit that he is embarrassed. In recent years, many philosophers have tried to naturalize intentionality to make it understandable by reducing it to something more familiar: causation, biological function, computational structure, in which cases the intentionality emerges as nothing, yet, as a special case that we have on the list of the acceptable facts from a scientific perspective.

Searle has not done any of this, but claims to have his own explanation of the nature of intentionality. Instead of reducing intentionality to something else, as other authors do, he declares it irreducible while offering an explanation as to make it biologically natural: as an example he suggests the physiological processes underlying the phenomenon of thirst. A lack of water in the body causes an increase of neuronal discharges in the hypothalamus through certain biochemical mechanisms. In turn, the neuronal discharges induce in animals a conscious desire to drink. Since the desire to drink is an intentional state, i.e. it is directed toward the act of drinking, this provides an explanation of a conscious mode of intentionality. In the same way, other forms of intentionality are developed: perceptual, cognitive, etc. Thus, we manage to explain the intentionality biologically, but this is not a naturalistic explanation of intentionality itself. All this tells us about the physiological mechanisms underlying intentionality. The philosophers interested in understanding intentionality want to realize what an intentional relationship is and what it consists of, what it means for the mind to be directed to something out of itself when we perform the act of thinking or desiring or perceiving.

What is the mysterious relationship of *aboutness* which our true mental states show? What is the nature of mental representation? Searle's book does not account for these problems. He simply describes what causes a mental state that shows intention, and, therefore, leaves the conceptual problem unsolved. How can a brain be able to originate mental states that represent the outside world? What is in certain groups of neurons that makes them capable of symbolic activity? The kidney cells have no intentionality; why, instead, do brain cells have it? What is the relationship between the cells of my brain and the city of London in the event that I am thinking about London?

Searle's conception is not false, but irrelevant, as it is not an answer. It would be better for him to remain true to its claim of irreducibility of intentionality and not try to explain it naturally. The problem remains of how intentionality is possible in a physical system. Searle tries to go both ways: he declares that a conceptually puzzling phenomenon is irreducible, but strives to have something left unexplained.

McGinn criticizes the eliminativistic position of Paul and Patricia Churchland.The arguments in favour of eliminativism are rather weak: first, there is no argument for the falsity of folk psychology that covers everything inside the mind: bias does not imply error. Second, the durability of folk psychology could not be explained by its dogma, but to its obvious

truth: compare in this respect with the stability of elementary arithmetic that lasts from the time of the Greeks. Churchland's third objection is deceitful, since it is assumed that folk psychology is unable to integrate with the natural sciences of man. In fact, the model of contemporary cognitive science shows continuity with the apparatus of popular psychology. The philosopher Jerry Fodor, for example, has convincingly argued that the conception of the mind, understood as an information analyzer and processor capable of manipulating symbols, adapts easily to the framework of the mind, as it is understood by the popular psychology, namely as a coherent range of propositional attitudes such as beliefs and desires [8]. Therefore, none of these arguments shows that folk psychology is radically wrong about the topics that interest us.

On the other hand, Churchland underestimates the first-person aspect of folk psychology. This is not a speculative theory we apply to others, it is the means by which we refer directly to our personal mental states. This immediate first-person reference requires special privileges: the knowledge I have of the fact that, just right now, I am thinking about philosophy is as certain as any form of knowledge can be, it is almost incorrigible, as Descartes thought. But Churchland believes that this form of firsthand knowledge is not knowledge at all, since I have no thoughts, according to the eliminativistic doctrine. Folk psychology is for him only a false theory and not the means of such immediate, absolutely certain, first-person knowledge.

But once we recognize the privileges of the person in folk psychology, it becomes inconceivable that we may be wrong on having mental states in an exclusively privileged way. Hence the belief, well founded, against eliminativism: we just know that we have beliefs and desires, and everything else. One of the recurring themes in Churchland is that neuronal dynamics underlying what we will call the mind does not involve the symbolic representation of a propositional kind. The brain is not constituted as a device to analyze and process the internal language that underlies our cognitive capacities. Instead, he writes that neurons direct themselves into "activation vectors", patterns of activities that do not involve anything resembling a sentence.

For its part, folk psychology insists on describing the thinking using the language of propositions, but Churchland argues that there is nothing in the brain that corresponds to the propositional apparatus of popular psychology. McGinn focuses on two points: (1) we are convinced, unlike Churchland, that folk psychology simply provides a description that ignores the details of what neurons are doing, like the description of a computer software ignores the description of the hardware. From the perspectives of elementary physics, activation vectors do not exist in the brain, which is a collection of subatomic particles. Reality is manifested at different levels and what is invisible to a level may seem obvious to another. (2) Churchland carefully avoids confronting the issue of language which analyzes itself. But if we understand language we must assume that our mental dynamics involve the manipula-

tion of linguistic propositional structures, because language consists of sentences, and if the propositional attitudes such as beliefs and desires are related to the language, they involve the internal linguistic structure.

The representative apparatus of the brain may not have, to a certain level, any reference to linguistic symbols, but it does not follow that these symbols do not play a part in the operation of our mind. Once we admit this, popular psychology can claim a science of the brain. This is precisely the position of Jerry Fodor that points out to "the language of thought".

Churchland's insistence on non-propositional neural representations leads to a strange result: it is more plausible that a computer thinks than humans do. Churchland notes that the standard architecture of computers consists of manipulating propositional structures serially while the brain works through non-propositional neural activations connected in parallel (which are called connectionist networks). Then the computer shows the shape of the internal processes that folk psychology requires, while human brains show a completely different type of mechanism. The result is that eliminationism is closer to the reality of computers than to ours. According to Churchland, the computer I am using has more claims than I have to be a thinker. This is a *reductio ad absurdum* of Churchland's positions.

Churchland and Searle represent opposite poles of the philosophical world. Searle takes seriously the notions of common sense about the mind and resists attempts to reduce or eliminate the mind in favor of a materialist metaphysics. Churchland believes that the idea that humans have beliefs and desires is a false theory about the way our brains work, a theory which must be replaced by a better theory that describes man in accordance with neurosciences. But does a middle way exist?

According to McGinn, the two theories are understandable answers, though incorrect, to a conceptual problem. The problem is how to integrate the conscious mind in the physical brain, how to capture the unity beneath the apparent diversity? The problem is very difficult and McGinn does not believe that someone has any strong ideas on how to solve it. However, we can expect two types of responses: either there is unity with the mind or there is no mind to unify with the brain. Then we get the antireductionist duality of Searle (who does not like this definition) or maybe we will have the combined eliminationism of Churchland, without consistency, with an attempt to reduce mental phenomena to our understanding of the brain. McGinn believes that the best solution is represented by a theory that unifies the conscious mind with the physical brain, but we have no idea what this theory would be. In fact, there is likely an underlying unity, even if we do not understand it.

McGinn affirms that there must be a unity below, because, were there not, we should postulate a miraculous form of emergency in the biological world. Consciousness can not jump into existence from matter as the Aladdin lamp genie. But our ways of access to conscious-

ness and the brain, respectively, through introspection and sensory perception, can not in principle reveal the hidden structure of this indispensable link.

> *I know that I feel pain because I feel pain inside me and I know that my neurons are activated and, using a scientific method, I can observe that they are, but I neither have the immediate consciousness of the necessary bond that unites all sensations and brain processes nor I possess any methods to extrapolate this relationship. We cannot infer our internal brain states from our consciousness and we cannot infer consciousness from the immediate sensory awareness of our brain; so the mode of their association is beyond our cognitive faculties.[7]*

We can know each side of the great fissure that divides the mind and body, but we have no faculty which reveals to us how they are split off from each other. All this is the basis of the difficulties we face in formulating a theory that can connect consciousness with the brain, but it is surprisingly hard to find that not every aspect of the natural world adapts to our powers of comprehension. We do not expect other evolved species to be omniscient. This is because we believe that our intelligence has evolved with the ability to solve any problem concerning the universe of which we are a small contingent part, but even if this argument is wrong we should admit the possibility that our knowledge about the mind and brain is severely limited and this produces the impression that this association is a brute and inexplicable fact. This could be an explanatory theory.

4. A personal proposal

It is absolutely clear that every thought, feeling, movement, perception, experience has neurophysiological and electrophysiological correlates. I do not exist separate from my body into the space-time dimension in which we all live. Nothing can happen in me that does not have a neurological basis, which does not involve the activation of neural circuits, but this does not mean that everything is due to my brain, as I'm not just my brain.

So let us ask ourselves: how can we tackle the question of how man is made, what constitutes consciousness, the I? First, this issue can not be resolved by science, it is not a science based issue. When science purports to answer these questions it makes a mistake, from which science is blinded: the claim that the scientific method is the only method of knowledge. When such a claim is made, one implies that what can not be known by the scientific method does not exist. Also, the statement that "scientific knowledge is the only objective true knowledge" is not a scientific statement, but a statement on the philosophical ground and as such should be sustainable.

How do I know the constituent factors of myself? If the criterion for this investigation was external to me I would be alienated, the slave of whoever owns the criterion. If the criterion for the knowledge of the constituent factors of myself was to be strictly scientific, it would be the paradoxical possibility that one other than myself could know myself better than I!

Therefore, the criterion has to be inside me, and consequently, the method for such knowledge must be akin to a look into my personal experience, as reflected in the thick of life, in action.

Within this dynamics I can easily find that I'm composed of two sets of factors, with different characteristics that are irreducible to one another. The first one includes a widespread phenomena in space, divisible, measurable, visible, and which inevitably change over time, mutate, become corrupt (we call this order of phenomena of the material, it is "the materiality"). The second one, such as the concepts, mathematical truths, the Self, value judgments, the decisions we take in life, are not measurable, non-divisible, non-perishable, non-visible; it is an order of phenomena which we can call spiritual, "not material", or in a more restricted way it could be called mental. Therefore, these two orders of phenomena are irreducible to each other and at the same time given only together.

Note that this reading of the experience does not contradict any of the data that the neurosciences have given us. Every action of man always implies a modification of the brain's neurophysiology and electrophysiology (you can not separate the two principles, as body and brain cannot be separated into the space-time dimension in which we live); but it also stresses that any attempt to fully explain the phenomena of non-material from material principle clashes with the experience that gives them to us as fundamentally irreconcilable. Such a position does not mean that they are two juxtaposed realities, it indeed shows that they belong to and form a unitary being, the human person. Therefore, this reading is distinct from the philosophical position that has most influenced the modern world – I speak, of course, of Descartes.

The revolutionary character of Descartes is the introduction of the "first person" to the foundation of philosophical discourse, the *"cogito ergo sum"*.

> *The introduction of the first-person perspective produces a radical renewal of the issue on (the ego, the subject or, in terms of the debate of the times of Descartes) the soul, which becomes consciousness in the eminent sense. [9]*

And yet, this is done with a clear stance with relevant consequences.[2]

> *The thinking substance (the cogito) is the one whose whole essence or nature, is that, in thinking and in order to be, does not require any place nor depends on any material thing [...] This is why the "I", i.e. the soul, what makes me myself, is absolutely distinct from the body and is also easier to recognize than the body, and even if the body were not, the soul does not cease to be what it is. [9]*

For Descartes, therefore, the ego coincides with the *res cogitans* that has existence in itself, and the body, the *res extensa*, is a pure machine, a mechanical device, somehow united to the

[2]From Descartes, Discourse on Method, quoted by Vanzago [9].

self. The dualism is established with its insoluble problem: how the two substances interact?

We know the response given by Descartes: the soul resides in the epiphysis (a centroencefalica median formation) and hence she governs the body. The Nobel Prize for biology, Francis Crick, discoverer of the structure of DNA with Watson, a decade ago proposed that human consciousness is established in the claustrum, a thin gray bandeletta immediately subcortical in the temporo-parietal-frontal lobes, of which we ignore the function. This was and is the influence of Descartes in the history of the western culture!

The main topic of all reductionists, eliminativists, scientists, materialists is that every activity, thought, feeling, desire or experience implies (but not depends upon) brain activity. These data are reported as a novelty made possible by modern exploration techniques of cortical functions. But neurologists knew about this for almost 200 years: the structure and functions of the brain were, in fact, discovered by observing and studying these natural experiments, which are the diseases of the CNS. For example, neurologists know that a lesion of Wernike's cortical area, in the posterior third of the superior temporal gyrus, that allows the understanding of spoken and written language, determines the appearance of a real and severe dementia: the disappearance of the opportunity to realize the meaning of words implies the loss of opportunity to think. Therefore it is important to realize that this does not imply that mental activity is then generated, determined, caused by brain activity!

The challenge before us, in front of Neuroscience (we are only on the initial threshold of understanding brain functioning) seems to me well expressed by the words not of a neuroscientist, but a theologian (remember Theillard de Chardin):

> *Nature - the flesh, bones, viscera, the cells (one might add, especially the brain, neurons) – become in the human beings need of the infinite [...] Unlike animals, even our physiology is whole set with this opening to infinity: this opening to infinity is rooted in our humanity, for this it is ineradicable. (J. Carrón)*

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