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What Must a Successful Theory of Consciousness Explain? Mapping the Requirements Across Philosophy, Neuroscience, Physics, and Psychology for a Truly Comprehensive Model of Mind

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Abstract

Throughout intellectual history, the relationship between the immaterial aspects of human existence and the physical body has been conceptualized under various guises: the soul-body, mind-body, and most contemporarily, the consciousness-brain problem—symbolized as the psi-phi (ψ-φ) problem. This paper argues that while historical discourse framed the debate in terms of a soul inhabiting a body, modern understanding necessitates greater precision: the central challenge is to elucidate the relationship between consciousness and the brain, as the mind is fundamentally a product of cerebral processes. Despite decades of neuroscientific research, a comprehensive and universally accepted theory of consciousness remains elusive. This elusiveness stems from a core paradox: consciousness, the very phenomenon we seek to explain, is inherently unobservable to the third-person methods of empirical science. Science, reliant on sensory data, can only obtain indirect correlates of conscious experience, leading to a proliferation of theories that remain, as Nick Herbert noted, more akin to fantasies than robust scientific explanations. The foundational axis of the debate revolves around two dominant metaphysical frameworks: monism and dualism. Monism, in its materialist form (Hobbes to Crick), posits that mental states are entirely reducible to physical brain activity—consciousness is an emergent property of neuronal interactions. An extreme variant, panpsychism (Berkeley, Hume), inverts this, asserting that mind is fundamental to all matter.

Key Words: mind-brain problem, psi-phi problem, dualism, monism, reductionism, consciousness

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Introduction

Although we know plenty of reasons why our heads are not empty, what we have found in our brains actually amounts to nothing (Schrödinger, 1946; 1959). This may come from the fact that our brain is so complex that we do not understand it. However, if our brain was simpler, our intelligence would be that much less, so that it would still seem very complicated to us and we still wouldn't be able to find anything in it. The biggest obstacle to a theory of consciousness is the fact that consciousness remains stubbornly unobservable. Science, depending on information derived through the senses, can only obtain information indirectly so that theories are various and inadequate.

For a long time, the theoretical approach of science, quite strangely, kept well clear of consciousness. If it cannot be said that such questions as 'What is consciousness?' are outside the realm of scientific study and if they still have importance in human life, then we must question the degree of importance of science for human beings.

According to physicist Roger Penrose, "What I imagine is that, one day in the future, a successful theory of consciousness will be developed — successful from the point of view of being a consistent and suitable theory of physics, successful because it fits well with the rest of physical understanding; a theory wholly suited to arguments relating to the questions of its predictions being what people are seeking answers to about themselves, and when, how and to what extent they are conscious." (Penrose, 1989).

Nick Herbert, in his book *Elemental Mind* (1999), says that "we cannot say that theories belonging to our own experience are bad, deficient or imperfect. We have no theory on this topic, even a bad one. We have only fantasies, pieces of broad philosophy and untested guesses."

Francis Crick, in the introduction to his book *The Astonishing Hypothesis* (1990), says "I cannot suggest a definitive answer to the question. I wish I could suggest one, but at present this seems very difficult. Of course, some philosophers are under the illusion that they solved the mystery long ago. The time has come to think in a scientific way about consciousness and most importantly to begin experimental studies on consciousness in a serious and determined way. We believe that it is impossible to answer questions about consciousness with general philosophical arguments."

All theories of consciousness formed for today are either correct or wrong. Their correctness can to some extent be confirmed with the information that we have, and their incorrectness can be shown from other sources. Each theory shows another part of the elephant, and some theories are like a mirror image of the elephant. A solution has been sought for many years to the relationship of the consciousness/mind and the brain. The interaction between consciousness and the brain can affect each one in different ways with

the different locations of each one. Each association opens the way for different philosophical and even ideological movements according to the locations of the mind or the brain (Karakaş, 2001; Gazzaniga, 2002; Dennett, 1988; Kuhn, 1962).

The basic approach to the consciousness-brain relationship comes from arguments about whether the relationship between them is one of dependence or juxtaposition. From the dependence viewpoint, everything which is not material is a product of the material brain, and is completely dependent on it. According to the juxtaposition view, there is 'something' which is non-material, different from it but juxtaposed to it.

In basic terms, interaction is at the same time a causal relationship. For this reason, there are four basic types of interaction: electromagnetic, weak, strong and gravitational. Physical systems demonstrate this well, but when we consider the mind-brain problem things get confused. We cannot find a successful and explanatory technique like in physics. The mind-brain relationship is more descriptive and is not explanatory. Many relationships have been proposed between states of the material brain (MA) and states of the mind (ZD). These can be monistic or dualistic. Monistic movements treat material state (MD) or state of mind (ZD) separately, while dualists deal with material states and the states of the mind together (MD+ZD). Taking them together opens up the possibility of complex relationships and interactions in various forms (MD→ZD, ZD→MD, or MD⇔ZD). In the monistic MD view, all states of mind can be reduced to states of the material brain (materialism) or physics (physicalism). From this viewpoint we come to the conclusion that the working of MA will be enough to understand states of mind. From the dualist standpoint, it is not enough to evaluate MA by itself. It is necessary to look at the thing which has a mind, because the basic complex interaction is in the direction ZD→MA.

So far, no theory of consciousness has been developed which is completely comprehensible and accepted by everybody. Concerning the understanding of consciousness, there are as many theories as there are theoreticians (Cowey, 1997; Pribram, 1999; Popper and Eccles, 1977; Tarlaci, 2010a, b; Beck, 2008a, b). But at base, despite arising from many different sources such as philosophers, neurophysiologists, mathematicians, physicists and molecular biologists, these modern theory-ideas can be traced to four main groups: phenomenologists, functionalists, mystics and reductionists. However, these approaches cannot be kept wholly separate.

Monism

The term monism was first used by Christian Wolff (1679-1754) to describe philosophers who believed in only the existence of the soul or only in the existence of matter. Monistic models assert that the only

important thing is the material body or the brain and that internal experience is no more than the movement of matter (materialism); each mechanical movement results in an internal experience and particles which form matter partly have a life of their own (*reductionist materialism*) (Herbert, 1985).

Table. People with different approaches to the mind-brain or consciousness-brain problem and the movements they belonged to.

Category	Subcategory	Proponents
Monistic	Materialism	Thomas Hobbes (1558-1579), Julian de la Mettrie (1709-1751), Pierre Fluorens (1794-1867), Paul Broca (1824-1884), Gustav Fritch (1838-1929), Eduard Hitzig (1838-1907), Voltaire (1694-1778), Diderot (1713-1784), D'Alembert (1717-1783), Holbach (1723-1789)
	Panpsychism	George Berkeley (1686-1753), David Hume (1711-1766), Thomas Brown (1778-1820), John Stuart Mill (1806-1873)
Dualistic	Epiphenomenalism	Edmund Husserl (1859-1938)
	Dual Appearance/Identity	Gottfried Leibniz (1646-1716), Gustav Fechner (1801-1887)
	Psychophysical parallelism	Immanuel Kant (1724-1804), David Hartley (1705-1757), Alexander Bain (1818-1903), Wilhelm Wundt (1832-1920)
	Psychophysical interactionism	René Descartes (1596-1650), Johann Herbart (1776-1841), Hermann Lotze (1817-1881), İbn Arabî (1165-1240), İbn Sina (980-1037), Filibeli Ahmet Hilmi (1865-1914)
	Occasionalism	Gazali (1058-1111), Arnold Geulinex (1624-1669), Nicolas Malebranche (1638-1715), Johannes Clauberg (1622-1665), Geraud de Cordemoy (1628-1684), Louis de la Forge (1632-1666)

Living things are basically physical matter and there is no need to look for a further agent. Just as horsepower is an indicator of the power of an engine, so mind-consciousness is a product of the material brain. The monistic approach takes the exactly opposite stance, and this is panpsychism. According to this, there is only one being and this is not material but mind-soul-consciousness. Matter has no independent existence. Matter is to do with perception. The beginning of everything is sensation and sensation at the same time is the basic process leading to the formation of the mind. That is, it is a product of the mind.

Anomalous monism is a kind of non-reductionist materialism. Every mind event is identical to a physical event. However, the language which we use to talk about mind events wanders off on a different road from the physical and continues that way. Therefore, the language we use cannot be directly associated with the identity of physical and mind events.

Reductionism

This Earth made of soil and rock, and our brains, made of living matter, are physical. Our brains are formed from cells, which are formed from molecules, which are formed from atoms, which themselves are constituted from subatomic particles and attractive forces. That is, our body and its organs can be reduced to their constituent parts and the functions of these.

Table. Johannes Poortman (1896-1970) grouped mind-brain or soul-body solutions. He recognized six different world-view groups (Portman, 1978).

Group	Description
Alpha	Monistic materialism, the view that only one kind of stuff, i.e., matter, ultimately exists in this universe.
Beta	The view that only matter exists, but that there are different kinds of matter (hylic pluralism), specifically that God and other spiritual beings are created of a finer kind of matter, not visible to our scientific instruments.
Gamma	That only matter exists, with the exception of one single entity which is not material. This entity may be God, Brahman, etc. This is the view held by Poortman himself.
Delta	The view that two separate kinds of material and one kind of spiritual, immaterial entity exists, for example the early Christian and Gnostic belief that man was made of body, soul and spirit, where the first two are different forms of matter and the spirit is immaterial.
Epsilon	A view in which matter and mind are totally separate things. This view was for example held by René Descartes in his cogito ergo sum statement, see mind dualism.
Zeta	Monistic idealism or illusionism, where matter is seen as some kind of emanation of God or another spiritual being. Especially this classification applies to the Brahman of the Hinduism.

Reduction or reductionism is used with a different meaning in science. According to some, there are two reductionist viewpoints, the ontological and the methodological. Later, theoretical reductionism was added. The reductionism of biology is "there is no whole, but..." It asserts that there is chemical or physical structure or genes, and everything is the nucleic acid molecule. But we know that organisms are chemical beings. In methodological reductionism physics and chemistry are enough to examine biological structures. In theoretical reductionism, the whole theoretical structure of some sciences can be reduced to a more basic science, and the terms and concepts of one can be applied to the other. If theoretical reductionism is correct, the whole of physics must contain the whole of chemistry and must be able to explain all of it. An example of this is the reduction of thermodynamics to statistical mechanics. All the basic concepts of thermodynamics can be derived from suitable statistical analysis of the behaviour of molecules (Guttman, 2005).

A molecule of water or an atom of carbon in our brain does not have consciousness. This interaction of molecules at the atomic level without consciousness or intelligence has striking consequences. The structure of DNA has the capacity to make copies of itself and to produce the proteins in our bodies. That it does this without consciousness or intelligence is certain. A molecule of DNA and an enzyme perform this task better than the best robot, with a very low margin of error and sometimes correcting mistakes in the optimal way. They work just like tiny machines. They act rather than standing still, they are unaware of what they are doing and cannot talk about it. And what about larger cell structures? In a fertilized egg or zygote, cells which will later be nerve cells divide and develop, and migrate and group together in accordance with the requirements of what will later be the brain. These nerve cells are able to take on a particular shape, settle in a particular place, and communicate with others in a particular configuration. They form the lower layer of the brain cortex in a tremendous feat of organisation.

How is it possible for all these unconscious automatons to come together and create conscious awareness? If there is no additional hidden matter within us as the dualists and vitalists believe, our conscious existence is formed from trillions of automatically functioning automatons, the result of which is that we are, roughly speaking, conscious automatons (Dennett, 1997). All the physical and chemical laws known which are reflected in an important part of the life of an organism are of a statistical nature (Dennett, 1997; Greenfield, 1997), and their collective results show our conscious existence. The idea that our unparalleled consciousness is just brain soup mixed with a few electric sparks is a real disillusion (Greenfield, 1997).

Table. Percentage constituents of muscles, which provide movement, and the brain, which forms consciousness. Even though there are no big differences in proportions, why does a different consciousness arise in each of them?

Constituent	Skeletal muscle (%)	Whole brain (%)
Water	75	77-78
Fat	5	10-12
Protein	18-20	8
Carbohydrate	1	1
Soluble organic matter	3-5	2
Inorganic salts	1	1

The argument against reductionism, that "the whole is greater than the parts" is true. But "greater" simply means the detailed definition of the interaction between the parts. This interaction makes the parts into a system. However deep reductionism goes, it ignores this interaction.

Regarding the workings of the brain and the birth of consciousness, the foremost names in the reductionist camp today are Crick-Koch, the physicist Roger Penrose and the anaesthetist Stuart Hameroff. The work of Hameroff and Penrose in particular can be regarded as ultra-reductionist (Penrose, 1985; 1989; 1994; Hameroff, 2001; Hameroff and Penrose, 2003). According to them, consciousness is at base a product of the interaction of the atoms and molecules which make up the brain, and even of the sub-atomic quantal constituents. They do not accept that the whole is greater than the parts. For the past three hundred years, the basic thrust of scientific thinking in Western science has been reductionist. According to the reductionists, a living thing is no more than a collection of atoms. Or they say that a Beethoven symphony is just a collection of notes and ignore the holistically-derived rhythm. But there is surely a place to bring the two together.

According to John Searle (1984) and Roger Penrose (1985), there must be substantial changes in science in order to explain conscious experience. According to Searle, states of the brain cause consciousness, but states of consciousness cannot be explained by statements of the state of the brain. Basically, consciousness is an internal characteristic. The state of being aware of a smell is ontologically different from the physical state of the brain. Ontology is the question of 'What is the real evidence for existence in the world?' According to Searle, the brain has irreducible characteristics:

1. If we try to explain consciousness in neurobiological terms, this is reductionism.
2. If we can perform reduction or define consciousness in biological terms, we cannot in reality consider state of consciousness.
3. But states of consciousness are a reality, as any idiot knows. In the end you say that neurology cannot explain states of conscious biologically. But it can immediately be seen that this conclusion is mistaken. Physics can explain heat as the kinetic energy of molecules, electricity as the movement of electrons, and light as the propagation of electromagnetic waves. If this was not so, what could science say about electricity, heat and light? Self-correcting discoveries like oxygen replacing phlogiston as the medium of burning bring new viewpoints and solutions. Only scientific advances are self-correcting. Thus science can only be corrected by science.

The sense of pain which I experience will certainly be different from yours, and indeed it is. To a certain degree pain is not real or non-existent. The sense of pain is a neurological and biological state. The neural reality following the sense of pain is in the form of the working pattern of nerve cells. Pain comes as a response to a physical state of the brain, so we might hope that you can feel pain when a nerve cell network is working in a particular way. If I have a network state working in the same way, which means that I will experience the same pain. However, even if we have the same pattern of pain nerve cells, the associations will be very different because of our different development, and different experiences of what pain is. Thus, the pain may be the same but our reactions, that is our feelings, will be entirely our own. In this situation, you might give the following explanation. If associations and patterns and learned experience of pain were exactly the same, would the feelings of pain in the two brains not be the same? The answer is of course 'yes'. However, in such a case the 'you' and 'I' above could not be two separate persons. Two people who were exact copies of each other like clones.

Newton, explaining in his book *Optics* how colours are formed, received a negative reaction from poets, and the mystic poet John Keats accused him of having stolen the secret of the rainbow: 'He ruined all the poetry of the rainbow by reducing it to the colours of a prism,' he used to say. Maybe the same fate will befall us with reductionism on the topic of the psi-phi problem.

Dualism

Everything we can think of can be classified as non-living (stones, houses, planets) or living. As living things, we want, we think and we

experience feelings like happiness and anger. In this way, we see ourselves as quite different from physical objects. This brings us to the idea that what makes us different as a living thing is something outside our physical make-up, a non-physical characteristic. Dualism arose from this view. The dualist model accepts mind/consciousness and brain/body as being completely separate things. In this model, the mind is both pushed outside the material and put in opposition to it. The problem with this is that the mind is pushed out of the field of scientific inquiry, and enters the realms of mysticism and philosophy. If we are talking about the mind and thought, we cannot separate thought from matter.

If a person is formed completely on a physical basis, then his mental states will be the result of an arrangement of physical states. Therefore, it will be impossible to make a clear distinction between physical objects such as stones or people (brains). According to dualism, mental operations must be formed from non-physical things. But if we characterize the mind as not being a thing without any physical being, then dualism is wrong.

The dualist approach actually comes from before Descartes. Socrates' distinction of reality/source, Plato's form/world, in more recent times Hume's knowledge / value, Kant's empirical superhuman / supernatural, Heidegger's being / time, Russell's existence/being, and finally Descartes' mind / body. That of Descartes has attracted the most attention among cognitive scientists and philosophers as Cartesian dualism.

Another mind-body interaction is that the mind and the body/matter interact in a balanced way. This is like the two sides of a coin, like heads and tails. It has two appearances and the two faces at the same time form the coin. This is like the two faces of mental process and the brain/body. Consciousness/mind affects matter, and matter the mind. The difference between the two changes depending on your viewpoint. Looking from outside, the brain/bodily state can be seen. Looking from inside, the mental state can be seen. However, a good dualist approach "must be able to explain in a detailed way these characteristics of matter which cause the interaction of these two completely different aspects of the world and the qualities of the soul" in whatever combination they might be.

Another aspect of dualism is psychophysical parallelism. According to this, the brain-body and the mind are two independent and quite separate entities, and there is no relationship between them. Each has its own operational rules. It is the theory of dualistic mind philosophy which maintains that there is no mutually causal relationship between the brain/body and the mind as proposed by 'interactionism', and that bodily events and mental events do not interact with each other but each exists in parallel with the other. Brain and mind events occur as two parallel series. Only certain brain phenomena coincide with certain equivalent mind phenomena. The best-known example of

parallelism is Leibniz's monadology. However, this viewpoint is very weak, and cannot explain how the drugs used on psychiatric patients affect behaviour or how anaesthetics affect consciousness.

Psychophysical interactionism is treated under the heading of dualism. Despite its similarity to psychophysical parallelism, the mind and the body affect each other differently. The body and the mind affect each other uninterruptedly. Even the slightest twitch in the body finds its equivalent in the mind, and everything in the mind creates an effect on the body. Each is a separate entity. This view derives ultimately from René Descartes. The body receives sensations from outside and carries them to the mind, where they are evaluated and bodily reactions suitable to them are created.

Occasionalism is another example of a type of dualism. According to this, the mind and the brain do not affect each other causally. In this view, it is argued that the apparently causal relationship between them is in fact set up by God. This is criticized as a *deus ex machina*, which is, unnecessarily introducing a god or supernatural figure to solve a complex problem. The leading proponent of this view is Ghazali. God stands as an intermediary between movements of the body and their equivalent mental states. In the words of Arnold Geulincx (1624-1669), 'Because of the necessity when doing something of the knowledge of how to do it, a substance which does not know anything cannot act on its own, and therefore the real cause of the action which seems to be the interaction of substances on each other must be God.'

The apex of dualism was reached by Descartes. According to Descartes, all physical things have a spatial dimension and are made up of particles, and can be divided into pieces. Because the mind has no dimensions and is not composed of parts, it cannot be physical. There are other concepts in physical reality that support dualism. Physical reality can be expressed in mathematical terms as unchangeable. Nature's book is written in the language of mathematics. All physical things can be described by geometry. The same cannot be said of the characteristics of the mind. Therefore, there must be another reality outside physical reality to include mental states. Another characteristic of mental states is the qualitative characteristics of bodily sensations such as pain, for example a dull pain or the visual experience of the colour red. The internal characteristics or *qualia* (subjectivity, the content of the mind) cannot be described mathematically.

In Descartes' view, a mind phenomenon can both be the cause of a physical phenomenon and the result of one (dualistic interaction). Leibniz does not agree with this, and proposes that it is correlated with the physical phenomenon (parallelism). Another point of view is maintained by Thomas Huxley and recently by F. Jackson. According to this, a mind phenomenon affects, but is not the cause of, physical phenomena (epiphenomenalism). In the past few years, dualism has

been strongly supported by David Chalmers. According to him, there is a law of physical isomorphism between the mental and the physical. Another claim for dualism is the problem of Joseph Levine's so-called explanatory gap. According to Levine, microphysical phenomena show an upward-moving trend, and try to reach the macrophysical, but there is an inexplicable gap, or door, between them.

Descartes in fact deals with the material body from a radically reductionist viewpoint. In his book *Traité de l'Homme* written in 1630, he sets out a radical mechanical reductionism. He equates all human activities to the operation of a machine that works by itself, like a clock or a windmill. He even insists that, when talking about man, even such actions as walking or singing will be sufficiently explicable mechanically in being realized without the help of a mind. When there is a contribution from the mind, he talks of the need for a separate 'rational soul' — *âme raisonnable*. The soul has no contribution in initiating physical actions. He asserts that there is nothing strange in seeing the body as a machine and says "A body coming from God's hand has been made incomparably better than any machine which man could make and harbours within it much more important movements." This statement is very similar to Roger Penrose's view in our own times that we cannot define human consciousness and mind algorithmically. He does not see it as possible that this universal vehicle of what is called intelligence and the mind can be completely physical because it is not possible for this machine to contain organs to respond to every situation that we can encounter in life (Davies, 1984).

Descartes says, "I have learned that there is a substance which in order to exist has no need for a place and is dependent on no material thing, and all its essence or nature is thinking. Thus, this 'I' — that is, the soul which makes me — is completely separate from the body, it is easier to know than the body, and even if the body did not exist, it would remain."

The neurophysiologist John Eccles, explaining his adoption of the dualist view in his classes in 1977-78, said, "Each individual is a sacred creation." Eccles claimed that it had been shown that the conscious ego was in direct communication with the specific language and idea-creating dominant hemisphere of the brain (Eccles, 1990; Beck and Eccles, 1992). Even though the body and the mind are not in a mutual relationship, matter is dominant (epiphenomenalism), or, just the opposite, each body may be dependent on a mind. The formation of mental processes is a formation of body-brain processes. The body may have a one-way effect on the mind. This dependence is not specific to living things even: all material in the universe is the same interaction (animism). The reflection of the dominance of the mind is known by theologians as the soul in the material body. At the basis of all religious belief systems such as Islam, Judaism, Christianity and Buddhism, is the idea that living, and sometimes

non-living, things have a soul. According to these beliefs, the soul comes from outside and settles in the body at the beginning of life, and leaves it when the body dies, and lives eternally in another dimension, some say among us.

Descartes' extreme dualism, that is, the thesis of the soul being outside the body or being without a body, still shows its influence today as a subject of criticism. At one time, although its followers were as numerous as the stars in the sky or the sand in the sea, it still had many opponents. In its own time, it was exposed to accusations of being far from original. One of the opponents of Descartes' philosophy, Pierre-Daniel Huet (1630-1721), defended the idea that *cogito* could *not show scepticism*. He maintained that the expression *cogito ergo sum* — I think therefore I am — was not just an inference but time had to pass between the moment when thinking occurred and the moment of realization that one had thought, and so the memory could be mistaken (Gjertsen, 1989). Spinosa and Leibniz also maintained that Descartes has not solved the mind-body problem. Leibniz sees him in this regard as an undecided Platonist.

According to Antonio Damasio (1994), Descartes; "...separated the body and the soul as if cutting with a knife; on the one hand there was the material of the body, which has volume and dimensions and works mechanically, and can be infinitely divided into particles, and on the other the mind, without volume or dimensions, unchanging and indivisible; pain which causes an upset in reasoning, moral judgments and bodily discomfort or feelings could exist separately from the body." His saying this shows that he was mistaken and that he was alluding to today's dualists: "If the mind can really be separated from the body, it would be very strange and contradictory if a large number of psychologists saw themselves as dualists, believing in the mind without reference to neurobiology, and without the need for physiology and chemistry."

Discussing Descartes' phrase "I think, therefore I am", Damasio says that Descartes first used it in its French form *'Je pense, donc je suis'* in *Discourse on the Method* (1637), and later in its Latin form *'Cogito ergo sum'* in *Principles of Philosophy*. Coming out strongly against Descartes, he does not forget Plato, and says that Plato's conversations on the body and the mind were of a kind to infuriate people much more. He suggests that his words are no different from Augustine's *Fallor ergo sum* — "I am mistaken, therefore I am".

According to Ryle, who calls this dualizing of mind and body a *deus ex machina*, this idea of Descartes is a result of his education as a Jesuit Priest. "... thus while some movements of human arms and legs are the effects of mechanical causes, others must be the effects of non-mechanical causes; while some arise from the movements of material particles, others are from the workings of the mind." According to Ryle, this description is in fact a result of the effect of Galileo, and "the belief

that there is a polar opposition between mind and matter is the belief that they are terms of the same logical category."

Despite all this denigration, the number of people praising Descartes was not small. In any case, the new ideas that Descartes had introduced were very different from those of his predecessors. He himself said that philosophy needed a radical new beginning. Bertrand Russell (1872-1970) said, "No one since Aristotle had succeeded in achieving what he did," and Montesquieu (1689-1755) praised him, saying, "Descartes is the person who teaches those who come after him how to find their own mistakes." Descartes was directly effective in transforming philosophy into a new shape.

Objections to Dualism

At different periods, a large number of opposing and alternative views have been set against dualism. The main opposing points are summarized below (Jolley, 1997; Rosenthal, 1998).

1. **Energy conservation:** According to the best-known law of physics, the total energy of a closed physical system remains constant. If mental events are not physical, then when mental events cause bodily events, a causeless physical movement arises without a physical reason. This results in an increase in the energy of a closed relational system. For this reason, the mental cause of bodily events contradicts the conservation of energy. When bodily events cause mental events, no problem arises in dualism, and as with other physical events, energy is conserved. The problem only arises in one causal direction, mind/consciousness → brain. Some theoreticians have developed epiphenomenalism, a different form of dualism. According to this, mental events are not physical and are formed by bodily events. However they have no causative effect of themselves. In this way, epiphenomenalism avoids breaking the law of energy conservation. An extreme form of dualism is known as parallelism, and this also avoids the difficulty. It denies any causal relation between the mind and the brain. Any state of causal interaction in the two directions is called interactionism. According to dualism, mental events change the distribution of energy and cause bodily changes. For this reason, the law of conservation cannot be accepted as opposing the idea that the mind has an effect.
2. **Interaction difficulty:** Another opposing view derives from the difficulty relating to how interaction between the physical and the non-physical occurs. For today, in contrast to our ability to understand sufficiently how a physical thing has an effect on another physical event, a

causal interaction between the mind/consciousness and the brain is quite simply incredible. We don't even have the terms or concepts for how something non-physical can have a physical effect. We have no theory for it. However, if something is unbelievable, that does not mean that it cannot have an interaction, but if this does occur, it means that we do not have useful theories. As a result, even if we cannot develop this kind of theory, it does not mean that mind/consciousness-brain interaction is not possible. Scientifically speaking, our capacity to understand the relationship may be limited.

3. **Time-lag objection:** A third objection is opposed to causal interaction. In order for non-physical events to cause bodily events, non-physical events must intervene. This must cause a measurable time-lag following the bodily event. Because no such gap has been shown so far, it is proposed that dualism is on the wrong track. However, there may be no need for such a time-lag. As with the force of gravity, it has an effect over an immeasurable length of time.
4. **Scientific inquiry:** Dualism accepts the mind/consciousness or soul as being independent of the material world. For this reason, there is no clue how to examine the characteristics of consciousness from a scientific point of view. This is because consciousness is a product of the material world, and science is information about the material world.
5. **Neuroscientific evidence:** In the past few years, research on the brain has shown that consciousness has a close connection to the physical structure of the brain. These findings are evidence against a mind-brain separation.

All these objections are no better than what dualism proposes in setting out what is reality. There is no support for taking these two sets of events, one mental, one physical, with slender connections between them, in parallel. The evidence we have amassed so far renders it necessary to consider human action as an undivided whole; however, this whole undeniably shows itself in two separate aspects. The view on the inside is what we feel and know when we make a decision; the view on the outside is what an anatomist or a physiologist sees when he looks into the head.

To summarize, the basic view of dualism, simply, is to understand the body and the soul like the two sides of a coin. Thus the soul/body or the mind-consciousness/brain is not seen as two separate things. Just the opposite, they constitute a unitary structure. Of the two or three ranged against dualism, one is materialism, which looks with suspicion on consciousness and believes that only the physical state is important. In psychology, we have the equivalent of materialism,

behaviourism. According to this, we form purely mechanical responses to external stimuli. Consciousness and mind have no meaning or importance. Finally, idealism asserts that the physical world has no real existence and everything is perception.

Phenomenology

This is a movement started by Edmund Husserl (1859-1938). Later on, Martin Heidegger (1889-1976), Jean-Paul Sartre (1905-1980) and Maurice Merleau-Ponty (1908-1961) also made contributions. It is the idea that all allusions made to physical objects are equal to actual or possible experiences without loss of meaning, or can be translated into these. Phenomenology has many points in common with Berkeley's theory of ideal matter, which does not accept matter. According to this, consciousness is a person's own subjective first-hand experience. Consciousness has no function or effect. Phenomenology has no relation to how the phenomena of mind are formed (Trusted, 1991; Schultz and Schultz, 2008; Verela, 1996).

It is a branch of philosophy which proposes that mental events are side-effects of physical events, and that they have no effect on events in nature. It is founded on the one-way relationship from the physical to the mental. Mental events do not have any power to exert any causal effect, and consist of a series of mental states which arise from events occurring in the nervous system as a projection without any causal connection between them. Mental phenomena cannot be totally reduced to physical phenomena. Mental processes or phenomena are taken to have no effect on natural processes, and are only an accompaniment to these processes. In other words, mental processes are only the shadows of material forces and physical events (Gold and Stoljar, 1999).

Shadworth Hodgson defined phenomenology for the first time in his work Time and Location (1865). He proposes that all consciousness and mind events are a result of brain states. However, in this relationship, consciousness events have no effect on the brain. Later, Thomas Huxley (1874), saying 'We are conscious machines', put forward the best-known argument for shadow phenomenology. Even though George Santayana (1905) put forward similar ideas, he did not attract much of a following.

Functionalism

According to this theory, the brain is a kind of machine. Functionalism is the result of opposition to introspection and argues that consciousness must be examined experimentally. Functionalism found a place for itself following the birth of the theory of evolution. Darwin affected various psychologists, and started them thinking about the function of consciousness. Expressing opinions on the

functions of consciousness became more important for many researchers than determining the elements of consciousness. At the same time, this increased interest in animal psychology. Before Darwin, studying animal psychology had no meaning, because according to Descartes animals had no soul. After the publication of *On the Origin of Species*, it was realized that the minds of humans and animals worked partly in the same way. In that period, many studies were conducted on animal intelligence, and as mental processes were considered, so functionalism was born. The pioneer of functional psychology was William James (1842-1910). Functionalism can be roughly summarized in this way: this machine provides communication within itself by electrical neural sparks, and physical processes have no mental cause. In suitable situations machines can come to think and feel. The soul has nothing to do with material concepts (Vaas, 1999; Verela, 1996; Trusted, 1991; Searle, 1984; Chalmers, 2002).

Basically:

1. Functional psychology is the psychology of mental processes, not the psychology of mental elements.
2. Functionalism is the psychology of the basic advantages of consciousness. Consciousness mediates between the needs of the organism and the demands of the environment.
3. Functional psychology is concerned not only with consciousness, but also with judgment, free will and their meanings.
4. At the same time, it is the psychology of psycho-physical relations (soul/body). For this reason, it believes that there is no real separation between the soul and the body. It takes these two as separate things belonging to the same system, and accepts that transfer is possible from one to the other. Over the course of time, functionalism is changing the direction of its focus from the subjective study of the individual (consciousness-mind) to objective study of explicit behaviour. It is moving to leaving mind research and concentrating wholly on behaviour. In this way, functionalism forms a bridge between the structuralists and the behaviourists (Trusted, 1991; Schultz and Schultz, 2008; Verela, 1996).

Personal Views: Schools of Neuroscience

Gerald Edelman (1989) proposed that only neurological theory could formulate the mind: "...the construction of a scientific theory of the mind is founded directly on the structure and working of the brain." Francis Crick (1994) said, "our scientific beliefs on the mind — the

behaviour of our brains — can be explained by the interaction of molecules in nerve cells and other cells."

Neuroscience brings us on to biological neuroscience, which considers the structure of individual nerve cells, their functions, and their collective organization. Put simply, biological neuroscience covers or takes in the physiology, chemistry and anatomy of nerves. Neuroscience can also be considered from another vantage point, that of cognitive neuroscience. Cognitive neuroscience lies between the biological and physical sciences and psychology which explain mental phenomena. Thus, while biological neuroscience tries to understand the biology of the brain, cognitive neuroscience uses biology and psychology to understand the mind. Looked at this way, two schools of neuroscience can be distinguished (Edelman, 2001).

Cognitive (ordinary) neuroscience or ordinary nerve cell school

According to this view, a successful theory of the mind will be purely a theory of cognitive neuroscience. It will explain psychological phenomena, and the science to do this will be neuroscience. Cognitive neuroscience will include the sciences of psychology and biology. However, it is thought that it will be a weak school. There are three reasons for this. 1. It takes the mind to be a biological phenomenon. In other words, its thesis depends on materialism. That is, phenomena of the mind are equivalent to neural phenomena. 2. According to this school, the understanding of this phenomenon will be provided by science. Its thesis rests on naturalism. 3. Again, the school may not completely provide understanding with biological concepts. There may be a need for psychological concepts.

It is a philosophy developed as a reaction to all kinds of supernatural approach, because of the idea that everything found in nature is to be found in so-called natural experience. Naturalist tendencies, in a stance close to materialism, claim that the natural world is a unitary area cleansed of the influences of God or man and of abstract universal concepts (Gold and Stoljar, 1999). According to this, the following deductions can be made from the naturalist viewpoint:

1. A successful theory for any class of natural phenomena will be provided by an advance in knowledge of these phenomena;
2. A mental phenomenon is equivalent to a neural phenomenon;
3. Knowledge of a neural phenomenon (*knowledge of the brain*) is neurology;
4. A successful theory of the mind will be provided by an advance in neurology;

5. A successful theory of mind phenomena is only a neurological theory.

Finally, this school leaves an explanation of the theory of mind to the future. For this reason, it has no 'fundamental' results. Therefore, it has been called an 'ordinary' theory. This viewpoint has been put aside by cognitive scientists. According to the cognitive sciences, researching the mind means at the same time researching the brain. A successful mind-consciousness theory will be a theory of the brain. But on the other hand it will not be a theory of our feet, our kidneys or the non-material mind. And this will be able to explain everything by means of nerve cells and their characteristics.

2. The biological (fundamentalist) school or radical nerve cell school

According to this view, a successful mind-consciousness theory will be a straightforward biological neurological theory. In this view, there will be no need for reference to or help from any linguistics or psychology. A successful theory of the mind will be stated in terms of the basic structure and functions of the brain, nerve cells, networks and their structures. Churchland's viewpoint is a fundamental nerve school (Churchland, 1986). Psychological characteristics can be stated by means of the biological characteristics of the sub-cellular level. Just as in geology macroscopic earthquakes can be caused by movements brought about by the arrangement of microphysical particles, the same is true for the brain. The Churchlands, who suggest this idea, do not take into account the fact that the world has no mind. At the same time, nobody describes the movement of the plates that cause earthquakes directly in terms of microphysical quarks, gluons, electrons and photons. Nevertheless, they suggest that "...the cognitive structure of nature can be found by examining the micro arrangement and micro workings of the biological brain. Psychological theory will find its explanations in the terms of neuroscience."

Easy and Difficult Questions of Consciousness

The philosopher David Chalmers (1995; 2002) states that reductionism does not explain consciousness and does not believe that it will explain it in the future. However, he forms two groups of questions to make it easier to understand statements on consciousness: easy questions and difficult questions. The answers to the easy questions generally come from psychology and biology. The really mysterious ones are the difficult questions.

The easy questions on consciousness include the following: how does the human subject differentiate sensory stimuli and how does it give a suitable response? How does the brain bring together information from different sources and use it to control behaviour? How do people express their own internal state? The answers to all these questions will be found in studies on cognitive psychology and neuroscience. The different and difficult question is this: what kind of physical operations

in the brain produce our subjective experience? Why does consciousness accompany our functions?

Today, consciousness researchers have focused completely on the easy questions of consciousness. All the questions which modern science answers are the easy questions. We can understand the electrical currents, the chemical secretions, the cell growth and the formation of connections involved in the mechanism of nerve communication. But even if it is said that consciousness is the product of physical processes, the important thing to be explained is how these things form conscious experience. We still do not have that explanation. That is, how do nerve cells talking to each other in the flesh-and-blood brain form consciousness. Or, we still do not know how the stimuli travelling from our eye to the visual cortex of our brain form the feeling of a red apple. Physical theories explain the physical structure of the system and how the various functions are performed. But we still have a long way to go before we can have a structural and operational explanation for consciousness.

According to Chalmers, neuroscience may one day find a neural equivalent to consciousness — brain structures relating to conscious experience. We may even find, in more detail, a specific neural equivalent between specific functions in the brain and related experience. However, it seems to be difficult to find how these structures form conscious experience. That is, there is a gap which needs to be explained between physical function and consciousness. This gap may in time be closed with a new theory and new discoveries.

According to widespread belief, physical science will produce a unified equation of the basis and laws of the universe. The physicist Steven Weinberg, in his book '*Dreams of a Final Theory*' (1993), says that the aim of physics is to create or discover a 'theory of everything' to bring together all the laws of nature. Despite the strength of physical theory, it doesn't seem likely that the existence of consciousness will emerge from the laws of physics. Physics can only explain the objective neural equivalent of consciousness. If the existence of consciousness cannot be derived from the laws of physics, which means that the 'theory of everything' of physics is not in fact a theory of everything.

According to Chalmers, conscious experience is a basic quality and cannot be further reduced. He explains this with a comparison: he notes that the phenomenon of electromagnetism discovered in the 19th century could not be explained on the basis of previously known science and physics, that there had been no concepts of that kind until that time, and that new basic concepts were developed and new laws were applied. A similar view can also be applied to consciousness. That is, if consciousness cannot be explained using current scientific knowledge, then we need new concepts. These will very likely come from a revolutionary development in science.

The ultimate aim of consciousness theories is to form a theory which has simple basic laws and is similar to the basic rules of physics. Of course, until we reach a sound theory, all the theories which are advanced may be wrong. However, new ideas and theories will always be produced. Almost every year, new pages are added to the research on consciousness. But it is not clear what an inexplicable theory of consciousness is. Is it its description? Is it its function? Is it why it is universal? Is it which anatomical brain structures it originates in? Is it in how it connects to the brain?

Table. What a theory needs to explain in order to be a good theory of consciousness, according to various researchers.

Researcher	Requirements
David Chalmers (2002)	How a physical system forms conscious experience; First-person experience; Subjective mind content (qualia); An explanation of the content of the mind; Unity of the consciousness in the brain; Control of behaviour and free will; Why we are conscious
Jeffrey Alan Gray (2004)	Development and emergence; What its vital value is; How does it emerge from brain events?; How does it affect behaviour?
Gerald Edelman (2001)	Conformity to physical conditions and laws; Not clashing with physical reality; What is its universal requirement?; Explanation of mind content
Nick Herbert (1995)	Mind connections / maps; Artificial awareness; Amount and quality of mind; Attention mechanism; Feeling of self and personality; Free will; What death is; Accessing minds at a distance; Universal importance

Primary and High-level Consciousness

According to Gerald Edelman (2001), consciousness can be examined under two basic headings: primary and higher-level consciousness. Primary consciousness is being consciously aware of everything in the world. At the moment when it exists, there are mental images. However, it does not cause any feeling in a person related to the past or the future. In the case of high-level consciousness, a person recognizes his or her own actions and feelings. It takes in the past and the future just as much as the present. And we are conscious that we are conscious.

Consciousness shows intentionality: thought and events themselves or about themselves. Consciousness shows itself by its effect on mental images and patterns of behaviour. However, it is not a simple copy of conscious experiences (a mirror of reality) nor is it necessary for the improvement of behaviour.

According to Edelman, there is no end to the theories of consciousness propounded by philosophers, but most of them do not carry the characteristics necessary for a scientific theory. What's more, they are related to the operations of the brain and the body, and depend on a basis of observation. Most of the theories are based on a functionalist machine model. These are generally of two types: the first accepts consciousness as real and like what is in a computer system program is concerned with performing. The other takes consciousness to be an epiphenomenon. Although this idea is fascinating and impressive, it is unworkable.

In spite of the success of modern molecular biology, the biggest puzzle in biology is how living things are organized or coordinated. Nerve cells by themselves can neither smell nor think nor remember. These nerve cells work together and form groups and perform conscious functions. The basic question here is where and in what form this intercellular interaction is produced. At the foundations of biology lie the laws of physics and chemistry; but the conceptual framework of these rules is very narrow. Going beyond the mere microscopic characterization of the system, there is a need for new concepts to explain them as a whole. Under certain conditions, a normal material forms a pattern all by itself and shows behaviour as if it was living. In self-organizing systems, there is no ghost managing the parts of the system. The system does not even have a self. Living things and the brain are open systems (unstable) and do not keep their structure or perform their functions without taking energy, matter or information from their surroundings.

A modern theory of consciousness must be able to explain which nerve network consciousness originates in, how it is produced evolutionarily and developmentally, and how concept formation, memory and language are connected to consciousness. At the same time, these events must be describable in neurobiological terms. Proof must be achievable preferably by real experiment or at least by thought experiment. And lastly, any suggested characteristic, whatever field of science it comes from, must conform to currently valid scientific knowledge. Edelman sets three important conditions for his own theory of consciousness, and proposes they should be applied to other theories of consciousness. These are a physical condition, an evolutionary condition and a condition of subjectivity / mental content.

1. **Physical condition:** The proposed theory should not clash with the laws of physics. That is, spirits and ghosts must be left aside. According to Edelman, today's physics is

sufficient to describe the physical world. However, it may not be enough to describe the basis of a theory of consciousness. Even so, quantum gravity, remote effect and super-physics must not be brought in (This is an odd view: is quantum gravity not a product of science?).

2. **Environmental condition:** Consciousness arises at some point in the evolution of species as a previously non-existent phenotypical characteristic. This idea proposes that consciousness arose as an evolutionary advantage. According to the laws of evolution, consciousness is not an epiphenomenon — a phenomenon like the glowing of a melting metal — but is an active function. It must be possible to explain the science of why this is so, and the current theory.

3. **Subjectivity / Mind content:** This is a group formed of the awareness of personal experiences, sensations and feelings. Here there is a phenomenal state. For example, redness is a characteristic of a red object. They are separable pieces of our subjectively experienced mental scene. When these perceptions occur along with experiences, they can be very definite. However, in the absence of perception they can be felt less, or more widely. For example, in the existence of pain, there is a difference in the degree of experienced subjective feeling between a pain we are actually experiencing and a pain which we experienced in the past.

Subjectivity is experienced only directly by the person himself. For this reason it is difficult to study it methodically. We cannot share subjectivity in the way that we share the physics that describes the objective world. An individual can transfer his own experience to another individual, but this transfer will always be partial and insufficient. Individuals have their own views on the total of their own conscious experience. However, this viewpoint cannot be made into a scientific theory. In addition, it is not possible to bring this under the experimental control of other observers.

In spite of this problem, when we examine consciousness we cannot behave as if we did not care about subjectivity. Phenomenal experience seems to be an insoluble problem as a first person viewpoint. Well then, is this situation completely without hope? Subjectivity cannot be completely ignored; however, when a theory of consciousness is made, a theoretically non-subjective observer can sense heat and the colour green. There is no such thing as a non-subjective scientific observer. The relation between brain structure and function can be looked at by subjective reporting including subjective situations (by a person's linguistic transfer). However, in any situation, individually and personally experienced subjectivity limits the possibility of scientific (objective) examination of consciousness.

This subjectivity is the basic division between high-level consciousness and primary consciousness. High-level consciousness is the demonstration of direct awareness in a human, and can be easily communicated by means of language to another person. Primary consciousness is formed from phenomenal experiences like mental views, and relates to a measurable present; it has no relation to concepts of self, the past, or the present. According to this, it is not enough to form a theory of consciousness only with the existence of primary consciousness. Thus, it is necessary for a good theory to show a relationship to a time dimension.

According to Edelman, we must first form a model of primary consciousness and then, by building a model of high-level consciousness on it, we must evaluate each of the connections of each of these models to human phenomenal experience. This view is in accordance with the accepted ideas of evolution, and the approach must explain how high-level consciousness evolved. In evolutionary terms, there are roughly speaking two types of nervous system organization, and these are important in understanding how consciousness evolved. Although the nerve cells of each system are structured, the structures which they form are very different (Edelman, 2001; Churchland, 1986).

The Primary System

The limbic (or because of its function the pleasure area) system is situated in the brain stem and the brain. This system serves to form behaviour related to appetite, sexual functions and self-defense. It has close connections with the hormonal glands and the autonomic nervous system, which are widespread in the body. An additional system regulates heart and breathing rate, sweating, digestion, sleep and sexual needs, and the body's internal clock cycle. These responses are a system of relatively late response, from seconds to months. This system is not closely connected to the outside world, and is mostly related to bodily functions. There are similar structures in almost all species.

The Secondary System

This is called the thalamocortical system and its organization is markedly different. The thalamus is the brain's sensory gateway and is a structure which functions along with the brain cortex. The thalamus sends incoming sensory stimuli to the relevant areas of the cortex. It is a fast system, working in the millisecond to second range. Compared to the limbic and brain stem structures, it has few or no advanced feedback control connections. Within itself it is separated into regions making complex connections. It evolved later than the primary system.

However, the existence of these two systems is not enough to explain consciousness. Other characteristics are needed. First, the cortical system must be developed and it must have close connections with the limbic system. This increases the existing capacity for learning. Second, there must be a new kind of memory built on these connections. The conceptual memory must be able to group the perceptual input of different systems of the brain. This grouping is provided by connections between the thalamus, the cortex, the limbic structure and the brain stem. Third, evolutionary development must be sufficient for the appearance of primitive consciousness. In terms of evolution, consciousness appears as a new piece of anatomy (Eccles, 1990; Edelman, 2001). An animal without these connections and a grouping memory cannot establish a connection with the perceptual events of the outside world. Interaction between this special kind of memory and perceptual grouping forms primitive consciousness. This primitive consciousness is necessary for a high-level consciousness.

Conclusion: The Road to Disappointment?

According to some pessimistic scientists, consciousness is inaccessible and is one of the questions which cannot be answered in this world. The foremost among those who maintains that consciousness cannot be understood is Colin McGinn (1989). His basic starting point for the idea that consciousness cannot be explained comes from the vicious circle of the mind trying to understand itself. According to him, an infinite mind tries to understand itself, but what it is trying to do is to access itself. For this reason the comprehensibility of the brain exceeds its capacity to understand and these results in a cycle *ad infinitum*.

Table. In order to solve the psi/phi problem on the basis of a suitable theory, Nick Herbert, in his book *Elemental Mind* (1999), set out the explanations needed and the questions which needed to be answered for a good theory of consciousness.

Characteristic	Question which needs answering
Mind connections	Will I be able to determine objectively the existence and amount of the mind? Can I establish a connection with other minds?
Mind maps	Apart from us, what kinds of mind carry the physical world? Is external reality formed by my mind?

Characteristic	Question which needs answering
Artificial awareness	How can we construct machines that have an interior like us? According to the monistic approach, if mind and matter are one, we can construct an artificial mind from normal matter. On the other hand, if the idea of the dualists that the mind comes from outside and is located in matter is correct, will science eventually show how we can form the homes where these entities coming from outside can settle?
Amount of mind	Which characteristic of matter tells us the amount of conscious awareness of a living creature? After a cessation of consciousness (sleep, general anesthesia), how does it come back, and how is its loss (general anesthesia) to be explained?
Quality of mind	What signals the quality of conscious awareness? It must explain the types of awareness of living things more primitive than us and higher than that which humans have yet been able to experience (*ne plus ultra* / the farthest point which can be reached).
Attention	How does conscious matter pay attention? How do active (voluntary) and passive (automatic) actions come about?
Feeling of Self	What is the feeling of self, the most noticeable characteristic of consciousness? How do we remain essentially the same person, even though our personality traits change with time? Is the self an illusion?
Personality	What is the essence of personality? What are the necessary conditions to create a person from abstracted internal experience? What is the material basis of being a person?
Free Will	What is the source of the feeling of self and the free choices identified with our personality, and made consciously and deliberately by the 'self'?
Death	Is it possible to explain on the basis of science rather than religion or philosophy what happens to the consciousness and the mind after death?
Reaching the Mind	Can we gain access to minds on the outside? Can there be a connection between minds (brains) or between normal matter located outside the mind?

Characteristic	Question which needs answering
Evolution	What is the value in evolutionary terms of being conscious? How did having an internal life help our ancestors in the struggle for survival? At what evolutionary step did consciousness appear? Or do we need to consider higher principles than the theory of evolution in order to understand consciousness?
Surprise	The most important characteristic of a good theory of consciousness is not how it explains the known and expected characteristics of human awareness, but how it elucidates previously unknown or unimagined cases, and those left in the dark.

Can a theory of consciousness be formed using the phrase which Aristotle introduced into philosophy, *summum bonum* (the best of the best)? We know that reality is beyond the play of words. It is difficult to find a satisfactory description of consciousness with philosophical statements which try to show the fly the way out of the bottle. But can we carry out an *experimentum crucis* or crucial experiment to find out which of the theories suggested is correct? The most important thing is how we can avoid false reasoning when making a theory of consciousness. How can we avoid theories which forget the probability content of judgments reached and take them as proof (*argumentum ad judicium*), theories or descriptions of consciousness which are based on subjective personal experiences (*argumentum ad personam*), those which attribute the characteristics of the composite parts of consciousness to consciousness itself (the fallacy of composition), or conversely those which assert that a characteristic of consciousness as a whole is also a characteristic of its parts (fallacy of division)? If consciousness is a result and we unwittingly take it as a premise (*petitio principii* / begging the question), even if the premise is correct and the result can be falsified it will be an invalid theory.

According to Colin McGinn, life is continuously under evolutionary pressure and consciousness arose evolutionarily as a result of a more advanced arrangement of matter. For this reason, it must have certain natural characteristics. These natural characteristics and the brain's structural characteristic are called "P" (P = primary). P at the same time signifies the brain, which is the material base of consciousness. In addition, there is a T, and it is a theory formed from observations made from outside. According to McGinn, T, by alluding to P, asserts that states of consciousness are connected to the state of the brain. Because of the particular limitations of our cognitive makeup, we can never comprehend the nature of P. He says that there can be *only two possibilities* to show the identity of P:

1. **Studying P by directly examining consciousness:** When we use introspection, we cannot find anything which looks like P. According to McGinn, introspection only connects us to one of the terms of the mind-brain relationship. It certainly does not lead us to a basic connection. Understanding P means comprehending the theory of T. And this explains how consciousness is connected to P. But when we understand T, which does not mean that we will understand the statements contained in it. One of these is the subjective quality of brain states. Completely understanding subjective qualities means conceptualizing those qualities. This is *reductio ad absurdum*.

2. **Understanding P by studying the physical brain:** Another way is to study the brain, that is, the flesh-and-blood part of the mind-brain relationship. P cannot be perceived by us. The problem is that in addition to the difficulty of explaining the physical characteristics of the brain, it is not an explanatory theory. In order to explain the physical effects of the brain and the way we observe the brain, the concept of consciousness is unnecessary. According to McGinn, making "comparisons" in the solution of the mind-brain problem may help to form a theory.

The mind-brain problem can be solved (Tarlacı, 2006a, b; 2010a, b). There is no need for mystery or metaphysics. But the fact that we are a part of the problem is the most important obstacle in the path towards finding a solution.

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