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## **Consciousness, Origins of**

To explain the origin of anything, we must be clear about that which we are explaining. There seem to be two main meanings for the term consciousness. One might be called *open* in that it equates consciousness with awareness and experience and considers rudimentary sensations to have evolved at a specific point in the evolution of increasing complexity. But certainly the foundation for such sensation is a physical body. It is unclear, however, exactly what the physical requirements are for a “central experiencer” to emerge in the course of evolution. Some suggest that it would require a basic brain, others a central nervous system, and others stipulate only a cellular membrane. The open definition is most often assumed by the so-called hard sciences.

The *closed* meaning of consciousness differentiates between a special sort of experience, i.e., conscious experience, and a special sort of awareness (i.e., self-awareness). This is the approach of psychoanalysis and psychology that accepts the existence of an unconscious mind. It is also the view of most phenomenological philosophers and psychologists (Martin Heidegger, Maurice Merleau-Ponty, Jacques Lacan, etc.). This entry discusses several scientific and philosophical views of consciousness and its origins.

Because of humanity’s unique social invention of symbolic communication – especially as in formal language but also in many other areas from music to mathematics – humans have learned to take the perspective of others and, in doing so, have become aware of their own existence, indeed, aware of their own embodied experience. Arguably, a few other species with large brains and complex social lives have occasionally exhibited self-awareness. Otherwise, species may learn from experience, but they live in the moment and have no knowledge of their own distinct lives, so it is assumed that they are unconscious in this sense.

To seek an answer to the question “What is the origin of consciousness?” one must first assume a perspective within the most fundamental ontological questions in philosophy. These questions include: What is ultimate reality? Is it ultimately one thing (*monism*, say, matter or spirit), two things (*dualism*, say, matter *and* spirit or mind), or many things? Is it timeless and unchanging or a process of continual change? Is the universe God-created, self-created, or perhaps an accident?

### **The Scientific Worldview and the Origin of Consciousness**

The most common and almost sacrosanct worldview in public education and most universities today is that of mechanistic materialism, aka reductive materialism, aka realism, aka “naturalism”, but probably best known as the scientific view – or, to be more exact, the ontological assumption of the sciences. Various degrees of commitment to this worldview seem to be religiously adhered to in the so-called hard sciences of the laboratory and the theories associated with them, but less so as one moves along the continuum into the social sciences.

Scientific views range along a continuum from *scientism*, which asserts that only scientific materialism can ultimately provide correct answers, to science as open-ended exploration, always ready to correct its errors when new evidence appears and which makes no pretense of answering the question *why?* In the scientific perspective, the ultimate reality is *material*, which is to say matter-energy, and all that exists has evolved by permutations, combinations, or mutations within matter-energy. Of course, as physical bodies evolved in complexity and brains grew larger, consciousness complexified and grew, too. The origin of consciousness will be explained via evolutionary science, for, at some point, it must have become advantageous for organisms to actually feel their response mechanisms, perhaps to make other responses possible.

The scientific worldview has been supremely successful in explaining (and often making use of) all sorts of phenomena that were once explained by myths, magic, superstition, or wild guesswork. Phlogiston (the presumed hidden fire within combustible material) and the luminiferous ether (the presumed medium necessary for the propagation of light) were still accepted by some scientists early in the 20<sup>th</sup> century, and science is still in the process of convincing an often-doubtful public of the reality of organic evolution.

Using experimental evidence and hypothesis testing, science has explained much that was once considered miraculous and, in the process, has made religious beliefs difficult for many people to sustain. Now it seems inevitable that science will explain consciousness and its origin within its reductionist system. Minds will be shown to be predictable and material.

In this view, the seat of consciousness is the dynamic, material object we call the brain. Though many popular science writers indicate that the brain is itself conscious, it is more often assumed that the brain creates consciousness through certain as-yet-unspecified processes or *modules*, that is, the brain is the machine of consciousness. Beginning in the 1990s, the “decade of the brain”, and continuing today, one of the goals of brain research is to find the *neural correlates of consciousness* (NCC), a view propounded by neuroscientists and self-proclaimed neurophilosophers (including Daniel Dennett, Patricia Churchland, and Paul Churchland). To explain the origin of consciousness, it is necessary to know which processes or modules are activated when the individual is conscious.

As noted earlier, there is some question whether consciousness in the open definition appeared with the first rudimentary sensations in living units that had no central processor (like a complex nervous system) and so likely no central experiencer, or whether it appeared only when the apex of the nervous system, the brain, began to process information. If the former, then what is needed is a detailed description of how momentary sensations evolved to combine into the prolonged sense of awareness found, we presume, in most adult human brains. If the latter, then it must be determined just which *modules* or processes in the brain produce consciousness. Once this matter is settled, it presumably is a short step to explain the origin of consciousness.

As an aside, it should be noted that the brain is not universally accepted as modular in its functioning. Some theorists posit that consciousness emerges when the interaction of overlapping neural nets reaches certain levels of complexity (like parallel information processing information or learning from feedback in computers). There are two corollaries to this view.

One is that, although the human brain may take up more body space than most other brains, it is structurally not very different from other mammalian brains, so there is no reason to think humans have a special sort of mind or consciousness. Second is the implication that if tiny microchips could replace complex neurons, they could serve as a satisfactory substrate for consciousness. Thus consciousness could emerge in computers or computer networks. At this point, however, how the brain produces consciousness or where in the brain consciousness is produced remains uncertain.

### **The Search for Neural Correlates**

There have been many suggestions for the NCC, beginning with René Descartes in the 17<sup>th</sup> century, who fancied the pineal gland as the seat of the soul, to many well-researched alternatives today, especially those informed by brain-imaging techniques such as EEG (electroencephalography), PET (positron emission tomography) scans, fMRI (functional magnetic resonance imaging), and fEITER (functional electrical impedance tomography by evoked response). A number of specific brain modules or neural processes have been suggested – too many to list – but among them are the prefrontal cortex, high-frequency (gamma band) oscillations, and recurrent oscillations in the thalamocortical systems. But there is uncertainty about whether brain imaging can ever find the NCC, much less explain its origin.

### **Problems with Scientific Reductionism**

One of the problems with brain-imaging techniques is that the brain seems to be always electrically and chemically active, even when the individual is not conscious. This fact implies that the interpretation of brain images cannot determine whether the images indicate conscious or non-conscious activity. Another well-known difficulty is the so-called “binding problem”, which states that diverse activities throughout the brain’s vast complexity could not combine fast enough to produce the continuity of consciousness.

Furthermore, if consciousness exists as a result of pre-determined brain activity, then individuals would behave no differently without it. In other words, it has no function. This claim has become known as the *zombie problem*: others would appear to have consciousness but would not.

This problem is related to the so-called *hard problem of consciousness* articulated by David Chalmers: Aside from how it functions, what is consciousness or awareness in itself (including its origin and why it exists)? The hard problem of origin asks, “How can non-conscious matter produce conscious experience, because consciousness itself is both invisible and immaterial?” How can even the first twitch of rudimentary sensation suddenly be felt by an entity in a world that presumably had, up until then, evolved entirely without feeling or sensation? This is a logical chasm, not least because a nonexperienced world is unimaginable to us. If one tries to imagine it, one is experiencing it vicariously.

### **Denial of Consciousness**

One way around this problem is to simply deny that consciousness exists, that to consider it an illusion of language, and that is how its origin must be understood. When humans began speaking, they found themselves in the position of the subject in sentences about objects

and so began to imagine a sort of little person – the homunculus – inside their heads who was the decision-maker of their actions, i.e., the self we each call “I”.

But this scenario is an illusion for, as many experiments in cognitive psychology have shown, conscious decisions appear to come after the *readiness potential* (the beginning of the action) has already been activated in the brain. Therefore, consciousness, at least as the decision-making CEO of one’s decisions, is an illusion. On this view, actions are biologically determined, and consciousness originated as a side effect of language. It is at best an *epiphenomenon* (an after-the-fact delusion).

### Quantum Consciousness

Another way of dealing with the quandary of how immaterial awareness could arise (or emerge) from inanimate, non-conscious matter-energy is to delve into the realm of subatomic particles or fields, better done with quantum mathematics than with visual tools. Postulated quantum consciousness, which exceeds the worldview of reductive materialism, is famously abstruse. (Some have speculated that quantum consciousness was likely because both quantum physics and consciousness are mysterious and apparently inexplicable, so they *must* be connected!)

Quantum consciousness is too paradoxical to be dealt with in this short space, but it can at least be noted that many of the classical laws of physics do not exist at this infinitesimal level, where matter is revealed as fields of energy. For example, light has been shown to have the properties of both waves and particles (photons), so could not reality be both mind (or spirit) and matter, as in the worldview of *double-aspect monism*?

Examples of the contradictions to the laws of classical physics that may allow for a mental aspect to reality include *nonlocality* or *entanglement*, which asserts that a submicroscopic particle (or field) like a photon or electron may be in more than one place at the same time, allowing for what is perceived as instantaneous action at a distance. Notable also is the *uncertainty principle*, which maintains that observation affects that which is observed, so that it is impossible to simultaneously determine both the position and velocity of a quantum unit (like a photon or electron).

According to the *observer effect*, which is related to the uncertainty principle, observation or measurement is necessary for the indeterminate superposition of a wave energy field to “collapse” into particles of measurable substance. For some quantum philosophers, the superposition is the universal state of pre-consciousness, a view also known *panprotopsychism* or *panexperientialism*. When the observer causes the indeterminate wave function of light to collapse or be transformed into matter-energy particles, consciousness begins, along with the perceptible world of form and matter.

### Dualism and Dual-Aspect Monism

For most of us, quantum physics is just too abstract to really grasp, especially in explaining the origin of consciousness. However, the concept of the superposition wave state hints at two pre-scientific worldviews that point to the origin of consciousness in other ways entirely. One is the religious worldview that states that God or the gods, either accidentally or purposefully, created the world, life, and consciousness. For some quantum physicists,

the ultimate observer is God, who brought forth form and consciousness from chaos. In this view, lived reality is secondary, an illusion, compared to the primary reality of God or the gods, but at least consciousness is explained, God and the world being separate substances, the worldview known as *dualism*.

Descartes famously stood with dualism, saying that both mind and matter are real, but only mind feels, thinks, and is consciously connected to God. Before gods were even conceived, however, it seems that tribal ancestors or archaic cultures felt Nature to be alive. If Nature is taken as God, this is pantheism, which has little support today. However, panpsychism, which is similar to the animism of archaic cultures in which all things have souls, seems to be making a comeback. It gets around the hard problem by claiming that Nature and psyche are two aspects of the same ultimate reality (*dual-aspect monism*), the perspective of ecopsychology. Psyche becomes embodied consciousness in animals, which match the animal's physical attributes.

Psyche, in ancient thought and alchemy, as well as in the writings of psychoanalysts like Carl Jung, manifests both consciously and unconsciously. Unconscious psyche implies unconscious experience, as in panexperientialism, which is instinctive experience. Only humans can make unconscious experience into conscious experience, into a conscious mind, via their ability to symbolize their own experience, share it with others, and reflect on it. But doing so is just a particularization of the universal mind or psyche.

### **Intersubjective Origin of Human Consciousness**

This line of argument leads to what is currently the only other widely accepted origin-of-consciousness theory, one that claims the brain is not enough to create human minds. I refer to what has been called intersubjectivity or the social construction of consciousness. Psychoanalysts or psychologists who accept the existence of an unconscious mind understand that the conscious mind – the self or the ego complex – is the product of social interaction and language.

People learn *ego*; they learn to refer to ourselves as “I”—that is, both the inner self whom we experience as guiding our choices and the subjective position in social interaction, especially in symbolic discourse (language). People learn to be conscious. This position is very similar to phenomenology, which sees the self as either *thrown* into consciousness or led into consciousness via social learning for the sake of group identity or, in a sense more in accord with totalitarian cultures, individuals are socially conditioned into being consciously controlled (via mechanisms like shame, guilt, pride, etc.).

Some developmental psychologists who have studied the stages of growth of individuals compare such stages in a broad sense to the prehistoric evolution of the human mind and have concluded that there is a specific stage when children attain consciousness of self, often after spending time identifying with the consciousness of others. In paleoanthropology, the first signs of symbolic communication or expression (beyond mere functional tool use) coincide with the emergence of cooperative minds within the shared intentionality of a group. From this view, self-awareness only becomes possible once one has assumed the position of others and objectively sensed one's existence from the outside, as it were, as a self among selves—intersubjectivity.

A great many steps are needed before individuals learn to place themselves in the position of the other and begins to communicate person to person. Language acquisition and symbolic communication are signs of self-consciousness, which is, again, the only consciousness humans recognize, though they often do imaginatively project the same sort of self-aware consciousness into our pets, other animals, or even when we personify natural phenomena. People imagine deities with a mind similar to theirs as well.

This socially-constructed consciousness is very different from the illusory consciousness mentioned above by the eliminative materialists as an accidental side effect (an *epiphenomenon*) of language use that has no actual effect on behavior. In the culturally constructed consciousness view, individuals learn to listen, speak, and become intersubjectively engaged in the course of becoming conscious of themselves. This may lead to the development of actual self-agency and self-directed behavior (but not *necessarily*). In other words, culture births the sense of self, and that self can then act to change the culture.

From this perspective, brains are necessary for consciousness but not sufficient. Other brains are needed, both living and dead, to which the individual must connect via channels of communication that act like extended synapses to exceed those of an individual brain in order to give shape to a cooperative culture. Only then does self-awareness or what we have come to call consciousness emerge.

### Conclusion

This intersubjective theory of origin is the closed sense of consciousness that rises above a sea of unconscious experience because of language and culture. The most widely-accepted view of the origin of consciousness (at least among academics), however, seems to be that of neuroscience, which views the brain alone as producing consciousness, all the way down – the open definition of consciousness. Ultimately, given the various origins of consciousness that have been hypothesized, the most acceptable will likely be the one most in accord with one's already-present set of assumptions about reality.

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### Recommended Further Readings

- Chalmers, D. J. (2010). *The character of consciousness*. New York, NY: Oxford University Press.
- Damasio, A. (2012). *Self comes to mind: Constructing the conscious brain*. New York, NY: Vintage.
- Nagel, T. (2012). *Mind and cosmos: Why the materialist neo-Darwinian conception of nature is almost certainly false*. New York, NY: Oxford University Press.
- Rochat, P. (2009). *Others in mind: Social origins of self-consciousness*. New York, NY: Cambridge University Press.
- Stapp, H. P. (2011). *Mindful universe: Quantum mechanics and the participating observer* (2<sup>nd</sup> ed.). New York, NY: Springer.