

## CONSCIOUSNESS AND SCIENCE

*'For eternity and always there is only now, one and the same now; the present is the only thing that has no end.'*

*Erwin Schrödinger*

### The Reality of Consciousness

Consciousness is the unseen background or screen upon which the objects of consciousness are projected. "One can *be* conscious but can't *know* consciousness in itself, for in the act of knowing, I am at a remove from it; the experience is perceived as a duality in terms of the knower and what is known."

We experience the multitudinous things of life, but do we experience the *context* within which things exist? All things, gross and subtle, outer and inner, make up the contents of our experience. Every content is grounded in a referent, a thing that can be pointed to, in some way known, be it visible like a chair or largely invisible like a feeling or thought, or totally invisible like an inner sound. All content occurs within a context. For a full knowledge of the content one must know the context . . . Consciousness is often spoken of as if it were a "thing," that is, it has a referent. Yet to what can we point? Surely, waking consciousness exists and is experienced, for otherwise how would we know we are joyous, sad or angry? Neuroscientists are now fast on the trail of what consciousness is, noting the qualia (the qualitative aspect of consciousness, such as feeling pain, seeing colors, hearing a sound), plumbing the cerebrum, cerebellum or reticular activating system, believing that if they can see how it functions they can define its quality of essence. Areas of the brain light up in accordance with different stimuli, but this is the observable functioning of consciousness, not what it is in itself. Consciousness, however, by definition not being a thing, is the context, the container, in which all things appear and disappear. (1)

The personal experience of consciousness or awareness, the sense of existing and being alive, is a self-evident truth that defies intellectual analysis or facile explanation. "The fundamental problem in explaining the experience of consciousness is that there is nothing else remotely like it to compare it with." Author Gary Lachman contemplates this conundrum:

Consciousness is fundamental and irreducible and not solely located in our brains. Consciousness from this perspective did not emerge out of matter at some time in the past. Consciousness was there from the beginning, and it would be more correct from this perspective to say that matter emerged out of it. Consciousness is the bottom line reality. It is, I accept, a mystery, but it is one that I have an immediate, direct awareness of – I am, in fact, immersed in it – and it is one that is inseparable from my having any experience at all.

Everything I know comes to me through consciousness, from the most intimate personal detail of my life, to my knowledge of what is happening at the furthest fringe of the observable universe, to my questions about the infinite complexities of the human brain. Without consciousness there would be none of this. (2)

Pure consciousness or primal awareness, our essential nature, is a permanent, timeless and universal presence within each of us. "We experience the knowledge of being conscious as a feeling of 'I am.' If you examine your sense of 'I am' you will see that, although obvious, it is completely indefinable." We all experience this 'I am' as the utter certainty that we exist. It is our *being*. This perspective is consonant with the reports of spiritual masters in mystical states of consciousness:

Everything you are conscious of exists as a flow of appearances within awareness. All that you see, hear, taste, smell and touch exists within awareness. The thoughts you are thinking right now exist within awareness. Your body exists within awareness. The world exists within awareness. If it did not exist within awareness you would not be aware of it. As a body you are an object which exists in the world, but as awareness you are an infinite emptiness which contains the world. Becoming conscious of your essential nature turns reality inside out. From the it-perspective awareness seems to exist inside the person you appear to be. But from the I-perspective awareness is an empty presence within which the whole life-dream is arising. Your essential nature 'is not at all in time or place, but is purely and simply in eternity,' as Meister Eckhart puts it. As awareness you don't exist in time. Time exists in you. You are awareness witnessing the flow of appearances we call 'time.'  
(3)

Western philosophers and scientists have also identified consciousness as the basis of all human experience. Professor of philosophy Jacob Needleman emphasizes that consciousness is the primary reality of every human being and is the gateway to understanding the laws and processes that govern the inner and outer worlds of experience: "Consciousness is intrinsically personal, the sense of *I-am-ness* without form or direction, simply present as pure being."

Many esteemed scientists, such as Nobel prize-winning physicist Max Planck, have pointed to the central place of the immediate, inward sense of consciousness or awareness in any description of the nature of reality. But science typically ignores or dismisses, in any theoretical model of the universe, the felt sense of individual existence and being. Planck:

The fact is that there is a point, one single point in the immeasurable world of mind and matter, where science and therefore every causal method of research is inapplicable, not only on practical grounds but also on logical grounds, and will always remain inapplicable. This point is the individual self or "the I." It is a small point in the universal realm of being, but, in itself, it is a whole world, embracing our emotional life, our will, and our thought. This realm of the self is, at once, the source of our deepest suffering, and, at the same time, our highest happiness.

Over this realm, no outer power of fate can ever have sway, and we lay aside our own control and responsibility over ourselves only with the laying aside of life itself. (4)

## Scientific Understanding of Consciousness

The relationship between consciousness, the spirit world and the brain has been a source of speculation by thinkers throughout human history:

The Greek father of modern medicine, Hippocrates, was an early proponent of what has proved to be a very popular idea: locating the spiritual in the cerebral cortex, the large, convoluted, lobed, walnut-shaped part of our brains that sits under our skulls. The cortex is the brain's most highly developed and recently evolved structure, responsible for language production, memory, reason, problem-solving, and what neuropsychologists call "executive decision-making": the qualities that most clearly distinguish us from other animals. Descartes disagreed with Hippocrates. He identified the pineal region as "the seat of the soul," the transducer that brought the divine, immaterial aspects of the universe into the material realm. It is interesting that modern neurology calls the pineal our "organ of darkness." Billions of years ago in amphibians and reptiles, it was a patch of photosensitive cells on the top of the head, a "third eye" that in the course of evolution dropped down into the skull in birds and mammals and is now responsible in human beings for the production of melatonin. Descartes notwithstanding, the bias toward the cerebral cortex as "the seat of the soul" continued throughout the nineteenth century. Neuroscience giant Paul Broca, the father of modern localization, was entirely consumed with the cerebral cortex, and that emphasis continues in the field today. (5)

Most scientists, although acknowledging that consciousness is both the most familiar and yet the most mysterious feature of human existence, continue to explain it on a strictly physical and biological basis: "Once considered beyond the reach of science, the neural mechanisms of human consciousness are now being unravelled at a startling pace by neuroscientists." Books such as *Consciousness Explained* by American philosopher Daniel Dennett purport to account for how consciousness arises from the interaction of physical and cognitive processes in the brain. This perspective has been challenged as *scientific reductionism* in which complex higher-order phenomena are reduced to simpler component parts, thus ignoring the principle that 'the whole is greater than the sum of its parts.'

With the advent of functional MRI and positron-emission tomography (PET) scans, neuroscientists were able to map the patterns of brain activity and inactivity during the performance of memory, speech, complex thinking and other tasks. Researchers have also discovered that the cerebral cortex also works in tandem with the limbic system and the primal brainstem.

In clinical neurophysiology, consciousness has a very precise but limited definition: awareness of oneself and one's surroundings coupled with engagement with specific brain systems in a certain sequence. Neurologist Kevin Nelson: "Consciousness is an awareness that is the summation of nerve activity, distributed and processed throughout the brain. Brain activity is necessary but does not necessarily lead to consciousness."

Philosophers, psychologists, and neuroscientists have together done much to bring human consciousness into focus and to reveal many of its not so obvious details. Neuroscience has produced a parade of theories to explain it. There are several properties that they more or less agree upon. First, consciousness abides within individuals and is not directly shared. It is stable over time with memory unifying the past with the present. Its elements dynamically shift to and fro between the subconscious background and conscious foreground. Many contributions come to consciousness from the senses, intertwined with mental processes that include emotions, thought, creativity, memory, and language. Conscious experience contains elusive subjective aspects, called qualia by some mind-brain scholars. Qualia refer to the subjective aspects of experience, such as the smell of fresh bread, the feel of silk on our fingertips, the blue of the sea. Qualia have been much discussed; they are at the heart of the mind-brain conundrum – how the physical brain can produce the nonphysical qualities of mind. (6)

In the traditional scientific worldview there is a clear distinction between subject and object, between the perceiver and the perceived. Physicist David Bohm acknowledges this duality: "The notion that the one who thinks (the Ego) is at least in principle completely separate from and independent of the reality that he thinks about is firmly embedded in our entire tradition."

General experience along with a great deal of modern scientific knowledge concerning the nature and function of the brain as the seat of thought, suggest very strongly that such a division cannot be maintained consistently. But this confronts us with a very difficult challenge: How are we to think coherently of a single, unbroken, flowing actuality of existence as a whole, containing both thought (consciousness) and external reality as we experience it? Clearly, this brings us to consider our overall *worldview*, which includes our general notions concerning the nature of reality, along with those considering the total order of the universe, i.e., *cosmology*. To meet the challenge before us our notions of cosmology and of the general nature of reality must have room in them to permit a consistent account of consciousness. Vice versa, our notions of consciousness must have room in them to understand what it means for its content to be 'reality as a whole.' The two sets of notions together should then be such as to allow for an understanding of how reality and consciousness are related. (7)

The relationship between the observer and the observed is one of the great philosophical challenges of modern science. "We are usually in the position of observers of a flow of 'external' or 'internal' events, and we are led to question whether those events have independent reality apart from an observer. We have to find an integral understanding of all experience which will resolve the dilemma in the interdependence of conscious observer and content of experience."

The duality between self and matter is resolved by showing how both poles of being – the conscious experienter and the object experienced – arise from a single source. The universe as we know it has thus the same origin as have we who experience it. We and the universe are interdependent elements of psychic processes in consciousness. Looking outward we fill the universe with values taken from within ourselves. Looking inwards we find that the patterns of the psyche correspond to the patterns of the outer world. Through the understanding of these symbolic correspondences we are enabled to reach a deeper understanding both of ourselves and of the universe, of the relationship between the two, and of our common source. (8)

David Bohm proposes that mind (or consciousness) and matter have a single origin and are abstractions from "the unknown totality of the universal flux." In this sense, mind and matter occur within the one great Whole and can be regarded as different, relatively autonomous yet complementary, aspects or orders of an underlying unity. Bohm expresses this concept in terms of his theory of an *implicate* and *explicate* order of the universe. He defines the implicate order as the "immediate and primary actuality" from which the manifest, explicate order of phenomenal existence is derived. "Each moment of consciousness has a certain *explicit* content, which is a foreground, and an *implicit* content, which is correspondingly background."

We begin by proposing that in some sense, consciousness is to be comprehended in terms of the implicate order, along with reality as a whole. That is to say, we are suggesting that the implicate order applies both to matter (living and non-living) and to consciousness, and that it can therefore make possible an understanding of the general relationship of these two, from which we may be able to come to some notion of a common ground of both . . . Thus we could come to the germ of a new notion of unbroken wholeness, in which consciousness is no longer to be fundamentally separated from matter. (9)

Bohm's paradigm challenges the conventional scientific understanding of consciousness by proposing that matter, life and consciousness all arise simultaneously from the implicate order, which he calls "the ground of all that is." This notion raises further questions about the ultimate nature of reality and the ability of human perception to fathom further possibilities of levels of complexity beyond the observable world: "Is this ground the absolute end of everything? In our proposed views concerning the general nature of 'the totality of all that is' we regard even this ground as a mere stage, in the sense that there could be in principle an infinity of further development beyond it."

The easily accessible explicit content of consciousness is included within a much greater implicit (or implicate) background. This in turn evidently has to be contained in a yet greater background which may include not only neuro-physiological processes at levels of which we are not generally conscious but also a yet greater background of unknown (and ultimately unknowable) depths of inwardness that may be analogous to the 'sea' of energy that fills the sensibly perceived 'empty' space. Whatever may be the nature of these inward depths of consciousness, they are the very ground, both of the explicit content and of that content which is usually called implicit. Although this ground may not appear in ordinary consciousness, it may nevertheless be present in a certain way. Just as the vast 'sea' of energy in space is present to our perception as a *sense* of emptiness or nothingness so the vast 'unconscious' background of explicit consciousness with all its implications is present in a similar way. That is to say, it may be *sensed* as an emptiness, a nothingness, within which the usual content of consciousness is only a vanishingly small set of facets. (10)

Arthur Young, founder of the 'Foundation for the Study of Consciousness,' argues that any meaningful theoretical description of the workings of the universe must contain consciousness as one of its fundamental constituents:

Cosmology (the science of the fundamental causes and processes in things) as interpreted by cosmologists of the present time suffers from the omission of a term corresponding to consciousness. To describe consciousness as an anthropomorphic attribute alone is totally inadequate. Consciousness is, rather, an ingredient which must be inherent in whatever we employ as descriptive of a universe, be this dimension matter, space or time. It is a basic ingredient. Because we have a knowledge of consciousness at least as certain as our knowledge of time or space or mass, it must be given recognition. Since no scientific observation can be made without consciousness, the latter cannot be accounted for as a compound of lesser ingredients – since it is thus basic, our cosmology must be revised to include it. (11)

There is an emerging consensus among many leading-edge scientists that consciousness must be included in any comprehensive model of the universe. The discoveries of relativity theory and quantum physics in the 20<sup>th</sup> century support this position. Much like light, consciousness has no precise location or form. Although invisible, it illuminates everything and is unimpeded by time or space. Dr. Christian Wertebaker, a neurologist and long-time student of Gurdjieff's Fourth Way teachings, expresses this new perspective: "Consciousness is not just an emergent property of a complex brain, but a universal and fundamental energy to which we can be more or less receptive. Consciousness unites our perceptions; just as we metabolize food to produce energy, we can metabolize impressions, transforming them into conscious wholes. The transformation of impressions is our proper highest role in the universal exchange of substances, or energies, because it serves to maintain the consciousness of the universe."

The role of consciousness in the universe has to become part of our theories. Modern physics already has been forced to include the fact that the way in which a phenomenon is observed is an essential, though still mysterious determinant of how reality manifests itself. But consciousness has to be explicitly put into the theory, and the relationship between the inner world of conscious beings and the outer world has to be understood. A great effort to understand consciousness is just starting now among brain scientists; maybe this will help lead to insights as to how these two worlds fit together. (12)

## Quality of Consciousness

The quality of human perception and consciousness is a critical factor in how we view and interact with the world. Psychologist William James, in his classic *The Varieties of Religious Experience*, wrote: "Our normal waking consciousness is but one special type of consciousness, whilst all about it, parted from it by the flimsiest of screens, there lie potential forms of consciousness entirely different. No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded."

Plato's allegory of the cave (13) explores the theme of illusion and reality in terms of the level and degree of consciousness of the observer. Human beings, he claims, are like prisoners chained in a dark cave in which a fire casts fleeting shadows on the wall which are misinterpreted as real events and phenomena of the outer world. This notion is similar to the implications of modern physics that there are no "real" things existing separate and independent of the consciousness of the observer. "Matter and the perception of matter are interdependently interrelated. The ultimate ground of matter is only a kind of emptiness, like space, that is filled with potentialities. Our perception, our consciousness, somehow contains veils or screens through which or onto which we project these visions we call phenomenal reality."

Whereas Western science holds that consciousness emerges from matter and is governed by physical processes, many Eastern mystical teachings suggest that consciousness exists prior to the creation of matter and transcends space and time. They propose that both the world of matter and the world of mental phenomena are determined and supported by consciousness. From this perspective consciousness is the ultimate reality. Some philosophers and scientists have questioned the strictly materialistic orientation of modern science which disregards more subtle dimensions of reality such as mind and consciousness, value and meaning:

The cult of materialism appears to arise because of a confusion of the values existing in all forms. For example, a book is obviously made up of physical materials such as paper and ink. But no one would suggest that the primary value of the book is in its physical form. We know that the material aspect of a book serves to transmit a message, and the message is the book's reason for existence. If we observe all man's productions from this viewpoint, we discover, as in the case of the book, a combination of plan, design, meaning, or message,

communicated by materials. An automobile has its source in human thinking and can be summarized in a set of blueprints. The plan contained in the blueprints, when embodied in suitable materials, provide us with a car. It follows from this, that all man's productions, whether a machine, a cathedral or a symphony, always manifests a duality – meaning (or mind) and matter. Further, the material aspect of a book or a machine is in dimensional space and time, and so wears out or ages, while the meaning or mind element, not in physical dimensional space or time, is not affected by the passage of the years. It is obvious that if we remove the ideation or mind from any human creation – take away its organization – a pile of materials with no sign of human intervention remains. (14)

When the faculties of thought, sensation and feeling are harmoniously balanced in a human being a more refined and highly developed level of consciousness can emerge. "The source of knowledge is not just the rational, analytic intellect. The real instrument of understanding is a blending of at least three fundamental sources of perception – sensation, the intellect and the heart or genuine feeling."

All semi-independent entities, from subatomic particles to galaxies, partake in some way in consciousness, and have some kind of inner life. Some believe this, but no one would attribute to molecules or cells the kind of awareness we have. Is it a matter of degree, or is there a threshold that makes possible the kind of inner world we are privileged to inhabit? One view is that it is the development in us of the capacity for abstract and symbolic thought, that in harmonious combination with sensations and emotions, makes it possible for us to resonate with the full reality of the universe. Thought by itself easily slips away from reality into fantasy, but when it is blended with sensation and feeling we can enter into the magical present moment, no longer infinitesimal, but all-encompassing. Each of these capacities is tuned to a different dimension of time and to a different aspect of the world: sensation is allied with matter, and thus with the flow of ordinary time; thought is at home in the realm of all possibilities; and feeling, linked with energy, mysteriously connects us with eternity. (15)

In general, science tends to disregard or minimize 'inner experience' and the knowledge it brings in understanding reality and illuminating the path of self-development and inner transformation. Someone who has not actually *experienced* the possibilities inherent in 'inner knowledge' tends to reject it as being primitive, irrational or magical. Jacob Needleman: "The ideal of objectivity, so prized in science and academic study, has degenerated profoundly. In the process of trying to free the mind from personal emotions that inevitably bias observation and thought, the modern ideal of objectivity has unknowingly distanced itself from a deep, inherent and essential instrument of understanding – what I am calling 'genuine feeling'."

Science demands that we base all our knowledge upon actual experience, but it denies the validity and even the existence of objective inner experience that

yields knowledge of the real world. It strictly limits the possibility of obtaining knowledge about nature and about the universe to data received through sense perceptions – sight, hearing, taste, etc. – which in their turn are organized by the mind into concepts and theories that then require further sense perceptions for their validation. This point of view about knowledge is known as empiricism, derived from the Greek word for “experience,” *empeiria*. Defined most generally, the doctrine of empiricism tells us that all knowledge must be rooted and tested by actual observation of events and objects in the external world. This doctrine of empiricism – putting the matter in its simplest terms – forms the very heart and backbone of the modern scientific era in which all of our lives have been immersed for centuries. This doctrine overlooks or is ignorant of a massive, towering fact – namely, the existence of the *discipline of inner experience*, experience of the inner world that is as precise and undeniable as the facts brought to light by sensory experience of the external world and organized into systematic theory by mathematics and logic. That is to say: science, in all its power and authority, is based solely on what we may call external empiricism. It knows little or nothing about what we may therefore call *inner empiricism* . . . The fundamental teachings of the great spiritual traditions and spiritual philosophies of the world are rooted in the disciplined work of inner empiricism. Through inner empiricism, knowledge about the universe and man is obtained of a kind and with a content that is inaccessible to modern science. (16)

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