"The Scientific and Contemplative Exploration of Consciousness"
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As we enter the twenty-first century and look back on the past four hundred years of scientific progress, who can fail to be impressed by the frontiers of knowledge that have been opened to human inquiry? The physical sciences have illuminated the realm of the extremely minute—the inner core of the atomic nucleus; events in the distant past—the first nanoseconds after the Big Bang; and phenomena on the far side of the universe—the constitution of galactic clusters billions of light years away. In the meantime, the biological sciences have made great discoveries concerning the evolution of life, they have mapped the human genome, and revealed many of the inner workings of the brain. But in the midst of such extraordinary knowledge of the objective world, the subjective realm of consciousness remains largely an enigma. While neuroscientists examine the brain correlates to the workings of the human spirit, the actual nature of the mind/body correlation is still a matter of philosophical conjecture: there is no hard scientific evidence that explains *how* the mind is related to the brain. There is no scientific consensus concerning the definition of consciousness, and there are no objective, scientific means of detecting the presence or absence of consciousness in anything, mineral, plant, animal, or human. In short, scientists have not yet fathomed the nature of consciousness, its origins, or its role in nature.

How is it possible that something so central to scientific inquiry, namely human consciousness, remains so elusive? Is it because it is inherently mysterious or even impenetrable to scientific inquiry? Or have scientists simply failed thus far to devise appropriate methods for exploring the frontiers of the inner spirit? To seek an answer to this question, let us review the ways in which scientists have successfully explored other realms of the natural world.

Looking first to the physical sciences, astronomy began to move beyond its medieval heritage when researchers such as Tycho Brahe devised instruments for making unprecedentedly accurate measurements of the relative movements of the planets. Whereas previous generations of astrologers were content to focus primarily on the alleged *correlations* between the movements of celestial bodies and terrestrial events, Brahe made careful observations of the planets themselves, albeit with the intention to improve the precision of astrological predictions. Similarly, Galileo made precise observations of falling bodies and other terrestrial and celestial phenomena. In short, careful observations of these natural phenomena themselves were the necessary basis for the subsequent explanation of *why* these physical phenomena act as they do.

The life sciences developed in a similar way. In the seventeenth century, the Dutch naturalist Van Leeuwenhoek used the microscope to observe minute organisms, and over the centuries this combination of technology and precise observation of living organisms led to the development of cell biology, molecular biology, genetics, and neuroscience. It is important to bear in mind, however, that what these physicists and biologists were observing were appearances to the human mind, not external, physical objects existing independently of consciousness. The mind has always played a central role in scientific observation and analysis, yet the scientific study of the mind did not even begin until three hundred years had lapsed from the time of Galileo. The obvious assumption behind this long delay was that consciousness plays no significant role in nature. But this is a metaphysical

assumption, not a scientific conclusion. Whether or not that hypothesis is a valid one, it is certainly an oversight to postpone for three centuries the scientific examination of one's primary instrument of observation of the natural world: human consciousness.

At the dawn of the modern science of the mind in the late nineteenth century, the pioneering American psychologist William James defined this discipline as the study of subjective mental phenomena, their relations to their objects, to the brain, and to the rest of the world (1892). He argued that introspective observation must always be the first and foremost method by which to study these issues, for this is our sole access for observing mental phenomena directly (1890/1950: I: 185). This approach parallels that of Tycho Brahe, Galileo, and Van Leeuwenhoek in the development of astronomy, physics, and biology, respectively: carefully observe the phenomena themselves, before trying to explain their origins or the mechanical laws governing their movements. William James added that introspective study of subjective mental events should be complemented with the objective examination of their behavioral and neural correlates. Since his time, great advances have been made in the behavioral sciences, and even more stunning progress is taking place in the brain sciences. But James's emphasis on the importance of introspectively observing subjective mental phenomena themselves has been largely ignored, so there has been no comparable development of rigorous methods for observing and experimenting with one's own mental phenomena firsthand.

Progress in astronomy before the time of Brahe and Kepler was hampered by both empirical and theoretical limitations. Empirically, medieval astrologers and astronomers failed to devise new, rigorous methods for the precise observation of celestial bodies. They were too caught up in their concern with the terrestrial correlates of celestial events. Theoretically, their research was limited by their unquestioning acceptance of the metaphysical assumptions of Aristotle, Christian theology, and astrology. In a similar fashion, contemporary behavioral and neuroscientific research into the mind is empirically limited by the absence of rigorous methods for observing mental phenomena firsthand. And theoretically, such inquiry is hampered by the metaphysical assumption that all mental events can be reduced to their neural correlates. This materialist premise is not a scientific conclusion, but an assumption that underlies virtually all scientific research into the mind/body problem.

It is with introspection alone that consciousness and a wide range of other mental phenomena can be examined directly. While this subjective mode of perception is still marginalized by the cognitive sciences, the contemplative traditions of the world have for centuries devised a wide range of methods for rigorously exploring the frontier of the inner spirit. Long before the time of Aristotle, the contemplatives of India, for example, devised sophisticated means of refining the attention, stilling compulsive thoughts, and enhancing the clarity of awareness. This discipline is known as the development of *samadhi*, or deep meditative concentration, which was then used to explore firsthand a wide range of mental phenomena (Wallace 1998).

In profoundly stilling the mind, Hindu and Buddhist contemplatives have allegedly probed beyond the realm of the ordinary human mind to an underlying substrate consciousness. In their view, experientially corroborated by hundreds of contemplatives throughout Asia, many of them adhering to diverse philosophical and religious beliefs, the human mind emerges not from the brain, but from this underlying substrate which carries on from one life to the next. This substrate consciousness need not be reified into a kind of ethereal substance, or immutable soul, but viewed more as a continuum of cumulative experience that carries on after death. In each lifetime, this stream of consciousness is conditioned by the body,

brain, and environment with which it is conjoined. In the context of such an embodiment, specific mental processes are contingent upon specific brain processes. The brain is necessary for the manifestation of those mental functions once the substrate consciousness is embodied, but it and its interaction with the environment are not sufficient for the occurrence of consciousness. Memories and character traits from one life to the next are stored in this substrate, not in the brain, and past-life memories can allegedly be recalled while in samadhi. However, if specific brain functions are impaired, one may lose access to their correlated mental functions as long as the substrate consciousness is conjoined with a body.

Pythagoras, Plato, Origen (a highly influential, third-century Christian theologian), and much of the Christian community during the first four centuries of the common era affirmed the continuity of individual consciousness from one life to the next. While Augustine thought that souls are likely created due to conditions present at the time of conception, he acknowledged that, as far as he knew, the truth of this hypothesis had not been demonstrated (391/1937: III: Chs. 20-21). Moreover, he declared that it was consonant with the Christian faith to believe that souls exist prior to conception and incarnate by their own choice (Ibid.: 379). This subject, he claimed, had not been studied sufficiently by Christians to be able to decide the issue. Acceptance of the theory of reincarnation in the Western world decreased from the fifth century onwards due to its condemnation by ecclesiastical councils and the decline of contemplative practice in general and the cultivation of deep meditative concentration in particular.

The theory of the substrate consciousness and its relation to the human mind has not been invalidated by contemporary neuroscience. While William James did not advocate reincarnation, he believed that the relation of the brain to the mind is akin to that of a prism refracting light, rather than mental events originating from the brain (1989: 85-86). He declared that this non-materialist view was compatible with the neuroscientific knowledge of his day, and this remains true today, so there are no purely scientific grounds for assuming a materialist view of the mind. While materialists claim that the burden of proof of the non-physical nature of the mind rests on those who can provide evidence to that effect, this is open to question. Introspective observation of mental phenomena does not suggest that they are physical in nature, nor does it provide knowledge of the brain. Likewise, the study of neural events alone provides no knowledge of the mind: one never sees any mental events in the brain, just electrochemical events. So it takes a leap of faith to believe that mental events are really brain functions viewed from a subjective perspective. Generally speaking, if one believes that two types of phenomena that *appear* to be radically different are in fact identical, the burden of proof lies in demonstrating their equivalence.

Is the belief that the mind is nothing more than a function, or emergent property, of the brain a scientific hypothesis? If so, there should be some way, at least in principle, to falsify that claim. Otherwise, it loses its status as a scientific theory. Insofar as scientific research on the mind/body problem is confined to the study of the behavioral and neural correlates of the subjective experience, it is hard to imagine how one could ever test for the existence of non-physical mental events. One would need to step outside materialist methodologies in order to detect anything non-physical. One viable way to put the materialist hypothesis to the test, thereby establishing its status as a scientific theory, is by studying the empirical evidence suggestive of reincarnation. Such research has been done not only by contemplatives exploring their past-life memories but by modern researchers, such as psychiatrist Ian Stevenson (1997). His remarkable work, however, has received little attention by the scientific community.

The reason for this may be quite simple. As neurologist Antonio Damasio

comments, many neuroscientists are guided by one goal and one hope: to thoroughly explain *how* neural patterns become subjectively experienced mental events (1999: 322). So they do not welcome empirical evidence that might suggest that the goal of their research is illusory. This situation is reminiscent of the goal of medieval astronomers to demonstrate how all celestial bodies move in perfect circles. Eventually, Kepler, who was also committed to this belief, was distressed when the empirical evidence accumulated by Tycho Brahe forced him to conclude that this long-held assumption was false.

With the union of scientific and contemplative inquiry, humanity may explore the frontier of the inner spirit in unprecedented ways (Wallace 2000). The importance of such collaborative research can hardly be overestimated. The very nature of human identity is at stake, and those who are committed to the pursuit of truth must be rely on rigorous, empirical research, even if it invalidates their most cherished assumptions.

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