

The Myth of Quantum Consciousness

Victor J. Stenger

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A new myth is burrowing its way into modern thinking. The notion is spreading that the principles embodied in quantum mechanics imply a central role for the human mind in determining the very nature of the universe. Not surprisingly, this idea can be found in New Age periodicals and in many books on the metaphysical shelves of book stores. But it also can appear where you least expect it, even on the pages of that bastion of rational thinking, *The Humanist*.

In an article in the November/December 1992 issue entitled "The Wise Silence," Robert Lanza says that, according to the current quantum mechanical view of reality, "We are all the ephemeral forms of a consciousness greater than ourselves." The mind of each human being on earth is instantaneously connected to each other - past, present and future - as "a part of every mind existing in space and time."¹

To my ear, these sound very much like the ideas of physicist and New Age guru Fritjof Capra, as expressed most recently in the film "Mindwalk." They also resonate with the "cosmic consciousness" promoted by Maharishi Mahesh Yogi and his Transcendental Meditation movement. Like Lanza, these sages claim modern physics as their authority. The Maharishi associates cosmic consciousness with the Grand Unified Field of particle physics. Maharishi University "quantum physicist" John Hagelin, Natural Law Party candidate for President in last year's election, has spoken frequently about quantum consciousness.

In Lanza's interpretation, quantum mechanics tells us that all human minds are united in one mind and "the entities of the universe - electrons, photons, galaxies, and the like - are floating in a field of mind that cannot be limited within a restricted space or period . . ."

Unlike traditional myths, which call on scripture or the utterances of

charismatic leaders as their authorities, this latest version of ancient Hindu idealism is supposedly based on up-to-date scientific knowledge. The assertion is made that quantum mechanics has ruled invalid the materialistic, reductionist view of the universe, introduced by Newton in the seventeenth century, which formed the foundation of the scientific revolution. Now, materialism is replaced by a new spiritualism and reductionism is cast aside by a new holism.

The myth of quantum consciousness sits well with many whose egos have made it impossible for them to accept the insignificant place science perceives for humanity, as modern instruments probe the farthest reaches of space and time. It was bad enough when Copernicus said that we were not at the center of the universe. It was worse when Darwin announced that we were not angels. But it became intolerable when astronomers declared that the earth is but one of a hundred billion trillion other planets, and when geologists demonstrated that recorded history is but a blink of time - a microsecond of the second of earth's existence.

In a land where self-gratification has reached heights never dreamed of in ancient Rome, where self-esteem is more important than being able to read, and where self-help requires no more effort than putting on a cassette, the myth of quantum consciousness is just what the shrink ordered.

But, alas, quantum consciousness has about as much substance as the aether from which it is composed. Early in this century, quantum mechanics and Einstein's relativity destroyed the notion of a holistic universe that had seemed within the realm of possibility in the century just past. First, Einstein did away with the aether, shattering the doctrine that we all move about inside a universal, cosmic fluid whose excitations connect us simultaneously to one another and to the rest of the universe. Second, Einstein and other physicists proved that matter and light were composed of particles, wiping away the notion of universal continuity. Atomic theory and quantum mechanics demonstrated that everything, even space and time, exists in discrete bits - quanta. To turn this around and say that twentieth

century physics initiated some new holistic view of the universe is a complete misrepresentation of what actually took place.

The belief in a universal, cosmic fluid pervading all space is an ancient one. To the Greeks, *aether* was the rarified air breathed by the gods on Olympus. Aristotle used this term for the celestial element - the stuff of the heavens - and said it was subject to different tendencies than the stuff of earth. When Newton was prompted to explain the nature of gravity in non-mathematical terms, he replied that gravity might be transmitted by an invisible aether. He further suggested that the aether also may be responsible for electricity, magnetism, light, radiant heat, and the motion of living things that he, like his contemporaries, thought was the consequence of some source beyond inanimate matter. Even today, despite the preponderance of evidence unavailable to Newton that life is a purely material phenomenon, people still speak of immaterial{,} vital forces such as *ch'i*, *ki*, *prana*, and *psychic energy* which have no scientific basis.

Newton also had proposed that vibrations of the aether might be excited by the brain. This speculation forms the conceptual foundation for the modern myth of quantum consciousness and the related belief that the human mind commands special powers - psychic forces - that transcend the material universe.

Newton had envisioned matter and light to be particulate in nature, though they appear continuous to the human eye. Gravity, however, seemed to be something else, acting invisibly - holistically - over the entire universe. In the mid-nineteenth century, the mathematical concept of the *field* was developed to describe the apparent continuity of matter, light, and gravity. A field has a value at each point in space, in contrast to the properties of a particle which are localized to a tiny region of space. To some current observers, fields are holistic entities while particles typify the reductionist view of nature, where everything is reduced to its parts. Holists, with great profundity, inform us that the whole is greater than the sum of its parts and so the reductionist view must be discarded. Note, however, that fields were not invented last week, after some great burst of intuition by a Capra or a

Lanza, but appeared in reductionist physics over a century ago. Little in the new holism is really very new, or very logical.

Pressure and density are two examples of matter fields. In continuous elastic media, pressure and density propagate as sound waves when the media are excited. As the phenomena of electricity and magnetism became better understood, they were also described in terms of fields. When Maxwell discovered that the equations which united electricity with magnetism called for the propagation of electromagnetic waves in a vacuum at the speed of light, it was suggested that the vacuum was not empty but filled with an elastic medium - the aether - whose excitation produced the phenomenon of light.

Electromagnetic waves beyond the narrow spectrum of visible light were predicted and soon observed and put to use in “wireless telegraphy.” One of the early workers in wireless telegraphy was the English physicist Oliver Lodge. While making major contributions to physics and engineering, Lodge joined William Crookes, Alfred Russel Wallace (co-discoverer of evolution) and other notable nineteenth century scientists in searching for phenomena that transcended the world of matter. If wireless telegraphy was possible, why not wireless telepathy? If electrical circuits could generate and detect ethereal waves, why not the human brain? Coincidentally, certain people who seemed to possess the ability to communicate with other minds, living and dead, had just appeared on the scene. They were called mediums a century ago; today their spiritual descendants are known as psychics or channellers.

Unfortunately, most scientists lack the specific skills needed to distinguish fact from illusion in the world of magic. The universe does not lie; people lie. Lodge and other psychical researchers allowed themselves to be fooled by the tricks of professional fortune-tellers and sleight-of-hand artists posing as spiritualists. Lodge desperately wanted to believe in life after death, writing passionately about communications with his son Raymond who was killed in Flanders in 1915. Sadly, he accepted the wildest claims of mediums.

Near the turn of the century, Michelson and Morley sought to find experimental evidence for the aether and succeeded in showing instead that it did not appear to exist. Shortly thereafter, in 1905, Einstein developed his theory of relativity which demonstrated that the concept of an aether was logically inconsistent with Maxwell's equations of electromagnetism. Einstein concluded that electromagnetic waves, including light, could not be the vibrations of an aether. Still, Oliver Lodge remained firm in his belief that a universal cosmic fluid existed that could be excited by the human mind. To Lodge, the aether was a necessity, the cosmic glue without which "there can hardly be a material universe at all."²

Lodge was similarly unhappy with what he was hearing young quantum physicists, like Bohr and Heisenberg, say about the fundamentally discrete, quantized, nature of all phenomena. He deplored "the modern tendency . . . to emphasize the discontinuous or atomic character of everything."³ But progress passed him by, as evidence accumulated that matter is composed of discrete atoms, that electricity is the flow of electrons or other charged particles, and that light is a current of particles called photons. When Oliver Lodge died in 1940, continuity was already long in its grave.

Einstein wasn't comfortable with quantum mechanics either, calling it "spooky." He and two collaborators, Podolsky and Rosen, wrote a paper in 1935 arguing that quantum mechanics was "incomplete" because it seemed to allow for the propagation of signals faster than the speed of light, a result forbidden by Einstein's relativity.⁴ Like so many of the strange effects of quantum mechanics, this was a consequence of the wave-particle duality in which physical systems behave either like waves or particles, depending on which type of property you are trying to measure. Again the distinction is between the discrete, localized properties of a particle and the continuous, distributed properties a field.

The EPR paradox remained a curiosity until 1964 when John S. Bell showed how it provided a way to experimentally test the conventional, "Copenhagen" interpretation of quantum mechanics.⁵ Earlier, physicist David Bohm had proposed

an alternative to Copenhagen in which invisible “hidden variables” were responsible for the wave-like behavior of particles.⁶ Bell showed the way to experimentally decide the issue. Now, after a series of precise experiments, the issue has been decided: The Copenhagen interpretation quantum mechanics has been convincingly confirmed, while the most important class of hidden variables is ruled out.⁷

David Bohm, who died in October, 1992, had been the foremost proponent of a new holistic paradigm to take the place of reductionist quantum physics.⁸ The failure of his related hidden variable theory did not cause the proponents of the new continuity to loose faith. Rather they have turned the experimental confirmation of conventional quantum mechanics on its head by arguing that a basis has been found for the superluminal signals needed in a holistic universe.

Einstein’s principle that no signals can move faster than light implies that separated events in the universe, even those an atomic diameter apart, cannot be simultaneously connected. This fundamentally contradicts the holistic view of an instantaneous interconnectedness among all things. Rather, relativity paints quite the opposite picture: a universe of localized particles that at any instant depend only on the other particles with which they are in direct contact. What is going on elsewhere in the universe at that instant can have no effect until the particles carrying the necessary information can get there, moving no faster than the speed of light. This is a far more complete form of reductionism than is present in pre-Einsteinian mechanics, where motions at superluminal or even infinite speeds were not ruled out by any known theory. Incompatible with the claims of the new holists, relativity not only supports the reductionist view - it makes it mandatory{!} A universal cosmic field like the aether, providing a mechanism for interconnectedness, requires a violation of Einstein’s relativity. But relativity has passed every experimental test that has been put to it since being introduced in 1905, so it cannot be casually discarded.

Similarly, the interpretation of quantum mechanics to which Einstein

objected, and which Bohm sought to replace, still reigns supreme after being subjected to a similar period of rigorous experimental test, including the tests of Bell's theorem. The EPR paradox thus would seem to suggest that quantum mechanics and relativity cannot be made compatible, and so one or the other must go. Before the experimental results confirming conventional quantum mechanics came in, Bohm and his supporters had argued that conventional quantum mechanics should be discarded. Now that the results are in, the new holists argue that relativity must yield, since quantum mechanics provides a mechanism by which signals can move faster than light. Quantum mechanics is indeed "spooky." So, bring out the spooks! An ethereal, universal field that allows for the simultaneous connection between events everywhere in the universe must exist after all.

Quantum mechanics is called on further to argue that the cosmic field, like Newton's aether, couples to the human mind itself. In Robert Lanza's view, that field is the universal mind of all humanity - living, dead, and unborn. Ironically, this seemingly profound association between quantum and mind is an artifact, the consequence of unfortunate language used by Bohr, Heisenberg and the others who originally formulated quantum mechanics. In describing the necessary interaction between the observer and what is being observed, and how the state of a system is determined by the act of its measurement, they inadvertently left the impression that human consciousness enters the picture to cause that state come into being. This led many who did not understand the physics, but liked the sound of the words used to describe it, to infer a fundamental human role in what was previously a universe that seemed to have need for neither gods nor humanity.

If Bohr and Heisenberg had spoken of measurements made by inanimate instruments rather than "observers," perhaps this strained relationship between quantum and mind would not have been drawn. For, nothing in quantum mechanics requires human involvement.

Quantum mechanics does not violate the Copernican principle that the

universe cares not a whit about the human race. Long after humanity has disappeared from the scene, matter will still undergo the transitions that we call quantum events. The atoms in stars will radiate photons, and these photons will be absorbed by materials that react to them. Perhaps, after we are gone, some of our machines will remain to analyze these photons. If so, they will do so under the same rules of quantum mechanics that operate today.

But even without human involvement, with inanimate instruments doing the observing, do the rules of quantum mechanics allow for superluminal motion? A careful analysis of the experiments that tested Bell's theorem shows that the only objects that move faster than light are mathematical creations of our imagination, like the quantum wave function, which are not physical objects. It can be demonstrated that no signal carrying actual information moves faster than the speed of light{.} Neither conventional quantum mechanics nor Einstein's relativity are violated.⁹

The overwhelming weight of evidence, from seven decades of experimentation, shows not a hint of a violation of reductionist, local, discrete, non-superluminal, non-holistic relativity and quantum mechanics - with no fundamental involvement of human consciousness other than in our own subjective perception of whatever reality is out there. Of course our thinking processes have a strong influence on what we perceive. But to say that what we perceive therefore determines, or even controls, what is out there is without rational foundation. The world would be a far different place for all of us if it was just all in our heads - if we really could make our own reality as the New Agers believe. The fact that the world rarely is what we want it to be is the best evidence that we have little to say about it. The myth of quantum consciousness should take its place along with gods, unicorns, and dragons as yet another product of the fantasies of people unwilling to accept what science, reason, and their own eyes tell them about the world.

Victor J. Stenger is Professor of Physics of the University of Hawaii and president of Humanists Hawaii. A further discussion of the ideas in this article can be found in his book *Physics and Psychics: The Search for a World Beyond the Senses* (Prometheus Books, 1990) and in his article "The Spooks of Quantum Mechanics," *Skeptical Inquirer* 15, No. 3, Fall 1990, p. 51. He is also author of *Not By Design: The Origin of the Universe* (Prometheus Books, 1988) .

Notes

¹Robert Lanza, 1992. "The Wise Science." *The Humanist* Vol. 52, No. 6, p. 24.

²Oliver Lodge, 1920. *Beyond Physics* . London: Alana and Unwin.

³Oliver Lodge, 1914. *Continuity. The Presidential Address to the British Association for the Advancement of Science, 1913.* New York: Putnam. P. 21.

⁴A. Einstein, B. Podolsky, and N. Rosen, 1935. "Can the Quantum Mechanical Description of Physical Reality Be Considered Complete?" *Physical Review* 47, p. 777.

⁵J.S. Bell, 1964. *Physics* 1, p. 195.

⁶David Bohm, 1952. "A Suggested Interpretation of Quantum Theory in Terms of 'Hidden Variables,' I and II." *Physical Review* 85, p. 166.

⁷Alain Aspect, Phillipe Grangier, and Roger Gerard, 1982. "Experimental

Realization of the Einstein-Podolsky-Rosen *Gedankenexperiment*: A New Violation of Bell's Inequalities." *Physical Review Letters* 49, p. 91; "Experimental Tests of Bell's Inequalities Using Time-Varying Analyzers. " *Ibid*, p. 1804.

⁸Gary Zukav, 1979. *The Dancing Wu Lee Masters*. New York: Morrow.

⁹David N Mermin, 1985. "Is the Moon There When Nobody Looks? Reality and the Quantum Theory." *Physics Today*, 38, p. 38.