Pseudoscience and Victor Stenger's Quantum Gods

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http://www.truthabouttm.org/truth/SocietalEffects/Critics-Rebuttals/StengerRebuttal/index.cfm

NOTES:

Quantum spirituality—the idea that some aspect of consciousness plays a fundamental role in the universe and that advanced physics should be interpreted as having to some extent already incorporated this principle—has had distinguished representation among both physicists and philosophers. It has generated an upsurge of grassroots enthusiasm because of the widespread sense that science and spirituality, rather than being fundamentally separate or even opposed, are in fact deeply connected and mutually reinforcing. Victor Stenger's purpose in writing Quantum Gods: Creation, Chaos, and the Search for Cosmic Consciousness is to "debunk" this idea—but attention to the details shows that it is actually Stenger's arguments that need the debunking.

There are two broad hypotheses about how consciousness should be integrated into the domain of physics. The first is that consciousness is to be understood as a localized product of brain processes….The second hypothesis is that consciousness and spirituality enter into physics at a more fundamental level of natural law and, indeed, if there is to be a reduction, it will be the material world that will prove to be a product of consciousness.

A number of the important themes underlying quantum spirituality, include:

o The powerful idea that there is a fundamental aspect of consciousness that is scientifically primary, and how this differs from the silly idea of individual solipsism.
o The manner in which key scientific theorists, such as Isaac Newton, attempted to integrate science and spirituality.
o The idea that a fundamental component of intelligence is non-computational, meaning neither deterministic nor random .
o What reductive materialism means and why it is difficult to reconcile with advanced physics.
o Why quantum measurement and quantum entanglement may provide a better framework than classical physics for understanding the physics of consciousness.

In Western thought the primacy of consciousness has had many distinguished representatives, including Plato, Leibniz, Immanuel Kant, Hume, George Berkeley, Hegel, Schopenhauer and Edmund Husserl. In one of the simplest presentations, called idealism, George Berkeley proposed that all material objects exist and interact in consciousness; ultimately they are all ideas in the mind of God…..

Contemporary physicist Roger Penrose has leveraged non-computational mathematics to support his argument for looking to new physics for the physical correlates of mind and consciousness. An important result in mathematics due to Kurt Gödel has been taken to show that mathematical intuition is non-computational—in other words it cannot be modeled by a computer algorithm. From this, Penrose suggests that the physical basis for human intelligence, in general, must involve a level of physics much deeper than the deterministic, mechanistic processes assumed by contemporary neuroscience, for which the brain is essentially just a complex computer.

Moreover …. non-computational does not mean random. Contemporary computers have pseudo-random number generators built in, and Penrose makes a convincing case that randomness, as for example from a quantum mechanical decay process, "indeed does nothing useful for us; if anything, it would be better to stay with the pseudo-randomness…" (Penrose, 1996, p.26). Randomness does not get at what is distinctive about human intelligence any more than deterministic processes do. Deterministic/random is not a comprehensive dichotomy—non-computational means both non-deterministic and non-random.[8] These ideas are central to Penrose's argument.

Mathematical intuition, and any genuinely creative thought process, evidently—if Penrose is right—involves something more, which cannot be modeled by any combination of deterministic and random processes.

Consciousness is the phenomenon most resistant to a reductive analysis. Today, most philosophers of mind (even those sympathetic to the materialist perspective) have abandoned a fully reductive approach and believe that, even supposing neuroscience will someday provide an exhaustive account of all neurophysiological processes in the brain, consciousness will remain unaccounted for. In other words, consciousness—what it is like to have subjective experience—seems to be irreducible to neurophysiology. Most contemporary discussions in the philosophy of mind acknowledge "the hard problem of consciousness" (Chalmers, 1996), according to which the fact of consciousness will remain unexplained even if—and this is a big *if*—all the functional capacities of the mind could be accounted for in terms of neurophysiological processes.

Even Jaegwon Kim, regarded as a leading advocate of a hardcore materialist perspective of mind, has backed away from a fully reductionist approach (Kim, 2005 and 2006).

reduction means there are no physical properties of the gas over and above those already inherent in the individual molecules. Emergence, by contrast to reduction, involves the occurrence of something new in the sense of a property of the whole which is not already implicitly contained in the separately specified states of its independently existing constituent particles.

Entanglement: what's the big deal?

According to Abraham Maslow's familiar quip, "If the only tool you have is a hammer, you tend to see every problem as a nail." Likewise, if all that science knows is localized particles interacting in terms of mechanistic causation, then our theories of mind are going to try to see mind in these terms and reject or eliminate anything—whether it is religion, spirituality, or even moral responsibility—which doesn't fit this model. But quantum physics may offer tools that are better suited to a sophisticated model of consciousness and spirituality.

Quantum entanglement presents a problem for materialism precisely because it incorporates a form of holistic emergence. And wholeness, as explained in the previous section, has traditionally been linked to consciousness.

EPR was the culmination of decades of intense debate between Einstein, defending the classical-particle worldview, and Niels Bohr, Werner Heisenberg, Wolfgang Pauli and the other leading figures in the development of quantum mechanics. All of them realized that nothing less than our fundamental conception of reality was at stake: does it consist in a reduction to separate, independently existing particles, or is fundamental reality characterized by unanalyzable features of wholeness? The distinguished physicist David Mermin refers to this as the "sublime mystery" of quantum mechanics.

Many of the paradigmatic discussions of entanglement refer to a two-particle system with total spin-0 which, by conservation of angular momentum, constrains each of the constituent particles to have opposite spins—if one is spin-up, the other must be spin-down. Now here is the crucial point: *The individual particles are not in a definite spin-state until a measurement is made.* It is only at the time of measurement that one of the particles assumes a definite spin in the direction measured—either spin-up or spin-down. This result gets instantly communicated to the other particle and collapses its spin state, which was until then an indeterminate combination of spin-up and spin-down.

This nonlocal entanglement between the two particles is precisely the kind of holistic, emergent and top-down kind of phenomenon which many think may contribute to a better framework for understanding consciousness than the classical conception of reduction to particles as separately existing, independently defined bits of matter.

"Entanglement" is Erwin Schrodinger's elegant and descriptive term, introduced in a 1935 article discussing Einstein's famous (EPR) argument against quantum mechanics.

When two systems … enter into temporary physical interaction due to known forces between them, and when after a time of mutual influence the systems separate again, then they can no longer be described in the same way as before [as independent systems]. I would not call that *one* but rather *the* characteristic trait of quantum mechanics, the one that enforces its entire departure from classical lines of thought. By the interaction the two [quantum states] have become entangled. (Schrödinger, 1935)

Many thoughtful people believe that science itself is a miracle, and that broad scientific themes—such as the orderliness in nature and the existence of laws of nature which we have the ability to comprehend—point to the fundamental nature of consciousness and even to a creative intelligence at the basis of the natural order.

Order suggests intelligence, and the orderliness in nature that is at the basis of science is often taken to indicate that intelligence exists at the most fundamental level of nature's functioning.

"*The ultimate source of order, of low entropy, must be the big bang itself.*" (Greene, 2004, p.173, Italics in the original.) Greene explains:

In its earliest moments, rather than being filled with gargantuan containers of entropy such as black holes, as we would expect from probabilistic considerations, for some reason the nascent universe was filled with a hot, uniform, gaseous mixture of hydrogen and helium. Although this configuration has high entropy when densities are so low that we can ignore gravity, the situation is otherwise when gravity can't be ignored; then such a uniform gas has extremely low entropy. In comparison with black holes, the diffuse, nearly uniform gas was in an extraordinarily low-entropy state. Ever since, in accordance with the second law of thermodynamics, the overall entropy of the universe has been gradually getting higher and higher; the overall, net amount of disorder has been gradually increasing. (Greene, pp.173-174)

Einstein observed that "The most incomprehensible thing about the world is that it is comprehensible." From the perspective of the materialist, there is no explanation for the law-like behavior of the material world or for our ability to understand and model this behavior with our scientific laws, especially our most fundamental laws, the laws of mathematical physics. These laws evidently connect our cognitive faculties with the way the material world is constrained to behave—but why should the material world be constrained to behave in a law-like manner? Moreover, why should our minds be tuned to this law-like behavior? Physicist and Nobel laureate

Eugene Wigner was even more explicit than Einstein:

It is difficult to avoid the impression that a miracle confronts us here … [or] two miracles of the existence of laws of nature and of the human mind's capacity to divine them.

As Gordon McCabe explains: When one asks the question, 'Why does the universe possess the laws of physics that we observe it to possess, and not some other possible laws?', one has in mind, as an alternative to our own world of empirical data, other sets of empirical data satisfying different laws. To argue that the laws of physics are the way they are, because the empirical data and coordinate-independence has constrained them to be such, is to misunderstand the problem at hand. (McCabe, 2009)