

Pseudoscience versus science

In his Commentary on the dangers of pseudoscience (PHYSICS TODAY, May 2016, page 10), Sadri Hassani sweeps under the rug the fact that the mind was explicitly introduced into the basic conceptual structure of quantum physics because a link was found between particles being observed and the observer. Several towering figures of quantum physics—for example, Max Planck, Erwin Schrödinger, John von Neumann, and Eugene Wigner—claimed that the consciousness of the observer is vital to the existence of the physical events being observed and that mental events can affect the physical world. Wigner, who received the Nobel Prize in Physics in 1963, wrote, “It was not possible to formulate the laws of quantum mechanics in a fully consistent way without reference to the consciousness.”¹

Hassani cites “Manifesto for a post-materialist science”² as an example of the growth of pseudoscience, but contrary to what he pretends, that editorial does not seek at all to equate research on psi phenomena and near-death experiences with quantum physics. *De facto*, the main objective of the manifesto is to present, in a concise and succinct manner, various lines of empirical evidence that strongly suggests that mind represents an aspect of reality as primordial as the physical world.

Mind is fundamental in the universe; that is, it cannot be derived from matter and reduced to anything more basic. Mind and the physical world are deeply interconnected, and mind—that is, will or intention—can influence the state of the physical world and operate in a nonlocal or extended fashion. That is, it is not confined to specific points in space, such as brains and bodies, nor to specific

points in time, such as the present. Furthermore, what we are proposing in the manifesto is that, to the great displeasure of Hassani and other pseudoskeptics like him, the consciousness-related interpretation of the quantum measurement problem is consistent with those conclusions and with the emerging post-materialist paradigm. It is not pseudoscience; it is evidence-based responsible science respected by open-minded theorists and experimentalists alike.

References

1. E. Wigner, *Symmetries and Reflections: Scientific Essays of Eugene P. Wigner*, Indiana U. Press (1967), p. 169.
2. M. Beauregard et al., *Explore* **10**, 272 (2014).

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Sadri Hassani, in his Commentary, laments the fact that many of America's top-tier medical schools “house centers of integrative health.” He singles out *Explore*, a peer-reviewed journal I serve as executive editor, for special criticism because we published “Manifesto for a post-materialist science,” which, he says, “elevates parapsychology and near-death experience to the rank of quantum theory.”

That article had nothing to do with equating those areas to the scientific status of quantum theory. However, Hassani appears unfamiliar with developments in which quantum physical concepts such as nonlocality and entanglement have been shown to occur in biological systems. That, we believe, indicates some as-yet-undefined degree of overlap between biomedical science and quantum physics. As physicist Vlatko Vedral states in his 2011 article “Living in a quantum world”:

Quantum mechanics is not just about teeny particles. It applies to things of all sizes: birds, plants, maybe even people. . . .

. . . Until the past decade, experimentalists had not confirmed that quantum behavior persists on a macroscopic scale. Today, however, they routinely do.¹

Until the origin, manifestations, and nature of consciousness—science's greatest mystery—are resolved, we shall continue to examine those topics at *Explore* with the same openness advocated by some of the greatest patriarchs of modern physics, including Max Planck, the founder of quantum mechanics, who said,

I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness.²

And Nobel physicist Erwin Schrödinger said,

Although I think that life may be the result of an accident, I do not think that of consciousness. Consciousness cannot be accounted for in physical terms. For consciousness is absolutely fundamental. It cannot be accounted for in terms of anything else.³

References

1. V. Vedral, *Sci. Am.*, June 2011, p. 38.
2. J. W. N. Sullivan, *Observer*, 25 January 1931, p. 17.
3. W. Moore, *A Life of Erwin Schrödinger*, Canto edition, Cambridge U. Press (1994), p. 181.

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The scientific community must formulate more direct countermeasures to address the “societal mental disease” of pseudoscience that Sadri Hassani discusses. Scientists are often perceived as condescending and dismissive of others' points of view. To effectively penetrate

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