BRIDGING SCIENCE AND BUDDHISM: TOWARD AN EXPANDED UNDERSTANDING OF MIND

Interview with Professor David E. Presti

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Dr. David E. Presti *teaches neurobiology, psychology, and cognitive science at the University of California, Berkeley. Before coming to Berkeley, Professor Presti worked in the clinical treatment of addiction and post-traumatic stress disorder. He also teaches neuroscience to Buddhist monks and nuns. In 2018, he wrote the book "Mind Beyond Brain: Buddhism, Science, and the Paranormal." In this interview, Professor Presti discusses the nature of the mind, empirical approaches to studying consciousness, and the value of fostering a dialogue between science and Buddhism.*

BSJ: We read that your training is in biophysics and clinical psychology. What led you to integrate spirituality into these fields?

DP: As an undergraduate, I developed a keen interest in quantum physics and Einstein's theories of relativity because they seemed to address what science could reveal about the nature of reality. This was also an era when ideas from Asian spiritual traditions were beginning to penetrate American culture. I read many books related to these traditions, which spoke to a view of mind and nature somewhat different from that of the Western world. After graduating, I came to California to study theoretical physics as a graduate student at Caltech. I joined the research group of Kip Thorne, who recently received a Nobel Prize for his role in the first measurements of gravitational radiation. Stephen Hawking was a visiting professor at Caltech the year I started, and I attended lectures on quantum mechanics by Richard Feynman. I was really steeped in theoretical physics, and at the same time continued to be very interested in the mind. I heard about Max Delbrück, one of the founders of modern molecular biology, who at this point was interested in the evolution of human cognitive capacities. I took his class on biophysics, and he gave me an opportunity to work in his microbial genetics lab for the summer. He also advised me to learn some biology. So, I switched from theoretical physics to experimental molecular biology. After receiving my doctorate, I did postdoctoral work in neurobiology, and then studied cognitive psychology at the University of Oregon because I wanted to learn more about human perception. I ended up getting another PhD in clinical psychology and did a clinical internship at the Veterans Hospital in San Francisco. I got a job there and worked in the treatment of addiction and post-traumatic stress disorder for the next 10 years. While still engaged in that work, I began teaching neurochemistry at UC Berkeley and then got the opportunity to come here full-time. My primary interest throughout has always been expanding the way we think scientifically about the nature of mind and consciousness.

BSJ: Your most recent book, *Mind Beyond Brain: Buddhism, Science, and the Paranormal*, explores what the encounter between science and Buddhism can teach us about consciousness and reality.[2] What motivated you to write this book?

DP: I have been wanting to produce this book for quite a few years. My first book covers the content of my introductory neurobiology class here at Cal.[3] In that book, I make it clear that there is still a great deal of mystery remaining in neurobiology, and at the end I propose a number of ways to broaden the science of consciousness. *Mind Beyond Brain* (Fig. 1) is a sequel to that, expanding upon one particular way forward in the study of mind. It's partly motivated by my close association with researchers who study anomalous phenomena at the University of Virginia School of Medicine. These phenomena include near-death experiences, in which approximately 20% of survivors of clinical death recall extremely vivid experiences after they are revived.[4] Sometimes this includes a vivid perception of the scene of their near-death from an out-of-body perspective. Such phenomena are completely inexplicable in terms of present assumptions about the mind-body relationship. The connection with Buddhism is related to the longstanding interest that the Dalai Lama has had in science. For several decades he has engaged in conversation with scientists on the study of mind and the physical world, and out of these engagements programs have developed to teach science to Tibetan Buddhist monks and nuns. I was fortunate to cross paths with the first of these programs 15 years ago and have on multiple occasions taught neurobiology and dialogued about science with Tibetan monastics in India, Bhutan, and Nepal (Fig. 2). They are deeply interested in questions about mind and world, and yet their tradition draws upon a worldview that is complementary to our own. That's the story of this book.

BSJ: What are your working definitions for the mind and for consciousness? How do these relate to the mind-body problem?

DP: I define mind as our mental experience: our thoughts, feelings, and perceptions. Consciousness is the awareness of this experience, awareness of what it's like to be us. We are not robots that mechanically perform things without any experiential awareness.

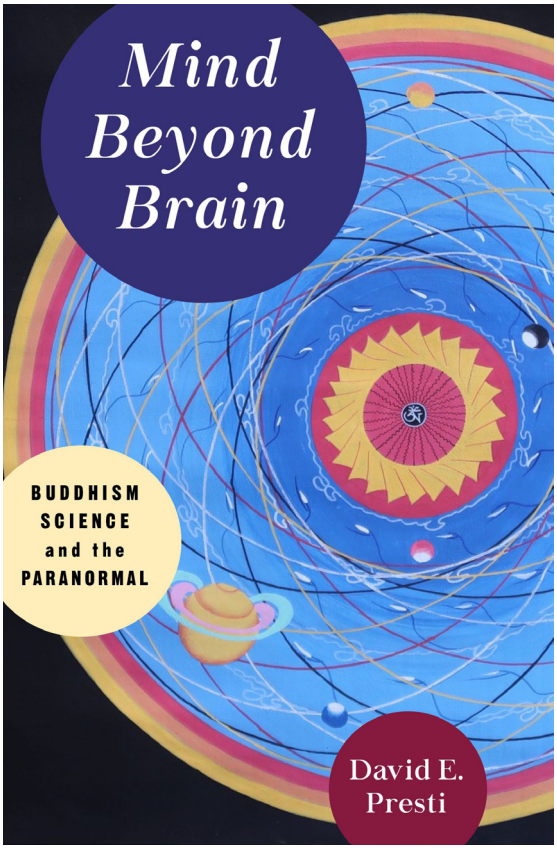

Figure 1: Professor Presti's recent book, "Mind Beyond Brain: Buddhism, Science, and the Paranormal." *This book explores how evidence for anomalous phenomena can productively impact the Buddhism-science conversation.*[2]

We have mental experience, something that is irreducibly subjective and not manifestly physical. The experience of sweetness or saltiness may be related to the presence of sucrose molecules or sodium ions, respectively, but it is not embedded in the molecule or ion. Rather, it depends on the molecule interacting with our nervous system and somehow giving rise to the experience. We may hypothesize that experience emerges in some way from physical processes in our body and brain, but we don't have a description of how that happens. This is the so-called mind-body problem.

BSJ: Why do you believe a paradigm shift for understanding consciousness is forthcoming?

DP: There has only been a handful of major paradigm shifts in the history of modern science. When Earth got displaced from the center of the universe in the Copernican Revolution, that led to hundreds of years of physics and astronomy explaining the organization of the cosmos. In biology, revolution around evolution led to understanding all of life on Earth as interconnected and developing diversity over long periods of time via processes of variation and selection. Einstein's work on relativity indicated that space and time are dynamically interconnected and vary as a function of relative motion and the presence of matter. Finally, one of the biggest revolutions so far has been quantum physics—suggesting that the fundamental structure of the material world is much more fuzzy and interconnected across space and time than we previously imagined. So, we have these four big revolutions in physics and biology, and my guess is that something even bigger will take place when we appreciate an enfolding of our own conscious awareness into the nature of the physical.

BSJ: What are psi phenomena?

DP: Psi phenomena are phenomena that transcend our current capacity to explain by any known physical mechanism. In the late 19th century, a group of British researchers created the Society for Psychical Research. They investigated phenomena that were related to various human experiences—hence the term "psychic," or "psyche," which refers to the mind. The term "psi" came to describe the phenomena. For example, there might be some kind of direct mind information transfer between people, called telepathy. Someone might get information about something happening at a distance, called clairvoyance. Someone might get information about something that hasn't happened yet; that's called precognition. These are phenomena that go beyond our ability to explain via what we presently know about sensory perception and information transfer. There may be straightforward physical explanations that we simply haven't uncovered yet, or they may indicate the need to radically alter the way we think about the relationship of consciousness and the world.

BSJ: What are some of the current psychophysiological methods used to measure psi phenomena? What are some challenges associated with these methods?

DP: There are small numbers of scientists at places like the Institute of Noetic Sciences in Marin County who are conducting laboratory studies of psi phenomena. Such studies are difficult and the effects, though highly significant, are often small. In addition, observations may be prone to perturbations from the environment or the participant's thinking. If there are ways in which mind is impacting the physical world, then all kinds of things might happen in constructed experiments, things that may be very difficult to control. To me, most of the juice is in increasingly sophisticated empirical documentation of spontaneous phenomena, looking for patterns that may suggest hypotheses for further investigation. These spontaneous occurrences are generally experienced in the context of powerful emotionality, often traumatic events: for example, death, near-death, or serious accident or illness.

BSJ: At the end of *Mind Beyond Brain*, you describe a distinction between the "supernatural" and the "super natural." What do these two concepts represent?

DP: Terms like "psi," "paranormal," and "supernatural" are often used synonymously to describe weird and inexplicable phenomena. Especially the latter two are saddled with a great deal of pop-culture baggage. "Super natural" (two words, the space is important)—a phrase coined by my colleague Jeffrey Kripal at Rice

Figure 2: Professor Presti with a group of Buddhist monks and nuns in Bhutan. *Presti has been involved with the Science for Monks and Nuns program for 15 years. Also pictured are Dr. Kristi Panik, psychiatrist at UC Berkeley University Health Services (and Presti's wife), and Dr. Bryce Johnson, UC Berkeley PhD in Environmental Engineering and director of the Science for Monks and Nuns program. Image courtesy of David Presti.*

University[5]—refers to natural phenomena that go beyond ordinary experience in a way that is currently inexplicable: things like out-of-body and other vivid perceptions during near-death experiences; apparitions associated with the death or serious injury of someone with whom one is emotionally connected; precognitive thoughts and dreams; and so forth. This two-word phrase is meant to emphasize that these are natural phenomena, occurring widely, and at the same time kind of super. They are in no way beyond science, and they can be investigated using the methods of science.

BSJ: You touched on near-death experiences. Why do many scientists not recognize these and other anomalous phenomena as meaningful?

DP: That is a hugely interesting question. Many folks who vigorously refuse to be open to the occurrence of these phenomena often don't know much about the empirical data, and moreover there is frequently a reluctance to learn more about it. It can be a very emotional resistance—people can get really upset about this stuff. One guess is that it's threatening to our sense of security in understanding the nature of reality, that we know what's going on. Even though there are mysteries like dark energy, dark matter, and how the brain generates consciousness, we generally feel pretty secure about how biophysical science places us within the material universe. However, these anomalous phenomena force us to step back and say, "Well, perhaps things are way more weird and mysterious than I thought."

BSJ: You also mention a "transmission hypothesis" for explaining anomalous phenomena. Can you tell us more about this framework?

DP: The working assumption in mainstream neuroscience is that whatever our mind is, it's completely generated by our body and brain. That is certainly consistent with a lot of things, but an equally consistent hypothesis is that our awareness comes partly from within our body and partly draws from other places. That's the "mind beyond brain." It's similar to what a lot of spiritual traditions would say—that we're channeling an aspect of something divine or cosmic. Historically, folks have drawn parallels with radio and television, and these days the best analogy would be connectivity to the internet. Using a smartphone, you can connect to an enormous amount of information from all over the planet. If you've never seen such a device before, you would probably assume that all the information is coming from inside the phone. But that's not the case; the phone is receiving what's transmitted through the cellular network. That's essentially the transmission hypothesis: part of what we are able to experience may be coming from something beyond our direct senses, at least insofar as we currently understand them.

BSJ: You write of a refined approach to studying subjective experience that involves careful introspection and analysis. How does Buddhism embody this approach?

Figure 3: Workshop on sensory neurobiology at the Kopan Nunnery in Nepal (2018). *Image courtesy of David Presti.*

DP: In our modern scientific tradition, we try to understand the world as detached observers—the essence of our science is objectivity. We build telescopes and microscopes and all sorts of probes to investigate things outside of our mental space. In Buddhism and a number of Asian philosophical traditions, they have a different worldview. The Dalai Lama and others have described aspects of Buddhist tradition as being a kind of internal science. They use contemplative practices to focus inward and deeply investigate the nature of mind. It's not that one's wrong and one's right—they're both right—but they achieve different things. It's easy to see that all of modern technology came out of Western science—the Tibetan Buddhists didn't invent iPhones. But the Western scientific tradition didn't lead to deeply introspective and analytic meditation practices.

BSJ: How do you see the relationship between Buddhism and science changing in the future?

DP: Buddhism is an ancient spiritual tradition that has long been deeply interested in the nature of mind and reality. Our own scientific tradition has also been around for a while and is interested in the same things. I think the conversation between science and Buddhism is really just getting started. While it has taken off largely due to the Dalai Lama's interest and influence, now all these Buddhist monks and nuns are also learning enough about science to be able to join the conversation (Fig. 3). In addition, scientists are learning about and exploring contemplative traditions and the worldview from which they arise. My guess is that deepening the science of consciousness will benefit enormously from engagement with a tradition that gives mind a far more central role in the world. This relationship is a multi-generational experiment; we'll see how it goes!

BSJ: What are some future directions in consciousness research?

DP: One way is to continue to ever more deeply investigate the structure and function of the brain and body. Biophysical science is telling us that wherever we look, we see more layers of interconnection. The immune system, the endocrine system, the nervous system—they're all constantly talking to each other. Moreover, our beliefs have a huge impact on the physical functioning of our bodies. In medicine, we call this the placebo effect. The placebo effect often gets dismissed, but it's truly the most amazing thing! Simply believing in something has an impact on its physical efficacy. Investigating these phenomena will give us more insight into mind-body connectivity. Another way is to expand our capacity to empirically explore subjective experience, learning some things from contemplative traditions such as Buddhism. And in addition we can pay attention to and further investigate anomalous psychological phenomena, the things that do not fit into our current framework of explanation. Ultimately this is about deepening our understanding of who we are as conscious living beings and how we fit into what we call the physical world. Are we completely explicable in terms of configurations of atoms that after billions of years of physical and biological evolution somehow bubble up consciousness? Or is something weirder going on, something where mind plays a more central role? How we choose to answer these questions has enormous social repercussions because it informs how we see who we are and what our place is in the world. That is likely to impact how we treat one another, the environment, and future generations. That's the deep reason I'm interested in this subject.

REFERENCES

1. Presti, D. E. (2018). *Mind Beyond Brain: Buddhism, Science, and the Paranormal*. New York, NY: Columbia University Press.
2. Presti, D. E. (2016). *Foundational Concepts in Neuroscience: A Brain-Mind Odyssey*. New York, NY: W. W. Norton.
3. Greyson, B. (1998). The incidence of near-death experiences. *Med Psychiatr, 1*, 92-99. doi: 10.1080/08998280.2018
4. Strieber, W., & Kripal, J. J. (2017). *The Super Natural: A New Vision of the Unexplained*. New York, NY: TarcherPerigee.