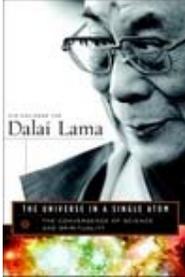


Science and Spirituality: Probing the Convergences and the Tensions

A review of



The Universe in a Single Atom: The Convergence of Science and Spirituality
by Holiness Dalai Lama

New York: Morgan Road, 2005. 216 pp. ISBN 0-7679-2066-X. \$24.95

Reviewed by
[Richard J. Davidson](#)

☞ This is a remarkable book in many respects. The Dalai Lama is considered both a head of state as the exiled leader of the Tibetan people and a religious and spiritual leader of Tibetan Buddhism. Of course, he is also very much a public intellectual, winner of the 1989 Nobel Peace Prize, and on the world stage as a strong advocate for the importance of compassion and ethics as guiding universal principles, applicable to all domains and accessible to all peoples. For someone in this position to write a book on science is remarkable. In this era when the Bush administration is rightfully criticized for not taking science sufficiently seriously, to have a head of state, and one from a Third World country who himself was born into a family of rural farmers, write about science is nothing short of extraordinary.

This book is the product of a very long-standing interest and curiosity displayed by the Dalai Lama in things scientific and technological. In the early chapters of this book, he recounts experiences from his childhood in Tibet that convey his deep curiosity in the scientific and mechanical worlds. The telescope provided him access to more precise views of the heavens than were afforded by classical Buddhist texts, and mechanical devices such as watches, movie projectors, and cars provided him with opportunities to discover how the physical world works. But probably most important were his early encounters with scientists during those times he traveled. These encounters convinced the Dalai Lama that "one fundamental attitude shared by Buddhism and science is the commitment to deep searching for reality by empirical means and to be willing to discard accepted or long-held positions if our search finds that the truth is different" (p. 25). It is in this context that the Dalai Lama proffers a statement that would make most other religious leaders cringe, the essence of which is that if any tenet of Buddhism is flatly contradicted by empirical scientific fact, he will be happy to discard it. Having said this, the Dalai Lama is quick to demonstrate his sophisticated logical

training and underscores the importance of the difference between science having not found something and science having found something not to exist. It is here that the rub exists, and the Dalai Lama is very effective at exposing scientific hegemony in several different areas of science and, in so doing, sharply but respectfully challenging us to question our assumptions and to distinguish between that which has been empirically confirmed and that which is simply assumed and has become part of our theoretical and conceptual dogma.

▬ The substantive parts of this book focus on areas of science that the Dalai Lama has pursued over the years and that have the most meaningful connection with topics in Buddhism. These are physics and cosmology; evolution; psychology, neurobiology, and consciousness; and ethics. He has had the opportunity to engage some of the best scientific minds in these areas in the world, largely through the work of an organization known as the Mind & Life Institute, a nonprofit organization dedicated to promoting dialogue between Western science and contemplative traditions. In this review, I only briefly address those issues outside of psychological inquiry and focus most of my comments on domains of greatest interest to psychology.

Physics and Cosmology

▬ Physics and cosmology occupy the first substantive sections of the book. Of greatest interest to the Dalai Lama are the philosophical implications of quantum physics and modern cosmology. The Dalai Lama identifies a number of significant points of convergence between at least some scientific views in these areas and classical understanding from the Buddhist tradition. However, the Dalai Lama has an extraordinary knack for asking simple yet deeply probing questions that challenge conventional scientific dogma. Of central importance in Buddhism is a theory of causation that essentially holds that events and actions do not arise *de novo* but are always preceded by other causal factors. This leads the Dalai Lama to ask, "What existed before the big bang? Where did the big bang come from? Why has our planet evolved to support life?" (p. 92). Needless to say, although these provocative questions are asked, they remain unanswered and stand as a challenge to both science and spirituality.

Evolution, Darwin, and the Origins of Altruism and Sentience

▬ The Dalai Lama describes the wonderful opportunities he has had to learn more about modern genetics and evolution. He describes his interactions with the world-renowned geneticist Eric Lander of the Massachusetts Institute of Technology, who compared the occurrence of random mutations in DNA to the occasional random errors in the transcribing of the *Kangyur*, the collection of scriptures attributed to the Buddha and translated into Tibetan. Although the natural occurrence of mutations is not something the Dalai Lama has any problems with, the fact that they appear to be random is. This issue is troublesome for the Dalai Lama and leaves him unsatisfied. He marshals support from other well-known scholars to buttress his discomfort with the

standard evolutionary account. For example, he cites the work of the philosopher of science Karl Popper, who once suggested that the theory of evolution cannot explain the origin of life on earth and that it is fundamentally not a testable theory but rather a metaphysical theory whose main and highly beneficial function is to guide scientific research. The intent of the Dalai Lama here is to raise questions, not to provide any definitive answers. The Dalai Lama's second major complaint about evolutionary theory is the difficulty it has with explaining altruism. Here there are certainly strong and major voices within evolutionary biology, philosophy, and economics who have proposed well-developed accounts for the development of altruism; these are briefly noted but not really addressed by the Dalai Lama.

☰ But the major friction between the standard evolutionary account and that informed by Buddhist philosophy regards the issue of sentience—"the evolution of conscious beings who have the capacity to experience pain and pleasure" (p. 115). Standard biological accounts call attention to the demarcation between living and nonliving, whereas the Dalai Lama wishes to mark the dividing line between sentient and nonsentient beings. From the Buddhist perspective, all sentient beings have an aspiration to seek happiness and overcome suffering. At the human level, this aspiration is conscious, and for the Dalai Lama, a scientific account of the origins of life and the cosmos will be incomplete "until there is a credible understanding of the nature and origin of consciousness" (p. 115).

On the Psychology and Neurobiology of Consciousness

☰ It is the sections of the book on this topic that have the most profound implications for modern students of psychology. The Dalai Lama wastes little time in tackling the fundamental issues that create the most friction. He argues,

The view that all mental processes are necessarily physical processes is a metaphysical assumption, not a scientific fact. I feel that, in the spirit of scientific inquiry, it is critical that we allow the question to remain open, and not conflate our assumptions with empirical fact. (p. 128)

Here the Dalai Lama is forcefully distinguishing between empirically established fact and dogma. Needless to say, this is an extraordinarily controversial claim and one that most modern psychologists and virtually all neuroscientists would reject. Nonetheless, the Dalai Lama provides anecdotal examples that at least at face value appear to pose difficulties for the standard account of the material basis of mind. However, these kinds of claims have never been subjected to rigorous scientific scrutiny and need to be to effectively resolve this challenge. It should be noted, though, that certain scientific assumptions are themselves based on well-established principles that have been subjected to lengthy empirical validation, and thus it is not necessary, nor is it realistic, to test every empirical possibility. Some would say that the dependence of mind on brain is one such assumption that has been subjected to countless empirical tests, and each and every

one of them has provided support for this general claim. At what point are global generalizations then reasonable?

☰ The Dalai Lama is not at all convinced. He argues that current neuroscience has no real explanation of consciousness itself and goes on to clarify what he means. In part, what he is referring to is the problem of *qualia*. Can we ever know what the experience of seeing blue is like from examining only the brain? Can we know not just the nature of the mental process in which a subject might be engaging but also the content of consciousness from the measurement of brain events alone? And what about the emergence of consciousness? What distinguishes between sentient and nonsentient beings? The Dalai Lama concludes that a science of consciousness based exclusively on the third-person method (the scientist measuring processes and events in the first-person subject) is inadequate. He then suggests that a more complete understanding of consciousness may be gleaned by combining third-person and first-person (reports of phenomenological experience) methods and offers the prospect here of a meaningful collaboration between science and Buddhism. This kind of collaboration is already bearing fruit in some of the new studies of brain function in long-term meditation practitioners (Lutz, Greischar, Rawlings, Ricard, & Davidson, 2004). The Dalai Lama suggests that we can put aside the hard problem of the material basis of consciousness and make headway with this kind of collaboration. I have the strong conviction that he is absolutely right in this suggestion and believe that in the next few years, an increasingly sophisticated body of research will appear that is focused on just these issues.

☰ An important distinction between the Buddhist approach to consciousness and the scientific approach is that the former seeks to transform consciousness for the purpose of relieving suffering and improving human welfare, whereas the latter is merely descriptive of the status quo. One practical benefit of the mental training embodied in the Buddhist contemplative tradition is training of attention. In his visionary chapter on attention in the *Principles of Psychology*, William James (1890) underscored the importance of educating attention but then remarked that the methods necessary to do so are not known. However, according to classical Buddhist texts, the Buddhists have such methods, and these methods were first developed more than 2,500 years ago. These methods require effortful training, and the Dalai Lama specifically notes that such attentional skill "is a matter of volition and focused effort; it is not a special mystical gift given to the few" (p. 156). And in an effort to highlight the importance of combining first-person and third-person methods to achieve the most complete understanding of consciousness, the Dalai Lama suggests that some degree of such mental training will have to become an integral part of the training of cognitive scientists who have interests in the study of human consciousness. This would be a remarkable addition to current graduate school curricula in psychology!

☰ The ethical context in which science is practiced is a domain on which the Dalai Lama has focused a considerable amount of his attention. For the Dalai Lama, it is not only imperative that the scientist reflect deeply on the ethical issues raised in his or her work; even more significantly, if we as scientists pause to appreciate the extraordinary interconnectedness of humans with one another, between humans and animals, and between humans and our environment that science itself has affirmed, we would be less likely to engage in actions that harm others (both humans and animals) and would be less likely to damage our precious environment. In this way, our scientific research can inform ethical decision making and reinforce certain attitudes that will help relieve suffering and will foster compassionate action. Although science can play a helpful role in this endeavor, the Dalai Lama is also quick to note the limitations of science and the fact that scientific knowledge is not, and will never be, complete.

☰ The Dalai Lama ends this book with a plea for the importance of integrating science and spirituality. He reminds us that they each differ in their approach but that they share the same end, namely the betterment of humanity. The book ends with this appeal:

Today, in the first decade of the twenty-first century, science and spirituality have the potential to be closer than ever, and to embark upon a collaborative endeavor that has far-reaching potential to help humanity meet the challenges before us. We are all in this together. May each of us, as a member of the human family, respond to the moral obligation to make this collaboration possible. This is my heartfelt plea. (pp. 208-209)

Reference

James, W. (1890). *The principles of psychology*. New York: Holt.
Lutz, A., Greischar, L. L., Rawlings, N. B., Ricard, M., & Davidson, R. J. (2004). Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. *Proceedings of the National Academy of Sciences, 101*, 16369-16373.

The line tension for Lennard-Jones fluids is found to follow a generic behavior with temperature and chemical potential effects that are all included in a simple contact angle parameterization. Former discrepancies between theoretical modeling and molecular simulation are resolved, and the line tension concept is shown to be robust down to molecular dimensions. The same qualitative behavior is observed for water but the line tension at the wetting transition diverges or converges towards a finite value depending on the range of the solid/liquid interactions at play. arXiv:2001.02896v1 [cond-mat.mes-hal]