Buddhism and Science is an extension of the Mind and Life dialogues which occur every year or two between the Dalai Lama and Western scientists. Having participated in three of these dialogues, I can attest to both the sheer pleasure and the intellectual value of the exchange. The essays in *Buddhism and Science* cannot capture the remarkable atmosphere and energy of the lively interaction between the Dalai Lama and Western scientists, but they can explore some of the basic issues and the overarching framework in which such dialogues take place. The volume is, therefore, a welcome and valuable contribution to the growing literature on this area (see, for example, the several Mind and Life proceedings volumes such as Dan Goleman's recent *Destructive Emotions*).

In *Buddhism and Science,* editor Alan Wallace has brought together a fine set of contributions by fourteen authors who are concerned with the relationship between Buddhism and Western science. They include the Dalai Lama, a range of Buddhist scholars and philosophers, neuroscientists David Galin and the late Francisco Varela, physicists Anton Zeilinger and David Finkelstein, and the astrophysicist Piet Hut.

The clarity and seriousness of the contributions from both sides will do much to dispel the view that only scientists are committed to rational inquiry, while Buddhists are "believers" who are committed to a certain set of religious dogmas. If this were the case, then no real dialogue would be possible. My experience in working with the Dalai Lama and many Buddhist scholars is that they are generally as interested and open-minded as good scientists. They bring finely trained philosophical abilities to play, and in the case of the mind sciences, their careful, contemplative study of states of awareness, the suffering caused by afflictive emotions, attention and capacities for visualization have already made contributions to the thinking of several prominent Western cognitive scientists.[1]

Alan Wallace's fine introductory essay addresses many of the implicit prejudices concerning conversations between Buddhism and science. His is an unusual introduction in that it goes far beyond introducing the themes and authors to tackle issues he feels block a fair assessment of Buddhism's contributions to the dialogue with science. In addition to his excellent introduction to the volume, Wallace provides the reader with

[1] For an overview, see Dan Goleman's article in the New York Times, February 5, 2003.

concise introductions to each of the papers. This device goes a long way toward unifying the volume and enables one to get a sense of each of the contributions while reading selectively. Wallace was as a monk for fourteen years before becoming a student of physics and religion. His background stands him in good stead and places the reader in able hands.

In his overall introduction Wallace squarely addresses the questions: on what basis can a dialogue between Buddhism and science take place and what forces impede it? He makes a forceful case that Buddhism and its methods have been misunderstood by many scientists and even by Buddhologists. Buddhism does not fit neatly into the Western conceptions of religion, philosophy or science. Its way of philosophizing differs in some respects from that in the West.

As a religion, Buddhism does not affirm the existence of a deity. While it's empirically-oriented, it attends to domains of experience long excluded from Western science, namely the insights gained through attentive contemplative inquiry. In contrast to Western science, Buddhism seeks the *inner* causes of suffering and joy, viewing them as more important that the outer causes, which are so much the focus for science. Buddhist methods of research, like those of science, can be mastered by anyone willing to put in the effort, and the results are repeatable, if not quantifiable. In these senses Buddhism is scientific.

Unlike conventional science, however, Buddhism maintains that rational and empirical methods can be brought to bear on deep questions of human existence concerning the origins and meaning of life, ethics and the cultivation of compassion. The traditional split between values and facts, the former applied to religion and the latter to science, is confounded by Buddhism in ways I find very helpful. The false divide has, I believe, done considerable harm. We have analogs in the West that also reach across the divide, such as Rudolf Steiner's Anthroposophy, but none has been as extensively developed as Buddhism.

In addition to misunderstandings of Buddhism, Wallace argues that scientists like Edward O. Wilson often misunderstand science, confusing their personal allegiance to

the metaphysical position of materialism with the practice of science itself. Wallace goes on to characterize and criticize the several traits of scientific materialism, concluding that it has been granted religious status by many and particularly by Wilson, for whom materialism is an unquestioned creed. Advocates of scientific materialism will have little sympathy for truly learning from other cultures given their own far-reaching confidence in the dogmatic picture they hold of the world. In place of scientific open-mindedness and a dispassionate interest in the data, scientism of Wilson's brand blocks mutual understanding and desires to totalize its grasp, reducing ethics and aesthetics to molecular genetics and evolution. In a few pages, Wallace offers a stinging rebuttal of Wilson's empire of scientism. Fortunately, there are scientists with a genuine interest in and openness to learning from cultures radically different from our own, and it is these individuals who have contributed essays to the volume.

Yet the very difference between cultures raises yet another obstacle to the dialogue. The post-modern position of "cultural particularism" holds that on first principles the cultures of Buddhism and science cannot understand one another. Each uses language and concepts differently, and because of these differences one cannot assess the truth claims of the other. Indeed, truth itself becomes a social construct. While valuing the positive contribution that post-modernism has made to broaden our appreciation of difference and tolerance for other cultures, Wallace rebuts the post-modern view that one's judgments are merely the work of aesthetic preference.

Against these two barriers to mutual investigation—scientific materialism and post-modern deconstruction—Wallace urges "mutual respectful dialogue and collaboration in both empirical and theoretical research." His motive is grounded in the conviction, frequently stated by the Dalai Lama, that we are subject to suffering because of ignorance and delusion. He welcomes all help in overcoming these since freedom can only arise "by coming to know reality as it is." Instead of two non-overlapping magisteria we are engaged in one enterprise as whole human beings. Buddhism, science and other means of inquiry can offer us a diverse set of methods for that single exploration. They can each contribute to the real work of becoming fully human.

I cannot give a full overview of the many fine contributions to this volume and so of necessity will limit myself to brief characterizations of the papers. The first essays set the stage. Buddhist scholar José Cabezón offers an analysis of the dialogue between Buddhism and science over time using the framework of conflict, compatibility and complementarity. He asks whether the differences between Buddhism and science are irreconcilable or, if they are compatible, what are their root similarities? The view of complementarity lies between these two, recognizing both similarities and differences. For example, the methods of science and Buddhism may both be empirical and rational in character, but the content on which they focus is quite different. Science produces factual knowledge while Buddhism is transformative. Cabezón makes an important observation, one that I have noticed as well **[Could you clarify what that observation is?].** **[The observation is in the next paragraph]**

The Dalai Lama and Western scientists are often gracious to one another, which is admirable. Substantial differences, however, do exist between the views each hold concerning, for example, the fundamental nature of consciousness and the basis for ethical action. These differences need to be examined thoroughly by both parties. Science too often arrogantly asserts itself in areas where it lacks real knowledge. Buddhism can likewise be complacent about doctrines it has long accepted. Cabezón writes, "The tendency [for self-protection] manifests itself in an unwillingness to go beyond the merely informative, in an intellectual laziness that too readily accepts differences, and that justifies such acquiescence in the name of complementarity, or its offspring, the romantic idealization of the other." Dialogue is most successful when the truly difficult areas can be probed earnestly and energetically in the common spirit of inquiry. As evidenced in the debating courtyards, such conflict can lead to deep friendships if grounded in right motivation and rather than egotism.

In a related essay, Thupten Jinpa gives an informative history of the relationship between science and Buddhism, primarily from the Tibetan Buddhist side. As a native Tibetan trained in both monastic universities and later at Cambridge University, Thupten

Jinpa demonstrates a masterful understanding born of his own long experience within Tibetan Buddhism and his many years in service to scientific dialogues as the Dalai Lama's main English-language interpreter. Many of his examples provide support for Cabezón's framework.

In the first article in the section of "Buddhism and Cognitive Sciences," the Dalai Lama discusses the nature of the mind and possibilities for its transformation. He emphasizes the importance of the attainment of freedom, which can be brought about by the mind itself, and of excluding subjective bias. Subsequent articles in this section are by the UCSF neuropsychiatrist David Galin and William Waldron, a professor of religion at Middlebury College. They address the complex issue of identity or the "self" in Buddhist and Western thinking. Each looks beyond a reified personal identity to a dynamic interconnected pattern of relationships that generates a phenomenal sense of self. The Buddhist position on this question is complex and varies according to the different schools. Neuropsychology and psychiatry offer chaotic and conflicting pictures of the self. Galin's view of self is both similar to and different from Buddhist views, as Wallace points out in his overview. Waldron, by contrast, focuses on the implications of a mistaken reified view of self, seeing it as a great source of human suffering and the genesis of evil. He does, however, simultaneously grant the illusory self an evolutionary advantage.

In my opinion the view of the self presented here is too dark. From what source does compassion arise, and where does the will for personal transformation come from? Who are the bodhisattvas and buddhas? How are we to understand their moral agency without a richer and more positive notion of self? By focusing so much on the negative consequences of attachment to self, the positive aspects of human identity fade into the background, or are relegated to a materialistically conceived evolutionary psychology. The deconstruction of the self is too glib. I remain unconvinced that Western cognitive psychologists truly understand the Buddhist views of the conventional self or the far deeper role of Buddha-nature as a noble higher self at work in humans and the universe.

With the essay of Varela and Depraz our attention shifts strongly to the interesting relationship between perception and imagination. They bring the three fields of neuroscience, Western phenomenology and Tibetan Buddhism to bear on this question. In their view imagination is not a secondary add-on derived from sense experience but a core feature of human consciousness. Perception, in this view, is a **constrained form of imagination**. **That which constrains it are the limitations of our physical sense organs and our bodily movement through the world.** As usual, Varela opens a door for us that most will find fresh and insightful.

Another contributor to the discussion on Buddhism and the cognitive sciences is **the sleep researcher** Stephen Laberge, who compares for us the state of lucid dreaming with the practice of dream yoga. In the last essay in this section, Buddhist monk and translator Matthieu Ricard offers a complement to the third-person character of neuroscience. He describes first-person methods of inquiry, giving one an appreciation for the value of insights arising from sustained contemplative practice like that found in Buddhism. Ricard argues for the rigor of such a contemplative science, and discusses the kinds of problems that can be examined with this tool.

The final section of the book takes up the relationship between Buddhism and the physical sciences. In this case no discoveries from the Buddhist side can be compared to those from physics and astronomy. Buddhism's contribution is to the philosophical understanding of modern physical science. Here **[please identify with his title or area of specialization]** William Ames gives a succinct overview of the situation. The qualitative and experiential character of Buddhist science is contrasted with the quantitative and objectifying character of physical sciences. He goes on to compare the early Buddhist views of reality with classical physics, and contrasts those views with the more recent Madhyamaka understanding and quantum theory. In particular, he explores the concept of "emptiness" in Madhyamaka and quantum physics. He finds a certain similarity while also recognizing the difference between the goals of the two systems. Where physics seeks factual knowledge, Buddhism seeks liberation through insight.

Victor Mansfield, **a professor of physics and astronomy at Colgate University,** uses Einstein's theory of relativity to do a similar job, comparing its view of time and of other fundamental, modern physical concepts with the relativism of Madhyamaka philosophy. His analysis brings the thoughtfulness of a physicist to the subtle questions of philosophical interpretation of theory. But Mansfield also has his eye on the need for moral coherence in our chaotic world.

One of the most sophisticated essays in the volume is that offered by the French philosopher, physicist and physician Michel Bitbol. He offers a deep study of the relationship between neo-Kantian philosophy, Buddhist philosophy and modern physics. The theoretical physicist David Finkelstein advocates for a theory of "universal relativity." In this vein he also proposes a view that replaces "states," which are static, with modes of action. Adopting the language of Francis Bacon, Finkelstein also examines the "idols" of science, seeking out their identifying features and the need to free ourselves from their unconscious domination. By the same token, any theory will set up the circumstances for the generation of idols and will therefore need correcting, *ad infinitum*. The final two papers are by the Anton Zeilinger and Piet Hut, both very distinguished scientists. Zeilinger's contribution is a short selection from a dialogue with the Dalai Lama that he and I had in Austria in 1998. It offers a glimpse of the Mind and Life conversation. Piet Hut offers a set of wide-ranging reflections on "Life as a Laboratory."

My brief remarks cannot do justice to the wide-ranging sweep of these papers, and their thoughtful treatment of often difficult concepts. Wallace's volume is an important contribution to the emerging dialogue between Buddhism and science, and to the larger rapprochement between science and spirituality.