Contemplative Mind, Hard Science

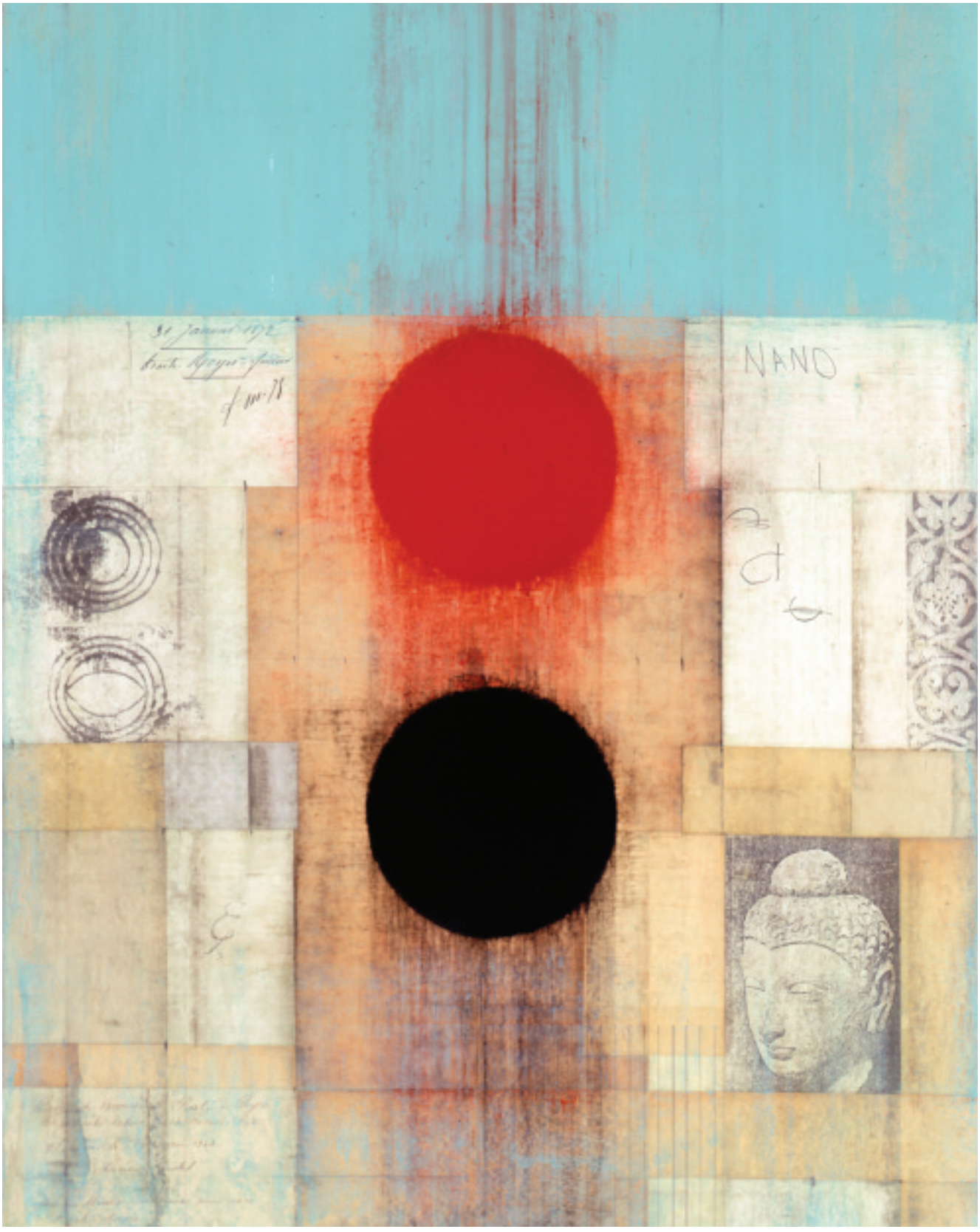
HIS HOLINESS THE DALAI LAMA

THERE IS A GROWING RECOGNITION that the study of consciousness is becoming a most exciting area of scientific investigation. At the same time, there is a growing acknowledgment that modern science does not yet possess a fully developed methodology to investigate the phenomenon of consciousness. This is not to say that there have been no philosophical theories on the subject or that there have been no efforts to "explain" consciousness in terms of material paradigms. At one extreme was the standpoint of behaviorism, which attempted to define consciousness in terms of the language of external behavior, thus reducing mental phenomena to verbal and bodily action. At the other extreme was what is known as Cartesian dualism, the idea that the world comprises two independent, substantially real things—matter, which is characterized by qualities such as extension, and mind, which is defined in terms of an immaterial substance, such as the "spirit." Between these two extremes all kinds of theories have been proposed, from functionalism (which attempts to define consciousness in terms of its functions) to neurophenomenology (which attempts to define consciousness in terms of neural correlates). Most of these theories understand consciousness by means of aspects of the material world.

But what about the direct observation of consciousness itself? What are its characteristics and how does it function? Does all of life (plants as well as animals) share in it? Does our conscious life exist only when we are aware of being conscious, so that in dreamless sleep, for example, consciousness may be said to be dormant, or even annihilated? Is consciousness composed of serial moments of mental fluctuation, or is it continuous but continually changing? Is consciousness a matter of degree? Does consciousness always need an object—something to be conscious of? What is its relation to the unconscious—not only the unconscious electrochemical events of the brain that are correlated with mental processes but also more complex and perhaps problematic unconscious desires, memories, and expectations? Given the highly subjective nature of our experience of consciousness, is a scientific understanding—in the sense of an objective, third-person account—ever possible?

BEYOND MEDITATION

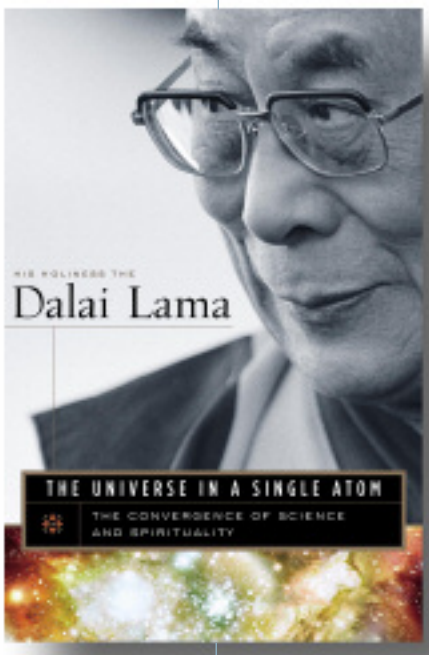
The question of consciousness has attracted a good deal of attention in the long history of Buddhist philosophical thinking. For Buddhism, given its primary interest in questions of ethics, spirituality, and overcoming suffering, understanding consciousness, which is thought to be a defining characteristic of sentience, is of great importance. According to the earliest scriptures, the Buddha saw



ROBERT KELLY

consciousness as playing a key role in determining the course of human happiness and suffering. For example, the famous discourse of the Buddha known as the Dhammapada opens with the statement that mind is primary and pervades all things.

Contemplative traditions on the whole have historically emphasized subjective, first-person investigation of the nature and functions of consciousness by training the mind to focus in a disciplined way on its own internal states. In this kind of analysis, the observer, the object, and the means of investigation are all aspects of the same thing, namely the mind of the individual experimenter. In Buddhism, this mental training is called *bhavana*, which is usually translated as "meditation" in English. The original Sanskrit term *bhavana* carries connotations of cultivation, in the sense of cultivating familiarity with a given object, whether an external or an internal experience.



People often understand meditation to refer simply to an emptying of the mind or a relaxation practice, but that is not what I mean here. The contemplative method, as developed by Buddhism, is an empirical use of introspection, sustained by rigorous training in technique and robust testing of the reliability of experience. All meditatively valid subjective experiences must be verifiable both through repetition by the same practitioner and through other individuals being able to attain the same state by the same practice. If they are thus verified, such states may be taken to be universal, at any rate for human beings. From the scientific point of view, this process can be compared with rigorous empirical observation.

The difference between science as it stands now and the Buddhist investigative tradition lies in the dominance of the third-person, objective method in science and the refinement and utilization of first-person, introspective methods in Buddhist contemplation. In my view, the combination of the first-person method with the third-person method offers the promise of a real advance in the scientific study of consciousness.

A great deal can be accomplished by the third-person method. As brain-imaging technologies become ever more effective, it is possible to observe closely the physical correlates of our rich world of subjective experience—such as neural connections, biochemical changes, the locations in the brain associated with specific mental activities, and the temporal processes (often at the level of milliseconds) by which the brain responds to external stimuli. [But] in order for the study of consciousness to be complete, we need a methodology that would account not only for what is occurring at the neurological and biochemical level but also for the subjective experience of consciousness itself. Even when combined, neuroscience and behavioral psychology do not shed enough light on the subjective experience, as both approaches still place primary importance on the objective, third-person perspective.

VALIDATING FIRST-PERSON METHODS

[T]he study of consciousness, including the entire range of its phenomena and everything that falls under the rubric of subjective experience, has two components. One is what happens to the brain and to the behavior of the individual (what brain science and behavioral psychology are equipped to explore), but the other is the phenomenological experience of the cognitive, emotional, and psychological states themselves. It is for this latter element that the application of a first-person method is essential. To put it another way, although the experience of happiness may coincide with certain chemical reactions in the brain, such as an increase in serotonin, no amount of biochemical and neurobiological description of this brain change can explain what happiness is.

I am aware that there is a deep suspicion of the first-person method in modern science. I have been told that, given the problem inherent in developing objective criteria to adjudicate between competing first-person claims of different individuals, introspection as a method for the study of the mind in psychology has been abandoned in the West. Given the dominance of third-person scientific method as a paradigm for acquiring knowledge, this disquiet is entirely understandable.

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Convention of Neuroscientists to Dialogue with the Dalai Lama

[And as Nature magazine reports, some of them aren't happy about it.]

The Dalai Lama is due to speak at the annual Society for Neuroscience meeting in Washington, DC, on November 12. But citing the oft-repeated refrain that science and religion should be kept separate, some neuroscientists are calling for the lecture to be cancelled. The critics accuse the Dalai Lama of trying to use the meeting to sell science that they regard as substandard: research on the relationship between meditation and physiological changes in the brain. Even the researchers directly involved in these studies, many of whom are working with the encouragement and support of the Dalai Lama, say that the work is in its early stages.

But the society did not invite the Dalai Lama to speak as a scientist. He will be in Washington to kick off its lecture series on Dialogues Between Neuroscience and Society, in which nonscientists are expected to address subjects of interest to neuroscientists.

Through the Colorado-based Mind and Life Institute, he has already interacted with many reputable neuroscientists. According to the society, he was invited, in part, because he has already had an influence on the design of experiments of great interest to neuroscientists. As even one opponent of the talk admits, He has views on controlling negative emotions, which is a legitimate area for neuroscience research in the future.

Critics counter that the talk threatens to entangle the Society for Neuroscience with religious activities. Their petition opposing the lecture even draws comparisons between the Dalai Lama with his belief in reincarnation and creationists.

But speakers at meetings nonscientists or scientists should not be barred on the basis of their religious beliefs. Well-known scientists, including Newton, have had religious beliefs that many people would disagree with, but these have no bearing on the credibility of their scientific ideas.

Furthermore, in stark contrast with the approach of most religious leaders, the Dalai Lama has tried for years to encourage empirical research into the claims he makes for the value of meditation. He encourages monks to take part in such experiments. Resulting studies have appeared in respectable scientific journals.

It is not unreasonable for the researchers who object to the invitation to protest against it and to draw attention to the limitations of the Dalai Lama s credentials as a speaker. But now that the point has been made, they should withdraw their threatened boycott and instead raise their issues in the open forum that will follow his talk.

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I agree with Harvard psychologist Stephen Kosslyn, who has conducted pioneering research into the role of introspection in imagination. He argued that no matter how highly trained a person may be, we have no evidence that his or her introspection can reveal the intricacies of the neural networks and the biochemical composition of the human brain, or the physical correlates of specific mental activities—tasks that can be most accurately performed by empirical observations through application of powerful instruments. However, a disciplined use of introspection would be most suited to probe the psychological and phenomenological aspects of our cognitive and emotional states.

What occurs during meditative contemplation in a tradition such as Buddhism and what occurs during introspection in the ordinary sense are two quite different things. In the context of Buddhism, introspection is employed with careful attention to the dangers of extreme subjectivism—such as fantasies and delusions—and with the cultivation of a disciplined state of mind. Refinement of attention, in terms of stability and vividness, is a crucial preparation for the utilization of rigorous introspection, much as a telescope is crucial for the detailed examination of celestial phenomena. Just as in science, there is a series of protocols and procedures which contemplative introspection must employ. Upon entering a laboratory, someone untrained in science would not know what to look at, would have no capacity to recognize when something is found; in the same way, an untrained mind will have no ability to apply the introspective focus on a chosen object and will fail to recognize when processes of the mind show themselves. Just like a trained scientist, a disciplined mind will have the knowledge of what to look for and the ability to recognize when discoveries are made.

While the Buddhist contemplative tradition has not had access to scientific means of gaining insight into the brain processes, it has an acute understanding of the mind's capacity for transformation and adaptation. Until recently scientists believed that after adolescence the hardware of the human brain becomes relatively unchangeable. But new discoveries in neurobiology have uncovered a remarkable potential for changeability in the human brain even in adults as old as I am. At the Mind and Life Conference in Dharamsala in 2004, I learned of the growing subdiscipline of neuroscience dealing with this question, called "brain plasticity." This phenomenon suggests to me that traits that were assumed to be fixed—such as personality, disposition, even moods—are not permanent and that mental exercises or changes in the environment can affect these traits. Already experiments have shown that experienced meditators have more activity in the left frontal lobe, the part of the brain associated with positive emotions, such as happiness, joy, and contentment. These findings imply that happiness is something we can cultivate deliberately through mental training that affects the brain. [T]he Buddha himself argued that if one wishes to avoid certain types of results, one needs to change the conditions that give rise to them. So, if one changes the conditions of one's state of mind (which normally give rise to particular habitual patterns of mental activity), one can change the traits of one's consciousness and the resulting attitudes and emotions.

My point here is not to suggest that we could use scientific method to prove the validity of the theory of Buddha nature but simply to show some of the ways in which the Buddhist tradition has attempted to conceptualize the transformation of consciousness.

A MATURE SCIENCE OF CONSCIOUSNESS

I envision the possibility of broadening the scope of the science of consciousness and enriching our collective understanding of the human mind in scientific terms. I think that experience of, indeed training in, some of the techniques of mental discipline (or others like them) will have to become an integral part of the training of the cognitive scientist if science is serious about gaining access to the full range of methods necessary for a comprehensive study of consciousness. Indeed, if the scientific study of consciousness is ever to grow to full maturity—given that subjectivity is a primary element of consciousness—it will have to incorporate a fully developed and rigorous methodology of first-person empiricism. It is in this area that I feel there is a tremendous potential for established contemplative traditions, such as Buddhism, to make a substantive contribution to the enrichment of science and its methods. Such collaborative study will contribute not only greater human understanding of consciousness but a better understanding of the dynamics of the human mind and its relation to suffering. This is a precious gateway into the alleviation of suffering, which I believe to be our principal task on this earth.

—*Excerpted from* The Universe in a Single Atom: The Convergence of Science and Spirituality *by His Holiness the Dalai Lama (Morgan Road Books, an imprint of Broadway Books, 2005).*