

Afterword: Buddhist Reflections

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Due to the unusual brevity of this Mind and Life Conference, which lasted two days instead of the five days for all the other meetings in this series, Robert Livingston asked me to write a concluding essay providing further context and elucidation of the Buddhist topics raised here by the Dalai Lama. The following is my attempt to fulfill that wish, principally setting forth certain Buddhist perspectives on the mind/body problem, and at times viewing modern scientific assertions in light of the Buddhist world view.¹² My motivation in doing so is not to demonstrate the superiority of one view over the other, but to open up new avenues of theoretical and empirical research to scientists and Buddhists alike. For there are, I believe, an increasing number of people today who, like myself, feel that modern neuroscience and Buddhism have a great deal to learn from each other. Neither has sole access to exploring the true nature of the mind or body.

The Reality of Suffering

The fundamental structure of Buddhism as a whole is known as the Four Noble Truths. All Buddhist theories and practices are presented within the context of these four, namely the reality of suffering, the reality of the sources of suffering, the reality of the cessation of

suffering together with its underlying causes, and finally the reality of the path to such cessation. The Buddha's injunctions regarding these four is that one should recognize the reality of suffering, eliminate the sources of suffering, accomplish the cessation of suffering, and follow the path leading to cessation.

Buddhism identifies two kinds of suffering: physical and mental. The two are not identical, for it is experientially apparent that one may be physically uncomfortable—for instance, while engaging in a strenuous physical workout—while mentally cheerful; conversely, one may be mentally distraught while experiencing physical comfort. This immediately raises the issue of the mind/body relationship. The fact that we have compelling grounds for not simply equating mental and physical degrees of well-being implies a kind of *affective* dualism between the body and mind. Such dualism is explicitly accepted by Buddhism and no reasons were presented in this conference why this should be refuted by modern neuroscience.

Affective dualism may be included in the broader category of what may be deemed *experiential* dualism: our experiences of objective, physical phenomena are quite unlike our experiences of subjective, mental phenomena. An event like an apple dropping from a tree, or a thing like an apple itself, appears quite different from the event of losing hope, or the experience of confidence. Similarly, there are significant experiential differences between objectively observing brain processes and subjectively observing mental processes: the former have specific locations and are composed of material entities that have shape, color, mass, and numerous other physical attributes; mental processes seem to lack those physical attributes, while possessing qualities of their own that are not apparent in brain processes. The fact that Buddhist contemplatives have observed the mind for centuries yet formulated no theory of the brain implies that introspective knowledge of the mind does not necessarily shed any light on the brain. Likewise, the study of the brain alone—independent of all first-person accounts of mental states—does not necessarily yield any knowledge of mental phenomena. Thus, experiential dualism, which maintains that physical and mental phenomena experientially seem to be different, is accepted by Buddhism as well as by at least some of the scientists in this meeting.

Experiential dualism also includes what may be called *causal* dualism, for the mind/body system, in Allan Hobson's words "is clearly open to interventions of two distinctive kinds. One is a biological intervention, the other is a conceptual intervention." Lewis Judd concurs when he comments that there "is evidence that there may be a synergistic effect between psychopharmacology and specific forms of psychotherapy." For with the combination of the two, the rate of relief for the clinically depressed is higher than if one administers medications alone. Likewise, Buddhism maintains that the mind is influenced by, and exerts its own influence upon, both mental and physical phenomena.

What shall we make of such mind/body dualisms, which are commonly accepted in Buddhism and in modern science? The Madhyamaka view, which the Dalai Lama endorses and which in Tibet is generally considered the pinnacle of Buddhist philosophy, maintains that humans have an innate tendency to reify both the contents of experience as well as ourselves as experiencing agents. According to this view, while it is useful to recognize the apparent differences between physical and mental events in the above ways, it is a profound error to conclude that nature itself—independently of our conceptual constructs—has created some absolute demarcation between physical and mental phenomena. Thus, the Madhyamaka view explicitly refutes Cartesian substance dualism, which has been so roundly condemned by contemporary neuroscientists. Madhyamikas, or proponents of the Madhyamaka view, declare that if the mind and body did each exist inherently—independently of conceptual designations—they could never interact. Thus, there is a deep incongruity between appearances and reality: while mind and matter seem to be inherently different types of independently existing "stuff," such appearances are misleading; this becomes apparent only by an ontological analysis of the nature of both types of phenomena.¹³

The difficulty of providing any explanation for the causal interaction of the body and mind if the two are regarded as real, separate "things" has been clearly addressed in this conference, and it is a chief reason why the great majority of neuroscientists have adopted a physicalist view of the mind. From a Buddhist perspective, while this step eliminates the need for any causal mechanism relating a

nonphysical mind with the brain, it has the disadvantage of shedding no light on the actual nature of consciousness or its origins. Indeed, though modern neuroscience has discovered many elements of the brain and neural processes that are *necessary* for the production of specific conscious processes, it has provided no cogent explanation of the nature of consciousness, nor does this discipline have any scientific means of detecting the presence or absence of consciousness in any organism whatsoever. Over the years since this meeting, I have heard no more illuminating materialist explanation of consciousness than that offered here, namely that it is simply a natural condition of the activated brain. Nor have I heard anything more revealing concerning the origins of consciousness than the statement that it is something that arises when there are enough neurons with elaborate enough connections to support conscious activity. Such accounts actually explain nothing, and they can hardly be counted as scientific theories, for they do not lend themselves to either empirical verification or refutation.

Not only do Madhyamikas reject the notion that the mind is an inherently existent substance, or thing, they similarly deny that physical phenomena as we experience and conceive of them are things in themselves; rather, physical phenomena are said to exist in relation to our perceptions and conceptions. What we perceive is inescapably related to our perceptual modes of observation, and the ways in which we conceive of phenomena are inescapably related to our concepts and languages.

In denying the independent self-existence of all the phenomena that make up the world of our experience, the Madhyamaka view departs from both the substance dualism of Descartes and the substance monism—namely, physicalism—that is characteristic of modern science. The physicalism propounded by many contemporary scientists seems to assert that the real world is composed of physical things-in-themselves, while all mental phenomena are regarded as mere appearances, devoid of any reality in and of themselves. Much is made of this difference between appearances and reality.

The Madhyamaka view also emphasizes the disparity between appearances and reality, but in a radically different way. All the men-

tal and physical phenomena that we experience, it declares, appear as if they existed in and of themselves, utterly independent of our modes or perception and conception. They appear to be *inherently existing things*, but in reality they exist as *dependently related events*. Their dependence is threefold: (1) phenomena arise in dependence upon preceding causal influences, (2) they exist in dependence upon their own parts and/or attributes, and (3) the phenomena that make up the world of our experience are dependent upon our verbal and conceptual designations of them.

This threefold dependence is not intuitively obvious, for it is concealed by the appearance of phenomena as being self-sufficient and independent of conceptual designation. On the basis of these misleading appearances it is quite natural to think of, or conceptually apprehend, phenomena as self-defining things in themselves. This tendency is known as reification, and according to the Madhyamaka view, this is an inborn delusion that provides the basis for a host of mental afflictions. Reification decontextualizes. It views phenomena without regard to the causal nexus in which they arise, and without regard to the specific means of observation and conceptualization by which they are known. The Madhyamaka, or Centrist, view is so called for it seeks to avoid the two extremes of reifying phenomena on the one hand, and of denying their existence on the other.

In the Madhyamaka view, mental events are no more or less real than physical events. In terms of our common-sense experience, differences of kind do exist between physical and mental phenomena. While the former commonly have mass, location, velocity, shape, size, and numerous other physical attributes, these are not generally characteristic of mental phenomena. For example, we do not commonly conceive of the feeling of affection for another person as having mass or location. These physical attributes are no more appropriate to other mental events such as sadness, a recalled image from one's childhood, the visual perception of a rose, or consciousness of any sort. Mental phenomena are, therefore, not regarded as being physical, for the simple reason that they lack many of the attributes that are uniquely characteristic of physical phenomena. Thus, Buddhism has never adopted the physicalist principle that regards only

physical things as real. To return to the First Noble Truth, both physical and mental suffering are to be recognized, but according the Madhyamaka view, neither exists as a thing-in-itself, and therefore the dualism between them is of a relative, not an absolute, nature.

The Reality of the Sources of Suffering

Just as Buddhism recognizes two types of suffering—mental and physical—so does it affirm the existence of both mental and physical causal influences that give rise to suffering. Physical injury, for example, produces physical pain and it may also result in mental anguish. On the other hand, certain attitudes such as arrogance, insecurity, craving, hostility, and jealousy may also result in mental distress, and these mental impulses may also lead one into activities that produce physical pain as well. It is also apparent that physical illnesses and injuries do not necessarily result in mental distress—they do not do so for everyone whenever such physical events occur—and mental suffering may arise even in the absence of any apparent physical influences. For example, one may feel deeply distressed by *not* receiving a telephone call from someone. This is not to say that there are no neurophysiological correlates to such unhappiness—that is, that there are no brain events that may be necessary for the arising of unhappiness—but it is not evident that those physical processes are the primary causes of one's distress. Indeed, Tibetan Buddhism asserts that all the mental states we experience as humans do have physiological correlates in the body, but it does not reduce the subjectively experienced mental states to purely objective, bodily states.

As the Dalai Lama has affirmed many times, if elements of Buddhist doctrine, including the Madhyamaka view, are compellingly refuted by new empirical evidence or cogent reasoning, then those Buddhist tenets must be abandoned. Many neuroscientists today claim that mental processes are in fact nothing other than brain processes: all mental events are either identical to brain events or are solely produced by them and have no existence apart from them. This view is at variance with Buddhism, so if there are compelling grounds for adopting it, Buddhist doctrine should be revised accordingly.

The ever-growing body of neuroscientific discoveries concerning the correspondence of specific mental processes to specific neural events can be reasonably interpreted in either of two ways. This evidence might suggest that mental processes are *identical* to, or at least *concomitant* with, their corresponding brain processes. If this turns out to be the case, this could be regarded as evidence in support of the materialist view that the mind is simply a function of the brain, but this is certainly not the only logical conclusion that could be drawn from such evidence. Alternatively, such correspondences between mental and neural processes might demonstrate that mental processes occur in *dependence* upon brain processes. This suggests a causal relation between two sorts of phenomena, which leaves open the possibility that there may be other causes—possibly of a non-physical, cognitive nature—that are necessary for the production of mental processes.

Common-sense experience suggests that mental and physical events exert causal influences upon each other. It has long been known that physical stimuli from our environment and from our body influence our perceptions, our thoughts, and feelings. And mental activity—including those same perceptions, thoughts, and feelings—influences the body. Buddhists take such causal interrelatedness at face value; neither physical nor mental causal agency is discounted due to any speculative presuppositions. Buddhism regards subjectively experienced mental events as being nonphysical in the sense that they are not composed of particles of matter; it regards physical events as being nonmental in the sense that they are not of the nature of cognition. Given this limited kind of dualism, what kind of physical mechanism does it posit to account for the causal interaction between these two kinds of phenomena? This question presupposes that all causation requires physical mechanisms, but this assumption has never been held by Buddhists.

It is not evident to me that contemporary physics refutes the limited dualist view proposed by the Madhyamaka view. Modern cosmology suggests that the physical world may have arisen from space itself, which is not composed of particles of matter and hence is not physical in the above Buddhist sense of the term. Many physicists now regard time, too, as being very like a dimension of space, and

even energy itself is not necessarily a purely objective, material entity. While the principle of the conservation of energy has often been posited by neuroscientists as a physical law that prohibits any non-material influences in the physical world, Richard Feynman (himself an avowed physicalist) points out that this is a mathematical principle and not a description of a mechanism or anything concrete. He adds that in physics today we have no knowledge of what energy *is*,¹⁴ leaving open the possibility, as the Madhyamikas propose, that energy as we conceive it is not something that exists purely objectively as an independent physical reality. Given the interchangeability of mass and energy, this raises interesting questions concerning the ontological status of matter as well.

The contemporary theoretical physicist Euan Squires explicitly claims that the conservation laws of physics should not be posited as compelling grounds for refuting dualist hypotheses of mind and matter.¹⁵ Until the work of Newton, physicists believed that all forces were simply “push/pull” effects of material bodies, but Newton’s law of gravitation countered that the presence of an object at one place could influence the behavior of another at an arbitrarily large distance away, without any intervening medium or mechanism. Thus, as Squires points out, “materialism” in its narrowest interpretation died in the seventeenth century. Similarly, until the late nineteenth century, most scientists viewed the world from the perspective of mechanistic materialism, which required a material medium for the propagation of light. But this principle of mechanism also became obsolete when Maxwell mathematically demonstrated that no such medium was necessary, and Michelson and Morley empirically demonstrated the absence of any physical evidence for such a medium. Thus, the classical principle of mechanism died in the nineteenth century and was even more deeply entombed by twentieth-century discoveries in the field of quantum mechanics.¹⁶ In the examples cited above, speculative preconceptions have been dispelled by advances in knowledge, in the best spirit of scientific inquiry.

To return to the Buddhist account of mind/body interactions, if mental and physical processes do not influence each other by means of some mechanism, how do they interact? Buddhism begins by affirming the validity of our common-sense conclusion that mental

and physical phenomena influence each other—a point that the scientists in this conference explicitly confirmed. This affirmation is made on the basis of a very straightforward, Buddhist definition of causality: A can be regarded as a cause of B if and only if (1) A precedes B, and (2) were the occurrence of A to have been averted, the occurrence of B would have been averted. Thus, this phenomenological theory of causality does not necessarily require mechanism.

As the Dalai Lama pointed out, there is a simple, twofold classification of causality that has a strong bearing on the nature of consciousness. A may be a *substantial cause* of B, in which case it actually transforms into B, or A may be a *cooperative cause* of B, in which case it contributes to the occurrence of B, but does not transform into it. Now if mental states are in fact nothing other than brain states, then there is no problem in asserting that prior neurophysiological events transform into mental states, and thereby act as their substantial causes. But to conclude with certainty that mental events are *identical* to their neural correlates—or that those mental events are simply a function or state of the corresponding brain states—it would have to be demonstrated empirically that the two occur simultaneously and not sequentially. This would entail knowing the precise moment when a mental event takes place and the precise moment its neural correlate takes place, and ascertaining whether those two moments are simultaneous or sequential. To the best of my knowledge, this has not yet been done, and it is not clear to me how it could be done with sufficient precision. If mental events are produced from prior neural events, the two cannot be identical, in which case it is valid to ask: Do physical processes act as substantial causes or as cooperative causes for mental processes?

If physical events, in causing nonphysical mental events, were to transform into them, the mass/energy of those physical events would have to disappear in the process; this is a position rejected by Buddhism and science alike, albeit for different reasons. Buddhism therefore proposes that physical processes may act as cooperative, but not substantial, causes for mental processes. In the meantime, physical events commonly act as substantial causes for subsequent physical events. But this raises the question: If preceding physical processes act only as cooperative causes for mental events, what, if anything,

are the substantial causes of mental events? If mental processes had no substantial causes, this would imply that they arise from nothing; Buddhism rejects this possibility, just as it rejects the notion that physical events can arise from nothing.

The conclusion drawn by Buddhism is that prior mental events act as the substantial causes of subsequent mental events. At times, specific mental states enter a dormant state, as, for example, when visual awareness is withdrawn as one falls asleep. But the continuum of the mind is never annihilated, nor does it ever arise from nothing.

The whole of Buddhism is concerned with identifying the nature and origins of suffering, and with exploring means to eliminate suffering from its source. Relying chiefly on contemplative and logical modes of inquiry, it is concerned chiefly with mental afflictions, as opposed to physical illness, and it has attended more to the mental causes of distress than to physical causes. In its pursuit of understanding the physical causes of mental suffering, Buddhism has much to learn from modern neuroscience. There is nothing in Buddhism to refute genetic influences, electrochemical imbalances in the brain, and other types of brain damage as contributing to mental dysfunctions, but in the face of such compelling evidence, a Buddhist might ask such questions as: if two people are genetically prone to a certain type of mental disorder, why is it that one may succumb to the disease and the other not? Likewise, two people may be subjected to very similar kinds of trauma, yet their psychological responses may be very different. To limit the pursuit of such questions solely to physiological causation seems unjustified, regardless of one's metaphysical orientation. The identification of a physical cause of a mental disorder does not preclude the possibility of important psychological factors also being involved. Thus, counseling someone to avoid or more successfully manage certain kinds of circumstances that may lead to mental problems may be sound advice. However, Buddhism is more concerned with identifying and healing the inner mental processes that make one vulnerable to such outer influences. Rather than trying to control or avoid outer circumstances, Buddhism recognizes that many difficult outer circumstances are uncontrollable and at times unavoidable; therefore it focuses primarily on exploring the malleability of the mind, especially in terms of making it less prone to afflictions regardless of one's environment.

In short, Buddhism places a greater emphasis on controlling one's own mind rather than on controlling one's environment. This may be why the Dalai Lama expressed such an interest in the range of causes of such mental disorders as chronic depression, for Buddhism is concerned with counteracting the principal causes of such disorders and not simply with treating their symptoms. For all the medical advances in understanding chronic depression, Lewis Judd candidly acknowledged that antidepressants do not "cure" these disorders; they "treat" or "manage" them as clinicians "try to remove the symptoms." This may be immensely useful in the short term, but for the long term, Buddhism stresses the importance of identifying the necessary and sufficient causes of all kinds of mental disorders with the hope that they may be eliminated and the individual may be utterly healed.

Why is it that medical science so often confines itself to explanations involving physical causation and so swiftly relegates other influences to the euphemistic category of "placebo effects" (bearing in mind that a placebo is defined as something that has no significant medical effects)? I suspect this is largely due to the fact that for the first three hundred years following the Scientific Revolution, there was no science of the mind in the West, and for the first hundred years in the development of psychology, the nature, origins, and causal efficacy of consciousness were widely ignored, with the brief exception of a few introspectionists such as William James. As James commented, those phenomena to which we attend closely become real for us, and those we disregard are reduced to the status of imaginary, illusory appearances, equivalent finally to nothing at all.¹⁷ While the brain has become very real for scientists observing the objective, physical correlates of mental activity, with no comparable development of sophisticated techniques for exploring mental phenomena firsthand, such subjective phenomena as mental imagery, beliefs, emotions, and consciousness itself have been widely regarded as mere illusory epiphenomena of the brain.

Buddhist contemplatives, on the other hand, have long ignored the brain's influence on the mind and therefore attribute little if any significance to it. But they have developed a wide array of introspective, contemplative methods for training the attention, probing firsthand into the nature, origins, and causal efficacy of mental events,

including consciousness itself, and for transforming the mind in beneficial ways. Centuries of experience derived from Buddhist practice suggest that the mind may be far more malleable and may hold far greater potential than is now assumed by modern science. However, as the Dalai Lama has commented elsewhere, these claims are like paper money. If we are to attribute value to them, we must be able to verify that they are backed by valid experience. Only that is the gold standard behind the currency of these Buddhist claims.

Does modern cognitive science know enough about the brain and mind to safely conclude that the hypothesis of a nonphysical mind is useless? When asked what percentage of the functioning of the brain we presently understand, neuroscientist Robert Livingston replies, "Half of one percent," and Lewis Judd concurs that "we have barely scratched the surface." Nevertheless, one may still hold to a physicalist view of the mind on the grounds that there is no scientific evidence for the existence of any nonphysical phenomena whatsoever, so the hypothesis of a nonphysical mind should not be entertained even for a moment. This would be a very cogent conclusion if science had developed instruments for detecting the presence of nonphysical phenomena and those instruments yielded negative results. However, to the best of my knowledge, no such instruments have ever been developed. Thus, the statement that there is no scientific evidence for the existence of anything nonphysical is unsubstantiated. If neuroscientists had a thorough understanding of all the necessary and sufficient causes for the production of consciousness, and if all those causes turned out to be physical, then all dualist theories of the mind and brain would have to be rejected. But contemporary neuroscientists agree that they are very far from that goal.

It is pertinent to point out here that, strictly speaking, there is still no scientific evidence for the existence of consciousness! Scientists know of its existence only because they are conscious themselves, and they infer on that nonscientific basis that other similar beings are conscious as well. But how *similar* to a human being must another entity be to be deemed conscious? When it comes to the presence or absence of consciousness in unborn human fetuses and in other animals there is no scientific consensus for the simple reason that there is no scientific means of detecting the presence or absence of consciousness in anything whatsoever. This accounts for the current lack

of scientific knowledge concerning the nature, origins, and causal efficacy of consciousness. With this in mind, we now turn to the topic of the cessation of suffering and the possibility of the cessation of consciousness itself.

The Reality of the Cessation of Suffering

Once the full range of suffering has been identified and its necessary and sufficient causes discovered, Buddhism asks: Is it possible to be forever freed from suffering and its sources? Many scientists would respond with a swift affirmative: when you die, all your experiences stop, for consciousness vanishes. In other words, the cessation of suffering occurs due to personal annihilation. While this is often promoted as a scientific view, from a Buddhist perspective, the present state of neuroscientific ignorance concerning the origins and nature of consciousness lends little credibility to any conclusions scientists may draw about the effect of biological death on consciousness.

Tibetan Buddhism asserts that during the process of dying, our normal sensory and conceptual faculties become dormant. The end result of this process, when all our normal mental faculties have withdrawn, is not the cessation of consciousness, but rather the manifestation of very subtle consciousness, from which all other mental processes originate. The presence of this subtle consciousness, according to Tibetan Buddhism, is not contingent upon the brain, nor does it entail a loss of consciousness. Rather, the experience of this consciousness is the experience of unmediated, primordial awareness, which is regarded as the fundamental constituent of the natural world. When the connection between this subtle consciousness and the body is severed, death occurs. But this consciousness does not vanish. On the contrary, from it temporarily arises a “mental body,” akin to the type of nonphysical body one may assume in a dream. Following a series of dreamlike experiences subsequent to one’s death, this mental body also “perishes,” and in the next moment one’s next life begins, for example in the womb of one’s future mother. During the development of the fetus, the various sensory and conceptual faculties are developed in reliance upon the formation of the body. But mental consciousness is said to be present from the moment of conception.

What are the empirical grounds for this theory of metempsychosis, presented here only in outline? Many highly trained Tibetan Buddhist contemplatives claim to be able to recall the events of their previous death, the subsequent dreamlike experience, and the process of taking birth. In many cases they also recall detailed events from their past lives, for the memories are stored, according to this theory, in the continuum of mental consciousness that carries on from one life to another. Other people, too, may have the sense of recalling their past lives, as in the example the Dalai Lama gave of the two girls in India who purportedly recollected the names of people that they had known in previous lives. However, most people do not remember their previous lives, according to Buddhism, for those experiences are eclipsed by the more recent experiences of this life, just as most adults have few memories of their infancy in this life.

In this conference, the scientists' difficulty in understanding the Buddhist concept of subtle consciousness may appear odd, for the notion of subtle physical phenomena is common in science. For example, the electromagnetic field of a single electron is a subtle phenomenon, which can be detected only with very sophisticated instruments. Likewise, the light from galaxies billions of light years away is very subtle and can be detected only with very powerful, refined telescopes. Similarly, Buddhism posits the existence of subtle states of awareness and mental events that can be detected only with very sensitive, focused, sustained attention. Ordinary consciousness is too unrefined and unstable to detect such phenomena, but Buddhism has devised numerous techniques for training the attention, unknown to modern science, so that it can ascertain increasingly more subtle mental and physical phenomena.¹⁸ While subtle states of awareness can be detected only with very refined awareness, even the grossest mental states, such as rage (which can be ascertained firsthand by an ordinary, untrained mind), cannot be directly detected with the physical instruments of modern neuroscience: they detect only the neurophysiological correlates of such mental states and other related physical behavior. Thus, all states of consciousness may be regarded as too subtle for modern neuroscience to detect.

Whereas belief in an afterlife or the continuity of consciousness after death is often regarded as an optimistic act of faith in the West, Buddhism counters that the belief in the automatic, eternal cessation

of suffering at death due to the disappearance of consciousness is an optimistic act of faith, with no compelling empirical or rational grounds to support it. Buddhism does indeed propose that suffering, together with its source, can be radically, irreversibly dispelled, but this requires skillful, sustained refinement of the mind and the elimination of the root cause of suffering—namely, ignorance and delusion—through the cultivation of contemplative insight and knowledge. The means for developing such insight are presented in the Buddhist path to liberation.

The Reality of the Path to the Cessation of Suffering

According to Tibetan Buddhism, the fundamental root of suffering is a type of inborn ignorance regarding the nature of one's own identity, one's own consciousness, and the world of which one is conscious. This tradition claims that all but highly realized people are born with these, but they can be attenuated and even eliminated entirely. Specifically, under the influence of such inborn ignorance we grasp on the absolute duality of self and other, which leads in turn to the reification of all manner of mental and physical phenomena, as well as the division of mental and physical itself. According to the Madhyamaka view, such ignorance is to be countered by realizing the manner in which all phenomena, including oneself, exist as dependently related events as described earlier in this essay.

In addition to such inborn ignorance, human beings are subject to a second type of mental affliction known as speculative ignorance. No one is born with this kind of ignorance, rather it is acquired through false indoctrination and speculation. Buddhism maintains that as a result of adopting unfounded, speculative presuppositions, we may become more confused than we would have been without receiving any formal education whatsoever.

Thus, the proper task of Buddhist training is not to indoctrinate people into a given creed or set of philosophical tenets. Rather, it is to challenge people to examine and re-examine their own most cherished assumptions about the nature of reality. By repeatedly putting our presuppositions to the test of critical examination by way of careful observation and clear reasoning, we empower ourselves to discover and eliminate our own speculative confusion. Once this is

cleared away, we are in a much more effective position to detect and vanquish the underlying, inborn ignorance and its resultant mental afflictions. In Buddhism, mental health and spiritual maturation may be measured in direct relation to one's success in overcoming these two types of mental afflictions.

With this twofold classification of ignorance in mind, let us examine the interface between Buddhism and modern science in terms of two quite disparate ways of confronting reality. One is by means of adhering to an ideology and the other is by pursuing scientific inquiry. The eminent anthropologist Clifford Geertz comments in this regard, "Science names the structure of situations in such a way that the attitude contained toward them is one of disinterestedness. . . . But ideology names the structure of situations in such a way that the attitude contained toward them is one of commitment."¹⁹ Geertz regards religious belief as a paradigmatic example of an ideology, and he remarks that this involves a prior acceptance of authority which transforms experience. In short, with respect to any ideology, one who would know must first believe.

The problem of adopting an ideology arises when there is a discrepancy between what is believed and what can be established by compelling evidence. But what constitutes compelling evidence and for whom? Scientists who are committed to physicalism are extremely skeptical of any evidence that is incompatible with that view. As Allan Hobson comments, their minds must be open about such evidence, but that opening is quite narrow. On the other hand, Tibetan Buddhists who are committed to the theory of metempsychosis are extremely skeptical of neuroscientific claims that the mind is simply an epiphenomenon or function of the brain. Thus, with the same neuroscientific evidence presented to them, physicalists find compelling evidence for refuting the nonphysical existence of the mind, whereas traditional Tibetan Buddhists and other nonmaterialists do not.

Most scientists would acknowledge that they do not *know* that consciousness is nothing more than a function of the brain, and most Buddhists, I believe, would acknowledge they do not *know* the consciousness is something more than a function of the brain. And yet convictions run strong in both ways, indicating that both sides are committed to disparate ideologies. If this is true, then scientists, together with Buddhists, may be equally prone to ideologies—or to

use Robert Livingston's term, "speculative suppositions." While the history of science is largely an account of disabusing ourselves of mistaken speculative suppositions, as Robert Livingston points out, Buddhism also places a high priority on dispelling such ignorance in order to eliminate the deeper, inborn ignorance that lies at the root of suffering.

Perhaps in order to explore this commonality, the Dalai Lama cited a threefold classification of phenomena that is made in Buddhism. The first of these categories includes phenomena that can be directly apprehended, or empirically demonstrated. The second includes those that are known by logical inference, but not directly. The third includes those that are accepted simply on the basis of someone else's testimony or authority. He hastened to add that these are not qualities inherent to different types of phenomena; rather, they are related to the limitations of our own knowledge. An event that is known to one person solely on the basis of someone else's testimony may be inferentially known by a second person; the same event may be known directly by a third person. Everyone agreed that it is the task of science to reduce the number of phenomena in the third category, and to move as many phenomena as possible from the second to the first category. This, in fact, is the goal of Buddhism as well.

Since it is widely regarded in the West simply as a religion, Buddhist doctrine is still widely regarded as an ideology, in contrast to scientific knowledge. Indeed, many Buddhists do uncritically adopt the tenets of their faith simply as a creed, without subjecting it to either empirical or rational analysis. Ideologies are commonly based not on immediate experience or on cogent, logical analysis, but on the testimony of someone else, such as the Buddha, whom one takes to be an authority. If the words of the Buddha are not accepted as authoritative, then the basis for this ideology vanishes into thin air. Even though many Buddhists do accept Buddhist doctrine in this way, the Buddha admonished his followers: "Monks, just as the wise accept gold after testing it by heating, cutting, and rubbing it, so are my words to be accepted after examining them, but not out of respect [for me]."²⁰ Thus, unquestioning commitment to an ideology is not only unnecessary in Buddhism, it was explicitly condemned by the Buddha himself!

While scientific knowledge is commonly equated with empirical discoveries, with an ever decreasing reliance upon inference and others' testimony, I believe even a cursory examination of the history of science demonstrates that this view is far from accurate. With the enormous specialization among the sciences and the vast amount of research that has been conducted throughout history and throughout the world today, no single individual can hope to empirically confirm the findings of the rest of the scientific community. Moreover, empirical scientific research relies upon the sophisticated tools of technology, and few scientists have the time or inclination to check the engineering of every instrument they use. For scientific knowledge to progress, scientists must rely *increasingly* on the claims of their scientific and engineering colleagues of the past and present. In most cases, I believe, that trust is well earned, but in most cases that is indeed reliance upon others' authority, not upon one's own observations or rigorous logic. As this is true within the scientific community, it is all the more true for the public at large, which provides the funding for scientific research—people regard scientists as authorities in their respective fields and accept their words on the basis of such trust. This trust is warranted by the belief that *if one were to engage in the necessary scientific training and perform a specific type of research for oneself, one could, in principle, verify other's findings empirically or at least by logical analysis.* It is with this same kind of trust that Buddhist contemplatives receive formal training in Buddhism and try to put to the test the Buddha's own purported discoveries about the nature of suffering, the source of suffering, its cessation, and the path to that cessation.

Buddhist inquiry into the above three types of phenomena proceeds by way of four principles of reason, to which the Dalai Lama referred only briefly in this meeting.²¹ To expand briefly on his comments here, the principle of dependence refers to the dependence of compounded phenomena upon their causes, such as the dependence of visual perception upon the optic nerve. It also pertains to the dependence of any type of phenomenon upon its own parts and attributes, or upon other entities, as in the interdependence of “up” and “down” and “parent” and “child.” The principle of efficacy pertains to the causal efficacy of specific phenomena, such as the capac-

ity of a kernel of corn to produce a stalk of corn. The principle of valid proof consists of three means by which one establishes the existence of anything: namely, direct perception, cogent inference, and knowledge based upon testimony, which correspond to the above threefold epistemological—and explicitly not ontological—classification of phenomena. The principle of reality refers to the nature of phenomena that is present in their individuating and generic properties. An individuating property of heat, for instance, is heat, and one of its generic properties is that it is impermanent. The Dalai Lama cites as examples of this principle the fact that the body is composed of particles of matter and the fact that consciousness is simply of the nature of luminosity and cognizance. These facts are simply to be accepted at face value: they are not explained by investigating the causes of the body and mind or their individual causal efficacy.

Let us apply these four principles to the materialist understanding of consciousness. According to this view, consciousness is simply a natural condition of the activated brain, much as heat is a natural condition of fire (the principle of reality). As such, consciousness vanishes as soon as the brain is no longer active (the principle of dependence), and it has no causal efficacy of its own apart from the brain (the principle of efficacy). These conclusions are based on the direct observations of neuroscientists investigating mind/brain correlates; they are inferred by philosophers who know of such correlates; and they are accepted as fact by many people who accept scientific materialism without knowing for themselves its supporting empirical facts or logical arguments (the principle of valid proof).

According to the Buddhist view, in contrast, consciousness is simply of the nature of luminosity and cognizance, much as fire is of the nature of heat (the principle of reality). Specific states of consciousness arise in dependence upon the sense organs, sensory objects, and prior, nonphysical states of consciousness (the principle of dependence); and they, in turn, exert influences on subsequent mental and physical states, including indirect influences on the outside physical world (principle of efficacy). These conclusions are purportedly based on the direct observations of contemplatives who have thoroughly fathomed the nature of consciousness; they are inferred by philosophers

on the basis of others' experiences; and they are accepted as fact by many Buddhists who accept Buddhist doctrine without knowing for themselves its supporting empirical facts or logical arguments (the principle of valid proof).

In evaluating these two radically different ways of understanding consciousness, the central question arises: which people are deemed to be authorities on consciousness due to their privileged, direct knowledge? Modern Westerners may look with deep skepticism upon anyone claiming to be an authority who is not an accomplished neuroscientist. Traditional Tibetan Buddhists, on the other hand, may look with equal skepticism upon anyone claiming to be an authority on consciousness who has not accomplished advanced degrees of meditative concentration by which to explore the nature of the mind introspectively. By what criteria does one judge who is and who is not an authority who can provide reliable testimony? In other words, whose direct observations are to be deemed trustworthy? I strongly suspect that answers to these questions must address the role of ideology, and perhaps it will turn out to be true that one who would know—either through inference or on the basis of authoritative testimony—must first believe. These questions certainly deserve to be examined in much greater detail, especially in the context of such cross-cultural dialogue.

Before closing, I would like to raise one final issue that is central to Buddhism and to the Dalai Lama himself, and that is compassion. As the Dalai Lama has commented many times, philosophical and religious theories vary from culture to culture, and scientific theories are subject to change over time, but the importance of love and compassion is a constant throughout human history. The Tibetan Buddhist path to liberation and spiritual awakening likewise places an equal emphasis on the cultivation of insight and compassion. Indeed, the experiential knowledge sought in Buddhism is said to support and enhance one's compassion, and any view that undermines compassion is viewed with extreme skepticism.

It was perhaps with this in mind that at one point in this conference the Dalai Lama asked the Western participants whether they—who asserted the identity of the mind (and implicitly the person) with the brain—could feel affection for a brain. The general response among the neuroscientists was perhaps best expressed by Antonio

Damasio: “What I can feel affection for is a particular individual, a person whom I know. . . . I don’t feel any affection whatsoever [for brains].” Lewis Judd commented in a similar vein, “the physician is dedicating his or her knowledge and skills on behalf of the patient as a totality, as a person, not to some fractional part or organ system. . . . The patient is not just a diseased liver or diseased brain, or whatever. The patient is an integrated, whole person.” But where is this “particular individual” or “whole person” to be found? According to physicalism, is this anything more than a baseless illusion, in which case, doesn’t this ideology critically undermine love and compassion?

According to the Madhyamaka view, a person cannot be identified with the mind alone or with the brain or the rest of the body. But no individual can be found under analysis apart from the body and mind either. No “I,” or self, can be found under such ontological scrutiny, so Madhyamikas conclude, like many neuroscientists today, that the self does not exist objectively or inherently, independently of conceptual designation. However, the Madhyamikas add that while none of us exist as independent things, we do exist in interrelationship with each other. Thus, we do not exist in alienation from other sentient beings and from our surrounding environment; rather, we exist in profound interdependence, and this realization is said to yield a far deeper sense of love and compassion than that which is conjoined with a reified sense of our individual separateness and autonomy.

Whatever fresh insights may be arise from the collaboration of Buddhists and neuroscientists, it is my hope that these may lead us to become more and more “warm-hearted persons.” I would like to conclude this essay with the Dalai Lama’s own concluding words: “Whether compassion has an independent existence within the self or not, compassion certainly is, in daily life, I think, the foundation of human hope, the source and assurance of our human future.”

