Mind in the Views of Buddhism and Cognitive Sciences

By Ming Lee

ABSTRACT

This presentation reviews several dialogues that His Holiness the XIVth Dalai Lama has had since 1987 with Western cognitive scientists on the nature of mind and mental states. The Western and Buddhist perspectives on the mind and body issue are compared and contrasted, with an intention to integrate the views of scientific materialism and Buddhist psychology.

With the advancement of modern scientific technology, Western scientists have been able to expand their understanding of the bioelectrical and biochemical functions of the brain. Cognitive scientists have access to sophisticated equipment, e.g., fMRI and PET, to study brain mechanisms in order to explain cognitive processes. They, however, adopt assumptions of scientific materialism in the study of the brain states, and equate mind to physical processes in the brain. Their understanding of the mind is based on methods that control and manipulate the brain using a combination of chemical, biological, and biophysical approaches.

Buddhist literature, including sutra, tantra, and Abhidharma, also provides extensive discussions on mind and its nature. Tantric literature, in particular, discusses mind and consciousness in various levels of subtlety, with special references to the relationship between various states of mind and their corresponding physiological states. The Buddhist approach, however, focuses more on conceptual systems and analytic methods in understanding the mind and its functions. A variety of mental techniques have also been promoted and practiced by Buddhists with a goal of inducing mental transformation and improving psychological well-being.

This paper covers discussions on the structure and functions of mind/brain based on Buddhist and Western theoretical frameworks and research findings of Western cognitive scientists. It concludes by examining potential benefits to both East and West through fruitful interfaces between Western cognitive sciences and Buddhist inner science.

Introduction

Buddhism has long been considered an "inner science" due to its focus on the systematic exploration and analysis of the mind, its nature, and its transformation. This emphasis starts with the teachings of the Buddha himself, continues in India through the works of the sectarian Buddhist schools – especially the Sarvastivada and Sautrantika Schools – and the Madhyamaka and Yogacara schools, and continues outside India through the Chinese Mind-Only School and Tibetan Buddhism. Through self observation, introspection, and analysis, Buddhists strive to gain valid knowledge of reality, consisting of both

the reality of self and the reality of the external world. The ultimate goal of their intellectual inquiries and experiential practices is not to increase their amount of knowledge, but to eradicate mental afflictions and develop wholesome mental states for achieving enlightenment. Buddhism has therefore a tradition of enhancing mental health through both intellectual understanding of true reality and practicing to transform ordinary thoughts and habitual dispositions.

The study of the mind and its various states and functions has also been a major focus in a number of disciplines in Western academia. Academic fields, such as psychology, neuroscience, linguistics, artificial intelligence, philosophy, and anthropology - the so-called cognitive sciences (Gardner, 1991) - all demonstrate more or less an interest in the study of the human mind and its relationships with other aspects of human behavior. Researchers of these disciplines, however, conduct their investigations or inquiries mainly from a scientific approach; that is, relying on methods that are considered objective, repeatable, and empirical. Take psychology for example: in the late nineteenth and early twentieth century when psychology was beginning to emerge as a new academic field, Western psychologists took inner states seriously and used methods such as introspection to study changes in the human psyche. With psychologists, especially American behaviorists, becoming more and more concerned with fitting their field into the ranks of "hard" science, the study of mind and mental states became less and less important and finally was ruled out entirely as illusory, inaccessible, and useless. Although the focus has been somewhat swung back through the effort of humanistic and cognitive psychologists, modern psychologists still find themselves less empowered to understand and help people through their own inner experiences (Thurman, 1991).

Buddhist psychology, as a system of thought that evolved outside the conceptual systems that have dominated contemporary Western psychology, opens for Western scientists a good opportunity for dialogue between the two systems. Buddhism, according to Wallace (2003), a trained American Buddhist monk and founder of the Institute for the Interdisciplinary Study of Consciousness, "offers something fresh and in some ways unprecedented to [Western] civilization, and one of its major contributions is its wide range of techniques for exploring and transforming the mind through firsthand experience" (p. 6). He further points out that Buddhism not only provides a wide array of testable hypotheses and theories concerning the nature of mind and its relation to the physical environment, but also has tested and experientially confirmed these hypotheses through the testimonies of Buddhist meditation practitioners over the past twenty-five hundred years.

Using radically different approaches to look at mind and behavior, Western cognitive sciences have also accumulated, for more than a century substantial knowledge of human brain structure and its relation to mental functions. Since 1987, his Holiness the Fourteenth Dalai Lama, has engaged in a series of dialogues with leading authorities of Western cognitive sciences for the

purpose of facilitating mental changes and transformation through a better understanding of the mind's complexity and adaptability. These fruitful interfaces have resulted in a significant gain in the understanding of thoughts as cultivated in the two different traditions and the knowledge of human brain and mental functions.

This paper discusses major theories and findings related to the human mind and mental functions based on the understanding of Buddhism and Western cognitive sciences. The series of dialogues between the Dalai Lama and Western scientists is used as the main source for literature review. As believed by those participants involved in the dialogues, the author sincerely hopes that through collaborative efforts between East and West we will have a better opportunity to advance human wisdom and further alleviate human suffering.

The Buddhist Understanding of Mind

The exploration of mind and mental functions is one of the main concerns in Buddhist teachings, beginning in early Buddhism and extending to sectarian Buddhism and Mahayana Buddhism. Buddhist literature, such as sutra, tantra, and Abhidharma, contains extensive discussions on mind and its nature. This literature, however, also reveals significant differences in the theories of mind proposed by various schools of Sectarian Buddhism and Mahayana Buddhism.

Sutras accounts of the Shakyamuni Buddha's teachings to his disciples, discuss the fundamental elements of human existence and the interactions between individuals' inner worlds – that is, one affected by both mind and body - and the external world. The teachings were delivered to the disciples primarily for the purpose of alleviating aversive experiences, or suffering, associated with their existence. This is why Buddhist teachings entail psychotherapeutic implications. The doctrines found in the sutras, such as the three universal characteristics of existence, Four Noble Truths, five aggregates, Eightfold Noble Path, twelve links of dependent origination, twelve sense-bases, and the eighteen constituents of reality, are shared by all the Buddhist schools and traditions in their explanations of mind; consciousness, and mental practice. Among the five psychophysical aggregates that constitute an individual's mental and physical existence, the aggregates of feelings, recognition, mental formations, and consciousness are all aspects of the mind whereas the aggregate of form is the only one describing the physical body. Clinging to any aspects of the aggregates contributes to the causal origination of suffering, the First Noble Truth (Bodhi, 2000). The mind is described as constantly changing, like a monkey jumping up and down or a waterfall gushing down the cliff with no single drop of water remaining in the same position for more than a moment. It is also because of this impermanent nature of the mind that there is the very possibility of positive mental transformation (Dalai Lama, 2003). It should be noted that the Buddha in his original teachings, however, did not elaborate a sophisticated system of levels of consciousness and associated mental factors, as vigorously discussed

and debated among the philosophers of the sectarian Buddhist schools and the Mahayana Schools.

Abhidharma, the third pitaka of the Buddhist scriptures and the canon of Sectarian Buddhism, systematically analyzes and reorganizes the Buddha's teachings on all worldly phenomena. In the Abhidharma texts and various commentaries on the Abhidharma, there are elaborated discussions on the structure of mind, including levels of consciousness and associated mental factors that arise depending on the mind, and the interactions of mind and the environment. Abhidharma is therefore considered the classical Buddhist mind science text (Goleman, 1991). Because different schools of Sectarian Buddhism cite different passages in the sutras to support their respective interpretations and, as mentioned above, the sutras do not contain clear definitions of mind and mental factors, their understanding of the mind and its functions as revealed in the Abhidharma texts varies. Prominent issues commonly debated among these schools, with each asserting different answers, include: (1) Is there one consciousness or many? (2) If there are many consciousnesses, can they arise at the same time? (3) Are there mental factors outside of the mind? and (4) How does consciousness apprehend objects? (Tsai, 2006).

The Sarvastivada School, for example, asserts that mind and consciousness are one and the same with mental factors existing independently outside of the mind. The philosophers of this school also affirm that consciousness apprehends its object directly without mediation, and there is no lag time between the arising of an object and the arising of its apprehending consciousness (Dalai Lama, 2003; Chen, 2000). In contrast, the Sautrantika School, the one that split from the Sarvastivada School and spurned the Abhidharma literature in favor of the early Buddhist sutras, believes that there are six consciousnesses, each apprehending different aspects of external phenomena but not arising at the same time. The philosophers of this school, however, deny the existence of mental factors as independent entities from the mind, as claimed by the Sarvastivada philosophers; rather, they consider mental factors nothing but different states of mind. The Sautrantika School and the two Mahayana schools of Indian Buddhism, the Yogacara and Madhyamaka Schools, assert that consciousness apprehends its objects via the mediation of images of these objects and arises with images. There is therefore a lag time between the arising of an object and the arising of apprehending consciousness.

The Madhyamaka School, using Nagarjuna's concept of eight negations, declares that there is no substantial existence of any phenomena comprising the world of our experience. Philosophers of the Yogacara School, on the contrary, assert that, although external objects do not exist as ultimately real, our consciousness, mainly the subtlest mind, does exist as conventionally real (Lusthaus, 2007).

The Yogacara School further claims that there are eight consciousnesses which can arise simultaneously. Mental factors are separate entities of the mind,

but arise together with the mind. The description of this structure of mind and mental factors is elaborated in *Mahāyāna śatadharmā-prakāśamukha śāstra*, an enumeration of the Yogacara One Hundred Dharma list by Vasubandhu, a Sarvastivadin monk converted to Sautrantika then Yogacara. In this text, Vasubandhu classifies all the existing phenomena and universal truths into five categories and a hundred constituent elements. It is an expansion of his earlier work, *Abhidharmakosa* which represents the thoughts of the Sarvastivada School, where five categories but only seventy-five constituent elements are identified (Sangharakshita, 2002). The Chinese Mahayana Mind-Only School, ascribing to the Yogacara School philosophy, also believes that mind and mental factors are separate but arise together.

Tantra, on the other hand, explores the various levels of subtlety of consciousness as well as the relationship between these various mental states and their corresponding physiological states. The first six consciousnesses classified by the Yogacara Schools, of which the first five are sensory consciousnesses and the sixth a mental consciousness, are classified as gross consciousnesses as they cannot function without the work of sensory organs and the brain (Dalai Lama, 2003). The mental consciousness is further classified into conceptual and non-conceptual consciousnesses. The conceptual consciousness apprehends its objects by way of generic thoughts, or mental representations, whereas non-conceptual consciousness apprehends its objects more directly, perceiving objects as they are without relying on thoughts. It is the non-conceptual consciousness that Buddhist practitioners strive to achieve, and the conceptual consciousness to abandon.

When relating the level of subtlety to different states of mind, the tantric texts describe a fivefold classification, including waking consciousness, dreaming consciousness, the consciousness of dreamless sleep, the consciousness when one has fainted, and the consciousness during the dying process, with a gradual increase of subtlety along the continuum of these states (Dalai Lama, 2003). The subtle levels of mind depend less on the brain, and they are usually manifested in four occasions: orgasm, yawning, sneezing, and deep, dreamless sleep. The subtlest level of mind, the "clear light" mind, so-called by Tibetan Buddhists who follow the tantric teachings more closely than any other Buddhist schools, can eventually be separated from the body at death. Hence, the mental stream of the subtlest consciousness does not end, while the streams of the grosser states of consciousness do come to an end with the cessation of physical functions. According to tantras, the "clear light" mind represents the ultimate nature of mind, which is essentially pure with a nature of "clarity and knowing" (Dalai Lama, 1991). The mind of ordinary people is contaminated or conditioned by afflictive emotions such as desire, hatred, and jealousy. Only at the death of lay people or during the lifetime of those profound meditation practitioners is this intrinsic quality of mind to be manifested. It is because of this "knowing" nature of mind that various types of consciousness can apprehend their objects.

In addition to the mind and its various states, the tantric literature also describes in detail subtle anatomy of the body, such as energy centers (chakras, 7 of them), energy channels (3 principal ones and 72,000 subtle ones), and the energies (5 root and 5 branch energies) that flow within the channels, and their interactions with the mental states (Sogyal, 1994). The mind, therefore, is considered "a highly intricate network of various mental events and states," which intimately interacts with the physical body and external phenomena (Dalai Lama, 1991, p. 22).

Given the varied theories asserted by different schools of Buddhism and a special attention to the subtlety of mind by Tibetan Buddhism, there are several questions left unanswered or uncertain among Buddhists. Western cognitive scientists, on the other hand, have also studied mind and mental functions for more than a century, albeit from radically different approaches and using different methods. With the development of modern medical technology, the study of mind and mental states has been facilitated by sophisticated examination techniques, such as functional Magnetic Resonance Imaging (fMRI) and Positron Emission Tomography (PET). The next section will review the fundamental approaches adopted by Western cognitive scientists and their major findings in relation to mind and mental functions.

Western Cognitive Scientists' Understanding of Mind

Although the interest in the inquiry of mind and its nature in the Western world can be traced back to the ancient time of Greek philosophers such as Socrates, Plato, and Aristotle, the inquiry was mainly philosophical or religious in nature. The seventeenth-century French philosopher Rene Descartes elaborated on the relationship between mind and body, and held that the mind and body are two distinct entities that function independently. His thought, called mind-body dualism, dominated thinking about the mind and mental effects until the late nineteenth century when an approach applying scientific principles to the study of mind emerged.

A group of German physiologists, including Wilhelm Wundt who established the first scientific laboratory for the study of psychological phenomena, began to demonstrate that psychological processes and their biological roots could be studied by using scientific methods. Wundt was interested in the study of human consciousness and its structure, and the method he used was introspection, in which the subject self-observed his own sensations and verbally reported the analysis of his own consciousness. Wundt's contemporaries, including the first major American psychologist William James, had also engaged in the study of consciousness by combining the direct observation of behavior with the use of introspection to understand the underlying mental processes. Sigmund Freud, an Austrian physician trained in neurology and practicing as a psychiatrist, developed psychoanalytic theory, which emphasized the impact of unconscious determinants on behavior and mental

health. Although striving to use scientific methods in their investigations, these early researchers of mental functions adopted rather subjective approaches such as introspection, self-analysis, and self-report in their studies.

This trend of using subjective methods to study consciousness and unconsciousness was abruptly interrupted during the early twentieth century with the emergence of an American school of psychology called behaviorism. To behaviorists, such as John Watson and B.F. Skinner, the understanding of behavior could be developed through observations and experimental conditionings without reference to such abstract concepts as consciousness. They even denied the existence of mind and attributed belief in the very existence of consciousness to ancient superstitions and magic (Watson, 1913). By reducing subjective mental phenomena to objective processes that could be studied with the limited available tools of science in the 1920s to 1950s, the behaviorist approach held back the study and understanding of the nature of mind for several decades.

After the 1950s when humanistic psychology and cognitive psychology replaced radical behaviorism to enter the spotlight of the American psychological arena, subjective experience once again became a hot topic in scientific research. The use of introspection, however, was still considered a non-mainstream scientific approach. Since the mid-1970s, with the rapid progress of cognitive neuroscience and advancement of medical technology, investigations of the brain and mental functions became the major focus in the study of human mind, and mental functions were equated with neural processes and brain structures, instead of behavioral dispositions. Many types of causal relationships between the mind and brain have been discovered by cognitive neuroscientists, including specific correlations between particular neural activities and mental activities in such ways that the occurrence or cessation of the former is linked to the occurrence or cessation of the latter, and vice versa (Wallace, 2007). Cognitive neuroscientists believe that consciousness is not independent of the brain (Churchland, 1999). To those who subscribe to modern scientific materialism, such as the so-called materialists or physicalists, mental states are actually states of the physical brain. The nature of mind is considered to be determined in the interactions of biology and psychology, in terms of neural networks and activities that involve dynamic bioelectrical and biochemical substances and events (Wallace, 2003). A better understanding of the brain's complexity and adaptability will result in a better understanding of mind. Based on brain anatomy studied under the microscope, Western scientists are able to identify specialized organization and distinctive neuronal circuits in the surface of the brain, the cerebral cortex, and their correspondences with mental functions. Neuropsychologists, those who focus on understanding mental processes from examining the results of brain trauma, find that damage to specific regions of the cerebral cortex has precise and predictable effects on human perception, memory, language, and other cognitive functions. Different regions of the cerebral cortex process different sensory data simultaneously, just like a large-scale parallel computer. Such correspondences between the cortical areas and mental functions are fundamental to the Western

scientific understanding of consciousness, which asserts that consciousness exists solely as a property of the brain (Damasio, 1999).

Another area that enjoys the results of neuroscientific research is the study of the biological base of emotions and the relationship between emotion and cognition. Davidson (2004) pointed out that there is no one center in the brain for a mental function as complex as emotion. Several regions of the brain have been identified by neuroscientists as critical for emotion regulation or arousal, including the frontal lobes in regulating emotions, the amygdala in activating emotions, and the hippocampus in appreciating the context of emotional arousal. Moreover, neuroscientific evidence suggests that regions of the frontal cortex in different brain hemispheres play an important role in different emotions, with the left frontal cortex relating to positive emotions and the right frontal lobe relating to negative emotions. In addition to findings that the brain areas responsible for initially activating an emotion (the amygdala) are different from the one responsible for regulating an emotion (the prefrontal cortex), Ledoux (1996) found that emotional arousal works faster than emotional regulation; that is, the emotional brain works faster than the rational brain. Similar findings in this regard were also reported by Damasio (1994), who suggested that emotions tend to be exclusively amygdaloid-centric and neglect higher level interpretations which are cortico-centric. Davidson (2004) also pointed out that one of the most exciting discoveries by Western neuroscientists is that the frontal lobes, the amygdale, and the hippocampus continually change as a result of life experience. The finding seems to provide biological support for the Buddhist belief that through such life experiences as observing precepts and practicing meditation, there is the possibility to better control our emotions.

Neuroanatomy has also been applied to the understanding of other mental functions by Western scientists, such as memory, sleeping, and dreaming. Like the association of brain regions to emotion, memory has also been found not to be stored in any specific region but spread out through large areas of the brain (Squire, 1999). However, a few brain regions are vital to the formation of new memories, such as the hippocampus and the thalamus. Also, changes in the strength of neural connections, which may result from life experiences, affect the recording of memory in the brain. In regard to the study of sleep and dream states, Western cognitive neuroscientists in general believe that the brain itself controls the various states of consciousness, whether waking, dreaming, or in deep sleep (Hobson, 1999). The regular alternation of the cycle of waking and sleeping states is controlled by the brain stem, which alters the production of specific neurotransmitters responsible for arousal and relaxation in a reciprocal way. In experiments with animals, Western neuroscientists have shown success in the control of altering states of wakefulness and sleep. Although the neuroscientists can objectively measure and identify distinctive sleep states and associate REM (rapid eye movement) sleep with dreaming, the purpose of dreaming still remains one of the great mysteries in the study of sleep (Hobson, 1999).

With the rapid development in cognitive sciences, especially unanticipated progress in neuroscience, during the past several decades, the Western world has observed tremendous growth in the knowledge of mind and mental states. The empirical findings based on an approach following the dogma of scientific materialism, however, present several fundamental obstacles to any meaningful collaboration between Buddhism and science. The obstacles, as critically pointed out by Wallace (2003), are mainly related to the assumptions of scientific materialism, including: (1) Objectivism – By disregarding any phenomena that are non-observable, non-measurable, individual, and uncontrollable, subjective representations of reality are excluded from investigation or treated as an illusion; (2) Reductionism – By breaking any phenomena apart into piecemeal constituents, an integrative, holistic, and comprehensive understanding of reality becomes out of reach; (3) Monism – By treating the entire universe as fundamentally one entity, that is, matter, the multiplicity nature of existence is misperceived and the versatility of possibilities in life is lost; (4) Physicalism – By viewing physical phenomena as the sole source of reality, the importance of biological and psychological phenomena and their interactions with the physical world is ignored; and (5) The Closure Principle – By believing that the universe is closed off from nonphysical influences and all biological and psychological processes are reducible to the laws of physics, many facets of human existence remain inexplicable and misconstrued. Given these fundamentally biased assumptions, Wallace (2003) proclaimed that "the picture, thus far, that scientific materialism gives us of the nature of human existence appears bleak at best" (p. 16).

How could Buddhism, a deeply humanity-oriented science of the inner world, contribute to cognitive sciences to make the picture presented by Western scientists more complete and acceptable? In the dialogues exchanged between His Holiness the Fourteenth Dalai Lama and Western cognitive scientists during the past two decades, several issues in relation to mind and mental states have been discussed in depth. The two sides seem to share some common understandings of certain aspects, disagree on a few others, and remain mutually unaware on the rest. The section below reviews some of the pertinent issues that have been exchanged between the two.

Issues on Mind Exchanged between Buddhism and Cognitive Sciences

A wide range of issues related to mind and life have been discussed between the Dalai Lama and Western cognitive scientists. Some of them are rather classical disputes between traditional Eastern and Western thoughts, while others bear a potential for future collaborative explorations between East and West. Following are a few exemplary issues exchanged in this series of dialogues.

Mind and Brain: One or Two?

According to Descartes' classic Dualistic view, mind and brain (like body) are two essentially different kinds of substance. Mind is unextended, indivisible, simple thinking, whereas brain is a physical element which has extension, position, and mass, and is therefore divisible. Modern scientific materialists, on the other hand, hold that mental states are really states of the physical brain. In their view, mind is not an independent entity, and has no substance. There is, in fact, just the brain; that is, the brain and mind are one and the same (Churchland, 1999). Materialists dispute the Dualistic view by giving arguments such as: (1) How can the mind, a completely nonphysical thing, interact with something physical such as the brain? (2) How can memories be recorded or carried by the nonphysical mind or soul so that after death the soul can retain those memories? (3) The mind or soul cannot be observed, and cannot retain its integrity if it does leave the body and become independent; (4) Research shows that damage or electrical stimulation to certain parts of the brain interrupts or changes mental functions, demonstrating a structural/functional dependency of mind on brain; and (5) Mental functions can be accounted very well by brain properties, dynamic circuitry, and electro-physiological properties (Churchland, 1999).

Buddhism explicitly rejects the Dualistic view of an absolute, substantial existence of either mind or brain. In the Buddhist view, mind and brain function in dependence upon each other. Their dependence, according to the Madhyamaka School of Buddhism, can be described from three aspects: "(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 designation of them" (Wallace, 1999, p. 35). Although in the Madhyamaka view mental phenomena are no more or less real than physical phenomena, the former do not possess such attributes as mass, location, shape, and size as the latter. Mind is therefore not regarded as a physical entity. Buddhism, in this sense, also rejects the Materialist view that considers mind and brain the same.

When Does Consciousness Begin?

With the right-to-life debate stirring up Western society, the determination of when consciousness begins becomes a pivotal concern among political activists and law makers. Although Western biologists and cognitive neuroscientists have already known that the basic physical structure of the brain is formed during embryonic development, they have yet reached a consensus on the criteria that can be used to determine whether an organism is conscious, let alone when consciousness begins. A general hypothesis that seems accepted by some Western neuroscientists is that consciousness arises in accordance with brain development when there are enough neural cells and connections to support conscious activity (Livingston, 1992; Houshman, Livingston & Wallace, 1999). Livingston (1992) went further to point out the possible time of the beginning of

consciousness. According to his research and understanding, the fetus of about twenty-two to twenty-six weeks of gestation manifests some signs that may imply the functioning of primitive awareness. Before the twenty-second week, claimed Livingston, there is no appreciable evidence to infer the existence of any, even primitive, awareness.

The Buddhist view in this regard is that consciousness begins even before the formation of the brain, with the basic capacity of being aware existing right from the very beginning of the conceptus. As Buddhists believe in reincarnation and consciousness being the part that connects the two adjacent lives, consciousness, in its subtlest form as described by Tibetan Buddhists, is thus considered as the entity that leaves the body last but enters into another body first. In other words, this subtlest mind can be independent from the body or the brain, and the mind is therefore believed to be manifested in a continuum of awareness that does not itself arise from the brain (Houshman, Livingston & Wallace, 1999). In regard to exactly when and where the consciousness interacts with the fertilized egg, the Dalai Lama acknowledged that there is no solid understanding among Buddhists themselves either. The Buddhist theory that consciousness continues across lives is considered the major disparity between East and West.

How Does Consciousness Begin?

In accordance with Western neuroscientists' belief that mind and brain are one and the same, their explanation of the origin of consciousness is also biological in nature. That is, they believe that consciousness arises from the biological properties of the brain, mainly the cells and DNA (Houshman, Livingston & Wallace, 1999). Hobson (1999) agreed with this view by saying that "consciousness seems to be a natural condition of the activated brain" (p. 88). Consciousness is therefore thought by neuroscientists to be as a product of the brain, arising naturally as the brain develops.

In discussion with Western scientists regarding this issue, the Dalai Lama (1999) offered a series of logical thoughts that lead to the Buddhist belief of the origin of consciousness. This logical reasoning goes as follows: (1) Everything begins as a result of a cause; (2) The initial cause must be an independent one; (3) The initial cause, or the substantial cause in Buddhist terms, of consciousness is an independent consciousness, as the substantial cause must be able to actually transform into that entity; and (4) The subtlest mind, or the subtlest consciousness, is independent after departing from the body at death; hence, it is possible to become the initial cause of consciousness of the next life. The last thought in this reasoning also provides support for the Buddhist theory of continuation of life after death. Although the Buddhist scriptures do have some reference to the origin of consciousness, the exact understanding in that area, such as when and where consciousness enters the body, still remains to be discovered, according to the Dalai Lama.

Is It Possible to Have Memories from Previous Lives?

Although a number of anecdotes of vivid and accurate memories from previous lives have been publicly reported, Western cognitive scientists still remain suspicious about the reliability and validity of such incidents. Their main reasons to reject the acceptance of these anecdotes as evidence for the existence of previous lives or the continuity of consciousness across lives are twofold: (1) The frequency of these incidents is too scarce to convince people about their credibility and any meaning they may possibly entail; and (2) Anecdotes, from a scientific view, are not evidence to support or refute any hypotheses (Houshman, Livingston & Wallace, 1999).

Buddhists, on the contrary, do assert the continuum of life and consciousness. It is possible, therefore, for someone to remember things that happened in previous lives, especially among young children of two or three years old, those who had meditative experiences in previous lifetimes or the present life, and those who died suddenly but were in perfect health in their previous life (Dalai Lama, 1999). The Buddhist explanation of this phenomenon includes: (1) Experiences of past lives imprint on one's stream of consciousness, which is then carried over, as mentioned above, into the present lifetime; (2) When the present body is fully developed and life experience is accumulated, the mental associations with this life become increasingly dominant and the ability to recall past life diminishes, showing the dependence of the mind on the body; and (3) If the power of the mind is enhanced, for example through meditation, one can re-access memories from previous lives, especially during meditative experiences in the dream state. Although Buddhists do believe in the possibility of memories from previous lives and provide explanation for the phenomenon, they, according to the Dalai Lama (1999), are still interested in finding possible physiological reasons to explain this type of incident, including a sense of affinity, closeness, or attraction to something or somebody whom one never met before in this life.

The dialogues on these issues reveal the understanding that each of the two traditions has accumulated over the years as well as the disparities in their views. Both sides, however, also acknowledged the limitations of their knowledge and expressed strong interest in learning from each other. The above-described examples of the issues they have discussed demonstrate the fruitfulness of this exchange and also point to many unresolved issues awaiting further exploration and clarification. As a result of this kind of close encounter between East and West, one further question may be how the exchanged information could be integrated, given the fact that the two sides come from such different traditions (e.g., philosophical versus scientific) and subscribe to such different investigational approaches (e.g., subjective and experiential versus objective and empirical). The following section explores the possibility of integrating Buddhist and Western views on mind, with a focus on potential benefits the dialogues may bring to each tradition.

Conclusion: Toward an Integration of Buddhist and Western Views on Mind

While Buddhism has a history of over twenty-five centuries exploring the mind and its nature as well as developing practicing techniques aimed at transcendentally transforming the mind, its knowledge of mind has yet to be well recognized by the Western world. Buddhism's reliance on introspection and self-analysis as main study methods may partially explain its lack of acceptance and acknowledgement in the science-oriented West. Other factors associated with its historical development may also contribute to its lack of popularity. As Wallace (2007) pointed out, Buddhist followers have over the centuries repeatedly derailed the focus of Buddhism from the original empirical and pragmatic orientation to dogmatic and scholastic pursuit. Modern academic scholars in the field of Buddhist studies continue this trend by confining the Buddha's teachings to a body of belief or religious faith. The wealth of Buddhist insights and experiences has therefore remained ignored by Western cognitive scientists in their pursuit of advancing the understanding of mind and its nature.

The rapid development in modern medical technology and neuroscience has resulted in tremendous progress in the understanding of the human brain and its structures and functions. This understanding, however, has been impeded by the rejection of applying empirical investigation to subjective experiences from a first-person perspective (Wallace, 2007). The assumptions of scientific materialism dominating the Western inquiries further reinforce researchers' perception of mental events as equating to physical matter such as the brain.

It is thus the hope of the Dalai Lama and Western cognitive scientists, as well as those in the audience and readership of their dialogues, that through communication and collaboration between East and West, both sides may benefit from each other with an ultimate goal of enhancing the well-being of the world at large. The potential benefits for Buddhism, as perceived by Wallace (2007), however, may be limited as the Buddha's teachings have already provided sufficient guidance for purifying the mind of its afflictions and achieving the goal of Buddhist practice. Even so, Wallace (2007) has gone ahead to suggest several potential areas that Buddhism may benefit from West. These benefits include: (1) Learning from the findings of cognitive neuroscience to understand more about mental diseases, psychological effects of brain damage, and neural correlates of mental phenomena; (2) Facilitating the spread of Buddhist teachings by engaging and collaborating with Western researchers who are also interested in the study of mind; and (3) Maintaining the vitality of Buddhist tradition in both the Eastern and Western worlds by obtaining the assistance of cognitive scientists in assessing the effectiveness of various meditation techniques, understanding which practices are appropriate for what types of people, and adapting Buddhist teachings and practices for optimal benefits.

Wallace (2007), on the other hand, also believed that the Western scientific tradition could benefit more if it joined the Buddhist tradition in its pursuit of investigating the multifaceted science of mind. The benefits, however, are contingent upon the modification of a strict confinement to the principles of scientific materialism. Potential benefits that might be enjoyed by Western cognitive neuroscientists include: (1) Learning from Buddhist insights drawn from the first-person exploration of a wide range of states of consciousness; (2) Developing a set of rigorous methodologies for the study of mind from the first-person approach; (3) Expanding the study of mind from the behavioral and neural correlates to the higher potentials of consciousness described by Buddhists such as paranormal abilities, extrasensory perception, and mental equilibrium; (4) Strengthening their power of discovering spectrums of mental phenomena by developing heightened degrees of attention stability and vividness through Buddhist practices; and (5) Extending the understanding of the continuity of individual consciousness in this life to the processes of dying and death.

A number of unresolved questions that are still puzzling both Buddhist contemplatives and Western cognitive scientists have been mentioned in their series of dialogues. There may be better opportunities for these questions to be solved through collaborative efforts between the two parties. A few examples of these numerous lingering questions are: (1) How can such a physical matter as the brain produce mental experiences? (2) What is the relationship between the brain and the various degrees of subtlety of consciousness? (3) Can we manipulate the brain in such a way so that desirable, wholesome mental functions may be induced while those undesirable mental afflictions may be eradicated? (4) What is the purpose of dreaming? (5) Can a single moment of consciousness apprehend itself, and, if so, how is it manifested in brain activities? (6) When and how does an organism become conscious? and (7) How does consciousness continue beyond death?

While there is still a long way to go to intimately integrate the theories and practices upheld by the Eastern and Western traditions, there seem to be at least two expectations that are shared by members of both sides. These expectations include: (1) There is value in collaborating with each other not only in terms of increasing the knowledge and understanding of the human mind, but also furthering the quality and well-being of human existence; and (2) A comprehensive, fully integrated science of mind is possible to achieve through collaboration and for the benefit of all sentient beings.

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