

Buddhism and Science

Donald S. Lopez, Jr.

It is a great honor to be invited to speak at Brookhaven. As will soon become painfully clear, I am a scholar of the humanities, one of “the two cultures” of the academy, according to the famous term coined by C. P. Snow fifty years ago, and a culture different from the natural sciences. Whether or not Snow was right in his characterization, there *are* differences between the humanities and the natural sciences. You may have heard of the argument between a philosopher and a theoretical physicist about who had the lower equipment costs. The philosopher said, “All I need is a pad of paper and a pencil.” The physicist said, “You win. I need a pad of paper, a pencil, and a wastepaper basket.”

There are other differences between the two cultures. Scholars of the humanities, at least those as old as I am, don’t use powerpoint that much. Another difference is rather odd. In the natural sciences, it is often considered rude to read a paper to the audience; the audience should be talked to and not read to. In the humanities, it is considered rude *not* to read a paper. To read a paper indicates that one cared enough about the audience and the occasion to craft something in advance, paying attention to the conventions of composition. So, I’m afraid I will be reading. But I promise to look up from time to time. And I promise to mention the word “physics.” In fact, I would like to begin with a quotation from Einstein:

The religion of the future will be a cosmic religion. It should transcend a personal God and avoid dogmas and theology. Covering both the natural and the spiritual, it should be based on a religious sense arising from the experience of all things, natural and spiritual

as a meaningful unity. If there is any religion that would cope with modern scientific needs, it would be Buddhism.

This is Einstein's prophecy. It declares that the religion of the future will not be limited to our small planet but will encompass the cosmos. All religions have sought to do this, but the implication here is that the religion of the future will do so accurately, its cosmology based not on fables but on physics. With scientific insight into the nature of the cosmos, the religion of the future will dispense with the primitive notion of a personal God who created the world and who bestows rewards and metes out punishments to his creatures. This religion will encompass both the spiritual and the natural in a harmonious way. It will require no confessions of faith or assents to propositions that derive from the authority of a scripture, no rituals that reenact forgotten myths. It will have no dogma, no church. There will be no damnation, only salvation, a salvation not through grace but through experience, the experience of the individual's sense of oneness with the universe. And, finally, it will be compatible with science. This will be the religion of the future. But it is a religion that already exists. It is, indeed, an ancient religion. It is Buddhism, set forth by the Buddha, the Enlightened One, over two millennia ago.

But there is a problem. This commonly cited declaration of Albert Einstein appears nowhere in his writings or records of his conversations.¹ It seems he never said it. But there is something about Buddhism, and about the Buddha, that caused someone to ascribe this statement to Einstein, the Buddha of the Modern Age. And since the time when Einstein didn't say this, intimations of deep connections between Buddhism and Science have continued, right up until today.

It has often been claimed over the past two centuries that, among the great religions of the world, Buddhism is most compatible with modern science. The nature of this compatibility has fallen across a wide spectrum, with some suggesting that the essential teachings of Buddhism (variously identified) are in no way contradicted by the findings of science (variously enumerated), while others suggest that the Buddha anticipated many of the key discoveries of science, that the Buddha knew more than two millennia in the past what scientists would only discover more than two millennia in the future. This afternoon, I will examine the origins of such claims, identify their present manifestations, and consider what is at stake in the conjunction of Buddhism and Science. Before doing so, however, it is perhaps useful to provide a very brief description of Buddhism.

A Sketch of Buddhism

Buddhism traces its origins to the teachings of an itinerant mendicant who lived in northern India during the fifth century BCE. His clan name was Gautama and his personal name was Siddhārtha. According to traditional accounts, he was born a prince in a small kingdom in what is today southern Nepal. Shielded from the tribulations of life by his father, the king, at the age of twenty-nine he eventually ventured forth from the royal palace, where on separate excursions he encountered a sick man, an old man, a corpse, and a meditating monk. Confronted with the realities of sickness, aging, and death, and the recognition that there are those who seek to escape from them, he departed from the palace, leaving behind his wife and newborn son, in search of a state beyond suffering. After six years of various forms of spiritual exercises, including extreme asceticism, he sat down under a tree and meditated all night. By dawn, he had become

enlightened (*buddha*, literally, “awakened”) and from that point was known as the Buddha, the awakened one, for he had awakened from the sleep of ignorance.

He decided to teach others what he had learned, seeking out his five former fellow ascetics, to whom he delivered his first sermon. He set forth what are known as the four noble truths: suffering, origin, cessation, and path. The first truth is that existence is qualified by suffering. Like many other Indian teachers of the day, the Buddha believed in rebirth, that beings are reborn in various states throughout the universe. In Buddhism, these states are generally enumerated as six: gods, demigods, humans, animals, ghosts, and hell beings. Although the sufferings undergone in the hot and cold hells are greater than those experienced in the heavens of the gods, each abode is ultimately unsatisfactory in one way or another, and all are unsatisfactory in the sense that even the happiest experiences eventually come to an end and one is reborn elsewhere.

The second truth, the truth of origin, explains why this is the case. The Buddha asserted that suffering is caused by *karma*, a Sanskrit term meaning “action.” He denied the existence of an eternal God who is the creator and judge, holding instead that experiences of pleasure and pain, and indeed the environment in which they occur, are the result of past deeds. Virtuous deeds done in the past result in feelings of pleasure in the future (a future that can occur in the lifetime in which the deed is done or any future lifetime). Non-virtuous deeds done in the past result in feelings of pain in the future. Virtue and non-virtue are generally defined as helping and harming others respectively, but are also enumerated under the headings of body, speech, and mind. Thus, killing, stealing, and sexual misconduct are physical non-virtues; lying, divisive speech, harsh speech, and senseless speech are verbal non-virtues, and covetousness, harmful intent, and wrong view are mental non-virtues. These negative deeds are in turn motivated by a

variety of negative mental states, the most important of which are desire, hatred, and ignorance, sometimes referred to as the three poisons. Among these, ignorance is identified as the root cause of all suffering. Although the nature of this ignorance is among the most extensively examined questions in Buddhist thought, it is generally defined as the belief in self; that among the physical and mental constituents of the person, there is a permanent, partless, autonomous self that is the owner of mind and body and that moves from one lifetime to the next. The belief in this self is the fundamental error, and the root cause of all suffering in the universe.

The third truth, the truth of cessation, postulates the existence of a state in which suffering is destroyed. The existence of such a state may be inferred from the process by which suffering is produced. That is, suffering is caused by negative deeds; negative deeds are motivated by desire or hatred; desire and hatred result from ignorance. Thus, if ignorance can be destroyed, there can be no desire and hatred; without desire and hatred, there can be no negative deeds; without negative deeds there can be no suffering. The Buddha called the state of the cessation of all suffering and rebirth nirvana.

The fourth and final truth is the truth of the path, the path to that cessation. The path is described in many ways in Buddhist literature; one of the more succinct is the three trainings: in ethics, in meditation, and in wisdom. Ethical deeds, defined as the control of body and speech, result in states of happiness within the cycle of rebirth. However, such deeds cannot, of themselves, bring about liberation from rebirth. Meditation in this context refers to practices that focus the mind, overcoming the ordinary state of mental distraction to produce a state of one-pointed concentration on a given object. Wisdom is defined as insight into the nature of reality, not simply intellectually, but at a level of deep concentration. The precise content of this wisdom

is a topic of detailed discourse in Buddhism, but it is generally described as the understanding that there is no self to be found among the constituents of mind and body.

Upon hearing the Buddha's first sermon, the five ascetics all became enlightened. The Buddha continued to teach over a long career, traveling through northern India, where he received the patronage of kings and merchants. He established an order of monks and nuns that continues until the present day. Forty-five years after his enlightenment, he died or, in the language of the tradition, passed into nirvana, never to be reborn again.

The Buddha wrote nothing during his lifetime. In keeping with the ancient Indian tradition, his teachings were preserved orally; they did not begin to be committed to writing until some four centuries after his death. Around the beginning of the Common Era, new texts, referred to as the Mahayana sutras, began to appear, claiming to be the word of the Buddha. There is thus a vast corpus of scripture attributed to the Buddha; how much of it can be traced directly to the Buddha himself has long been a point of contention among Buddhists and scholars of Buddhism.

In the centuries after his death, the Buddha's teachings (and those attributed to him) were spread by monks throughout Asia, from Afghanistan in the west to Japan in the East, from Mongolia in the north to Indonesia in the south. Monasteries were founded and texts were translated. The tradition grew and changed in significant ways, so much so that some scholars prefer to speak of several "Buddhisms" rather than a single "Buddhism."

The Colonial Encounter

Prior to the nineteenth century, European scholars divided the peoples of the world into four nations: Christians, Jews, Mohametans, and Idolaters. The Buddhists encountered across Asia

by European explorers, travelers, and Roman Catholic missionaries were placed in the last category, and statues of the Buddha were regarded as idols. It was only in the nineteenth century that the Buddha was identified with certainty as a historical figure of Indian origin, no longer a stone idol but the founder of a great religion.

European travelers encountered Buddhism all over Asia, but not in India, the land of the Buddha's birth. By the fourteenth century Buddhism had all but disappeared from India. The reasons for its disappearance were complex (the invasion of northern India by Muslim armies one of many causes), but its consequences were profound. For by the nineteenth century, when European scholars trained in South Asian languages began a sustained study of the culture and history of India, what they would come to call "Buddhism" was an artifact. There were no Buddhists in India, although there were Buddhists almost everywhere else in Asia. Instead, India had monuments (often in ruins), cave temples (overgrown by jungle), and statues (often broken). There were stone inscriptions to be deciphered, and there were Sanskrit manuscripts preserved in Nepal to the north of India and Pali manuscripts in Sri Lanka to the south of India. These were the materials from which European philologists would build their Buddhism.

The nineteenth century thus saw the birth of what has been called the "scientific discovery" of Buddhism, that is, the study of Buddhism by scholars who could read Buddhist texts in the original languages. This was made possible by significant advances in the science of philology, with the discovery of language families and ancient connections between the classical Indian language of Sanskrit and the classical European languages of Greek and Latin, as well as modern German, French, and English. These were called the Indo-European or Aryan languages; *aryan* is a Sanskrit term meaning "noble" or "superior," and was the name that ancient peoples of northern India used to refer to themselves. Through a complicated process,

theories of language groups eventually gave rise to theories of racial groups. The kinship between the people of ancient India and the people of ancient Greece and hence (through a certain leap of faith) those of modern Europe became not simply a matter of verb roots but of blood lines.

Because there were no Buddhists living in India during the colonial period, the Buddhism of India, that is, the first Buddhism, became the domain of European and, later American and then Japanese scholars. In 1844, the French Sanskritist Eugène Burnouf argued convincingly that Buddhism is an Indian religion and that it must be understood first through texts in Indian languages. For the remainder of the nineteenth century, India became the primary focus of Buddhist Studies in Europe, and Sanskrit became the lingua franca of the academic field. Much of the early scholarship focused on the life of the Buddha and on the early history of Buddhism in India, prior to its demise there, referred to by such terms as “original Buddhism,” “primitive Buddhism,” sometimes “pure Buddhism.” This austere system of ethics and philosophy stood in sharp contrast to what was perceived as the spiritual and sensuous exoticism of colonial India, where Buddhism was long dead. This ancient Buddhism, derived from the textual studies of scholars in the libraries of Europe, could be regarded as the authentic form of this great religion, against which the various Buddhisms of nineteenth-century Asia could be measured, and generally found lacking. Buddhism thus came to be regarded as a tradition that resided most authentically in its texts, such that it could be effectively studied from the libraries of Europe; many of the most important scholars of the nineteenth century never traveled to Asia. They created a Buddha and a Buddhism unknown at the time in Asia, and that may never have existed there before the late nineteenth century. Just as there was a quest for the historical Jesus, there was a quest for the historical Buddha, and European Orientalists felt they found him.

Their Buddha was not so foreign. He was in fact, racially, an Aryan, unique among the founders of the world religions; Abraham, Jesus, and Muhammad were all Semites. But the nobility of the prince was not only hereditary; he was also noble because he renounced his royal birth to achieve a spiritual nobility. He was portrayed as a great reformer, described by some as “the Luther of Asia,” who condemned the vapid priestcraft of the Hindu Brahmins and the caste system they controlled. In a Europe obsessed with questions of race and questions of humanity, the Buddha was both racially superior and a savior for all humanity, an ancient kinsman, a modern hero. Furthermore, his ancient teachings, as represented by Victorian scholars, seemed most modern.

The Buddha of Science

Buddhism, then, could be hailed as religion whose founder was neither a god nor a prophet of God, but a man. This man, through his own efforts and his own investigations, discovered the nature of the universe, and then compassionately taught it to others. This Buddha described a universe that was not created by God but that functioned according to laws of cause and effect. These laws was not limited to the material world, but extended also to the moral realm, where virtue leads eventually to happiness and sin to suffering, not through the whims of a capricious God, but through the natural law of karma.

This Buddha understood the mechanisms of the mind in precise detail, explaining how desire, hatred, and ignorance motivate actions that eventually result in all manner of physical and mental pain, and he set forth techniques for bringing the chattering mind and the unruly emotions under control in order to reach a state of serenity. Beyond this, he analyzed the myriad constituents that together are called the person, finding among them nothing that lasts longer

than an instant. Thus, he discovered, through his analysis, that there is no self, that there is no soul, that what we call the person is but a psychophysical process, and that the realization of this fundamental truth results in a certain liberation.

This Buddha then extended this analysis to the phenomena of the universe, declaring the universal truth of *pratītyasamutpāda*, dependent origination, according to which everything is interrelated, each entity connected to something, nothing standing alone, with effects depending on their causes, wholes depending on their parts, and everything depending on the consciousness that perceives it, appearing differently depending upon one's perspective. Yet whether wave or particle, there is no uncertainty about the ultimate nature of reality, which the Buddha calls *śūnyatā* or emptiness. Emptiness is not nothingness; it is the absence of what is called *svabhāva*, self-nature, a false quality projected upon the objects of our experience by ignorance, and removed by wisdom.

This Buddha's discoveries were not limited to psychological truths and philosophical insights. He described multiple universes, each with its own sun, universes that arose out of nothingness and returned to nothingness over the course of vast cosmic phases of creation, abiding, and disintegration, measured in massive units of time called "countless aeons." And he explained how countless beings are born in these universes across these aeons, each moving, through a process of spiritual evolution, to a state of perfect wisdom.

This Buddha discovered these truths not through revelation but through investigation and analysis, testing hypotheses in the laboratory of his mind to arrive at conclusions. He articulated these truths in his teachings, truths that derive not from faith, but from the Buddha's own experience. And when he died, he did not ascend into heaven. He lay down between two trees

and said to his monks, “All conditioned things are subject to decay. Strive on with diligence.” Then he passed away, like a flame going out.

For Europeans and Americans seeking an alternative to theistic religions, who sought to preserve religion, or at least a religion, in the light of science, this was a Buddha to whom all manner of scientific insights could be ascribed, from the mechanisms of the universe to the structure of the atom, from a natural law of morality to the deepest workings of the mind. His was a religion, if it was a religion at all, that required no dogma, no faith, no divinely inspired scriptures, no ritual, no worship of images, no God. This Buddha enjoyed particular popularity among the more anti-clerical of the European intellectuals.

For them, Buddhism was a tradition that saw the universe as subject to natural laws, without the need for any form of divine intervention. This led many European enthusiasts to declare Buddhism as the religion most suited to serious dialogue with science, because both postulated the existence of immutable laws that governed the universe.

This Buddha was rather different from the Buddha whose words were recited and whose image was venerated across Asia. Despite the chronological and geographical range of the tradition, he portrayed with great consistency in Asia. He was believed to have perfected himself over the course of millions of lifetimes as a bodhisattva, performing the virtuous deeds called perfections. He was believed to have taken rebirth in heaven in his penultimate life, where he perused the world to select the city of his final birth, his caste, his clan, and his parents. He was believed to have achieved enlightenment at the age of thirty-five, sitting under a tree along the banks of a river. With this enlightenment, he was believed to possess all manner of supernormal powers, including full knowledge of each of his own past lives and those of other beings, the ability to know others' thoughts, the ability to create doubles of himself, the ability to rise into

the air and simultaneously shoot fire and water from his body. Although he passed into nirvana at the age of the eighty-one, he could have lived “for an aeon or until the end of the aeon” if only he had been asked to do so.

Rather than narrating the events of his final lifetime, the traditional biographies of the Buddha, which did not begin to appear until some four centuries after his death, seemed more intent on describing his previous lives, and the previous buddhas he encountered along the way. He was but one of many buddhas; each taught the same truth, the same path to liberation from suffering. Indeed, all buddhas are said to be remarkably similar in word and deed; they differ from each other in just a few ways, one of which is the circumference of their auras.

The Buddha Returns to Asia

The Buddha who had been created in Europe did not remain there. By the latter half of the nineteenth century, much of Buddhist Asia had come under European control. Ceylon and Burma were British colonies, Indochina was a French colony. Although China, Korea, Japan, and Tibet did not come under direct European or American control, they each had varying levels of contact with Europe, including the establishment of Christian missions. As in the classical colonial economy, raw materials, in this case, Buddhist texts in Sanskrit and Pali, were extracted from the colony and shipped to Europe, where they were refined to produce a new Buddha, one that had not existed before. To complete the colonial circuit, that Buddha was then exported back to Asia, where he was sold to Asian Buddhists, who sent him into battle against the Christians.

Christian missionaries to Asia continued to regard Buddhists as heathens, and sought to demonstrate that errors of Buddhism, sometimes condemning it as superstition, sometimes as idolatry. To counter these claims, Buddhist elites claimed that Buddhism was in fact superior to

Christianity, in part because it was more compatible with science. At a lecture delivered at the Town Hall in New York in 1925, the Sinhalese activist Anagarika Dharmapala (1864-1944) declared:

The Message of the Buddha that I have to bring to you is free from theology, priestcraft, rituals, ceremonies, dogmas, heavens, hells and other theological shibboleths. The Buddha taught to the civilized Aryans of India 25 centuries ago a scientific religion containing the highest individualistic altruistic ethics, a philosophy of life built on psychological mysticism and a cosmogony which is in harmony with geology, astronomy, radioactivity and relativity. No creator god can create an ever-changing, ever-existing cosmos. Countless billions of aeons ago the earth was existing but undergoing change, and there are billions of solar systems that had existed and exist and shall exist.²

In China, the challenge came not only from Christian missionaries, but from a growing community of Chinese intellectuals who saw Buddhism as one of several forms of primitive superstition preventing China's entry into the modern world; for them, Buddhist practice was fraught with ghosts and demons, and Buddhist doctrine was "life denying." As a religion imported from India long ago, Buddhism had periodically been regarded with suspicion by the state over the course of Chinese history and had been subjected to imperial persecution on four occasions (in 564, 567, 845, and 955 CE). Criticism of Buddhism intensified in the early decades of the twentieth century (especially after the Republican revolution of 1911) when Buddhism was denounced both by Christian missionaries and by Chinese students who returned from studying abroad, among whom the works of John Dewey and Karl Marx were particularly

popular. Again, the new Buddha was sent into battle, with some Chinese monks claiming that science can confirm the insights of the Buddha but is incapable of gaining those insights through its own means. In order to penetrate beyond appearances to the true nature of reality, however, science is inadequate. In order to understand the nature of reality, one must achieve buddhahood.

In the last decades of the nineteenth century, Buddhism was also under attack in Japan. In an effort to demonstrate the relevance of Buddhism to the larger interests of the Japanese nation, Buddhist leaders sought to promote a New Buddhism that would play an active role in Japan's attempts to modernize and expand. In the early years of the Meiji period (1868-1912), Buddhism was portrayed as a foreign and anachronistic institution, riddled with corruption, a parasite on society, and the purveyor of superstition, impeding Japan from taking its rightful place among the great nations of the modern world. The New Buddhism that was espoused in response to such charges was represented as both purely Japanese and purely Buddhist, more Buddhist, in fact, than the other Buddhisms of Asia, especially those of China and Korea, which many Buddhist leaders conceded were corrupt. The New Buddhism was also committed to social welfare, urging the foundation of public education, hospitals, and charities. It supported the military expansion of the Japanese empire. And it was fully consistent with modern science.³

Although various Buddhist thinkers each offered a somewhat different view from the other, together they regard Buddhism as that religion most compatible with science, although they also hold that Buddhism offers access to states of wisdom that science alone can never attain. Some even went so far as to declare that Buddhism was not a religion at all, but was itself a science of the mind. The implications of such a claim become clear in light of theories of social evolution of the day, which saw an inevitable advance of humanity from the state of primitive superstition to religion to science. By claiming it to be a science, Buddhism,

condemned as a primitive superstition both by European missionaries and by Asian modernists, jumps from the bottom of the evolutionary scale to the top, bypassing the troublesome category of religion altogether.

Buddhism and Science in the Contemporary Period

The discourse of Buddhism and Science remained relatively dormant during the 1940s and 1950s, with the exception of parallels drawn by some between psychoanalysis and Zen, inspired largely by the works of D. T. Suzuki.⁴ It reemerged in the 1960s with the efflorescence of interest in Asian religions and Eastern wisdom. The signal publication during this period was the improbable bestseller, *The Tao of Physics*, first published in 1975. The work went on to become a classic of the New Age, selling more than one million copies. Its author, Fritjof Capra (1939-) was a physicist rather than a student of Buddhism, and thus relied on secondary sources for his portrayal of Buddhist thought. As was the case with a number of works of this period, Capra spoke as often of “Eastern mysticism” as of a specific tradition. This mysticism included, then, insights from Hinduism, Buddhism, and Taoism. He writes:

The argument of this book could therefore be phrased more generally, by saying that modern physics leads us to a view of the world which is very similar to the views held by mystics of all ages and traditions. Mystical traditions are present in all religions, and mystical elements can be found in many schools of Western philosophy. The parallels to modern physics appear not only in the *Vedas* of Hinduism, in the *I Ching*, or in the Buddhist *sutras*, but also in the fragments of Heraclitus, in the Sufism of Ibn Arabi, or in the teachings of the Yaqui sorcerer Don Juan.⁵

Like the Theosophists of the nineteenth century, Capra sees a deep foundation from which all mystical traditions arise, a tradition that both anticipates and is confirmed by what he calls “the New Physics.” Both mysticism and the modern physics derive their insights from empirical methods, yet those insights cannot be expressed in words. They thus remain beyond the comprehension of those who are neither mystics nor physicists.

Since the 1980s, the fourteenth Dalai Lama of Tibet has been the most visible and influential Buddhist teacher to embrace the discourse of Buddhism and Science. Born in 1935 in a distant corner of the Tibetan cultural domain, he was identified as a young boy as the fourteenth incarnation of the Dalai Lama, a lineage of Buddhist teachers that extends back to the fifteenth century; since 1642, the Dalai Lamas were also the temporal rulers of Tibet. He displayed an interest in mechanical things from the time of his tutelage in the Potala Palace in Lhasa, where he discovered various European gadgets given as gifts to his predecessor. The Peoples Liberation Army invaded Tibet in 1950 and the Dalai Lama assumed the position of head of state, traveling in 1954 to China, where he was impressed by Chinese feats of engineering. During a failed Tibetan uprising against the occupying army in March 1959, he escaped to India, where he has lived since.

The Dalai Lama made his first trip to the United States in 1979 and has traveled extensively since then, often meeting with scientists and researchers to discuss a wide range of topics, from cosmology to neurology. Due in part to his interests, over the past twenty years, the effects of Buddhist meditation have begun to be measured by neurologists, adding a new dimension to Buddhism and Science.⁶

The assertions being made in this domain are qualitatively different from the assertion that the Buddha understood the theory of relativity. The claim here is that Buddhist meditation works. However, in order to understand the laboratory findings, such a claim requires that one first identify what is “Buddhist” about this meditation, describe what the term “meditation” encompasses in this case, and explain what “works” means, especially in the context of the exalted goals that have traditionally been ascribed to Buddhist practice.⁷ Although these goals are numerous and are variously articulated across the tradition, it can be said that their ultimate goal is not self-help but a radical reorientation toward the world—and in many articulations, a liberation from it—either for oneself or for all beings.

Consequences

Through these various peregrinations, the discourse of Buddhism and Science has survived from the nineteenth, through the twentieth, and now into the twenty-first century. It began in the arena of polemics, with Buddhists seeking to defend their religion against the attacks of Christian missionaries. By the time that the first claims of affinity between Buddhism and science began to be made in Asia in the late nineteenth century, science had come to carry connotations of authority, validation, and truth, separate from and, in some cases, in conflict with, those of the Christian church. It is therefore perhaps unsurprising that Buddhist leaders in Asia would point to what they identified as the scientific aspects of Buddhism in an effort to trump the charges of idolatry and superstition leveled at them by Christian missionaries across the Buddhist world. They argued that the Buddha knew long ago what the science of the Christian west was only now discovering, whether it be the mechanisms of causation that rely on no god, the analysis of

experiences into their component parts, the subtle disintegration of matter called impermanence, or the existence of multiple universes.

In this first stage, “Buddhism” was the philosophy of the Buddha, as European Orientalists understood him, an aristocratic teacher who rebelled against the corrupt priestcraft of his day to teach an ethical system that required no God, and which opened the path to freedom from suffering to all humanity. Asian Buddhists and European enthusiasts could thus claim Buddhism as the most modern of the world religions, able to uphold morality without the need for an angry creator God, and as the most scientific, fully in accord with the science of the day, which described a mechanistic universe of cause and effect.

In the period after the Second World War, this science was displaced by Einstein’s theories and “original Buddhism” was displaced by Zen, especially as set forth by D. T. Suzuki. The focus turned from cause and effect to relativity and from the law of karma to “interdependence,” through creative readings of Nāgārjuna’s statements on *pratītyasamutpāda*, “dependent origination.” In more recent years, expositions of emptiness and quantum physics have continued (although now drawing on Tibetan interpretations of Indian Buddhist doctrine) with a new element added: the relation of Buddhism to cognitive science, especially through laboratory investigations of the effects of Buddhist meditation on the brain. Thus, in each of its periods of conjunction with science, a different form of Buddhism has been called upon to play its part.

Over the century and a half of its association with Buddhism, “science” has also meant many things. At times, science has meant a method of sober and rational investigation, with the claim that the Buddha made use of such a method to arrive at the knowledge of deep truths about inner and outer worlds. At other times, science refers to a specific theory: the mechanistic

universe, the theory of evolution, the theory of relativity, the Big Bang, whose antecedents are to be found in Buddhist doctrine. At other times, science has referred to a specific technology—the microscope, the telescope, the spectrometer—that has been used to discover what the Buddha knew without the aid of such instruments; as more precise instruments have been developed over the past century, the claims of the Buddha’s knowledge have remained constant. And at still other times, science has referred to the manipulation of matter, with dire consequences for humanity unless paired with the compassionate vision of the Buddha.

The referent of “Buddhism” and the referent of “science” have thus changed radically over the course of more than a century, yet the claim for the compatibility of Buddhism and Science has continued to be made, with a remarkable rhetorical consistency. And in each case, in order for the claim to be made, each term must be radically restricted. “Buddhism” becomes a single tradition, and within that tradition, an isolated set of elite doctrines and practices, eliminating much of what has been deemed essential, whatever that might be, to the exalted monks and nuns and ordinary laypeople who have gone for refuge to the Buddha over the course of more than two thousand years. The term “science” is often restricted to such an extent that it becomes like a mantra, a potent sound with no semantic value.

Buddhists first encountered science, perhaps ironically, in the guise of Christianity; it was a superior knowledge, a knowledge that Christianity possessed and Buddhism did not, thus providing yet further proof of the superiority of Christianity, and hence a tool of the missionary and a reason for conversion. Later, science would be portrayed as the product of a more generalized “European civilization,” something that this civilization would take around the world; the vehicle for that journey was colonialism. The modern Buddhists of the late nineteenth and early twentieth centuries thus had good reason to try to claim science for themselves.

Whether to counter the missionary's charge that Buddhism was superstition and idolatry, or to counter the colonialist's claim that the Asian was prone to fanciful flights of the mind and meaningless rituals of the body, or to counter both, science proved the ideal weapon. It was Buddhism, in fact, that was the scientific religion, the religion best suited for modernity, throughout the world. It was an Asian, the Buddha, who knew millennia ago what the European was just beginning to discover. This latter point was only made possible through the strange international network that invented the Buddha as we know him.

A century later, the missionaries have not gone away, but their inroads into Buddhist societies are largely confined to specific times and places of the past. And European colonialism, in its classical form, has died out. Yet the discourse of Buddhism and Science persists, unchanged in so many ways. The enemy is slain; the weapon continues to be wielded.

The inevitable links between nation and science help to explain why today the most famous proponent for the links between Buddhism and Science is none other than the Dalai Lama, who has struggled for a half century for the independence of Tibet, perhaps still seeking to demonstrate that Tibetan Buddhism is not the primitive superstition that the European Orientalists saw in the nineteenth century and that the Chinese Communist Party saw in the twentieth. Rather, Tibetan Buddhism is presented as a worthy interlocutor of science and hence an appropriate ideology of a modern nation that might one day exist.

But Buddhism and science are different. In the scientific method, at least in its idealized form, reality or truth (whatever those terms might mean in a given case) has not yet been discovered; hypothesis and experiment are employed to arrive at a truth that is at the time unknown, or at least unverified. That truth can change, and has changed many times over the history of science, with a new truth sometimes refining an old truth, sometimes completely

replacing it. The image is one of augmentation and revision, moving toward an ever-receding horizon of omniscience, a Theory of Everything.

Over the long and varied development of the Buddhist traditions, there remains the shared belief that the nature of reality was discovered long ago by the Buddha, and before him, by the buddhas of the distant past, and that same reality was understood by all buddhas in its entirety and its fullness. This reality is represented not as something that the Buddha was the first to discover but which he rediscovered. In a famous metaphor, the Buddha describes a traveler coming across an ancient city at the end of the ancient path through the great forest, a once great city, now deserted and in ruins. The traveler informs the king, who restores the city to its former glory. The Buddha is that traveler, discovering the same path to enlightenment that the buddhas of the past had found. Thus, in Buddhism, the truth is something that is found, and then lost, and then found again. This is why it is said that the next buddha does not appear in the world until the teachings of the previous buddha have been completely forgotten. As long as the path to the city of reality remains passable and the city itself remains prosperous, there is no reason for repair. But when the city falls into ruins and the path is overgrown with oblivion, then the path must be cleared again and the city restored. This is what the buddhas do, again and again, over the aeons.

In a sense, then, Buddhism is profoundly retrospective, looking to the past to understand the present, and thereby to secure a haven safe from a hazardous future. There is a comfort in the knowledge that the course to that haven has already been clearly charted. There is a comfort in the knowledge that that course has already been safely navigated. There is a comfort in the knowledge that the other shore has been reached. Science, in a popular representation, offers a different appeal, an appeal to the quest for what has never been known by anyone yet is

somehow there, waiting to be discovered, if we just knew how to find it. In the meantime, we must live in doubt of our deepest knowledge. Perhaps this is why we yearn for the teachings of an itinerant mendicant in Iron Age India, even of such profound insight, to somehow anticipate the formulae of Einstein.

Notes

¹. This is one of two statements about Buddhism attributed to Einstein that are widely quoted. The second is a variation of the first: “Buddhism has the characteristics of what would be expected in a cosmic religion for the future: It transcends a personal God, avoids dogmas and theology; it covers both the natural and the spiritual, and it is based on a religious sense aspiring from the experience of all things, natural and spiritual, as a meaningful unity.” The attribution of these statements to Einstein is questionable. They do not appear, for example, in Thomas J. McFarlane, ed., *Einstein and Buddha: The Parallel Sayings* (Berkeley, CA; Seastone, 2002). When either of these of two statements is cited, either no source is provided or the source is identified as Helen Dukas and Banesh Hoffman, eds., *Albert Einstein: The Human Side* (Princeton, NJ: Princeton University Press, 1954), with no page number provided. In fact, the quotation does not appear in this volume, where the only mention of Buddhism or the Buddha is, “What humanity owes to personalities like Buddha, Moses, and Jesus ranks for me higher than all the achievements of the enquiring and constructive mind.” See page 70; the German original appears on page 144.

². Anagarika Dharmapala, “Message of the Buddha,” in Ananda Guruge, ed., *Return to Righteousness: A Collection of Speeches, Essays and Letters of Anagarika Dharmapāla* (Ceylon: The Government Press, 1965), p. 27.

³. The “spirit” of the New Buddhism, as well as its close ties to the expansionist policies of the Meiji government, is expressed in the concluding paragraphs of an address entitled “History of Buddhism and Its Sects in Japan,” delivered by the Shingon priest Toki Hōryū (1854-1923) on September 14, 1893 to the World’s Parliament of Religions in Chicago:

The present Japanese Buddhism has passed several hundred years since the last change. The past experience points out to us that it is time to remodel the Japanese Buddhism—that is, the happy herald is at our gates informing us that the Buddhism of the perfected intellect and emotion, synthesizing the ancient and modern sects, is now coming.

The Japanese Buddhists have many aspirations, and at the same time great happiness, and we can not but feel rejoiced when we think of the probable result of this new change by which the Buddhism of great Japan will rise and spread its wings under all heaven as the grand Buddhism of the whole world.

See Horin Toki [Toki Hōryū], “History of Buddhism and Its Sects in Japan” in Walter R. Houghton, ed., *Neely’s History of the Parliament of Religions and Religious Congresses at the World’s Columbian Exposition*, 4th ed. (Chicago: F. Tennyson Neely, 1894), p. 226.

On Meiji policies regarding Buddhism and Buddhist responses, see James Edward Ketelaar, *Of Heretics and Martyrs in Meiji Japan* (Princeton, NJ: Princeton University Press, 1990), Richard Jaffe, *Neither Monk nor Layman: Clerical Marriage in Modern Japanese Buddhism* (Princeton, NJ: Princeton University Press, 2001), and Brian Victoria, *Zen at War* (New York: Weatherhill, 1997).

⁴. See, for example, Daisetz Teitaro Suzuki, Erich Fromm, and Richard De Martino, *Zen Buddhism and Psychoanalysis* (New York: Harper, 1960) and Alan Watts, *Psychotherapy, East and West* (New York: Pantheon Books, 1961). Theravada claims also continued during this period. The Burmese Buddhist monk, U Thittila, playing on the multivalence of the word

dharma (Pali: *dhamma*), declared, “All the teachings of the Buddha can be summed up in one word: Dhamma. . . . Dhamma, this law of righteousness, exists not only in a man’s heart and mind, it exists in the universe also. All the universe is an embodiment and revelation of Dhamma. When the moon rises and sets, the rains come, the crops grow, the seasons change, it is because of Dhamma, for Dhamma is the law residing in the universe which makes matter act in the ways revealed by the studies of modern science in physics, chemistry, zoology, botany, and astronomy. Dhamma is the true nature of every existing thing, animate and inanimate.” U Thittila, “The Fundamental Principles of Theravada Buddhism” in Kenneth W. Morgan, ed., *The Path of the Buddha: Buddhism Interpreted by Buddhists* (New York: The Ronald Press Company, 1957), p. 67.

Also relevant in the post-war period, especially in Japan, was the question, raised by Buddhists and others, of the use and misuse of science in the wake of the bombings of Hiroshima and Nagasaki. The Buddhist writing on this topic, much of which has yet to be translated into English, represents an important element of the Buddhist and science discourse in the 1950s and 1960s. The writings of D. T. Suzuki on science, composed both in Japanese and English over the course of more than half a century, merit their own study. The complicity of Japanese Buddhists (including Suzuki) in the Pacific War has been a source of both repentance and recrimination. See, for example, Brian Daizen Victoria, *Zen at War*, 2nd ed. (Lanham, MD: Rowman and Littlefield, 2006), James W. Heisig and John C. Maraldo, eds., *Rude Awakenings: Zen, the Kyoto School, and the Question of Nationalism* (Honolulu: University of Hawaii Press, 1995), and Jamie Hubbard and Paul L. Swanson, eds., *Pruning the Bodhi Tree: The Storm Over Critical Buddhism* (Honolulu: University of Hawaii Press, 1997).

⁵. Fritjof Capra, *The Tao of Physics: An Exploration of the Parallels Between Modern Physics and Eastern Mysticism*, 3rd edition, updated (Boston: Shambhala, 1991), p. 19. The reference to Don Juan is probably significant, since Capra notes in the Preface, “In the beginning, I was helped on my way by ‘power plants’ which showed me how the mind could flow freely; how spiritual insights come on their own, without any effort, emerging from the depth of consciousness.” See Capra, p. 12.

⁶. For an insightful account of the recent role of Asian religions, including Buddhism, in neurological research, see Anne Harrington, *The Cure Within: A History of Mind-Body Medicine* (New York: W. W. Norton and Company, 2008), pp. 205-242.

⁷. For a useful survey and analysis of recent scientific research on the effects of meditation, see Maria B. Ospina, et al., *Meditation Practices for Health: State of the Research*, Evidence Report/Technology Assessment No. 155, AHQR Publication No. 07-E010 (Rockville, MD: Agency for Healthcare Research and Quality, June 2007). The report states:

The field of research on meditation practices and their therapeutic applications is beset with uncertainty. The therapeutic effects of meditation practices cannot be established based on the current literature. Further research needs to be directed toward the ways in which meditation may be defined, with specific attention paid to the kinds of definitions that are created. A clear conceptual definition of meditation is required and operational definitions should be developed. The lack of high-quality evidence highlights the need for greater care in choosing and describing the interventions, controls, populations, and

outcomes under study so that research results may be compared and the effects of meditation practices estimated with greater reliability and validity. Firm conclusions on the effects of meditation practices in healthcare cannot be drawn based on the available evidence. It is imperative that future studies on meditation practices be rigorous in design, execution, analysis, and reporting of the results.

See Ospina, et al., p. 6