

Buddhism and Science: Breaking New Ground

B. Alan Wallace (editor), Columbia University Press, New York, 2003.

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The great Marxist sinologist Joseph Needham blamed Buddhism for stifling science and technology in China while they flourished in Europe. In claiming that everything is an illusion, Buddhism ‘played a part in strangling the development of Chinese science’. Zen Buddhism, in ‘rejecting all philosophy’ was also unfavourable to a scientific view. Since the Buddha refused to speculate, Buddhism discouraged scientific research. Above all, its main object is to escape from this world, not to try to understand it. A ‘despairing’ and ‘perverse’ philosophy, he concludes.^[1] Needham's analysis stands in marked contrast to all the sixteen contributors to this book, and indeed to the prevailing view today that of all the religions Buddhism is the most compatible with science.

It is certainly a fact of history that a great surge in systematic scientific research, followed by technologies with overwhelming effects, took place in Europe from the eighteenth century onwards. Despite its sophisticated civilisations, science in Asia had to await influence from Europe before it was able to make comparable advances. A common view has been that there was a religious factor in this difference, that something in Protestant Christianity favoured science. However, an excellent essay in this volume by Jose Ignacio Cabezon indicates that the conditioning factors were far more complex, and that when Western science did arrive in Asia, it was treated by Buddhists in an open and welcoming way, in contrast to the responses to science of many European churchmen.

When science did arrive, some South Asian Buddhist monks were tempted either to detect prefigurings of scientific discoveries in Buddhist texts, or to laud Buddhism as the most scientific of religions, and the Buddha as the first scientist. They were supported, from Victorian times onwards, by westerners' responses to Buddhism. Cabezon points out that human beings have at first a tendency to treat what is culturally very different in terms of the culturally familiar, so a host of compatibilities between Buddhism and science were discerned. Buddhism was seen as undogmatic, giving authority to the individual, critical in spirit, with a universal impersonal causal law (like science), and with a scientific ethics. Colonel Olcott, a Theosophist instrumental in the revival of Buddhism in Sri Lanka, pointed out around 1889 that Buddhism shared an evolutionary vision with science, both teaching ‘that man is the result of the law of development, from an imperfect lower, to a higher and perfect condition’ (p. 44). (I have explored this connection elsewhere.)^[2]

Cabezón argues that the unsophisticated view of compatibility, or even identity, between Buddhism

and science is now being replaced by one of complementarity. Each has something to offer the other. The contributors to this volume point out a number of such cross-fertilisations, concentrating on two areas in which Buddhist thought may be able to advance scientific understanding: cognitive science and modern physics.

There is one man in particular who should be credited both with stimulating Western scientists to investigate Buddhism, and with reassuring Buddhists that they have nothing to fear from science – the Dalai Lama. As an inquisitive boy-lama roaming around in the vast Potala Palace, he loved to investigate exotic Western mechanical devices, as well as quizzing his tutors on science. Somewhere he relates how, as he turned a globe in his hands, it gradually dawned on him that this was a representation of our spherical world, and the flat cosmology of the ancient Indian texts had now been superseded. He has never lost his eager fascination for science, and he instigated a continuing series of biennial meetings with groups of Western scientists in which a number of topics have been freely explored. (The meetings are organised by the Mind-Life Institute, and an appendix in the book lists those which have been published so far.)

Thus many of the contributors have been involved in the Mind-Life conferences, and have to varying extents practised or studied within the Dalai Lama's Gelug school of Tibetan Buddhism. Alan Wallace, the editor, is one of his translators as well as a writer on Buddhism and science; the Dalai Lama's chief translator, Thupten Jinpa, is probably the only Tibetan monk to have studied Western philosophy to a doctoral level, and offers an interesting essay on Tibetan responses to science. Geshe Jinpa informs us that the Dalai Lama does more than encourage a dialogue between Buddhism and science. He is prepared to let science change Buddhism, so that if a fact emerges that is incompatible with Buddhist theory, he says, 'there is no doubt that we must accept the result of the scientific research' (p. 77). He 'believes that the dynamic encounter with scientific thought could help revitalise Buddhist analysis of the nature of objective reality and the mind' (p. 78).

After all, as the Dalai Lama writes in a short piece for this book explaining the nature of mind in Tibetan Buddhism for the benefit of scientists, 'the mind is transformed when one ascertains and thoroughly acquaints oneself with fresh insights into the nature of reality that invalidate one's previous misconceptions or false assumptions' (p. 96). A Buddhist is interested in the way things are, not in clinging to any specific description, even descriptions hallowed by centuries of transmission in a Buddhist tradition.

The section on cognitive science includes a very stimulating paper by the neuropsychologist David Galin. He engages thoroughly with Buddhist ideas on self, being cheerfully prepared to challenge them without being dismissive. It is well worth breasting the current of his sociological jargon for the sake of several gem-like insights on the human mind. How do we deal with the complexity of

experience? Well, we ‘seek and find, or project, a simplifying pattern to approximate every complex field ... by lumping (ignoring some distinctions as negligible) and by splitting (ignoring some relations as negligible). Both ... create discreet entities useful for manipulating, predicting and controlling ... [but] may impose ad hoc boundaries on what are actually densely interconnected systems and then grant autonomous existence to the segments’ (p. 108). Even the contents of our own consciousness have to be dealt with in this way, resulting in our array of fragmented self-concepts, and we just put up with the anomalies that arise. Buddhism, he explains, agrees that discovering entities is conventionally indispensable, but attachment and aggression arise through reifying them, which violates the principle that all things are interdependent, and all entities are conditional approximations.

Galín is unhappy with Buddhism's moral disapproval for these self-errors, since they are ‘an essential evolutionary adaptation’ (p. 132). He applauds ‘the Buddhist solution to the modern suffering of alienation and anomie ... to completely contextualise self, not to simply erase it.’ (p. 137) He doesn't, I think, have confidence in the possibility of an unmediated immersion in experience, making all self-views obsolete. However, he recognises the importance of meditation. We evolve to act in cumulatively more sophisticated ways on the environment, and have become able to model the states resulting from alternative courses of action (i.e. karma). Sitting meditation eliminates physical action, and progressively limits mental action by interrupting the loop that connects action-observation-action. Thus peripheral awareness has the space to grow, and to notice more and more facets of interrelatedness, allowing a more integrated mental structure to coalesce.

Historically, the schools of psychology in the West have sought to arrive at a final analysis of what the self actually is, and thus represent the operation of the first fetter that, according to the Buddha, prevents irreversible Insight: fixed self view (*satkā ya-dṛṣṭi*). However, the present contributors do not represent this trend, which may have run its course. They recognise the fragmentary and contingent nature of the empirical self. William Waldron connects the accounts of evolutionary psychology and Buddhism concerning the deeply rooted defensive predispositions erected around the sense of an independent ‘I’. Human evil and suffering are caused by attempts to secure constructed selves, often at the expense of others.

Waldron connects Buddhism and evolutionary psychology, claiming that both show that negative behavioural patterns ('evil') have a big influence over long periods of time in evolution, being present in ourselves as inherited capacities, active all the time as predispositions. We can break such vicious, self-centred patterns by firstly understanding the human condition, and then working to overcome their influence.

Here, Waldron misses an opportunity to discuss the systematic teachings of Buddhist ethics, an

astonishing omission from the whole book. The simplest Buddhist formulation of the way to emancipating enlightenment outlines three trainings: the training in morality, in meditation, and in wisdom. *Buddhism and Science* makes an excellent contribution to discussing the second and third in the light of modern scientific approaches, but hardly mentions the first – morality. Yet the connection between morality and scientific enterprises is a live topic in current discussions of science, with very good reason. New scientific developments almost always have implications for human well-being beyond the satisfaction of the curiosity of the researchers, and beyond the promise of technologies for entertainment or labour-saving. For example, transport, agricultural (e.g. genetic modification) and power generation technologies can have major environmental impacts. And medical technologies can involve potentially harming some beings (including experimental animals) to fulfil the wishes of others. The book is rich in philosophical and psychological topics, but hardly mentions ethics.[\[3\]](#)

Another highly technical paper, again worth the effort, is by Francisco Varela and Natalie Depraz. A Chilean neuroscientist who tragically died in 2001, Varela has for some years been making very fruitful connections between Buddhist non-dual understandings of the mind (informed by his groundbreaking work on brain states), and the work of the French phenomenologists. Having established that actual experience and the states of the brain act reciprocally upon one another, so that it is incoherent to say that brain states simply cause mental events, he and Depraz show how perception can be regarded as subsidiary to the mental function of imagination. Perception refers to what is present, imagination to what is not present, and the two mix so that in every moment they are emerging into awareness from an unconscious background, as a living present.

It is still the case that the dominant view among neuroscientists is, in effect, that processes in the body cause the mind. But Varela and Depraz have shown that one's state of mind can access local neural processes, so that neither can be reduced to the other. The mental state corresponds to a particular neural state, and actively incorporates or discards any contemporary neural activity in the relevant brain region, evaluating many potential neural states 'until a single one is transiently stabilised and expressed behaviourally' (p. 213). Mental states require both a phenomenological and a biological account. The neural elements and the global cognitive subject are co-determined; the subject is emergent, not just from the neural base, but also from preceding mental states. Buddhism extends this account by offering its pragmatic consequences, showing how the living present, with imagination active, is a means for human transformation. The authors then describe empathy-enhancing Tibetan visualisation techniques that effect this process.

We can be dazzled by the power and scope of science into accepting the philosophical assumptions that many scientists live by. But the materialist assumption, which includes the belief that the mind is only an epiphenomenon of the brain, is shown by analyses such as that of Varela and Depraz to be a very odd one. After all, we know that we make free decisions to use our bodies in various ways: the

mental is operating upon the physical, as well as being constrained by the limitations of the physical. To suppress our knowledge of freedom of choice seems needless. The difficulty is that notions of reciprocal and interweaving causal processes are comparatively new in the West, so a scientist would be afraid that granting causal efficacy to the mind would be to grant that the whole material universe came into being merely by the force of ideas. A crucial contribution that Buddhism can make to science is to clarify the notion of dependent co-arising (*pratītya samutpāda*). When we observe a phenomenon, inner or outer, we can be confident that it arises and ceases through the coming together of innumerable cooperative conditions, and that it forms an element in the complex of conditions out of which new phenomena are arising. Consequently, no phenomenon exists independently, nor can it persist, since its conditions are inevitably changing. The name that we give it does not refer to any real entity, but is rather a sort of focused torchbeam selecting for our attention a little patch on the shifting cloudscape of experience.

Varela and Depraz are refusing to see brain and experience as isolated entities: 'there is no gap to bridge, only traces to follow' (p. 226). By allowing that human experience possesses a genuine causal agency, they are taking the subjective pole of reality seriously, something that is essential if we are to understand more fully the ways in which body and mind interact. Continuing research need not exclude consideration of those mental states which are comparatively less closely jointed to a brain. Buddhism at present diverges from science in incorporating in its worldview various apparently out-of-body experiences, including the possibility of consciousness unlinking from a dying body and relinking with a growing embryo – i.e. rebirth. It is disappointing that this volume is almost completely silent on rebirth, despite the formidable investigations of Ian Stevenson.[\[4\]](#)

Matthieu Ricard is a French-born Tibetan Buddhist monk with a background in science, whose published conversations with his philosopher father became a bestseller.[\[5\]](#) His article is on 'Contemplative Science', a vogue designation for Buddhism that is perhaps trying to appropriate some of the prestige of science. However, the term does highlight the fact that meditation and other mental disciplines should be seen as valid methods for investigating the mind, complementing the objective techniques of brain scans and psychiatrists' questionnaires.

Many centuries ago, the dialecticians of the *Mādhya*maka school of Buddhism (starting with *Nagārjuna*) tackled Indian philosophical positions that in some ways resemble the standpoints of modern scientists. But it seems to me that Ricard shares with some of the other contributors to this book, notably Wallace, an unreflective overconfidence in the potency of these arguments against views that after all arise from a very different, and often very subtle, philosophical background. Western thought already provides well-developed approaches to understanding reality, which have spotted the weaknesses of dualistic, mechanistic, essentialist and idealist views; in this volume we have excellent presentations on Kant (*Bitbol*), and on phenomenology (Varela and Depraz). One might add Spinoza,

who so inspired Einstein, and is the subject of a recent book by neuroscientist Antonio Damasio,[\[6\]](#) as well as William James, Karl Popper and others. Much hard work will be involved in integrating these thinkers with Buddhism (as the astrophysicist Piet Hut points out in the concluding paper in this volume), but it will be very productive, and surely they cannot be ignored. Eventually, though, we will need a new Tsongkhapa: a fine scholar with a brilliant mind, highly realised through meditation practice.

Meanwhile, the more unreflective western Mā dhyamikans, as well as putting old arguments into new bottles, also tend to conflate Buddhism as a whole with Mā dhyamaka thought, presenting rival Buddhist doctrines as if they had been conclusively refuted by Nagā rjuna and his successors in the Tibetan Gelug school. There are scholars writing on science under the influence of other branches of Buddhism, and it is a great shame that the editor did not bring in their perspectives. For example, several writers on Buddhism and Ecology (a topic unfortunately absent from this book) have practised in Theravā da and Zen, including Joanna Macy, Kenneth Kraft, Leslie Sponsel, Bhikkhu Bodhi, and others. (There is also a bit of a national bias, more than half of the contributors being Americans.)

The modern physics section of *Buddhism and Science* explores the surprising departures from down-to-earth realism that have been emerging mainly in quantum mechanics during the past century. Fitjof Capra popularised some of the parallels with Buddhism, in a general and rather unconvincing way, in his very influential *The Tao of Physics*, published nearly 30 years ago. Despite my protestations above, I must admit that a rigorous application of Mā dhyamaka epistemology to physics, as we see in several of the contributions here, promises to be far more genuinely illuminating than the vague (often verbal) parallels of Capra. But the most impressive paper is by the French philosopher of science Michel Bitbol. (He characterises Capra and others as offering: ‘mere analogy at an ill-defined level of the two discourses, with obvious apologetic purposes’ (p. 327).) His ‘Cure for Metaphysical Illusions’ is an extremely thorough, and difficult, elucidation of neo-Kantian philosophy of science, explaining how Mā dhyamaka approaches can build on it, and extend it radically.

Like Nagā rjuna, Kant was aware of the limitations of concepts. They are only for the formal ordering of the empirical contents, a process that will never end, though reason provides an inaccessible goal of complete rational understanding to regulate the process. Unaware of this as we generally are, it is easy to take the form that our intellect gives to phenomena as being the form of the things in themselves, ‘projecting the a priori structure of the knowing subject onto the world, thus mistaking it for a pregiven worldly structure’ (p. 328). This is the all-pervasive ‘transcendental illusion’, which is very hard to recognise, let alone to compensate for. Bitbol calls on the neo-Kantian philosophers of science to help us with recognising it, but needs to bring in Buddhism to show us how to overcome the illusion. ‘Nagā rjuna's exclusive mission was to free everyone from the spell of reified conventional truth’ (p. 332). (Bitbol helpfully points out in a note that *saṃvṛti-satya*, usually translated

'conventional truth', is more literally a surface truth covering over ultimate truth.) Thus, 'to be in nirvāna means seeing the very same things that appear to the deluded consciousness of sa.msā ra, but seeing them as they are – as merely empty, dependent, impermanent, and non-substantial' (p.333).

Efforts towards a compromise between science and religion in the 19th century West failed, leading to a schizophrenic attitude in which a system of beliefs and values were seen as indispensable, but the available system (monotheism) was incoherent in the light of science. Bitbol wishes to initiate the construction of a single higher-order tool, combining science, philosophy, and the 'nondogmatic soteriology' offered by the Mā dhyamaka. The new tool needs to rely on the 'dynamic potentialities' of doctrines, not their canonical texts, seeing them as operational rather than dogmatic.

Scientific theories are not representations of the world, but are for structuring our actions and anticipating their outcomes, with philosophy helping adjust us between all the possibilities of action within a value system; then Buddhism opens life out in self-transformation. Science does not reveal a pre-existent underlying absolute reality (realism), yet it is more than a set of useful techniques (instrumentalism), being 'the stabilised byproduct of the dynamic reciprocal relation between reality as a whole and a special fraction of it' – the subject (p. 337). The structure of scientific theories is highly significant; they are not arbitrary, but it is possible nevertheless to remain metaphysically agnostic. In fact, Bitbol convincingly argues that this kind of philosophy of science is far more compatible with modern physics, especially quantum mechanics, than the belief in a mechanistic world and a dualistic epistemology. Scientists resist relationalist and nondual philosophies through fear of having no ground to stand on. They can take heart, says Bitbol. Mā dhyamaka dialectically deconstructs substantialist and dualistic views, but it also introduces 'a form of life in which losing ground is not a tragedy (it can even promote enlightenment...) and in which an alternative (say, pragmatic, integrated, and altruistic) strong motivation can be given to science' (p. 339).

There is not space here to detail Bitbol's compelling philosophical framework for quantum mechanics, but I will mention his response to the problem of indeterminism – the unpredictability of quantum events. Is it that chance is ultimate, and any deterministic laws that we find come from the law of large numbers? Or is it that determinism is ultimate, and apparent randomness comes from the complexity of huge numbers of interacting events, as studied in chaos theory? If we take a dependent co-arising-type approach, we will see that the causes of any event are not defined in the absolute, but are 'relative to the very circumstances of the production of the phenomena' (p. 349). Since phenomena arise in dependence upon an enormously complex context, a context which includes the person or instrumentation detecting the phenomena, they are immune to any certain determination. Relations between things should be seen as being prior to the things that are relating; however, 'neither connection, nor connected nor connector exist', says Nagā rjuna. Buddhism's radical analysis is needed to cap philosophy of science, since it comes from 'direct stabilised experience of a

disabused outlook' – i.e., non-conceptual Insight into reality – while the insights of Western philosophy, impressive though they are, are the products of the free play of ideas.

Buddhism and Science succeeds so well because all its contributors take both Buddhism and science seriously, seeing that both represent ways of understanding human experience, and both present opportunities for enhancing its quality. Although Joseph Needham was able to write so dismissively of Buddhism only a few decades ago, we now know that he was mistaken. We know because scientists are engaging personally with the practice of Buddhism. They are finding in it a congenial spirituality which does not nag at their work so long as that work does no harm. They are also finding that it offers remarkable new vistas into the methods and models of science itself. But will Buddhism ever actually influence scientific practice – where to look in one's research, how to explain and interpret one's findings? This book will convince the reader that mind-science has already been changed by Buddhism, but the jury is still out on physics. Francisco Varela has no doubt. His assessment, thinking particularly of Buddhism impacting science, is that 'the rediscovery of Asian philosophy, particularly of the Buddhist tradition, is a second Renaissance in the cultural history of the West, with the potential to be equally important as the rediscovery of Greek thought in the European Renaissance.'^[7] The dialogue has only just begun; we live in exciting times.

Notes

[1]. Joseph Needham, *The Shorter Science and Civilisation in China, Volume I* (Cambridge University Press, 1978), pp. 264, 265, 272.

[2]. Robin Cooper, *The Evolving Mind: Buddhism, Biology and Consciousness* (Windhorse Publications, Birmingham, 1996).

[3]. For a good survey, see Damien Keown, *Buddhism and Bioethics* (Macmillan, London, 1995).

[4]. e.g. Ian Stevenson, *Twenty Cases Suggestive of Reincarnation* (University Press of Virginia, 1974).

[5]. Jean-Francois Revel and Matthieu Ricard, *The Monk and the Philosopher* (Thorsons, London, 1998).

[6]. Antonio Damasio, *Looking for Spinoza: Joy, Sorrow and the Feeling Brain* (Heinemann, 2003).

[7]. Varela, Thomson, and Rosch, *The Embodied Mind* (MIT press, 1993), p.22.