Science and Buddhism: Gentle bridges between the science of the world and the science of the mind

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1. Is there a basis for a dialogue?

As an astrophysicist studying the formation and evolution of galaxies, my work often raises questions about matter, space and time.

As a Vietnamese-born raised in the Buddhist tradition, whenever I came up against these concepts, I couldn't help wondering about how Buddhism would have dealt with them and how its view of reality compares to the scientific viewpoint.

But I wasn't sure whether such questions even made sense. I was familiar with and appreciated Buddhism as a practical philosophy, which provides a guide for self-knowledge, spiritual progress and becoming a better human being. Thus, as far I knew, Buddhism was primarily a pathway leading to Enlightenment, a contemplative approach with an essentially inward gaze, in contrast to science's outward look. What's more, science and Buddhism have radically different methods of investigation of reality. In science intellect and reason play the leading roles.

By dividing, categorizing, analyzing, comparing and measuring, scientists express natural laws in the highly abstract language of mathematics.

Intuition is not absent in science, but it is only useful if backed up by a coherent mathematical formulation and validated by observation and analysis. On the other hand it is intuition -- or rather inner experience - that plays the leading role in the contemplative approach. Rather than breaking up reality, it aims to understand it in its entirety. Buddhism has no use for measuring apparatus and does not rely on the sort of sophisticated observations that form the basis of experimental science. Its statements are more qualitative than quantitative.

So I was far from sure that there would be any point confronting science and Buddhism. I was afraid that Buddhism would have very little to say about the nature of phenomena, because this is not its main interest, whereas such preoccupations lie at the heart of science.

In the summer of 1997, I met the French Buddhist monk Matthieu Ricard at the University of Andorra where we were both giving lectures. He was the ideal person to discuss these issues with: he was trained as a scientist (he has a doctorate in biology from the Pasteur Institute in Paris), so is familiar with the scientific method; but he is also well-versed in Buddhist texts and philosophy as he has left the scientific world to become a Buddhist monk in Nepal about 30 years ago. We had many fascinating discussions during our long walks together in the inspiring mountain scenery of the Pyrenees. Our conversations were always mutually enriching. They led to new questions, original viewpoints and unexpected syntheses that required further study and clarification, and still do so.

I shall discuss below the main issues that sometimes divided us, sometimes united us. A book, *The Quantum and the Lotus*, was born from those friendly exchanges between an astrophysicist who wanted to confront his scientific knowledge with his Buddhist philosophical origins with a Western scientist who became Buddhist and whose personal experience has led him to compare these two approaches.

At the close of our conversations, I must say that my admiration for how Buddhism analyzes the world of phenomena has grown considerably. It has thought deeply and in a profoundly original way about the nature of the world. But the ultimate goals for the pursuit of knowledge in science and Buddhism are not the same. The purpose of science is to find out about the world of phenomena. In Buddhism, knowledge is acquired essentially for therapeutic purposes. The objective is not to find out about the physical world for its own sake, but to free ourselves from the suffering that is caused by our undue attachment to the apparent reality of the external world. By understanding the true nature of the physical world, we can clear away the mists of ignorance and open the way to Enlightenment.

It is not my purpose in this paper to make science sound mystical nor to justify Buddhism's underpinnings with the discoveries of science. Science is perfectly self-sufficient and accomplishes well its stated aim without the need of a philosophical support from Buddhism or from any other religion. Buddhism is a science of the Enlightenment, and whether it is the Earth that goes around the Sun or the contrary cannot have any consequence on its philosophical basis. But because both are quests for the truth, and both use criteria of authenticity, rigor and logic to attain it, their respective views of the world should not result in an insuperable opposition, but rather to a harmonious complementarity.

Werner Heisenberg expressed this eloquently: “I consider the ambition of overcoming opposites, including also a synthesis embracing both rational understanding and the mystical experience of unity, to be the mythos, spoken or unspoken, of our present day and age.”

I shall discuss below the Buddhist concepts on interdependence (section 2), emptiness (section 3) and impermanence (section 4) and how they find an echo in modern science. I shall outline how Buddhism rejects the idea of an "anthropic" principle in section 5. Finally, in section 6, I conclude that science and spirituality are two complementary modes of knowledge and that they must go hand in hand so that we do not forget our humanity.

2. Interdependence

2.1 Buddhism and the interdependence of phenomena

One of Buddhism's central tenets is the “interdependence of phenomena”. Nothing exists inherently, or is its own cause. An object can be defined only in terms of other objects and exists only in relationship to others. In other words, this arises because that exists.

Interdependence is essential to the manifestation of phenomena. In Buddhism, the perception of distinct phenomena resulting from isolated causes and conditions is called “relative truth” or “delusion”. Our daily experience makes us think that things possess a real, objective independence, as though they existed all on their own and had intrinsic identities. But Buddhism maintains that this way of seeing phenomena is just a mental construct. Rather it adopts the notion of mutual causality: an event can happen only because it is dependent on other factors.

Any given thing in the world can appear only because it is connected, conditioned, and in turn conditioning, An entity that exists independently of all others as an immutable and autonomous entity couldn't act on anything, or be acted on itself.

Buddhism thus sees the world as a vast flow of events that are linked together and participate in one another. The way we perceive this flow crystallises certain aspects of the nonseparable universe, thus creating the illusion that there are autonomous entities completely separate from us. Thus phenomena are simply events that happen in some circumstances. This view does not mean that Buddhism denies conventional truth -- the sort that ordinary people perceive or the scientist detects with his apparatus -, or that it contests the laws of cause a defect, or the laws of physics and mathematics. It simply holds that, if we dig deep enough, there is a difference between the way we see the world and the way it really is.

The most subtle aspect of interdependence concerns the relationship between a phenomenon's “designation base” and its “designation”. An object's “designation bases” refer to its position, dimension, form, colour or any other of its apparent characteristics. Together, they comprise the object's “designation”, a mental construct which attributes an autonomous distinct reality to that object. In our every day experience, when we see an object, we aren't struck by its nominal existence, but by its designation. Because we experience it, Buddhism does not say that the object doesn't exist. But neither does it say that the object possesses an intrinsic reality. So it concludes that the object exists (thus avoiding the nihilistic view that Westerners too often attribute mistakenly to Buddhism), but that this existence is purely interdependent. A phenomenon with no autonomous existence, but which is nevertheless not totally inexistent, can thus act and function according to the laws of causality.

2.2 Inseparability in quantum mechanics

A notion strikingly similar to that of Buddhism's interdependence is the concept of inseparability in quantum mechanics based on the famous thought experiment proposed by Einstein, Podolsky and Rosen (EPR) in 1935. In simplified terms, the experiment goes like follows. Imagine a particle that disintegrates spontaneously into two photons A and B. The law of symmetry dictates that they will travel in opposite directions. If A goes northwards, then we will detect B to the south. It all seems perfectly normal. But that's forgetting the strangeness of quantum mechanics. Particles can also appear as waves. Before being captured by the detector, A appeared as a wave, not a particle. This wave was not localized, so that there was a certain probability that A might be found in any direction. It's only when it has been captured that A changes into a particle and' learns' that it's heading northwards. But, if A didn't “know” before being captured which direction it had taken, how could B have “guessed” what A was doing and adjusted its behaviour accordingly so that it could be captured at the same time in the opposite direction? This is impossible, unless A can inform B instantaneously of the direction it has taken. But as Einstein said, “God does not send telepathic signals”, and there can be “no spooky action at a distance.” He therefore concluded that quantum mechanics did not provide a complete description of reality, that A must “know” which direction it was going to take and “tell” B before they split up. According to him, there must be 'hidden variables' and quantum mechanics must be incomplete.

And yet Einstein was wrong. In 1964, John Bell devised a mathematical theorem called “Bell's inequality” which could be verified experimentally if particles really did have hidden variables. In 1982, Alain Aspect carried out a series of experiments on pairs of photons and found that Bell's inequality was always violated. Quantum mechanics was right and Einstein was wrong. In Aspect's experiment, photons A and B were 12 meters apart, yet B always “knew” instantaneously what A was doing, and reacted accordingly.

In the latest experiment carried out by Nicolas Gisin, the photons are separated by 10 km, and yet their behaviours are perfectly correlated. This is bizarre only if, like Einstein, we think that reality is cut up and localized in each photon. The problem goes away if we admit that A and B, once they have interacted with each other (the physicists describe them as “entangled”) become part of a non-separable reality, no matter how far apart they are, even if they are at opposite ends of the universe. A doesn't need to send a signal to B because they share the same reality. Quantum mechanics thus eliminate all idea of locality and provides a holistic view of space. The notions of “here” and “there" become meaningless, because “here” is identical to “there”. That is what physicists call 'inseparability'. So phenomena do seem to be “interdependent” at the subatomic level, to use the Buddhist term.

2.3 Foucault's pendulum and interdependence in the macrocosm

Another fascinating and famous physics experiment shows that interdependence isn't limited to the world of particles, but applies also to the entire universe. This is the pendulum experiment carried out by Léon Foucault in 1851 to demonstrate the rotation of the Earth. We are all familiar with the behavior of the pendulum. As time passes, the direction in which it swings changes. If the pendulum were placed at either the North or South pole, it would turn completely round in twenty-four hours. Foucault realized that, in fact, the pendulum always swung in the same direction, and it was the Earth that turned.

But there remains a puzzle not clearly understood to this day. The pendulum is attached to a building which is attached to Earth. The Earth carries us at some 30 km/s around the Sun, which is itself flying through space at 230 km/s in its orbit around the center of the Milky Way. Our Galaxy, in turn, is falling toward the Andromeda galaxy at 90 km/s. The Local Group of galaxies, whose most massive members are our Galaxy and Andromeda, is moving at 600 km/s under the gravitational attraction of the Virgo cluster, and of the Hydra-Centaurus super-cluster. The latter is it self falling toward the Great Attractor, the mass of which is equivalent to that of tens of thousands of galaxies. All of these masses and motions are local. Yet, the Foucault pendulum seems to disregard all of them and align itself with the rest of the universe, i.e. with the most distant clusters of galaxies known. Thus, what happens here on Earth is decided by all the vast cosmos. What occurs on our tiny planet depends on all the structures in the universe. Why does the pendulum behave in that way? We don't know. Ernst Mach thought that it could be explained by a sort of omnipresence of matter and of its influence. According to him, the correlation between the plane of oscillation of the Foucault pendulum and the distant clusters of galaxies comes from the distant universe being responsible for the inertia of the pendulum, and hence of its motion, through a mysterious interaction which he did not precise. Again, we are drawn to a conclusion that resembles very much Buddhism's concept of interdependence that each part depends on all the other parts.

3. Emptiness: the absence of an intrinsic reality

The notion of interdependence leads us directly to the idea of emptiness or "vacuity" in Buddhism, which does not mean nothingness (as often thought erroneously by Westerners), but the absence of inherent existence. Since everything is interdependent, nothing can be self-defining and exist inherently. The idea of intrinsic properties that exist in themselves and by themselves must be thrown out. Once again, quantum physics has something strikingly similar to say. According to Bohr and Heisenberg, we can no longer talk about atoms and electrons as being real entities with well-defined properties, such as speed and position. We must consider them as part of a world made up of potentialities and not of objects and facts. The very nature of matter and light becomes subject to interdependent relationships. It is no longer intrinsic, but can change because of an interaction between the observer and the object under observation. Light and matter have no intrinsic reality because they have a dual nature: they appear either as waves or particles depending on the measuring apparatus. The particle and wave aspects cannot be dissociated and complement each other.

This is what Bohr called the "principle of complementarily". The phenomenon that we call a "particle" becomes a wave when we are not observing it. But as soon as a measurement is made, it starts looking like a particle again. To speak of a particle's intrinsic reality, or the reality it has when unobserved, would be meaningless because we could never apprehend it. The "atom" concept is merely a convenient picture that helps physicists put together diverse observations of the particle world into a coherent and logical scheme. Bohr spoke of the impossibility of going beyond the results of experiments and measurements: “In our description of nature, the purpose is not to disclose the real essence of phenomena, but only to track down, so far as possible, relations between the manifold aspects of our experience.” Only relationships between objects exist, and not the objects themselves. Quantum mechanics has radically relativised our conception of an object, by making it subordinate to a measurement or, in other words, an event. What is more, quantum fuzziness places a stringent limit on how accurately we can measure reality. There will always be a degree of uncertainty about either the position or the speed of a particle. Matter has lost its substance.

4. Impermanence at the heart of reality

In Buddhism, the concept of interdependence is also closely linked to the notion of the impermanence of phenomena. Buddhism distinguishes two types of impermanence.

There is first the gross impermanence - the changing of seasons, the erosion of mountains, the passage from youth to old age, our varying emotions -- and then the subtle impermanence: at each infinitesimal moment, everything that seems to exist changes. The universe is not made up of solid, distinct entities, but is like a vast stream of events and dynamic currents that are all interconnected and constantly interacting. This concept of perpetual, omnipresent change chimes with modern cosmology. Aristotle's immutable heavens and Newton's static universe are no more. Everything is moving, changing and is impermanent, from the tiniest atom to the entire universe, including the galaxies, stars and mankind.

The universe is expanding because of the initial impulse it received from its primordial explosion. This dynamic nature is described by the equations of General Relativity. With the Big Bang theory, the universe has acquired a history. It has a beginning, a past, present and future. It will die in an infernal conflagration or else an icy freeze. All of the universe's structures - planets, stars, galaxies and galaxy clusters - are in perpetual motion and take part in an immense cosmic ballet: they rotate about their axes, orbit, fall toward or move apart from one another. They, too, have a history. They are born, reach maturity, then die. Stars have lifecycles that span millions, or even billions of years.

Impermanence also rules the atomic and subatomic world. Particles can modify their nature: a quark can change its family or “flavour”, a proton can become a neutron and emit a positron and a neutrino. Matter and antimatter annihilate each other to become pure energy. The energy in the motion of a particle can be transformed into another particle, or vice versa.

In other words, an object's property can become an object. Because of the quantum uncertainty of energy, the space around us is filled with an unimaginable number of “virtual” particles, with fleeting ghost-like existences. Constantly appearing and disappearing, they are a perfect illustration of impermanence with their infinitely short life cycles.

5. Is there an anthropic principle?

Despite the remarkable convergences outlined above, there is one area where Buddhism may enter in conflict with modern cosmology. This concerns the fact that the universe has had a beginning and has been fine-tuned to an extreme degree for the emergence of life and consciousness.

5.1 Copernicus's ghost

Since the sixteenth century, the place of humanity in the universe has shrunk considerably. In 1543, Nicholas Copernicus knocked the earth off its pedestal as the centre of the universe by demoting it to the rank of just another planet revolving round the sun. Ever since, the ghost of Copernicus has not ceased to haunt us. If our planet wasn't at the centre of the universe, then, our ancestors thought, the sun must be. Then it was discovered that it is just a suburban star among the hundreds of billions of stars that make up our galaxy. We now know that the Milky Way is only one of the several hundred billions of galaxies in the observable universe, which has a radius of about fifteen billion light-years. Humanity is just a grain of sand on the vast cosmic beach. The shrinking of our place in the world led to French philosopher Blaise Pascal's cry of despair in the seventeenth century: “The eternal silence of endless space terrifies me”. His anguish was echoed three centuries later by the French biologist Jacques Monod in his book “*Chance and Necessity*” (Knopf, New York 1971): “Man knows at last he is alone in the unfeeling immensity of the universe, out of which he has emerged only by chance”, and by physicist Steven Weinberg, who remarked: “The more the universe seems comprehensible, the more it also seems pointless”'(in *The first Three Minutes*, Basic Books, New York, 1977).

5.2 The anthropic principle

I do not think that human life and consciousness arised purely by chance in an unfeeling universe. To my mind, if the universe is so large, then it evolved this way to allow us to be here. Modern cosmology has discovered that the conditions that allow for an intelligence to emerge seem to be coded into the properties of each atom, star and galaxy in our universe and in all of the physical laws that govern it. The universe appears to have been very finely tuned in order to produce an intelligent observer capable of appreciating its organization and harmony. This statement is the basis of the “anthropic principle”, from the Greek “anthropos” meaning “person”. There are two remarks to be made. First, the term “anthropic” is really inappropriate, as it implies that humanity in particular was the goal toward which the universe has evolved. In fact, anthropic arguments would apply to any form of intelligence in the universe.

(…)

What is the scientific basis of the anthropic principle? The way our universe evolved depended on two types of information: 1) its initial conditions such as its total mass and energy content, its initial rate of expansion, etc. and 2) about fifteen physical constants: the gravitational constant, the Planck constant, the masses of the elementary particles, the speed of light, etc. We can measure the values of these constants with extreme precision, but do not have any theory to predict them. By constructing 'model universes' with varying different initial conditions and physical constants, astrophysicists have discovered that these need to be fine-tuned to the extreme: if the physical constants and the initial conditions were just slightly different, we wouldn't be here to talk about them. For instance, let's consider the initial density of matter in the universe. Matter has a gravitational pull that counteracts the force of expansion from the Big Bang and slows down the universe's rate of expansion.

If the initial density had been too high, then the universe would have collapsed into itself after some relatively short time -- a million years, a century or even just a year, depending on the exact density. Such a time span would have been too short for stars to accomplish their nuclear alchemy and produce heavy elements like carbon, which are essential to life. On the other hand, if the initial density of matter had been too low, then there would not have been enough gravity for stars to form. And no stars, no heavy elements, and so no life! Everything hangs on an extremely delicate balance. The initial of the universe had to be fixed to an accuracy of 1 part in 10^{60}. This astonishing precision is analogous to the dexterity of an archer hitting a one-centimetre-square target placed fifteen billion light-years away, at the edge of the observable universe! The precision of the fine-tuning varies, depending on the particular constant or initial condition, but in each case, just a tiny change makes the universe barren, devoid of life and consciousness.

5.3 Chance or Necessity?

How to account for that extraordinary fine-tuning? It seems to me that we are faced with two distinct choices: the tuning was the consequence of either chance or necessity (to quote the title of Monod's book). If we opt for chance, then we must postulate an infinite number of other parallel universes in addition to our own (these multiple universes form what is sometimes called a multiverse).

Each of these universes will have its own combination of physical constants and initial conditions. But ours was the only universe born with just the right combination to have evolved to create life. All the others were losers and only ours is the winner. If you play the lottery an infinite number of times, then you inevitably end up winning the jackpot. On the other hand, if we reject the hypothesis of parallel universes and adopt the hypothesis of a single universe, ours, then we must postulate the existence of a principle of creation which finely adjusted the evolution of the universe.

How to decide?

Science cannot help us to choose between these two options. In fact, there are several different scientific scenarios that allow for multiple universes. For example, Hugh Everett has proposed, to get around the probabilistic description of the world by quantum mechanics, that the universe splits into as many nearly identical copies of itself as there are possibilities and choices to be made. Some universes would differ by only the position of one electron in one atom, but others would be more radically different. Their physical constants, initial conditions and physical laws wouldn't be the same. Anther scenario is that of a cyclical universe with an infinite series of Big Bangs and Big Crunches.

Whenever the universe is reborn from its ashes to begin again in a new Big Bang, it would start with a new combination of physical constants and initial conditions. A third possibility is the theory proposed by Andrei Linde whereby each of the infinite number of fluctuations of the primordial quantum froth created a universe. Our universe would then be just a tiny bubble in a super-universe made up of an infinite number of other bubbles. None of those universes would have intelligent life, because their physical constants and laws wouldn't be suitable.

Intriguing as these notions are, I do not subscribe to the idea of multiple universes. The fact that all of these universes would be unobservable, and thus unverifiable, contradicts my view of science. Science becomes metaphysics when it is no more subjected to the test of experimental proof. Furthermore, Occam's razor bids us to cut out all the hypotheses that are not necessary: why create an infinite number of barren universes just to produce one that is conscious of its own existence? In my work as an astronomer, I often have the good luck to travel to observatories to contemplate the cosmos. I am always awed by its organization, beauty, harmony and unity. It is hard for me to think that all that splendor is but the product of pure chance. If we reject the idea of multiple universes and postulate the existence of just one universe, ours, then it seems to me that, we must wager, just like Pascal, on the existence of a creative principle responsible for the fine-tuning of the universe. For me, this principle is not a personified god. It is rather a pantheistic principle which is omnipresent in Nature, not unlike that described by Einstein and Spinoza. Einstein puts it like this: “The scientist is possessed by the sense of universal causation... His religious feeling takes the form of a rapturous amazement at the harmony of natural law, which reveals an intelligence of such superiority that, compared with it, all the systematic thinking and acting of human beings is an utterly insignificant reflection.”. He added: “I believe in Spinoza's God who reveals himself in the harmony of all that exists, but not in a God who concerns himself with the fate and actions of human beings.”

5.4 Buddhism denies the existence of a creative principle

The Pascalian wager I just outlined is contrary to the Buddhist approach, which denies the existence of a creative principle (or a watchmaker God). It considers that the universe doesn't need tuning for consciousness to exist. According to it, both have always coexisted, so they cannot exclude each other. Their mutual suitability and interdependence is the precondition for their coexistence. I am not totally at ease with this explanation. While I admit that this might explain the fine-tuning of the universe, it seems far less clear to me that Buddhism can answer existential questions, of the sort that Leibniz asked about the universe: “Why is there something, rather than nothing?” I would add: “Why are the natural laws as they are and not different?” For example, it would be quite easy to imagine us living in a universe governed only by Newton's laws. But this isn't the case. For the laws of quantum mechanics and relativity describe the known universe.

The Buddhist view also raises other questions. If there is no creator, the universe cannot have been created. So there is neither a beginning nor an end. The only sort of universe that would be compatible with this idea is a cyclical one, with an endless series of Big Bangs and Big Crunches. But the scenario of the universe one day collapsing into itself in a Big Crunch is far from being proven scientifically. It all depends on the amount of dark matter in te universe, and this is as yet unknown. According to the latest astronomical observations, the universe does not seem to have enough dark matter to stop and reverse its expansion. They seem to indicate a flat universe which will expand forever and will stop only after an infinite time. Thus our present state of knowledge seems to exclude the idea of a cyclical universe. As for streams of consciousness that have coexisted with the universe since the first fractions of a second after the Big Bang, science is still far from being able to examine this question. Some neurobiologists think that there is no need for a consciousness continuum that coexists with matter, and that the former can emerge from the latter, once a certain complexity threshold has been passed.

6. Science and spirituality: two windows into reality

I have attempted to show that there are striking convergences between the views of reality of modern science and Buddhism. The concept of interdependence which is at the heart of Buddhism is echoed by the globality of reality implied by the EPR experiment on the subatomic and atomic scale, and by Foucault's pendulum and Mach's principle on the scale of the universe. The Buddhist concept of' emptiness', the absence of intrinsic existence, finds its scientific equivalent in the dual nature of light and matter in quantum mechanics. Because a photon is a wave or a particle depending on how we observe it, it cannot be said to exist as a entity with an inherent existence. The concept of impermanence echoes the concept of evolution in cosmology. Nothing is static, everything changes, moves and evolves, from the tiniest atom to the largest structures in the universe. The universe itself has acquired a history.

I have also pointed out a potential area of disagreement: Buddhism rejects the idea of a beginning of the universe and of a creative principle that fine-tunes its properties for the emergence of life and consciousness.

The above convergences are not surprising, since both science and Buddhism use criteria of rigor and authenticity to attain the truth. Since both aim to describe reality, they must meet on common grounds and not be exclusive of each other. Whereas in science the primary methods of discovery are experimentation and theorizing based on analysis, in Buddhism contemplation is the primary method. Both are windows which allow us to peer at reality. They are both valid in their respective domains and complement each other. Science reveals to us “conventional” knowledge. Its aim is to understand the world of phenomena. Its technical applications can have a good or bad effect on our physical existence. Contemplation, however, aims to improve our inner selves so that we can improve everybody's existence. Scientists use ever more powerful instruments to probe Nature. In the contemplative approach, the only instrument is the mind. The contemplative observes how his thoughts are bound together and how they bind him.

He examines the mechanisms of happiness and suffering and tries to discover the mental processes that increase his inner peace and make him more open to others in order to develop them, as well as those processes that have a destructive effect in order to eliminate them. Science provides us with information, but brings about no spiritual growth or transformation. By contrast, the spiritual or contemplative approach must lead to a profound personal transformation in the way we perceive the world and act on it. The Buddhist, by realizing that objects have no intrinsic existence, lessens his attachment to them, which diminishes his suffering. The scientist, with the same realization, is content to consider that as an intellectual advance which can be used to advance his work, without changing fundamentally his basic vision of the world and how he leads his life.

When faced with ethical or moral problems which, as in genetics, are becoming ever more pressing, science needs the help of spirituality in order not to forget our humanity. As Einstein said so well: 'The religion of the future will be a cosmic religion. It will have to transcend a personal God and avoid dogma and theology. Encompassing both the natural and the spiritual, it will have to be based on a religious sense arising from the experience of all things, natural and spiritual, considered as a meaningful unity...Buddhism answers this description...If there is any religion that could respond to the needs of modern science, it would be Buddhism.'