The Universe in a Grain of Sand

A chapter excerpted from *The Quantum and the Lotus*

The Interdependence and Nonseparability of Phenomena

The concept of interdependence lies at the heart of the Buddhist vision of the nature of reality, and has immense implications in Buddhism regarding how we should live our lives. This concept of interdependence is strikingly similar to the concept of nonseparability in quantum physics. Both concepts lead us to ask a question that is both simple and fundamental: Can a "thing," or a "phenomenon," exist autonomously? If not, in what way and to what degree are the universe's phenomena interconnected? If things do not exist per se, what conclusions must be drawn about life?

Trinh Xuan Thuan: Buddhism rejects the idea of a principle of creation, as well as the radical notion of parallel universes—though it may accommodate the idea of multiple universes. To Buddhism, the extraordinary fine-tuning of the physical constants and the initial conditions that allowed the universe to create life and consciousness are explained by "the interdependence of phenomena." I think it's time to explain more about this idea.

Matthieu Ricard: To do so, we should first return to the concept of "relative truth." In Buddhism, the perception we have of distinct phenomena resulting from isolated causes and conditions is called "relative truth" or "delusion." Our daily experience makes us think that things have a real, objective independence, as though they existed all on their own and had intrinsic identities. But this way of seeing phenomena is just a mental construct. Even though this view of reality seems to be commonsense, it doesn't stand up to analysis.

Buddhism instead adopts the notion that all things exist only in relationship to others, the idea of mutual causality. An event can happen only because it's dependent on other factors. Buddhism sees the world as a vast flow of events that are linked together and participate in one another. The way we perceive this flow crystallizes certain aspects of the nonseparable universe, thus creating an illusion that there are autonomous entities completely separate from us.

In one of his sermons, the Buddha described reality as a display of pearls—each pearl reflects all of the others, as well as the palace whose facade they decorate, and the entirety of the universe. This comes down to saying that all of reality is present in each of its parts. This image is a good illustration of interdependence, which states that no entity independent of the whole can exist anywhere in the universe.

Thuan: This "flow of events" idea is similar to the view of reality that derives from modern cosmology. From the smallest atom up to the universe in its entirety, including the galaxies, stars, and humankind, everything is moving and evolving. Nothing is immutable.

Ricard: Not only do things move, but we see them as "things" only because we are viewing them from a particular angle. We mustn't give the world properties that are merely appearances.

Phenomena are simply events that happen in certain circumstances. Buddhism doesn't deny conventional truth—the sort that ordinary people perceive or the scientist detects. It doesn't contest the laws of cause and effect, or the laws of physics and mathematics. It quite simply affirms that, if we dig deep enough, there is a difference between the way we see the world and the way it really is, and the way it really is, we've discovered, is devoid of intrinsic existence.

Thuan: So what has that true nature got to do with interdependence?

Ricard: The word "interdependence" is a translation of the Sanskrit *pratitya samutpada*, which means "to be by co-emergence" and is usually translated as "dependent origination." The saying can be interpreted in two complementary ways. The first is "*this* arises because *that* is," which comes down to saying that things do exist in some way, but nothing exists on its own. The second is "*this*, having been produced, produces *that*," which means that nothing can be its own cause. Or we could say that everything is in some way interdependent with the world. We do not deny that phenomena really do occur, but we argue that they are "dependent," that they don't exist in an autonomous way. Any given thing in our world can appear only because it's connected, conditioned and in turn conditioning, co-present and cooperating in constant transformation. Their way of "being" is simply in relation to one another, never in and of themselves. We tend to cling to the notion that "things" must precede relationships. This is not the case here. The characteristics of phenomena are defined only through relationships.

Interdependence explains what Buddhism sees as the impermanence and emptiness of phenomena, and this emptiness is what we mean by the lack of "reality." The seventh Dalai Lama summarized this idea in a verse:

Understanding interdependence, we understand emptiness
Understanding emptiness, we understand interdependence.
This is the view that lies in the middle,
And which is beyond the terrifying cliffs of eternalism and nihilism.

Another way of defining the idea of interdependence is summarized by the term *tantra*, which stands for a notion of continuity and "the fact that everything is part of the whole, so that nothing can happen separately." Ironically, though we might think that the idea of interdependence undermines the notion of reality, in the Buddhist way of thinking, it is interdependence that actually allows for reality to appear. Let's think about an entity that exists independently from all others. As an immutable and autonomous entity, it couldn't act on anything, or be acted on itself. For phenomena to happen, interdependence is required.

This argument refutes the idea of distinct particles that are supposed to constitute matter. What's more, this interdependence naturally includes consciousness. The reality of any given object depends on a subject that is aware of that object. This was what the physicist Erwin Schrodinger meant when he wrote: "Without being aware of it, and without being rigorously systematic about it, we exclude the subject of cognizance from the domain of nature that we endeavor to understand. We step with our own person back into the part of an onlooker who does not belong to the world, which by this very procedure becomes an objective world."

Finally, the most subtle aspect of interdependence, or "dependent origination," concerns what we call a phenomenon's "designation base" and its "designation." A phenomenon's position, form, dimension, color, or any other of its apparent characteristics is merely one of its "designation bases." This designation is a mental construct that invests a phenomenon with a distinct reality. In our everyday experience, when we see an object, we aren't struck by its nominal existence, but rather by its *true* existence. If we analyze this "object" more closely, however, we discover that it is produced by a large number of causes and conditions, and that we are incapable of pinpointing an autonomous identity. Since we have experienced it, we can't say that the phenomenon doesn't exist. But neither can we say that it corresponds to an intrinsic reality. So we conclude that the object exists (thus avoiding a nihilistic view), but that this existence is purely nominal, or conventional (thus also avoiding the opposite extreme of material realism, which is called "eternalism" in Buddhism). A phenomenon with no autonomous existence, but that is nevertheless not totally inexistent, can act and function according to causality and thus lead to positive or negative effects. This view of reality therefore allows us to anticipate the results of our actions and organize our relationship with the world. A Tibetan poem puts it this way:

To say a thing is empty does not mean
It cannot function—it means it lacks an absolute reality.
To say a thing arises "in dependence" does not mean
It has intrinsic being—it means it is illusion-like.
If thus one's understanding is correct and certain
Of what is meant by voidness and dependent origin,
No need is there to add that voidness, and appearance
Occur together without contradiction in a single thing.

Thuan: I find everything you've told me about interdependence striking. Science, too, has discovered that reality is nonseparable, or interdependent, both at the subatomic level and in the macrocosmic world. The conclusion that subatomic phenomena are interdependent was derived from a famous thought experiment conducted by Einstein and two of his Princeton colleagues, Boris Podolsky and Nathan Rosen, in 1935. It's called the EPR experiment, from the initials of their surnames.

To follow this experiment, you need to know that light (and matter, too) has a dual nature. The particles we call "photons" and "electrons," as well as all the other particles of matter, are Janus-faced. Sometimes they appear as particles, but they can also appear as waves. This is one of the strangest and most counterintuitive findings of quantum theory. Even stranger is the finding that what makes the difference about whether a particle is in the wave or particle state is the role of an observer—if we try to observe the particle in its wave state, it becomes a particle. But if it is unobserved, it remains in the wave state.

Take the case of a photon. If it appears as a wave, then quantum physics says that it spreads out in all directions through space, like the ripples made by a pebble thrown into a pond. The photon in this state has no fixed location or trajectory. We can then say that the photon is present everywhere at the same time. Quantum mechanics states that when a photon is in this wave state, we can never predict where the photon will be at any given moment; all we can do is evaluate the probability of its being in a particular position. The chances might be 75 percent or 90 percent,

but never 100 percent. Since Einstein was a committed determinist, he couldn't accept that the quantum world was ruled in this way by probability or chance. He argued famously that "God does not play dice," and stubbornly set about trying to find the weak link in quantum mechanics and its probabilistic interpretation of reality. That's why he came up with the EPR experiment.

The experiment goes like this: First imagine that you have constructed a measuring apparatus with which you can observe the behavior of particles of light, called photons. Now imagine a particle that disintegrates spontaneously into two photons, *a* and *b*. The law of symmetry dictates that they will always travel in opposite directions. If *a* goes northward, then we will detect *b* to the south. So far, so good. But we're forgetting the strangeness of quantum mechanics. Before being captured by the detector, if quantum mechanics is correct, *a* appeared as a wave, not a particle. This wave wasn't localized, and there was a certain probability that *a* might be found in any given direction. It's only when it has been captured that *a* changes into a particle and "learns" that it's heading northward. But if *a* didn't "know" before being captured which direction it had taken, how could *b* have "guessed" what *a* was doing and ordered its behavior accordingly so that it could be captured at the same moment in the opposite direction? This is impossible, unless we admit that *a* can inform *b* instantaneously of the direction it has taken. But Einstein's cherished theory of relativity states that nothing can travel faster than light. The information about *a*'s location would need to travel faster than the speed of light in order to get to *b* in time, because, after all, *a* and *b* are both particles of light and are therefore traveling themselves at the speed of light. "God does not send telepathic signals," Einstein said, adding, "There can be no spooky action at a distance."

On the basis of these thought-experiment results, Einstein concluded that quantum mechanics didn't provide a complete description of reality. In his opinion, the idea that *a* could instantaneously inform *b* of its position was absurd: *a* must know which direction it was going to take, and tell *b* before they split up; *a* must then have an objective reality, independent of actual observation. Thus the probabilistic interpretation of quantum mechanics, which states that *a* could be going in any direction, must be wrong. Quantum uncertainty must hide a deeper, intrinsic determinism. Einstein thought that a particle's speed and position, which defined its trajectory, were localized on the particle without any observation being necessary. This is what was called "local realism." Quantum mechanics couldn't describe a particle's trajectory because it didn't take other "hidden variables" into account. And so it must be incomplete.

And yet Einstein was wrong. Eventually, physicists showed that exactly what Einstein thought couldn't happen in the EPR experiment did happen. Since its invention, quantum mechanics and its probabilistic interpretation of reality—has never slipped up. It has always been confirmed by experiments and it still remains today the best theory that we have to describe the atomic and subatomic world.

Ricard: When was the EPR effect confirmed experimentally?

Thuan: EPR remained only a thought experiment for some time. No one knew how to carry it out physically. Then, in 1964, John Bell, an Irish physicist working at CERN, devised a mathematical theorem called "Bell's inequality," which would be capable of being verified experimentally if particles really did have hidden variables, as Einstein thought. This theorem at

last allowed us to take the debate from the metaphysical plane to concrete experimentation. In 1982 the French physicist Alain Aspect, and his team at the University of Orsay, carried out a series of experiments on pairs of photons in order to test the EPR paradox. They found that Bell's inequality was violated without exception. Einstein had it wrong, and quantum mechanics was right. In Aspect's experiment, photons *a* and *b* were thirteen yards apart, yet *b* always "knew" instantaneously what *a* was doing, and reacted accordingly.

Ricard: How do we know that this happens instantaneously, and that a light beam hasn't relayed the information from *a* to *b*?

Thuan: Atomic clocks, connected to the detectors that capture *a* and *b*, allow us to gauge the moment of each photon's arrival extremely accurately. The difference between the two arrival times is less than a few tenths of a billionth of a second—it is probably zero, in fact, but existing atomic clocks don't allow us to measure periods of under 10^{-10} seconds. Now, in 10^{-10} seconds, light can travel only just over an inch—far less than the thirteen yards separating *a* from *b*. What is more, the result is the same if the distance between the two photons is increased. Even though light can definitely not have had the time to cross this distance and relay the necessary information, the behavior of *a* is always exactly correlated with that of *b*.

The latest experiment was carried out in 1998 in Geneva by Nicolas Gisin and his colleagues. They began by producing a pair of photons, one of which was then sent through a fiber-optic cable toward the north of the city, and the other toward the south. The two pieces of measuring equipment were over six miles apart. Once they arrived at the end of the cables, the two photons had to choose at random between two possible routes—one short, the other long. It was observed that they always made the same decision. On average, they chose the long route half the time, and the short route half the time, but the choices were always identical. The Swiss physicists were sure that the two photons couldn't communicate by means of light, because the difference between their response times was under three-tenths of a billionth of a second, and in that time light could have crossed just three and half inches of the six miles separating the two photons. Classic physics states that because they can't communicate, the choices of the two photons must be totally independent. But that is not what happens. They are always perfectly correlated. How can we explain why *b* immediately "knows" what *a* is doing? But this is paradoxical 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* are part of a nonseparable reality, no matter how far apart they are. In that case, *a* doesn't need to send a signal to *b* because these two light particles (or, rather, phenomena that the detector sees as light particles) stay constantly in touch through some mysterious interaction. Wherever it happens to be, particle b continues to share the reality of particle *a*.

Ricard: Even if the two particles were at opposite ends of the universe?

Thuan: Yes. Quantum mechanics thus eliminates all idea of locality. It provides a holistic idea of space. The notions of "here" and "there" become meaningless, because "here" is identical to "there." This is the definition of what physicists call "nonseparability."

Ricard: This should have enormous repercussions on how physicists understand reality and our own ordinary perception of the world.

Thuan: Indeed. Some physicists have had problems accepting the idea of a nonseparable reality and have tried to find a weak link in these experiments or in Bell's theorem. So far, they've all failed. Quantum mechanics has never been found to be wrong. So phenomena do seem "interdependent" at a subatomic level, to use the Buddhist term.

Another fascinating and famous experiment in physics shows that interdependence isn't limited to the world of particles, but applies also to the entire universe, or in other words that interdependence is true of the macrocosm as well as the microcosm. This is the experiment often referred to in short as Foucault's pendulum.

A French physicist, Leon Foucault, wanted to prove that the Earth rotates on its axis. In 1851 he carried out a famous experiment that is reproduced today in displays in many of the world's science museums. He hung a pendulum from the roof of the Pantheon in Paris. Once in motion, this pendulum behaved in a strange way. As time passed, it always gradually changed the direction in which it was swinging. If it was set swinging in a north-south direction, after a few hours it was swinging east-west. From calculations, we know that if the pendulum were placed at either one of the poles, then it would turn completely around in twenty-four hours. But because of the latitude of Paris, Foucault's pendulum performed only part of a complete rotation each day.

Why did the direction change? Foucault answered by saying that the movement was illusory. In fact, the pendulum always swung in the same direction, and it was the Earth that turned. Once he'd proved that the Earth rotated, he let the matter drop. But Foucault's answer was incomplete, because a movement can be described only in comparison with a fixed reference point; absolute movement doesn't exist. Long before, Galileo said that "movement is as nothing." He understood that it exists only relative to something else. The earth must "turn" in relation to something that doesn't turn. But where to find this "something"? In order to test the immobility of a given reference point, a star for instance, we simply set the pendulum swinging in the star's direction. If the star is motionless, then the pendulum will always swing toward it. If the star moves, then the star will slowly shift away from the pendulum's swing.

Let's try the experiment with known celestial bodies, both near and far. If we point the pendulum toward the Sun, after a few weeks there is a clear shift of the Sun away from the pendulum's swing. After a couple of years, the same happens with the nearest stars, situated a few light-years away. The Andromeda galaxy, which is 2 million light-years away, moves away more slowly, but does shift. The time spent in line with the pendulum's swing grows longer and the shift away tends toward zero the greater the distance is. Only the most distant galaxies, situated at the edge of the known universe, billions of light-years away, do not drift away from the initial plane of the pendulum's swing.

The conclusion we must draw is extraordinary: Foucault's pendulum doesn't base its behavior on its local environment, but rather on the most distant galaxies, or, more accurately, on the entire universe, given that practically all visible matter is to be found in distant galaxies and not in nearby stars. Thus, what happens here on our Earth is decided by all the vast cosmos. What occurs on our tiny planet depends on all of the universe's structures.

Why does Foucault's pendulum behave like this? We don't know. Ernst Mach, the Austrian philosopher and physicist who gave his name to the unit of supersonic speed, thought it could be explained by a sort of omnipresence of matter and of its influence. In his opinion, an object's mass—that is to say, the amount of its inertia, or resistance to movement—comes from the influence of the entire universe. This is what is called Mach's principle. When we have trouble pushing a car, its resistance to being moved has been created by the whole universe. Mach never explained this mysterious universal influence in detail, which is different from gravity, and no one has managed to do so since. Just as the EPR experiment forces us to accept that interactions exist in the microcosm that are different from those described by known physics, Foucault's pendulum does the same for the macrocosm. Such interactions are not based on force or an exchange of energy, and they connect the entire universe. Each part contains the whole, and each part depends on all the other parts.

Ricard: In Buddhist terms, that's a good definition of interdependence. It's not a question of proximity in time or space, or of the speed of communication and physical forces whose influence wanes over great distances. Phenomena are interdependent because they *coexist* in a global reality, which functions according to mutual causality. Phenomena are naturally simultaneous because one implies the presence of the other. We are back with "this can only be if that also exists; this can change only if that also changes." Thus we arrive at an idea that everything must be connected to everything else. Relationships determine our reality, the conditions of our existence, particles and galaxies.

Thuan: Such a vision of interdependence certainly agrees with the results of the experiments I've just mentioned. The EPR experiment, Foucault's pendulum, and Mach's inertia can't be explained by the four fundamental physical forces. This is extremely disturbing for physicists.

Ricard: I think that we have a good example here of the difference between the scientific approach and Buddhism. For most scientists, even if the global nature of phenomena has been demonstrated in rather a disturbing way, this is merely another piece of information, and no matter how intellectually stimulating it may be, it has little effect on their daily lives. For Buddhists, on the other hand, the repercussions of the interdependence of phenomena are far greater.

The notion of interdependence makes us question our basic perception of the world and then use this new perception again and again to lessen our attachments, our fears, and our aversions. An understanding of interdependence should demolish the wall of illusions that our minds have built up between "me" and "the other." It makes a nonsense of pride, jealousy, greed, and malice. If not only all inert things but also all living beings are connected, then we should feel deeply concerned about the happiness and suffering of others. The attempt to build our happiness on others' misery is not just amoral, it's also unrealistic. Feelings of universal love (which Buddhism defines as the desire for all beings to experience happiness and to know its cause) and of compassion (the desire for all beings to be freed of suffering and its causes) are the direct consequences of interdependence. Thus knowledge of interdependence leads to a process of inner transformation, which continues throughout the journey of spiritual enlightenment. For, if we don't put our knowledge into practice, we are like a deaf musician, or a swimmer who dies of thirst for fear of drowning if he drinks.

Thuan: So the interdependence of phenomena equals universal responsibility. What a marvelous equation! It reminds me of what Einstein said: "A human being is part of a whole, called by us the 'Universe,' a part limited in time and space. He experiences himself, his thoughts and feelings, as something separated from the rest—a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest us. Our task must be to free ourselves from this prison by widening our circles of compassion to embrace all living creatures and the whole of nature in its beauty."

In fact, the language of physics is currently incapable of expressing the global, holistic nature of reality. Some people even talk of another truth, a "veiled reality" in the words of the French physicist Bernard d'Espagnat.

Ricard: This is an interesting idea, as long as we don't see this "veiled reality" as the ultimate solid reality hidden behind appearances. Doing so would just reify the world of phenomena once more. An important point we must keep in mind about interdependence is that it is not just a simple interaction between phenomena. Instead, it is the precondition for their appearance.

Thuan: Heisenberg expressed a similar idea when he wrote, "The world thus appears as a complicated tissue of events, in which connections of different kinds alternate or overlap or combine, and thereby determine the texture of the whole."

Ricard: If, however, "veiled" means "illusory" or "inaccessible to concepts," then Buddhism would be in agreement with d'Espagnat.

Thuan: I don't think d'Espagnat would call his "veiled reality" illusory. To his mind, it's a reality that escapes our perceptions and measuring apparatus. While I agree with you that interdependence must be the fundamental law, science can't describe it yet.

But even if scientists are having trouble grasping the fullness of interdependence, they are having no trouble finding a wide range of evidence for different kinds of interconnections in our world. For example, there is the cosmic interconnection of the Big Bang. We are all products of that primordial explosion. The hydrogen and helium atoms that make up 98 percent of the universe's ordinary matter were made during the first three minutes of its existence. The hydrogen in seawater and in our bodies all comes from that primordial soup. So we all have the same genealogy. As for the heavy elements that are needed for complexity and life, and which make up the other 2 percent of the universe's matter, they were produced by the nuclear alchemy in the center of the stars and the explosion of supernovas.

We are all made of stardust. As brothers of the wild beasts and cousins of the flowers in the fields, we all carry the history of the cosmos. Just by breathing, we are linked to all the other beings that have lived on the planet. For example, still today we are breathing in millions of atomic nuclei from the fire that burned Joan of Arc in 1431, and some of the molecules from Julius Caesar's dying breath. When a living organism dies and decays, its atoms are released back into the environment, and eventually become integrated into other organisms. Our bodies contain about a billion atoms that once belonged to the tree under which the Buddha attained enlightenment.

Ricard: This also offers another way of looking at the EPR effect. Since all "particles"—whatever that might mean—were closely bound together in the singularity of the Big Bang (and perhaps during other Big Bangs), they must still be so now. Thus the natural condition for phenomena always has been and always will be global.

But in Buddhism, it isn't so much the molecular connections that matter—for they have little effect on our happiness or suffering—but rather the fact that all sentient beings, with whom we are *all* related through interdependence, wish to be happy and to escape suffering.

Thuan: Yet another kind of interconnection discovered by science is that we're all linked together genetically. We all descend from *Homo habilis*, who appeared in Africa about 1,800,000 years ago, regardless of our race or skin color. As a child of the stars, humanity perhaps experienced a feeling of cosmic affiliation most intensely when we saw for the first time those stirring pictures from the space missions of our blue planet floating, so beautiful and yet so fragile, in the immense darkness of space. This global view reminds us that we are all responsible for our Earth and must save it from the ecological disaster that we're inflicting on it. William Blake expressed the global nature of the cosmos beautifully in the following lines:

To see a World in a Grain of Sand
And a Heaven in a Wild Flower,
Hold infinity in the palm of your hand
And Eternity in an hour.

The entire universe is indeed contained in a grain of sand, because the explanation of the simplest phenomena brings in the history of the entire universe.

Ricard: Those Blake lines remind me of one of the quatrains of a sutra by the Buddha:

As in one atom,
So in all atoms,
All worlds enter therein—
So inconceivable is it.

Buddhist writings also say that the Buddha knows at all times the nature and the multifariousness of the universe's phenomena, in both space and time, as clearly as if he were holding them in the palm of his hand, and that he can transform an instant into an eternity, or an eternity into an instant. I can't help wondering if William Blake had read these texts, or whether inspiration passed down over the ages! If you consider these thoughts carefully, then you will see that the Buddha's omniscience corresponds exactly to a global perception. There's no need to see the Buddha as a god. It's enough to know that enlightenment embraces everything and knows at each instant the number and the nature of things. It is this global view that permits omniscience. The Indian Buddhist philosopher and poet Asvaghosa wrote, "As a result of deep concentration, one realizes the oneness of the expanse of reality." On the other hand, fundamental ignorance results in fragmentation, and hence a limitation, of knowledge. We can perceive only certain aspects of reality, and fail to see its true nature.

Thuan: The infinity of worlds makes me think of the other intelligent life-forms that probably exist in the cosmos. The observable universe contains several hundred billion galaxies, each having several hundred billion stars. If, like our sun, most of those stars have ten or so planets orbiting them, then we arrive at a total of several hundred billion trillion planets. It seems absurd that among such a huge number, our planet should be the only one to house conscious life. The existence of extraterrestrial civilizations raises interesting theological questions. For instance, Christianity says that God sent his Son, Jesus Christ, to Earth to save humankind. So are there a multitude of Jesus Christs visiting each planet that has conscious life in order to save the beings that have evolved there?

Ricard: Buddhism talks of billions of different worlds, where different forms of beings live. It is said that most of these worlds have a Buddha who teaches the beings how to reach enlightenment. A Buddha doesn't save souls as one would throw a stone at a mountaintop. He gives them the means to identify the cause of their suffering and deliver themselves from it, and eventually to achieve the ultimate wisdom and bliss of enlightenment.

Thuan: The Italian philosopher Giordano Bruno had already raised these questions at the end of the sixteenth century, when he suggested that the universe was infinite and contained an infinite number of worlds with an infinite variety of life-forms. He paid for such temerity with his life, for the Church condemned him to be burned at the stake four centuries ago, in 1600. It's fascinating to see that Buddhism was asking this sort of question more than two thousand years ago…

Ricard: It is also said that on each blade of grass and each grain of dust, in each atom and in each pore of the Buddha's skin, there is an infinite number of worlds, but that it is not necessary for these worlds to shrink, or for the pores to grow larger. In other words, each element includes all of the others through interdependence without having to change its dimensions.

Thuan: What a striking image! During our conversations I've greatly admired how Buddhism manages to use poetic images to express concepts that are often difficult, run against common sense, and can't be expressed in everyday language. According to Buddhism, does the world exist when it's not being perceived by a consciousness?

Ricard: Of course, the world around us doesn't vanish when we are no longer conscious of it. But this is a false question because, to begin with, consciousness exists and is thus an active part of interdependence and, second, it would be impossible to imagine or describe what reality would be like if there were no consciousness. Thus, this position is neither nihilistic nor idealistic, in that it doesn't deny conventional reality. But neither is it realistic or materialistic, given that a reality existing only by its ow,n means is meaningless for us. This is what the Buddha calls the Middle Way. In the words of a Tibetan commentator:

Two sticks which, when rubbed together, produce a fire, are themselves burned up in the blaze. Just so, the dense wood of all conceptual bearings of both existence and nonexistence will be totally consumed by the fires of wisdom of ascertaining that all phenomena lack true existence. To abide in that primal wisdom in which all concepts have subsided—this is indeed the Great Madhyamaka, the Great Middle Way, free from all assertions.

This is summed up by Nagarjuna in these verses from his major work, *The Fundamental Treatise on the Middle Way*:

The words "There is," means clinging to eternal substance,
"There is not" connotes the view of nihilism.
Thus in neither "is" nor "is not"
Is the dwelling place of those who know.

In the *Sutra Requested by Sagaramati*, the Buddha said:

The wise have understood interdependent origination,
They do not rely on extremist views.
They know that things have causes and conditions,
And that nothing is without cause or condition.

And Nagarjuna went on:

That which arises dependent on something
Is not in the least that thing,
Neither is it different from it.
Therefore it is neither permanent nor nothing.

According to the Buddha, the ultimate nature of phenomena is thus a union between appearances and emptiness:

Know that all phenomena
Are like reflections appearing
In a very clear mirror,
Devoid of inherent existen