

# HINDU PERSPECTIVES ON THE THIRST FOR TRANSCENDENCE

by *Varadaraja V. Raman*

*Abstract.* Definitions of *nature* and *transcendence* are given, and the framework of Hindu thought is presented. The levels of reality as discovered by physics are then discussed, which leads us to revise our notions of reality and objectivity. Transcendence is defined as something beyond matter-energy in space-time and is explored in several contexts of modern science, as in pre-Big-Bang state, negative entropy, information, complexity, and others. Finally, a philosophical reflection on consciousness is presented.

*Keywords:* *akshara*; *avyakta*; brahman; complexity; consciousness; information; *kshara*; matter-energy; natural; nature; pre-Big-Bang entropy; space-time; subnatural; supernatural; transcendence; virtual particles.

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In the Western tradition,<sup>1</sup> Thales of Miletus<sup>2</sup> initiated a search for naturalistic explanations of the phenomenal world with his hypothesis that everything emerged from water. That search has borne much fruit, and today the framework of the scientific establishment is governed, by and large, by the conviction that naturalistic explanations are enough to explain every aspect of physical reality, including intensely personal experiences. Yet, deep in the hearts of many people, including some scientists, persists a feeling that there may be something more to the world. This something, which also provides a basic context and significance for our lives, is variously described as transcendent or supernatural or at least nonmaterial.

Varadaraja V. Raman is Emeritus Professor, Rochester Institute of Technology, Rochester, NY 14623; e-mail [vvrps@rit.edu](mailto:vvrps@rit.edu). A version of this essay was presented at the forty-ninth annual conference of the Institute on Religion in an Age of Science, "Is Nature Enough? The Thirst for Transcendence," Star Island, New Hampshire, 27 July–3 August 2002.

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The question therefore arises as to whether nature is enough, and also why what may be called a thirst for transcendence persists. In this essay I discuss these questions from the perspective of classical Hindu spiritual and philosophical worldviews as well as from certain aspects of current science.

#### ANALYSIS OF THE QUESTION

There is something incomplete in the question that has been posed, “Is Nature Enough? The Thirst for Transcendence.” We are asked whether nature is enough without specifying, Enough for what? The second part is equivalent to asking, Is transcendence necessary? This reminds me of the famous exchange between mathematician Pierre Simon de Laplace and Napoleon Bonaparte. When Laplace presented a copy of his book *Celestial Mechanics* to the emperor, Napoleon is said to have asked why there was no mention of God in a book with that title. Laplace answered that he had no need for that hypothesis (Bell 1986, 181). Laplace meant to say that nature is more than enough for explaining planetary motions, as indeed it is for accounting for the rainbow and even for our craving for food. However, if one were to ask whether nature is enough to explain why the Taliban blew up Buddha’s statue, why Shakespeare wrote *Hamlet*, or how the mathematical prodigy Ramanujan came to some very abstruse theorems, the problem becomes much more complicated.

Then again, by its use of the word *thirst*, the title of this essay seems to suggest that belief in, or acceptance of, transcendence is a consequence of an innate human need. But it would be legitimate to ask whether it could be that, like gravitation and electromagnetic waves, the existence of a transcendental realm was a discovery rather than a need satisfaction.<sup>3</sup>

#### CLARIFICATION OF TERMS

Let us define our terms. *Nature* is the totality of the material universe, and it embraces all of the entities and phenomena in the vast and complex arena in which science works. So when we ask whether nature is enough, we are asking whether there is anything more to the universe than what the sciences explore. This has been a running theme all through humanity’s intellectual history—whether there is more to life than what meets the senses. Reasoned speculation has contributed more substantially to the debate than observations and proofs have.

The term *transcendence* has been analyzed by philosophers in many modes.<sup>4</sup> In the theological arena, transcendence refers to something that exists beyond the physical world. It is often regarded as an attribute of God. The idea of God as “wholly other” than the creation affirms God’s transcendence.<sup>5</sup> In this theological sense, one could interpret the title as asking, Is science not enough? Why crave for God?

Then again, transcendence is often associated with the supernatural in that it is pictured as being above the natural world. Therefore, another wording of the title could be, Is science not enough? Why does one keep wanting the supernatural?

Clearly, the question itself is complex and multifaceted. Jaina thinkers of ancient India held that answers to profound questions depend in no small measure on one's perspective.<sup>6</sup> An atheist who starts from the conviction that there is no God or hereafter would reject transcendence, while a theist with the opposite conviction would adore a transcendent God. The reaction to transcendence of a religious naturalist who traces kindness, altruism, joy, and sorrow to genes and memes will not be the same as that of a mystic for whom the experience of the transcendental is more real than that of the fleeting panorama of this world.

It does not follow from all this that the pursuit of the question will be futile. Rather, this shows that on certain issues, at least, it may not be possible to arrive at unanimity. What one may hope for is a variety in the answers, all enriching and each contributing in some way to the clarification of the complexity.

#### *KSHARA, AKSHARA, AND AVYAKTA; BRAHMAN*

Hindu insights on transcendence may be traced back to the Vedas, which constitute the root scriptures of the tradition. The essence of Vedic visions, enriched by the spiritual experiences and metaphysical speculations of later sages, are found in more than 108 Upanishads and other canonical texts, including the *Bhagavad Gita*, the best known of them all.<sup>7</sup> In the *Katha Upanishad*, for example, transcendence is affirmed explicitly as a realm beyond matter and mind in the following verse (I:3.10–11):

Beyond the senses are the perceived things.  
 Beyond these is the mind,  
 Beyond mind is understanding,  
 Beyond understanding is the supreme Self.  
 Beyond this is the Unmanifest  
 Beyond which is the Abstract Spirit,  
 Beyond that there is but Naught.  
 This is the final destination.<sup>8</sup>

Here, as elsewhere in Hindu writings, transcendence is presented not as a religious doctrine but as a finding that is accessible to all who would care to seek. Transcendence is regarded as a layer of reality, as a substratum, indeed, the ultimate essence, of the experienced world.

This view may be clarified with an analogy. Suppose that we are enjoying a sumptuous meal. This is the immediate level of experiencing the food through our perceptual channels of taste and smell. The meal was

made possible through the process of cooking, which involves an array of procedures such as cutting, chopping, boiling, frying, and adding the right amounts of salt and spices. If these do not occur in precise and well-defined ways, the food will not appear in its delectable form at the table. Finally, beyond the cooking and the preparing of dishes, there is the essence of the food itself: the proteins, the carbohydrates, the vitamins, the minerals, and so on. These lie hidden from our normal view. Ultimately, it is the life-fueling energy implicit in the food that is responsible for the health and well-being of the individual. This energy is too abstract to be visualized as such. It finds expression in countless biochemical molecules. Thus, we recognize three distinct dimensions of the food: the directly perceived level, the processes engendering the perceived level, and the ultimate invisible level: the essence of it all.

Similarly, in the course of our everyday experiences, we become aware of many things and events. The totality of all this constitutes the perceived universe. It includes everything from the most minute entities at the core of physical matter to giant stars and grand galaxies. The one common characteristic of these tangible constituents of the universe is transience: sooner or later they all transform and dissolve. This dimension of the cosmos is described in the Hindu framework as *kshara*: that which is perishable or destructible. In the Hindu view, only that which is permanent is real; the ephemeral is but a *maya*, or appearance, which creates temporally relevant states, actual or illusory.

Science explores the nature and basis of the perceived components of the universe. The investigations of science have revealed that underlying the tangible world are immutable physical laws that are responsible for the sustenance and functioning of the world such as it is. These laws are not directly visible to us, but their nature and complexity can be grasped by the human mind. The totality of the principles and laws constitutes the *akshara*, or inerasable dimension on account of which the *kshara* components of the universe arise. They correspond in my analogy to the cutting and boiling and spicing without which there would be no food at the table. The rules of the game are more permanent than any particular game that is played.

The Hindu worldview goes a step further. Beyond the empirical and the intellectually grasped features is a third level. This is the ultimate substratum of the universe, somewhat like the essence of the food. This grounding is not recognizable mentally or perceptually because it does not manifest itself in any way. It is therefore referred to as the *avyakta*, or nonmanifest dimension. Yet its existence and essence can be apprehended by human consciousness by processes that transcend perceptual-mental modes.

This nonmanifest root of the cosmos is also known as *brahman*.<sup>9</sup> Brahman is beyond the constraints of space and time, of conservation and causality. That is why verbal discourse on the nature of God often leads to

contradictions and confusions. Brahman is to be apprehended, not comprehended; experienced, not described; vouched for, not proved. Those who have realized brahman speak of ecstasy and bliss, not of proof and belief. Brahman is the transcendent principle in the Hindu framework. Thus, the Hindu world, like other traditional religious frameworks, affirms the existence of transcendence. Except at a mythopoetic level, it does not anthropomorphize it. In other words, like electrons and matter waves, transcendence is taken as an aspect of the universe that is super-subtle and immaterial. This mystical idea was also articulated by Jacques de Marquette when he interpreted it as saying that “the essence of life and of the whole world is an all-embracing spiritual substance, which is the reality in the core of all beings, irrespective of their outer appearances of activities” (quoted in Bharati 1976, 88).

#### LEVELS OF REALITY

It is not difficult to conceptualize this as a possibility. In the physical world, we see solids and liquids as tangible entities. But careful investigations reveal the existence of gases and vapors, which are not as tangible. Even solids, liquids, and gases do not fully include all physical reality, for there is also radiant energy. Radiation is not solid, liquid, or gas. One may say that gases transcend solid and liquid matter, and radiation transcends matter more generally. Likewise, it is contended by Hindu mystic-sages, there is a level that is beyond these elements of the tangible world.

Or, consider two-dimensional curves on a plane. All such lines constitute reality at one level. But three-dimensional bodies bulge out of two-dimensional reality, and they do not form part of that world. Solid bodies transcend the realm of surfaces. Creatures confined to the plane are not likely to imagine, by virtue of their limited experience and inability to transcend that spatial confinement, that there are three-dimensional bodies, just as not many of us would ordinarily envisage that there could be four- and higher-dimensional entities.<sup>10</sup> But the incapacity of human minds to picture this or that cannot stand in the way of its existence.

Hindu sages maintain that while the realization of brahman may not be within reach of everyone, it is not beyond all. Not everybody can grasp the subtleties of string theories, but some can. Like multidimensional space, the nonmanifest brahman defies all attempts to visualize. Yet, it is not impossible to get an inkling of the ultimate root of Reality, whether of its physical side or of its nonphysical. As with the grasp of fundamental physics or in the climb to a mountain peak, apprehension of brahman is within reach of all who would undertake the quest. Prayer is a focused effort to connect with the transcendental. It is not unlike the use of a telescope or a microscope to explore the field for discerning something that is not within one's ordinary awareness. Meditation may be viewed as psychoscopic scanning to detect the transcendental.

## THE REALITY OF TRANSCENDENCE AND OBJECTIVITY

A crucial question that now arises is, To what extent and on what basis can transcendence be regarded as real? Two kinds of answers are given to this. First, there is the declarative side, the assertion by metaphysical philosophers that there exists a transcendental level of reality that is beyond our normal grasp. The postulate of such a realm is consonant with the tenets of most religions.

Then there is the experiential side of transcendence. Persons in various cultures have affirmed that they have glimpsed transcendence. The visions of mystics, though culture-dependent in the modes of manifestation, have similarities: the experience of joy, bliss, and ecstasy, and of oceanic unity with the cosmos. Though not necessarily linked to any religion, it often is (Bharati 1976).

Hard-core science responds that these are essentially particular states of the brain, inducible by specific drugs. But then, one may ask, is not everything so? Is not the world of nontranscendent reality, such as we perceive in our heads, also a result of cerebral chemistry? The vast stretch of space with a multitude of forms out there is transitorily etched on the tiny retina by fleeting photons. The consequent impression of a tangible reality, colors and all, of a solid, substantial world, is also the result of marvelous chemistry and action potential in neurons. But for the brain, what would elliptical orbits, the visible spectrum, or the half-life of radium really mean? In other words, is it logically kosher to reject the claims of mystics as delusionary errors brought about by brain biochemistry gone astray? All we can say is that there are species-normal processes and deviations thereof, but all are results of chemicals and neurophysiological processes inside the skull.

Just as the silvery moon is reflected during a cloudless night on the calm surface of a body of water, could it not be that some other feature of reality (in the sense of that which exists) is also an occasional reflection in the human brain? It is not implausible that all the complexity of an evolved human brain enables it to resonate with the transphysical dimensions of the universe as nothing else can.

From the perspective of pure physics, the entire universe may be summed up simply as energy transformations of matter-energy in space-time. Every occurrence in the phenomenal world is a result of interactions and consequent transformations. Since we have been enormously successful in explaining a vast range of the features and processes in the physical world on the basis of this paradigm, most physicists would unhesitatingly affirm that nature is definitely enough for an adequate understanding of the world. From the perspective of physics, the thirst for transcendence is just that: a psychological craving that has arisen from the cultural evolution of *Homo sapiens*. In due course, we will be able to explain on the basis of genes,

neurons, and the environment how this common need for transcendence emerges in the human psyche.

Here we may note that, all through history, even some scientists who subscribed to the paradigm of a phenomenal world fitting into the strait-jacket of matter-energy in space-time took transcendence for granted in contexts outside their experimenting and theory-building phases (Vukanovic 1995). They created and contributed to science in significant ways and also lived happy lives in a split worldview, as it were: the rationalist-materialist one for scientific matters and a something-beyond-conviction in other contexts. Some have proclaimed that they could be both simultaneously.<sup>11</sup>

#### SCIENCE AND THE SUPERNATURAL

In traditional religious frameworks, transcendence is supernatural—that is, above nature. Supernature, by definition, is not subject to the laws of nature. A supernatural entity or phenomenon can violate the constraints imposed by physical laws. Miracles are patent violations of natural laws. That is why the occurrence of miracles is quite consistent with the existence of the supernatural. Moreover, supernatural entities are not normally recognized by the usual channels of perception. In other words, they cannot be seen or heard or touched or smelled. However, now and again, some human beings develop the capacity to become aware of the supernatural.

It is here that science and traditional religions either come into open conflict or diverge fundamentally in their worldviews. Most religions accept, indeed require, the existence of supernatural realms and entities. Every religion has its angels and demons, its heaven and netherworld. The ancient worldview, intimately tied to traditional religions, accepted a celestial realm not as imagery or symbolic representation but as a very real region located somewhere “up there” where the Divine reigned. Souls were supernatural units associated with the living, and death was the parting of this supernatural element from the gross material body, which it vivified.

Modern science either explicitly denies supernature or benignly ignores it. The denial arises from a basic tenet of science: there is nothing more to the universe than matter-energy and the inexorable laws that govern them everywhere and at all times. The ignoring is a consequence of the fact that science has been able to achieve a good deal in terms of explanations and accomplish much in terms of applications without having to assume anything supernatural. The rise of modern science may be traced to the Copernican demolition of the demarcation between the changing and corruptible world here below and the changeless and perfect world above, which is governed by different laws and peopled by different beings (Wertheim 1999). This was, in a sense, a conceptual demolition of the

supernatural. Every major discovery since the rejection of geocentrism has been one more revelation of the essential commonality between matter such as we observe and study on Earth and what obtains in the crust and core of planets and stars.

Individual scientists may believe in the existence of angels and pearly gates, but science as an enterprise has neither reason nor motivation to imagine supernatural entities in its efforts to understand and explain the phenomenal world. If explanation of phenomena were the only goal, from the perspective of science the answer to the question Is supernatural necessary? would be a resounding No. This is not to argue for or against supernatural but to emphasize that supernatural, if such exists, is beyond the scope and concern of science, and, such as it is imagined in the lore and literature of humanity, is totally inconsistent with the tenets of current science.

Some have argued that God as Logos is a perfectly natural principle, that God is supremely natural in that it is from God that all of nature emerged. There are different levels of causality, and from a restricted perspective the higher levels of causality may appear to be supernatural when in fact they are not. This perspective leads one to say that "God is a wholly natural Being who created using natural processes because He has no other choice" (Corey 1994, 318). In the age of science in which we live, bringing God down from the supernatural to the natural plane seems to win God more respectability and acceptability.

#### TRANSCENDENCE FROM SPECIFIC THEORIES IN PHYSICS

If nature includes all that is matter-energy in space-time, we may extend or refine the notion of transcendence to mean that which is neither matter nor energy and is not localizable in space-time. Transcendence, thus considered, may or may not be linked to the physioenergetic spatiotemporal world. From this perspective, it can be argued that some developments in twentieth-century physics have made transcendence a reasonable element in a variety of contexts.

*Quantum Physics.* Transcendence emerges as an unexpected by-product of quantum physics in the context of an interpretation of the Heisenberg uncertainty principle. From the fact that the states of fundamental particles are inseparably intertwined with our detection of them, it has been argued that, prior to any observation, electrons and other elementary particles have an existence that is not exactly physical in the conventionally accepted sense of the word. Only that which is physically observed or observable in principle has any existence. Or, as one would say in technical jargon, the observed electron is a result of the reduction of a wave-packet. This forces us to regard unobserved electrons as epiphenomena, which are not much removed from the transcendence of religious



lore. In quantum physics one refers to the observed state of a system as one of the possible eigenstates of a mathematical operator. From this perspective, the totality of physical reality may be regarded an eigenstate of a transcendental operator (Comfort 1984, 171). An eigenstate is one of the possible states in which a quantum system can exist.

*General Relativity.* Another major theory of twentieth-century physics is Einstein's theory of general relativity and the associated view of cosmogenesis, namely, the Big Bang. According to a fundamental theorem in this theory, space, time, matter, and energy were all co-born at the instant of the Big Bang.<sup>12</sup> If this be so, one could argue that what gave rise to their simultaneous genesis must have been above and beyond them, that is, transcendent. Whether we call it God or Brahman or a symmetry-breaking matchstick in the metaphor of the high-energy physics,<sup>13</sup> it was neither matter nor energy, and it was not constrained by space or time. One could say that transcendence becomes a necessary element in any worldview that specifies a time of birth for the universe, as a nonphysical cause of the physical world. Laplace said that he saw no need for a God-hypothesis to account for what is happening in the physical world, but as for what caused the physical world to happen at all, we do need some hypothesis or other.<sup>14</sup> Related to this is the philosophical question of why the universe emerged with these particular laws and associated parameters. Who or what determined that these are to be the laws governing the physical world and not another set? This question is circumvented by the so-called M-theory, according to which this just happens to be one of countless possible perfectly valid universes, and there is nothing intrinsically unique about it.<sup>15</sup>

*Higher-Dimensional Reality.* Next, consider the attempts of physics to unify the fundamental interactions described by physicists: gravitational, electromagnetic, weak, and strong. In versions known as string theories, the universe began with a far greater number of dimensions than the four in which we live—anywhere from ten to twenty-six (Greene 2000). But soon after the emergence of the universe, all the other dimensions save the four basic ones of space-time became so curled up and minuscule that they are no longer recognizable as such. Could it be that these primordial twenty-six dimensions were themselves a subset of still higher dimensional realms that constitute transcendence?

*Pre-Big-Bang Entropy.* Another perspective relates transcendence to a principle of physics by which the direction of time is conditioned by increase in entropy. The entropy of the universe has been steadily increasing over the eons and will continue to do so indefinitely. We know that living organisms are open local pockets within which entropy decrease occurs (Prigogine 1980). Going back in time, the entropy of the universe must have been less and less, but this means more and more structure. As

Paul Davies put it, "It is clear that no order at all would exist unless the universe as a whole started out with a considerable stock of negative entropy" (Davies 1983, 166). At the momentous Big Bang, it must have been zero. Thus, the pre-Big-Bang state may be regarded as a state with negative entropy. Considered thus, transcendence may be viewed as a state of negative entropy. That every living entity involves a diminishing of entropy could be interpreted as reflecting a striving toward that state of negative entropy. In other words, the human mind which communes with transcendence in one mode or another may be looked upon as a pocket of diminishing entropy struggling in a sea of increasing entropy to regain its original status.

EMERGENCE, COMPLEXITY, INFORMATION,  
AND TRANSCENDENCE

Twentieth-century science recognized the inadequacy of mechanistic models to explain many features of the experienced world. And in the attempt to circumvent the souls of religions and the poetry of metaphysics and to keep everything within reason and coherence, a new paradigm has been developing in the world of science incorporating terms like *emergence*, *complexity*, and *information*.

Whereas *ex nihilo* smacks of scholasticism, *emergence* sounds scientific, though the terms are not all that different conceptually. *Ex nihilo* says that you get something that was not there before—out of nothing. Emergence says you get something that was not there before by putting together some things. The something in *ex nihilo* refers to matter and energy. The something in emergence refers to properties, qualities, and capabilities. Getting rabbits out of an empty hat is *ex nihilo*; getting meaning by putting together a string of letters is emergence. A crucial difference between reductionist explanations and emergence is that the latter deals with unpredictable outcomes.<sup>16</sup> It must be realized that the mere use of a term like emergence, however scientific it might sound, does not necessarily explain the phenomenon.

The related notion of *complexity* is to reductionism what the rain forest is to the individual plants and creatures inhabiting it; it provides a holistic perspective that has overall features not apparent in the individual members. Petty or grand, reductionism is wedded to mechanism, which is clockwork in its routine repeatability, even impressive in its predictive power, but can say little about the remarkable properties that come from intangible interconnectedness. Reductionism is successful insofar as it shows the underlying causes and components: why this happens this way and not that, why something is this and not something else.

But myriad happenings in the world are not neat and regular and predictable: the formation of a cloud, the trail of a running deer, the sudden

anger of a good friend, the evolution of Jupiter into a large planet rather than a small star, the swings in the stock market. All of these are also part of the phenomenal world, and they cannot be reduced to the this-there-fore-that model.

So the idea has arisen that the world is more than a mesh of linear causal chains and that it is more than the predictable and inevitable effects of laws and leptons. Rather, it seems as though great potential for the unpatterned and the unpredictable lies simmering in the subconscious of nature, as it were, bursting out as spurts now and again. Utterly unexpected phases emerge from well-structured entities even in the context of rigid laws, principles, and mathematical formulas. This is what complexity is all about: the intractable built-in feature in this vast and intriguing arena we call the universe. Scientists once imagined that Newton and his successors had transformed it all into elegant differential equations with clear boundary and initial conditions. It turns out that there is more chaos in the cosmos than Galilean science had led us to believe.

Classical reductionism has been enormously successful in explaining and predicting phenomena, but only where the whole is equal to the sum of its parts. Such situations are described as linear. However, where the total is much more than or very different from the simple sum of the components, we have a nonlinear situation. In such instances complexity asserts itself. There are more nonlinear than linear instances in the world, more complexity than simplicity. Only in the last quarter of the twentieth century did science begin to tackle complexity in systematic ways.

Complexity is nowhere more glaring than in the biological world, where life forms arise and act in utterly unpredictable ways. Yet, each organism seems to be well conditioned for its lifespan. Neurons fire, secretions flow, cells divide, and a zillion other biochemical processes routinely occur, mostly in flawless fashion, in the nooks and niches of the countless organisms that are part of the biosphere. How does this happen?

Here we invoke the notion of *information*. When a system has structure, it has information, too. But the structure should be nonrandom. The now defunct hard-core reductionist view was that the properties of water were already implicit in two atoms of hydrogen and one of oxygen and that the chemical bonding of the three made these explicit. But in the emergence paradigm, new properties arose as a result of the combination. One also could theorize that this was rendered possible thanks to an external source. Nerves in the tongue have the capacity for creating the sensation of, say, sweetness, as does a candy. But it is only when the two combine that the experience of sweetness emerges.

The DNA molecule can be analyzed into its subunits of carbon, nitrogen, oxygen, and many more. But the whole molecule is what carries information, that is, what it takes to allow for, instigate, and result in phenomena that constitute biology.

The laws of physics and chemistry allow a goodly number of things to happen. Information is what causes certain things to happen in particular ways. When we encounter a dilemma, it is information that enables us to choose one rather than the other in a meaningful way. Information and intelligence are related, and not just at the CIA. The ultimate root of information is as yet ill-understood. All we know is that, though it is anchored to molecules and mechanisms, information is not a localizable entity. It is, above all, an interconnecting principle. Insofar as it is not matter-energy, nor spatiotemporally localized, could insubstantial information, which provides the patchwork for the cosmic quilt, be transcendence?

#### TRANSCENDENCE FROM PHYSICS AND IN RELIGION

It is important to recognize that the transcendence that is suggested from the theories in science has little in common with the transcendence of which religions generally speak. From the perspective of most religions, transcendence is an aspect of a divinity that is very closely linked to the human condition. The vision of God as a transcendent principle is very different from the transcendence that seems plausible from physical theories. The higher-dimensional transcendence of general relativity or quantum mechanics has no glory to laud, no grace to give, no mercy to show, no heaven to welcome our souls. The intellectual logic-derived transcendence is as bereft of meaning and love, as cold and callous to the human experience, as quarks, leptons, and field bosons. At best, it could be likened to the rainbow, which evokes awe and wonder and, also like the rainbow, is there whether or not you and I are admiring it.

Just as deducing free will from quantum indeterminacy will be of little guidance when we are confronted with a moral choice, the assurance of transcendence on the basis of string theories or negative pre-Big-Bang entropy contributes little to the peace that comes to the pious from prayer or penitence. This is not to affirm or deny the transcendence of which religions speak but to state that proofs for the existence of God, ancient and imaginative as they are, have little connection with the coherent constructs of science.

If we wish to seek a link between a reasonable extrapolation to transcendence from physics and an affirmation of transcendence in one of the religious traditions of humankind, the Hindu concept of brahman is perhaps what comes closest. It is not unlike the God of James Jeans, who imagined the Divine as pure mathematical thought governing the physical universe (Jeans 1930). In the world of Hindu spirituality, brahman is not a He or a She that prescribes or proscribes behavior or a principle that is compassionate to the suffering or considerate to the repentant but a mute substratum of cosmic awareness that is at the beginning and end of a cyclical universe and bears witness to the events and episodes that transpire during

the intervening spatiotemporal phases of matter-energy transformations. It does seem reasonable to imagine that, even as vapors rising from the oceans fall back as raindrops into containers, a magnificent cosmic consciousness manages to thrust itself into the complex systems of human bodies.

From this perspective, transcendence is the subtle backdrop of the physical universe. If we compare the universe to a great painting, the tiny signature in a corner is like the human spirit: a reminder of how it all came to be—a witness to the creation, as it were. The evolution of the universe has been a slow process from the first Big Bang of creation, through the formation of atoms and molecules and stars, supernovas, and planets, to the first spark of self-replicating molecules and the gradual transformation to reflecting and restless minds. As the stamp of the artist is imprinted somewhere in the work, the human spirit is manifest at a niche in the created world.

Much of biodiversity has been adequately accounted for in terms of the view that all of its expressions are products of the first molecules and cells that were synthesized from the primordial salts and gases that permeated ancient oceans, and that the variety of life forms resulted from genetic mutations often instigated by the sole goal of survival. However, it is not sufficiently clear what some elements of cultural evolution have to do with biological survival, such as appreciation of beauty, reverence for nature, commitment to justice, creation of music, and fondness for rhyme and rhythm. It is just as reasonable, and to many even heartwarming, to suppose that, just as at its most advanced stages of evolution the human mind became aware of electrons and protons and managed to measure the speed of light and the distance of galaxies, it also developed the potential for uncovering the transcendental dimensions of the universe. *Homo sapiens* seems to be the only species that has gone far beyond the call of duty for keeping the species alive. Much of what humans have created and uncovered is quite irrelevant to biological survival.

#### THE NATURAL, THE SUBNATURAL, AND THE TRANSNATURAL

Science deals with the natural world. This is the world beyond human lives and minds, a world that has, to all appearances, been there for eons before the emergence of *Homo sapiens*. It includes not only plants, trees, rivers, and mountains but also stars and planets, atoms, molecules, and distant galaxies. It is the study of this nature—φύσις in Greek—that we call physics and science in our own times.

There are two other entities that need to be mentioned in this context, because their existence is also part of the physical world.

First, physics has unveiled the existence of what are called *virtual particles*, which are responsible for all the known fundamental interactions. It is in terms of these that we explain the myriad aspects and functioning of

the physical world. They are subtle and minute almost beyond imagination. Virtual particles come and go and even violate during very short intervals of time the law of matter-energy conservation. It is by their fleeting, firefly-like appearance and disappearance that current physics pictures the root forces that give stability to the physical world. They make cosmic emptiness perpetually throb, causing the so-called vacuum fluctuations.

Virtual particles are not like the natural substantial entities that they engender—the world of material chunks that we observe, measure, and detect with instruments, consisting of dust bits and sand grains to mammoth stars and galaxies. Virtual particles are the ultimate units at the deepest substratum of the material world. They can never be observed, even in principle. They may well be described as subnatural, for they are well below what we normally call nature. More densely packed than bacteria in a cesspool or sand grains on the beach, subnatural entities throng the microcosm. They are the ground stuff of which the gross material world of our experience is the tangible result. Yet, ironically, they are no stuff at all. Nor are they like anything in the nature that we see and study.

Then again, although everything in nature is matter-energy in space-time, there also arise in the world from electrobiochemical processes in human brains entities that we call thoughts. Thoughts are not spatiotemporally localizable, nor are they physiochemical entities. More tenuous than a subdued whisper, subtler by far than neutrinos and massless photons, thoughts are the only nonphysical entities that arise from purely physical systems, as far as we know.

We have at present no clear knowledge of whether thoughts have independent existence and of what nature they are. But this much is clear: All science and religion, all society and civilization, all knowledge and understanding, all values and relationships rest ultimately on insubstantial thoughts and ideas, concepts and reflections. Thoughts and ideas are *trans-natural* entities. The world may be natural, but its comprehension calls for the transnatural.

#### CONCLUDING THOUGHTS

From the merger of a microscopic sperm and an egg in the darkness of the fallopian tube arises an entity that gradually acquires self-awareness and an identity all its own. This embodied consciousness reflects and rejoices, creates and communicates, and engages in countless activities for a brief time span. Then, at the end of the experience, its nonphysical attributes vanish. No thinking mind can remain unimpressed by this remarkable phenomenon, which, as far as we know, is unlike any other in the silent stretch of space and time. If anything is mystery, human consciousness is.

It is difficult to write this off as another cause-effect accident of casual chemistry. Niels Bohr once said that if one is not jolted by quantum me-

chanics, one has simply not understood it. I will confess that the jolt I received from my first encounter with quantum mechanics was not half as intense as what I still feel when I reflect upon consciousness. I cannot dismiss it as yet another emergence like thunder or a volcano in nature's blind dance, like wing and horn from mutations. And I suspect that even a rigorous course on religious naturalism would not relieve me of this sense of supreme mystery.

Four centuries of modern science have thrown much light on the physical basis of this uncommon wonder, which may have parallels in other planetary pockets in the universe. Perhaps someday we will be able to account for consciousness in terms of neurons, microtubules, or some other matter-based principle. But as of now it remains a fantastic anomaly in the mindless arena of mass-energy. No purely material link has as yet been unveiled between alphabetical permutations and sublime sonnets, or between molecular structure and meaning and value. Perhaps the tenuous bridge between matter and mind is an aspect of transcendence.

It is quite satisfying to many to regard love and laughter, acts of kindness, and the quest for truth as among the peak performances of neuron firings, as evolutionary upshots of cerebral chemistry, as readable scripts from genetic programming. It may well be that we are essentially sophisticated carnal robots that organize conferences on Star Island. But it also is plausible that some kind of transcendence is at work in value and meaning and whatever else goes with what we loosely call the human spirit.

Each one of us carries within a totality that is more than the sum of our body's material substrate. Yet, many of the atoms and molecules that make up our anatomy at this hour were not part of us not so long ago. Moreover, millions of microorganisms thrive and perish in our saliva and alimentary canal. With all that, there is a subtle self that has been illumining every one of us, something that etches the identity of a separate existence even within a hugely interconnected whole. This self has been with us since the first comprehension and utterance of *I* and *me*, and it will be part of us until the dusk of life when, gradually or suddenly, our individual memories will falter and fade away for good.

The biochemical basis in the persistence of personhood is clearly there. Someday, silicon configurations in plastic casings may acquire feelings and emotions, mimicking the heaves and exhilarations of the human heart. Computers create music today; they might be enjoying it tomorrow. But this is no proof that there is nothing beyond matter and energy in space and time. Who is to say that silicon chips can't experience transcendence?

Nature certainly appears as a tangible manifestation of matter and energy. However, the laws of nature that organize and sustain it cannot be located here or there: they pervade the entire span of spread-out space and ceaseless time. From this perspective, transcendence is the intangible principle that breathes life into inert matter. The scientific, philosophical, and

religious quest for transcendence may well be more than thirst for a fantasy. Even as a heliotrope is drawn to light, the evolved brain may be reaching out for transcendence. If it is a thirst, the thirst could well be the yearning of the human spirit to remember its own prephysical origins.

### Transcendence

Beauty and colors so pleasing to the eye,  
 Stars and planets in the dark sky,  
 The ratio in the circle denoted by pi,  
 The surging of the seas and the marvel of the fly

The splendor of the flowers that blossom and die:  
 All these were there as eons rolled by.  
 But neither plants nor trees, nor beasts nor birds  
 Described all these in rhymes or in words.

Nature and her laws were occult in the dark,  
 Till consciousness came, and lit them with its spark.  
 How did this happen, for what purpose and whence?  
 Could the answer for this be in Transcendence?

### NOTES

1. In the Hindu tradition, a similar naturalistic worldview was suggested by Uddalaka Aruni, whose name appears in the *Chandogya Upanishad* (Chattapadhyaya 1991, 43).
2. Thales of Miletus, the first of the Seven Wise Men of ancient Greece, lived in the sixth century B.C.E.
3. After all, we don't talk about a thirst for color: color is a consequence of the interaction between an external entity (electromagnetic waves) and human cerebral structure.
4. Immanuel Kant, for example, regarded the principle of causality as a transcendental truth.
5. Philo Judaeus was emphatic when he spoke of God as "transcending virtue, transcending knowledge, transcending the good itself." He regarded God as implanting the laws of nature at the time of creation (quoted in Wolfson 1972, 152).
6. This thesis is known as *Anekantavada* (doctrine of multiplicity).
7. For a brief introduction to these texts, see Raman 1989.
8. See, for example, Olivelle 1996, 239.
9. The *Brihadaranyaka Upanishad* says: "In the beginning there was only Brahman." This is not surprising when we consider that the same logical brain that is allergic to unreason is perfectly accepting of intriguing irrationality in the dream state.
10. Edwin Abbott explored this idea in his famous book *Flatland: A Romance of Many Dimensions* (1991).
11. Thus, for example, Guglielmo Marconi said: "Proudly I declare that I am a believer. I believe in the power of prayer. I believe it not only as a faithful Catholic but also as a scientist" (quoted in Frankenberger 1973, 21).
12. The Hawkins-Penrose theorem states that under certain conditions (which seem valid in the framework of current physics) the universe must have had a birth at a definite point in time (singularity).
13. Current physics explains the emergence of the physical universe as resulting from a symmetry *breaking* occurrence.
14. The God/Creator hypothesis is one such.



15. M-Theory is the new name for what used to be called string-theory, which pictures the ultimate constituents of the physical universe as different vibration modes of open and closed strings.

16. In an emergence phenomenon the emerging whole is greater than the sum of the parts from which the emergence occurs.

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