

# HOW HEALING HAPPENS: EXPLORING THE NONLOCAL GAP

Larry Dossey, MD

©

Publication:  
*Alternative Therapies in Health and Medicine*  
2002; 8(2)12-16, 103-110

**F**or the entire history of the human race, people have believe that healing can take place at a distance. How does healing happen remotely? The short answer is: Nobody knows. The situation is rather like that described by Sir Arthur Eddington, the British astronomer-physicist, who said, in speaking about the uncertainty principle in modern physics, “Something unknown is doing we don’t know what.”<sup>1</sup>

The reasons we don’t know how healing happens is that the task is remarkably daunting. We have bumped up against what may be the three most mysterious entities in the universe: consciousness, space, and time. As we shall see, understanding spiritual or distant healing requires penetrating these mysteries, about which we remain appallingly ignorant. We are like the blind men who encounter the elephant. Every expert in healing seems to be feeling different parts, and the version we report represents a different point of contact. A “whole-elephant” perspective is lacking. So what can we say about how these events happen?

The question of how healing happens is tightly connected with language and taxonomy, because the language used in this field often presumes or implies a mechanism — as when we say “nonlocal healing” or “energy healing.”

I don’t enjoy talking about the importance of language in healing, because this subject stirs powerful emotions. People take their language personally. We use language to describe what we do, and what we do is connected with our self-image, how we define who we are. To question someone’s choice of language can be perceived as a personal attack or threat. I have seen nice, serene researchers go ballistic in formal meetings when their healing language was questioned, and it is not a pretty sight.

Language both attracts and repels. W. H. Auden used to say that when he didn’t want to talk to someone sitting next to him on an airplane, he simply told them he was a medievalist. I have been experimenting with this tactic lately. I have discovered I can achieve Auden’s result by telling someone I’m an explorer of nonlocal mind. That usually turns them away. But if they ask, “What’s that?” I respond, “Mind that is everywhere in space and time.” That always does it.

I had a lesson in the power of language a few years ago when a friend of mine decided to open a sophisticated restaurant in Mountain View, a tiny town located in the

beautiful Ozark Mountains of northwest Arkansas. At the time this sleepy little community did not have a good *downscale* restaurant, and whether or not it was ready for an *upscale* establishment was debatable. But he was enthusiastic about bringing culinary excellence to town. One of the choices he offered on the menu was beef Stroganoff. The problem was that nobody knew what it was, and not a single person ordered it. It was a complete failure. But instead of tossing out all the beef Stroganoff, the next day he reprinted the menu, changed the name of beef Stroganoff to beef and noodles, and made it the special of the day. Beef and noodles was a huge hit and a constant menu feature thereafter. From this event we can derive what I call the Beef Stroganoff Principle: *If you want to sell something, be careful what you call it.*<sup>2</sup>

Much depends on the audience. The rules for a menu in Mountain View, Arkansas, would not be the same for Los Angeles. The *Los Angeles Times* recently featured an article on how to design a restaurant menu. The writer says, “Spaghetti, \$14,” sounds steep and not very appealing. But ‘Spaghetti with grilled sardines, pine nuts, currants, and wild spinach, \$14’ sounds worth it.” Other guidelines: never say “boiled,” which sounds like you’ve cooked the life out of the food; say “stewed” or better yet, “roasted.”<sup>3</sup>

In the young field of spiritual or distant healing, we are in the process of designing the menu, deciding what to call it. We know that people are attracted or repelled by certain terms. The problem is that there is no accepted taxonomy and the vocabulary is a muddle. We seem to be making it up as we go along, often with little forethought. Metaphors and poetic images mingle with facts, and it is difficult to tell one from the other. Some of the terms we hear are psychic healing, psychokinesis (or PK, mind over matter), prayer healing, healing intentionality, energy healing, vibrational healing, quantum healing, nonlocal healing, consciousness-based healing, and just plain “healing.”

Like my friend’s beef Stroganoff, which did not penetrate the market in Mountain View, Arkansas, until he found a name that was comprehensible and acceptable to the surrounding world, it may be that the market we want to penetrate with spiritual healing — conventional medicine and the scientific community — will not respond positively until we begin to speak a proper language.

## **THE LANGUAGE OF HEALING**

To illustrate how language can be twisted and run amok in the culture, consider the term “quantum.” It has captured the popular imagination and is being used to describe everything in sight. In a shopping center near my home, a health foods store advertises products for “quantum nutrition.” Close by is a beauty salon advertising “quantum perms.” It is impossible to escape “quantum” these days. When I recently scanned the books in my library I saw books on quantum psychology, quantum healing, quantum physics, quantum reality, and the quantum body. I did a quick search of the Internet and turned up 1,354,310 entries for “quantum.” If you try this, you’ll discover thousands of listings for items such as quantum CDs, quantum fishing equipment, quantum consulting,

quantum marketing, quantum workshops for success in business, quantum employment opportunities, quantum creativity, quantum fashions, and quantum comic books. Why do people use “quantum”? Attaching “quantum” to your product or service implies that it is chic, modern, and a major advance — a quantum leap — beyond your competitors. It is obvious that there is a psychology behind naming, which applies not only to commerce but to the field of spiritual healing as well.

Of course, we expect advertisers to take liberties with language and to blur metaphor and fact. But in science we are supposed to follow a different standard. We are supposed to use terms that mean what they say.

But in spiritual healing, we don't. Consider the term “energy” and its variants, which crop up in terms such as “energy healing,” “vibrational healing,” “subtle energy healing,” and the efforts of healers to balance the “energies” or the “frequencies” of a person in need. Physics currently acknowledges four kinds of energy — the electromagnetic, the gravitational, and the strong and weak nuclear forces. Are “energy healers” referring to these types of energy, or to metaphors? Almost never do the healers define what they mean when they use these terms. Even if they *are* referring to known types of energy, can “energy” explain spiritual healing?

Certainly not *distant* healing. In the physics-and-parapsychology community, there is near-unanimity on this point. As a single example, here's what physicists Elizabeth A. Rauscher and Russell Targ say in their recent article, “The Speed of Thought,” in the *Journal of Scientific Exploration*, in their discussion of the distant, nonlocal behaviors of consciousness, including distant healing:

We recognize that every ontology is perishable...However, we are confident that two factors will remain: namely that these phenomena are *not a result of an energetic transmission, but rather they are an interaction of our awareness with a nonlocal hyper-dimensional space-time in which we live.*”<sup>4</sup> [emphasis in original]

Robert G. Jahn, Brenda J. Dunne, and Roger D. Nelson of the Princeton Engineering Anomalies Research (PEAR) lab agree:

...[W]hile there have been many attempts to interpret conscious-related anomalous phenomena in terms of some physical form of information transmission, virtually all of these have explicitly presumed a space/time reference matrix. The demonstration of negligible attenuation of the empirical effects with distance, along with the precognitive and retrocognitive capacities, would seem to call this presumption into question, and specifically to preclude their attribution to any known form

of field radiation, be it electromagnetic, geophysical, or *even subtler* physical vectors. [Emphasis added].<sup>5</sup>

...The literature of psychic research abounds with attempts to transpose various physical formalisms [to account for these effects]: electromagnetic models, thermodynamic models, mechanical models, statistical mechanical models, and others....Although these comprise an interesting body of effort, none of them seems fully competent....Indeed, it appears that no simple application of existing physical theory is likely to prevail. In order to encompass the observed effects, a substantially more fundamental level of theoretic model will need to be deployed, one which more explicitly acknowledges the role of consciousness in the definition of physical reality.<sup>6</sup>

No one has been clearer about the importance of language in healing than psychologist Lawrence LeShan. LeShan has spent more years studying healers, doing healing, and teaching healing than anyone alive. He says:

One factor adding to the complications of this particular term ["energy"] is the fact that we often take concepts meaning something fairly familiar that are used in other ways of construing reality and apply them as if they are synonymous for [the scientific concept of] "energy." I think here of such words as "prana," ["chi"], "wakanda," "gray force," and "orenda." These are terms that make sense in the particular way of organizing and construing reality in which they originated. They make no sense when translated directly into others. Whatever it is that manifests in a "meridian," it is not the same thing that makes an electric light bulb glow. You confuse the two at the peril of your possibility of constructive thinking.<sup>7</sup>

Unless we recognize the problem [of language] and that it is not only confined to the one word ["energy"] ...our progress will continue to be hampered. And for those who do not think it has been, I might point out that if I have an appendicitis attack, it will make a crucial difference whether my physician has been trained in 1990 or 1590. In one case I will live, in the other I will die. However, if I ...go to a psychic healer, it will not make any difference in which century the healer was trained. The results will be about the same. Nor have we learned anything much about understanding, training, or using telepaths or clairvoyants in the past centuries. (I know of no other field — except possibly political science — of which this can be said). This is pretty shocking when you come to think about it and when you consider the serious work that has gone into such areas as psychic healing and spiritual development by intelligent,

dedicated and hard-working human potential people. It illustrates that something ...[is] very wrong. Our attitude towards language appears to be one of them.”<sup>8</sup>

Now, I realize that most healers are bored stiff by questions of language and consider this debate a needless haggling over terms. The main thing, they say, is whether or not healing works, not what we call it. I disagree. We face serious obstacles in advancing healing work, and we do not need to compound our problems by adopting a language that other scientists find impenetrable and which has no accepted currency in mainstream science.

We can create horrendous problems by playing fast and loose with terminology. Consider the flap over Therapeutic Touch (TT) that took place at the University of Colorado a few years ago. For years TT researchers and practitioners have referred to "energy patterns," "energy flow," "energy fields," "blocked energy," and "energy balancing," as if these concepts have been empirically demonstrated beyond reasonable doubt. But although there is considerable evidence for the clinical efficacy of TT,<sup>9</sup> the critical experiments that might clarify the underlying mechanisms have simply not been done. Most TT practitioners — there are notable exceptions — do not appear to realize this, and make no attempts to distinguish metaphor from fact. In adopting this stance, TT proponents at the University of Colorado played into the hands of so-called skeptics who despise the idea of distant healing. The skeptics launched a campaign to ban the teaching of TT in state-funded institutions and caused immense distress to the nurse scholars who were involved.

As a further example of how confused language evokes criticism, consider the recent hostile paper "Experiments in Distant Intercessory Prayer" by Chibnall et al in a recent issue of the *Archives of Internal Medicine*.<sup>10</sup> One of their targets is the undisciplined use of "energy" and "subtle energy." When researchers in distant healing use such terms, one can almost see the cynics gloating, saying "Gotcha!"

Is it possible to arrive at a language of healing that is true to the experimental findings?

## **THE THREE PHASES OF DISTANT HEALING**

It is helpful to divide spiritual healing into three phases.

The first phase involves the activities and intentions of the individual who is attempting the healing. This usually involves entering a meditative, prayerful state which healers sometimes call "centering." Healers describe a variety of experiences when they enter this psychophysical state — feelings of serenity, empathy, and compassion, warmth and tingling in the extremities, and so on. We know a lot about this stage. For nearly half a century researchers have described the physiological changes that are involved, including EEG patterns, MRI and PET scan data, cardiovascular changes, immune modifications, and so on. What's the mechanism? Most researchers are comfortable

using the energy-related framework of conventional science in describing these events — biology, chemistry, classical physics, anatomy, physiology.

Let's jump to the third or "downstream" phase of spiritual healing. This involves the response of the individual to whom the healing is directed. These changes may involve a variety of physical sensations as well as physiological changes. Controlled studies have documented positive responses in cardiovascular disease,<sup>11,12</sup> advanced AIDS,<sup>13</sup> infertility,<sup>14</sup> and so on. In nonhumans, studies have demonstrated increased healing rates in surgical wounds in animals, increased germination rates in seeds and the growth rates in plants, increased replication rates of various types of microorganisms, decreased hemolytic rates of red blood cells, altered kinetics of biochemical reactions, and so on.<sup>15,16</sup> As with the initial phase of spiritual healing, most researchers believe these third-phase changes can also be described within the local, classical framework that underlies modern physiological research.

### THE NONLOCAL GAP

Between the initial and final phases of healing lies the most intriguing phase of all — the distance between the healer and healee. We can call this phase the "nonlocal gap," because it can be described only by invoking the concepts of nonlocality, as we shall see. Although we know that this spatial separation can be bridged by the intentions, empathic wishes, and compassionate prayers of healers, and by both conscious and unconscious thought, it remains a domain of great mystery. These nonlocal behaviors of consciousness also have the ability to generate intense emotional and intellectual revolt on the part of those wedded to a thoroughly local view of reality. But these objections are destined to become a footnote in history, because there is nothing in the whole of Newtonian physics that can explain how this nonlocal gap is bridged. There is no hope, even in principle, of applying classical, causal, local, energy-based explanations to this in-between phase of spiritual healing. Although energy"-based models may do quite well to explain what happens *within* healer and healee, they don't work in explaining what happens in this strange world *between* the healer and healee. So this is why no single mechanism is going to explain spiritual healing.

The conventional view within science, of course, is that consciousness is completely local — i.e., it is confined to specific points in space (the brain and body) and time (the present moment). In brief, modern science assumes that consciousness and the brain are identical. Thus astronomer Carl Sagan: "[The brain's] workings — what we sometimes call mind — are a consequence of its anatomy and physiology, and nothing more."<sup>17</sup> And Francis Crick: "...a person's mental activities are entirely due to the behavior of nerve cells, glial cells, and the atoms, ions, and molecules that make up and influence them."<sup>18</sup>

Yet the confidence exuded by presumptuous statements such as these is premature. We are appallingly ignorant about the connections between consciousness and the brain. Thus philosopher John Searle: "At the present state of the investigation of consciousness we *don't know* how it works and we need to try all kinds of different

ideas.”<sup>19</sup> And philosopher Jerry Fodor: “Nobody has the slightest idea how anything material could be conscious. Nobody even knows what it would be like to have the slightest idea about how anything material could be conscious. So much for the philosophy of consciousness.”<sup>20</sup>

## **A MODEST PROPOSAL**

So I have some very simple suggestion. If we choose to do science in this field, let’s use the language of science. Let us not invent a private vocabulary for which there is no shared meaning in the scientific community. Let us not assert mechanisms of healing which are inconsistent with empirical findings. And when we are in the dark about mechanism, let us admit it.

## **IS SPIRITUAL HEALING SPIRITUAL?**

What do we mean by the term “spiritual healing”?

By “spiritual,” I mean the sense of connectedness with a factor in the universe that is wiser and more powerful than the individual sense of self and that is infinite in space and time. I choose to refer to this factor as the Absolute. In the great religions it is often referred to as God, Goddess, Allah, the Tao, Universe, and so on. By “healing” I simply mean the restoration of a sense of wholeness, from whence the term “healing” is derived. Healing involves a sense of oneness of mind and body within the person, but can also include a sense of oneness with all there is, a condition of which the great mystical traditions have always spoken. Healing may or may not be associated with the eradication of a particular disease.

The differences of opinion about the nature of healing are profound. Most people in our culture believe that healing has something to do with spirituality and prayer. But J. B. Rhine, the founder of modern parapsychology, disagreed. Rhine believed that intercessory prayer was nothing more than psychokinesis or PK — mind acting directly on matter. He saw no reason to put God in the loop. As he put it,

Religious communication is basically psi communication, pure and simple....All the physical miracles, whether in the healing of disease, the miraculous movement of objects, or the control of the elements, had to be manifestations of PK [psychokinesis].<sup>21</sup>

## **ABOUT DAT**

Other experts disagree with Rhine’s position on psychokinesis, and say that PK is vastly overrated. This view has been most recently elaborated by Ed May, Jessica Utts, and James Spottiswoode in their Decision Augmentation Theory or DAT.<sup>22</sup> According to this view, people don’t push the world around with their intentions or prayers. Instead, they intuit what is going to happen in the future and align their intentions with these

developments, which gives the illusion that their intentions caused the pattern of events that ensues. So DAT essentially abolishes psychokinesis in favor of precognition.

DAT is at odds with the views of most researchers in healing and parapsychology. Almost all of them believe that consciousness can both *insert* information nonlocally into the world and therefore actually *do* something “out there,” in addition to *acquiring* information or knowledge from the environment. Some researchers have lined up strenuously against DAT— such as physicist York Dobyns of PEAR<sup>23,24</sup> and philosopher and Whiteheadian scholar David Ray Griffin of Claremont College, who accepts the evidence for psychokinesis but rejects precognition in principle.<sup>25</sup>

If DAT permits only precognition, can it account for healing? I believe it can, at least for certain kinds of healing. Evidence suggests that individuals can precognitively acquire information that is relevant to the health of themselves and their loved ones. If they precognize this information before the unhealthy event takes place, they may take action to avoid future illness or even death. For example, surveys of parents of babies who died of sudden infant death syndrome (SIDS) reveal that these parents have intuitions or premonitions of the impending death of their infant 10 times more frequently than parents of normal infants.<sup>26</sup> If this precognitively acquired information were acted on, the deaths of the babies may have been avoided. Even groups of individuals appear precognitively to acquire information of impending disasters, and have used this information to avoid lethal consequences.<sup>27</sup> Precognition-based theories such as DAT, therefore, can be highly relevant to health outcomes.

I believe there are arguments in favor of psychokinesis and intentionality have been underestimated by the DAT proponents. Among these are concepts from evolutionary biology that have been elaborated by the Nobel neurobiologist Sir John Eccles,<sup>28</sup> among others. Eccles maintained that conscious awareness would not have arisen in the evolutionary history of humans if consciousness were unable to *do* something. The fact that consciousness expanded, so to speak, in higher organisms, is an indication that it lent survival value to the organism possessing it. If something contributes a survival advantage, then it must be capable of acting in some way on the world in which the organism finds itself. The arising of consciousness is therefore evidence of its potency. So for Eccles consciousness was not effete or an illusion but was causal.

Eccles was not defending PK, of course; but other scholars come surprisingly close to doing so. For example, one of the current godfathers of quantum physics, Henry P. Stapp of UC-Berkeley, says,

“...the new physics presents prima facie evidence that our human thoughts are linked to nature by nonlocal connections: what a person chooses to do in one region seems immediately to effect what is true elsewhere in the universe. This nonlocal aspect can be understood by conceiving the universe to be not a collection of tiny bits of matter, but rather a growing

compendium of ‘bits of information’ . . . . And, I believe that most quantum physicists will also agree that our conscious thoughts ought eventually to be understood within science and that when properly understood, our thoughts will be seen to DO something: they will be efficacious.”<sup>29</sup> [emphasis in original]

## NONLOCALITY

Let’s look closer at the second phase of distant healing, the “nonlocal gap.” What is a nonlocal event? “Nonlocality” is a term that literally means, in layman’s language, “not local.” If an event is nonlocal, it is not confinable to the here-and-now. It violates confinement to specific points in space and time. Two books about nonlocality for laypersons and nonphysicists are particularly recommended — physicist Nick Herbert’s *Quantum Reality*,<sup>30</sup> and *The Non-Local Universe*<sup>31</sup> by science historian Robert Nadeau and physicist Menas Kafatos.

What do nonlocal events look like? There is a class of experiments in quantum physics that demonstrates nonlocal features. For example, if one takes subatomic particles that have once been in contact and separates them at arbitrary distances — theoretically, even to the ends of the universe — a change in one is correlated with a change in the other *instantly* and to the *same degree*. In some strange way, the particles appear to behave as if they are a single particle, in spite of their separation. Physicist Henry Stapp says that these nonlocal quantum connections could be the “most profound discovery in all of science.”<sup>32</sup> How do the nonlocal correlations take place? How can one particle “know” that the other has changed? Hypotheses abound, but there is no agreement. In spite of the lack of an explanatory mechanism, nonlocal phenomena are not in doubt in contemporary physics; numerous experiments have been done since this phenomenon was first theorized by the Irish physicist John Bell in the 1960s.<sup>33,34</sup>

Nonlocal events have three essential characteristics that distinguish them from local, common-sense, everyday happenings. They are *unmediated*, *unmitigated*, and *immediate*.<sup>35</sup> “Unmediated” means that they are not propagated by any known force, energy, or signal. “Unmitigated” means that the strength of the correlated, distant changes does not weaken with increasing distance; in other words, the distant changes do not obey the inverse square law of classical physics, according to which the strength of a signal decreases inversely according to the square of the distance from the source. This means that nonlocally correlated events are as robust at a million miles as at an inch. “Immediate” means that the distant correlations take place instantly; there need be no travel time for an energetic signal uniting them, because such a signal does not exist.

Why apply “nonlocal” to the consciousness of human beings? Humans often behave as if they are a single “particle,” so to speak, even though they separated at great distances as in distant healing. But not only distant healing. As physicists and psi researchers Elizabeth A. Rauscher and Russell Targ state, “The concept of nonlocality is

very reminiscent of the data dealing with identical twins, separated at birth and reared apart, who nonetheless show striking similarities in their tastes, interests, spouses, experiences, and professions, beyond what one could reasonably ascribe to their DNA.”<sup>36</sup> And not only in distant twins, but in virtually any distant humans who share empathic bonds.

A great deal of evidence suggests that distant healing is unmediated. No one has ever discovered a signal uniting a healer and healee who are widely separated, and they have looked hard. Distant healing therefore resembles psi events such as telepathy and clairvoyance, which, with vanishingly few exceptions, have not been linked with any mediating signal.<sup>37</sup> Moreover, experiments with Faraday shielding does not diminish healing effects, which would be the case if conventional electromagnetic energies were involved. (True, ELF or extremely low- frequencies cannot totally be shielded, but it is not clear how ELFs could encode enough information to account for complex healing events. Nor is it clear how ELF waves could operate outside the present moment and account for precognitive information sharing, as in remote viewing experiments. Of this, more below.)

Is nonlocal healing immediate? It is difficult to be certain, because we cannot say when a healing intention is actually formed in the mind of the healer, and neither can we determine the moment it begins to act in the healee. But if healing is nonlocal with respect to space, we would expect it also to be nonlocal with respect to time. As physicists Russell Targ and Elizabeth Rauscher state, “nonlocality is a property of both time and space.”<sup>38</sup> Princeton researchers Robert G. Jahn and Brenda J. Dunne imply that spatial nonlocality mandates temporal nonlocality. As they say,

[In quantum physics], there is little mathematical distinction between spatial and temporal behavior, so that any [explanation of the] acquisition of information remote in distance would equally well apply to information remote in time.<sup>39</sup>

Now, physics does not own nonlocality. Parapsychology researchers discovered nonlocal events about a hundred years before quantum mechanics was ever invented. Yet we bow and scrape in deference to quantum physics as if it enjoys a monopoly on nonlocal events — the “small-is-beautiful” syndrome, as philosopher Stephen Braude calls it.<sup>40</sup> Physics does *not* own nonlocal events. In fact, there is no proof whatever that nonlocal *human* experiences depend on *quantum* nonlocality; therefore we ought to stop holding healing hostage to quantum physics. Physics offers us some helpful images and analogies, for which we can be grateful — but an analogy is not a homology. Equating consciousness with quanta is to commit a category mistake — confusing the menu with the meal, to return to our earlier metaphors.

To summarize: When we go looking for the mechanism of distant healing, one size does not fit all. We can perhaps use classical, energy-based explanations for the first

and third phases within the healer and healee, respectively, but not for the nonlocal gap between them.

## NONLOCAL HEALING

Because nonlocality is the most striking feature of distant healing — *the* quality that distinguishes it from conventional forms of healing — I suggest that the term *nonlocal healing* be adopted. This gives a far more accurate description than “energy healing” or and similar terms, which are incomplete at best and misleading at worst. On the other hand, if researchers and clinicians choose to continue using classical, energy-related terms, they should specify which phase of distant healing they are referring to. And if they use “energy” metaphorically, they should go to great pains to say so, to prevent confusing themselves and ourselves as well.

Can we learn to think nonlocally? The old classical images grant us some measure of psychological comfort about how the world behaves, especially in healing. For example, when a friend goes to the hospital we often say to him or her, “I’ll be thinking about you and sending you prayers,” or “I’ll be sending you energy.” But if healing works nonlocally, there is no necessity for intentions, thoughts, and prayers to be “sent” anywhere, because they are already there. Nothing “reaches out”; indeed, there is no *out*. Yet most of us are wedded to directionality in healing. For instance, I have never met anyone who felt that their healing intentions or prayers traveled backward, downward, or sideways. Going beyond our classical images in favor of nonlocal thinking is not easy. But, then, major advances in thinking never are.

I used to keep a list of terms that might be less repellent to people — extended mind, cosmic consciousness, the One Mind, Universal Mind, the collective unconscious, the collective conscious, on and on. Yet these terms appear dated or are burdened with too much religious and psychological baggage. I settled on “nonlocal mind” because I believe no other term captures the features of consciousness that flow *both* from experience *and* experiments. “Nonlocal” has additional cachet because nonlocality is recognized within physics as an innate feature of the natural world. If physicists have identified nonlocality in their world, this says we’re not making it up; and if physicists can talk about nonlocal events, then surely we are justified in searching for nonlocal events in the human domain.

But we have to be careful here. The fact that nonlocal events exist both in the subatomic and human domains does not mean that quantum physics somehow explains what happens in the human dimension. It explicitly does not. There is no evidence whatever that human beings experience nonlocal phenomena because the itsy bitsy particles in their brains behave nonlocally. Quantum mechanics therefore provides us with a potent metaphor — but *only* a metaphor — for what is happening between separated humans.

This caution is everywhere ignored — thus “quantum psychology,” “quantum health,” on and on. When we equate quantum nonlocality with human nonlocality, we

commit what Whitehead called a category mistake. Or as the linguist Alfred Korzybski said, we confuse the map with the territory. Here's an example of the category mistake in action:

"All of these mystics have said in one way or another, 'We're all interconnected'. Well, we have discovered a mechanism for that in science called non-locality. The first discoveries, which were made at the particle level, found that particles that were ever entangled in a process, if they go apart from each other, forever remain correlated. We've recently discovered a mechanism in science that is non-local called quantum holography, which carries the information about every physical object. It serves as the basis, it now appears, for what we call the inner experience."<sup>41</sup>

## **SPECIFIC HYPOTHESES**

We really should stop beating up on ourselves because we can't explain how distant healing works. For some reason, many of us think it is fatal to operate in a theoretical vacuum. So, rather than say, "We don't know how this stuff works," we pretend to have all the answers. But it is not lethal in science to admit ignorance about mechanism. This is particularly true in medicine, where we have often known *that* something works before we understand *how* it works. For centuries we knew *that* drugs such as quinine, colchicine, and aspirin worked before we figured out *how*. We still don't know how general anesthetics work, but this has hardly retarded their use.

One of the most common reasons people reject distant healing is that there is no generally accepted hypothesis in science that permits it. This leads researchers in distant healing and parapsychology to imagine that if we just had a super-duper theory explaining all these anomalous happenings, all the skeptics would come over to our side. To those researchers who actually believe this, I say, "Dream on." It is not the lack of an explanatory theory that retards this field so much as the innate resistance to changing one's world view.

In fact, there is an abundance of hypotheses supporting nonlocal manifestations of consciousness. These have recently been advanced by first-rate scholars in a variety of disciplines. Dean Radin has reviewed some of the main ones in his book *The Conscious Universe*,<sup>42</sup> as have I.<sup>43</sup> Douglas Stokes has reviewed more than 40 theoretical models of psi phenomena,<sup>44</sup> and a recent review has also been offered by Beichler.<sup>45</sup>

Some hypotheses deserve special notice. One is that of William A. Tiller, who has long been at the forefront of hypothesis development and research in this field. Tiller, most recently with Walter E. Dibble, Jr., and Michael J. Kohane, suggest, on the basis of their experiments, that a single person or a group of individuals can create an "elevated and tangible 'field of consciousness'" in a specific spatial region by creating a "metastable condition in the 'vacuum state.'" Such intentions can be cumulative; if these intentions are repeated daily over years, this process can "raise the local vacuum

state” to a “stable phase change” that may continue indefinitely. This can convert a mundane site to a “sacred space.” Tiller, Dibble, and Kohane suggest that physical objects can similarly be conditioned, and that such objects may function as intermediary devices; when moved to other locations they can “condition” the new space in the same way that they have been conditioned by the original intentions of the humans involved.<sup>46</sup> Tiller<sup>47</sup> proposes the existence of multidimensional spaces — “emotional (9D), mental (10D) and spiritual (11D)” spaces which, in his view, “give rise to subtle energy fields.” These hypotheses are elaborated in great mathematical detail. One may object to all these multi-dimensional spacetime manifolds — but when we compare them to the multi-dimensional theories that currently are all the rage in string theory within modern cosmology, for example, they can begin to seem downright conservative.

One of the most fertile hypotheses about how healing happens has recently been advanced by Robert G. Jahn, former dean of engineering at Princeton University, and Brenda J. Dunne of the Princeton Engineering Anomalies Research (PEAR) lab.<sup>48</sup> They propose that we must take into account not only *conscious* intentions in the entire spectrum of nonlocal, consciousness-mediated events, but the unconscious as well. They furthermore distinguish between the tangible and intangible levels of the material world. As they state,

The model...lends itself to representation of various alternating healing modalities such as therapeutic touch, remote diagnosis and healing, and prayer therapy...or even to acupuncture and homeopathy, where stimulation of rather abstract, essentially intangible physiological information paths or processes appears to yield a variety of demonstrable clinical benefits.

The role of the unconscious has been too long neglected in hypotheses of how healing happens. We make much of “intentionality,” and lodge it almost exclusively in conscious awareness. But Jahn and Dunne also emphasize the *unconscious*:

Whatever the form of environmental conditioning, the operator would need to achieve a delicate balance between maintaining some teleological sense of intention or desire for a particular experimental outcome, while still surrendering conscious control or responsibility for the achievement of that goal to the unconscious mind and its deeper resources. ...[A] particularly effective strategy...is to establish a paradoxical environment which inhibits the operator from focusing on any particular reality...From this state of “innocence” (*i.e.*, not tainted by any preconceptions, prejudices, or consensus realities), the mind and the machine [or distant individual, in healing] could establish a new shared reality that would manifest as anomalous in both sectors...[I]n this bonded state, the mind does not directly query or instruct its environment, it “dances” with it, each

partner sensing and conforming to the other until a new resonance is reached.

One of the most sophisticated hypotheses compatible with nonlocal knowing and nonlocal healing has been recently proposed by physicists Elizabeth A. Rauscher and Russell Targ. They acknowledge that consciousness is fundamentally nonlocal, not just in space but also in time. Their hypothesis accounts for both vectors of consciousness — its capacity to *insert* information *into* the world, and to *extract* information *from* the world. In their words:

[Ours is] a geometrical model of space-time, which has already been extensively studied in the technical literature of mathematics and physics. This eight-dimensional metric is known as ‘complex minkowski spade’ and has been shown to be consistent with our present understanding of the equations of Newton, Maxwell, Einstein, and Schrödinger. It also has the interesting property of allowing a connection of zero distance between points in the complex manifold, which appear to be separate from one another in ordinary observation. ...[Our] model...describes the major elements of experimental parapsychology, and at the same time is consistent with the present highly successful structure of modern physics.<sup>49</sup>

The systems theorist Ervin Laszlo also proposes that distant, nonlocal, events are related to the zero point field and the quantum vacuum.<sup>50</sup>

Nobel physicist Brian D. Josephson and physicist Fotini Pallikara-Viras have proposed that nonlocal subatomic events and our capacity to find or create *meaning* may underlie nonlocal consciousness-mediated events.<sup>51</sup>

David J. Chalmers of the University of Arizona has proposed that consciousness may be a fundamental property in the universe, not reducible to anything more elemental, not derivable from anything else.<sup>52</sup> This hypothesis, while not actually endorsing the nonlocal operations of consciousness such as distant healing, nonetheless appears cordial to them.

Astronaut-engineer Edgar Mitchell proposes that the nonlocal manifestations of consciousness can be understood through quantum holography. As he says, “[T]he Quantum Hologram is that which survives. It has the characteristic of carrying and retaining all the events of Life’s experience. In other words, the event history of the self is in the Quantum Hologram. All those events are retained and, since the Quantum Hologram is non-local, are propagated throughout the universe as available information. Thereby, Nature does not lose it’s experience, Nature retains information. . . A Law of the Conservation of Information.”<sup>53</sup>

British zoologist Rupert Sheldrake, who advocates nonlocal, immaterial “morphogenetic fields” that can be structured by conscious intention.<sup>54</sup>

Physicist Amit Goswami of the Institute of Theoretical Physics at the University of Oregon suggests that consciousness is associated with some sort of “potential” that can be nonlocally transferred from one brain to another.<sup>55</sup>

Then there is Data Augmentation Theory or DAT, offered by May, Utts, and Spottiswoode, already mentioned.<sup>56</sup>

## **INFORMATION**

Many of these hypotheses employ the concept of information in describing the nonlocal behaviors of consciousness. What is information? According to Jahn and Dunne, information is “any array of stimuli that the consciousness, or the environment, is capable of sensing and reacting to.” Information, they say, is “the sole currency of reality.” As they put it, “Neither [the] environment nor [the] consciousness can productively be represented in isolation; only in the interaction — in the exchange of information between the two — are palpable effects constituted.”<sup>57</sup> I am reminded of the definition of information given by anthropologist Gregory Bateson: a difference that makes a difference.

A final comment about hypotheses of distant healing. Most scholars reject electromagnetic theory as an explanation for the mind’s nonlocal activities, but physicists Rauscher and Targ urge caution. In electromagnetic theory, Targ states, there are mathematical equations that suggest time reversibility. In the 1920s, for instance, physicist Paul Dirac developed a mathematical description of the relativistic electron which functioned as an “advanced wave” that appears to travel faster than the speed of light. This could conceivably permit a person to experience precognition. But the gain in temporal advantage would be only one nanosecond per foot of distance, whereas the precognitive phenomena studied by parapsychologists usually involve hours or days. So the advanced wave, Rauscher and Targ state, would provide an hour’s warning, only for events at a distance of  $10^9$  miles or greater. Thus, “All electromagnetic or radio wave descriptions of psi suffer from these same limitations.”<sup>58</sup> And what about the proposal that remote perception could be explained by extremely low-frequency (ELF) waves? Rauscher and Targ: “Although this model has received repeated investigation — with regard to permissible bit rates and signal propagation — it fails to provide any explanation for precognitive psi, which...has the same reliability and efficacy as real-time psychic perception.”<sup>59</sup>

## **THE FUTURE**

In 1992, 3 of the nation’s 125 medical schools offered courses exploring the relationship of spirituality and health; in 2001, 75 offer such.<sup>60</sup> The impact of following a religious or spiritual path on health and longevity is becoming common knowledge, and is documented by nearly 1,600 studies in the rapidly developing field of the epidemiology

of religion.<sup>61,62</sup> Double-blind, controlled studies of spiritual healing are being done at major medical schools throughout the country.<sup>63, 64, 65, 66</sup> Five positive systematic or meta-analyses attest to the validity of distant healing.<sup>67,68, 69,70, 71</sup> These are historic developments in which we can take great pride.

One of the surest ways of derailing these monumental advances is to claim more than we can demonstrate, such as by playing fast and loose with indefensible explanations of how these events take place. This will alienate open-minded physicians and scientists, will provide scoffers the opening they are looking for, and will prolong the time when spiritual healing is available. It is far better if we simply stick with the facts, focus on empirical findings, and acknowledge the tentative nature of the hypotheses we offer.

To those theologians who are concerned that healing research will debase spirituality and prayer: You need not worry. Virtually all the researchers participating in this field consider healing research to be sacred science, not an exercise in materialistic reductionism. They are acutely aware that for every question answered by healing research, a dozen pop up to take its place. Healing research is not about proving, disproving, or testing God, as some cynics mistakenly claim. It is, however, an exercise in restoring a majestic dimension to nature that has been forgotten in modern science. With few exceptions, healing researchers rightfully defer on questions of mechanism, or they cautiously speculate on how these events happen. Their primary strategy is to investigate whether or not healing is real, and then to step aside and invite people to interpret the *how* of healing in their own way.

Although the field of nonlocal healing is in its infancy, the baby is healthy. Yet the great unknowns of this field — the nature of consciousness, space, and time — remain shrouded in mystery. As we go forward, then, let us be bold and creative, but let us also be humble. As a nudge toward humility, we might adopt as a motto for this field the above comment of astronomer-physicist Sir Arthur Eddington: SOMETHING UNKNOWN IS DOING WE DON'T KNOW WHAT.

A word about the future. We need a Manhattan Project of Healing, a coordinated research effort that brings together the best and the brightest researchers in this field to examine methodology, protocols, and hypotheses. Currently researchers are doing their own thing, using research designs that are so disparate that it is not surprising that some result in positive outcomes and some do not. Some studies require healers or pray-ers to devote an hour or more to healing intentions, while other studies prohibit them from spending more than five minutes doing such. Some studies recruit healers with decades of experience, other studies recruit healers with virtually no experience. No wonder results vary. These disparate methods result in a lot of wasted time, energy, and scarce funds. We can do better.

Above all, let us try mightily to avoid the curse of pragmatism as healing research procedes. Some people seto regard the positive findings merely as a new tool in the physician's black bag — a "new penicillin," as it were, for eradicating illness. Distant

healing *is* about healing and we *should* use it pragmatically. Indeed, the failure to employ distant healing in concert with other proven techniques may be unethical. Yet healing research goes beyond using healing intentions or prayer to cure disease. The most important issue in this research is not how large the effect sizes are in any given experiment, *but whether or not the effect exists at all*. If it does, the universe is utterly different from picture given to us in modern science. Why? If consciousness, through whatever mechanism, can exert nonlocal effects elsewhere in the world, then it is, itself, in some sense nonlocal. And if consciousness is nonlocal, then it is infinite, because a limited nonlocality is a contradiction in terms. Nonlocality implies *infinitude* in space and time, and thus eternity and immortality. This realization dwarfs whether or not we can use prayer or intentions to benefit a particular disease.

Sometimes the realization of the infinite, nonlocal nature of consciousness springs forth nearly whole and complete in the vision of great scientists. An example is Erwin Schödinger, the Austrian physicist who was awarded the Nobel Prize for his wave equations that underly quantum physics. I close with his vision:

A hundred years ago, perhaps, another man sat on this spot; like you, he gazed with awe and yearning in his heart at the dying light on the glaciers. Like you, he was begotten of man and born of woman. He felt pain and brief joy as you do. *Was* he someone else? Was it not you yourself? What is this Self of yours?...What clearly intelligible *scientific* meaning can this ‘someone else’ really have?...Looking and thinking in [this] manner you may suddenly come to see, in a flash,...it is not possible that this unity of knowledge, feeling, and choice which you call *you own* should have sprung into being from nothingness at a given moment not so long ago; rather this knowledge, feeling, and choice are essentially eternal and unchangeable and numerically *one* in all men, nay in all sensitive beings. But not in *this* sense – that *you* are a part, a piece, of an eternal being, an aspect or modification of it....No, but inconceivable as it seems to ordinary reason, you – and all other conscious beings as such – are all in all. Hence this life of yours which you are living is not merely a piece of the entire existence, but is, in a certain sense, the *whole*; only this whole is not so constituted that it can be surveyed in one single glance....Thus you can throw yourself flat on the ground, stretched out upon Mother Earth, with the certain conviction that you are one with her and she with you. You are as firmly established, as invulnerable, as she – indeed, a thousand times firmer and more invulnerable. As surely as she will engulf you tomorrow, so surely will she bring you forth anew to new striving and suffering. An not merely, ‘some day’: now, today, every day she is bringing you forth, not *once*, but thousands upon thousands of times, just as every day she engulfs you a thousand times over. For eternally and always there is only *now*, one and the same now; the present is the only thing that has no end.<sup>72</sup>

— Larry Dossey, MD  
Executive Editor

# NONLOCAL MIND:

## What Scientists Say

We do not have to wait for scientists to endorse nonlocal mind. They have already done so.

The following quotations are from some of the most prestigious and respected scientists of the twentieth century. They affirm the view that the mind is infinite, eternal, and one.

### ERWIN SCHRÖDINGER

*Shrödinger is one of the patriarchs of modern physics. He was awarded the Nobel Prize for his wave equation, which lies at the heart of quantum mechanics. One of his deepest concerns was the role of consciousness in establishing physical reality.*

“We have entirely taken to thinking of the personality of a human being...as located in the interior of its body. To learn that it cannot really be found there is so amazing that it meets with doubt and hesitation, we are very loath to admit it. We have got used to localizing the conscious personality inside a person’s head – I should say an inch or two behind the midpoint of the eyes....It is very difficult for us to take stock of the fact that the localization of the personality, of the conscious mind, inside the body is only symbolic, just an aid for practical use.”<sup>73</sup>

•

“To divide or multiply consciousness is something meaningless. In all the world, there is no kind of framework within which we can find consciousness in the plural; this is simply something we construct because of the spatio-temporal plurality of individuals, but it is a false construction....The category of *number*, of *whole* and of *parts* are then simply not applicable to it; the most adequate...expression of the situation is this: the self-consciousness[es] of the individual members are numerically identical both with [one an]other and with that Self which they may be said to form at a higher level.”<sup>74</sup>

•

“There is obviously only one alternative, namely the unification of minds or consciousness. Their multiplicity is only apparent, in truth there is only one mind.”<sup>75</sup>

•

“Mind is by its very nature a *singulare tantum*. I should say: the overall number of minds is just one.”<sup>76</sup>

“Consciousness is a singular of which the plural is unknown. There *is* only one thin, and that which seems to be a plurality is merely a series of different aspects of one thing, produced by a deception...as in a gallery of mirrors.”<sup>77</sup>

•

“The fact remains that time no longer appears to us as a gigantic, world-dominating [force], nor as a primitive entity, but as something derived phenomena themselves. It is a figment of my thinking. That as such it might some day put an end to my thinking, as some believe, is beyond my comprehension.”<sup>78</sup>

•

“If we decide to have only one sphere [of existence], it has got to be a psychic one, since that exists anyway....”<sup>79</sup>

•

“So we are faced with the following remarkable situation. While the stuff from which our world picture is built is yielded exclusively from the sense organs of the mind, so that every man’s world picture is and always remains a construct of his mind and cannot be proved to have any other existence, yet the conscious mind itself remains a stranger within that construct, it has no living space in it, you can spot it nowhere in space. We do not usually realize this fact, because we have entirely taken to thinking of the personality of a human being, or for that matter also that of an animal, as located in the interior of its body. To learn that it cannot really be found there is so amazing that it meets with doubt and hesitation, we are very loath to admit it....It is very difficult for us to take stock of the fact that the localization of the personality, of the conscious mind, inside the body is only symbolic, just an aid for practical use.”<sup>80</sup>

•

“Subject and object are only one. The barrier between them cannot be said to have broken down as a result of recent experience in the physical sciences, for this barrier does not exist.”<sup>81</sup>

•

“[T]he ‘statistical theory of time’ [and]...the theory of relativity...[imply] a liberation from the tyranny of old Chronos. ...But some of you, I am sure, will call this mysticism....[But] we may, or so I believe, assert that physical theory in its present stage strongly suggests the indestructibility of Mind by Time.”<sup>82</sup>

•

“I venture to call it [the mind] indestructible since it has a peculiar time-table, namely mind is always *now*. There is really no before and after for the mind.”<sup>83</sup>

•

“We may, or so I believe, assert that physical theory in its present stage strongly suggests the indestructibility of Mind by Time.”<sup>84</sup>

•

“A hundred years ago, perhaps, another man sat on this spot; like you, he gazed with awe and yearning in his heart at the dying light on the glaciers. Like you, he was begotten of man and born of woman. He felt pain and brief joy as you do. *Was* he someone else? Was it not you yourself? What is this Self of yours?...What clearly intelligible *scientific* meaning can this ‘someone else’ really have?...Looking and thinking in [this] manner you may suddenly come to

see, in a flash,...it is not possible that this unity of knowledge, feeling, and choice which you call *you own* should have sprung into being from nothingness at a given moment not so long ago; rather this knowledge, feeling, and choice are essentially eternal and unchangeable and numerically *one* in all men, nay in all sensitive beings. But not in *this* sense – that *you* are a part, a piece, of an eternal being, an aspect or modification of it....No, but inconceivable as it seems to ordinary reason, you – and all other conscious beings as such – are all in all. Hence this life of yours which you are living is not merely a piece of the entire existence, but is, in a certain sense, the *whole*; only this whole is not so constituted that it can be surveyed in one single glance....Thus you can throw yourself flat on the ground, stretched out upon Mother Earth, with the certain conviction that you are one with her and she with you. You are as firmly established, as invulnerable, as she – indeed, a thousand times firmer and more invulnerable. As surely as she will engulf you tomorrow, so surely will she bring you forth anew to new striving and suffering. An not merely, ‘some day’: now, today, every day she is bringing you forth, not *once*, but thousands upon thousands of times, just as every day she engulfs you a thousand times over. For eternally and always there is only *now*, one and the same now; the present is the only thing that has no end.”<sup>85</sup>

## ALBERT EINSTEIN

*Einstein is perhaps the most famous scientist who ever lived. His publication of the special theory of relativity in 1905 forever changed the classical, mechanical, Newtonian world view.*

“A human being is part of the whole, called by us ‘universe,’ a part limited in time and space. He experiences his thoughts and feelings as something separate 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 decisions and to affection for a few persons nearest us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty.”<sup>86</sup>

•

“I feel such a sense of solidarity with all living things that it does not matter to me where the individual begins and ends.”<sup>87</sup>

•

“The individual feels the futility of human desires and aims and the sublimity and marvelous order which reveal themselves both in nature and in the world of thought. Individual existence impresses him as a sort of prison and he wants to experience the universe as a single significant whole.”<sup>88</sup>

## FREEMAN DYSON

*Renowned physicist Freeman Dyson, known for his work in deep space propulsion, has been outspoken on his views of the centrality of consciousness in the universe.*

“The universe shows evidence of...mind on three levels. The first level is the level of elementary physical processes in quantum mechanics. Matter in quantum mechanics is not an inert substance but an active agent, constantly making choices between alternative possibilities according to probabilistic laws. Every quantum experiment forces nature to make choices. It appears that mind, as manifested by the capacity to make choices, is to some extent inherent in every electron. The second level at which we detect...mind is the level of direct human experience. Our brains appear to be devices for the amplification of the mental component of the quantum choices made by molecules inside our heads....There is evidence...that the universe as a whole is hospitable to the growth of mind....Therefore it is reasonable to believe in the existence of a third level of mind, a mental component of the universe. If we believe in this mental component of the universe, then we can say that we are small pieces of God’s mental apparatus.”<sup>89</sup>

#### HENRY MARGENAU

*Henry Margenau was Professor Emeritus of Physics and Natural Philosophy at Yale University for nearly a half century.*

“[The sensory perceptions of human beings are finally] transcribed...[into a] physical reality, in essence the same for all....[This] oneness of the all implies the universality of mind....”<sup>90</sup>

•

“If my conclusions are correct, each individual is part of God or part of the Universal Mind. I use the phrase ‘part of’ with hesitation, recalling its looseness and inapplicability even in recent physics. Perhaps a better way to put the matter is to say that each of us is the Universal Mind but inflicted with limitations that obscure all but a tiny fraction of its aspects and properties.”<sup>91</sup>

•

“Its [a Universal Mind’s] knowledge comprises not only the entire present but all past events as well. Much as our thought can survey and come to know all space, the Universal Mind can travel back and forth in time at will.”<sup>92</sup>

•

“The Universal Mind has no time slit, no personal wall; its knowledge is not limited by quantum probabilities.”<sup>93</sup>

•

“The Universal Mind has no need for memory, since all things and processes – past, present, and future – are open to its grasp.”<sup>94</sup>

•

“[Lowering the personal wall would] enhance our identity with others. This lowering of the wall might occur in cases of unusual sympathy with and love of others, in spontaneous empathy through concentrated attention, in meditations, in dreams, in personal experiences that...reveal alternate realities. It might occur in prayer, when an individual merges with the Universal Mind. The lowering of the personal wall might permit extrasensory perception in the form of coalescence of information, perhaps in the form of mind reading.”<sup>95</sup>

•

“What I...imply is that the conscious self will return to its presumed origin, which is the Universal Mind, and from this it seems to follow that, as part of God, it has the faculty of revisiting all aspects of its earthly experience, and perhaps even the choice of forgetting them all and consigning itself to oblivion (or even extinction). But the crucial thought, the expectation of a reunion with God, already contains some solace and hope and the promise of death as a unique experience.”<sup>96</sup>

## DAVID BOHM

*Bohm is one of the godfathers of modern physics. He was deeply interested in the nature of the mind and its relationship to matter.*

“Ultimately, the entire universe (with all its ‘particles,’ including those constituting human beings, their laboratories, observing instruments, etc.), has to be understood as a single undivided whole, in which analysis into separately and independently existent parts has no fundamental status.”<sup>97</sup>

•

“Deep down the consciousness of mankind is one. This is a virtual certainty because even in the [quantum] vacuum matter is one; and if we don’t see this it’s because we are blinding ourselves to it.”<sup>98</sup>

•

“The deeper you go, the more general the thoughts are to where they belong to the whole species.”<sup>99</sup>

•

“If we don’t establish these absolute boundaries between minds, then...it’s possible they could...unite as one mind.”<sup>100</sup>

•

“Ultimately all the moments are really one,...therefore now is eternity....everything, including me, is dying every moment into eternity and being born again.”<sup>101</sup>

•

“Each person enfolds something of the spirit of the other in his consciousness.”<sup>102</sup>

•

“The question is whether matter is rather crude and mechanical or whether it gets more and more subtle and becomes indistinguishable from what people have called mind.”<sup>103</sup>

“Everything is alive. What we call dead is an abstraction.”<sup>104</sup>

•  
“The electron, in so far as it responds to a meaning in its environment, is observing the environment. It is doing exactly what human beings are doing.”<sup>105</sup>

•  
“You may have to get banged on the head for 200 or 300 years before you’ll change your ideas. For example, I think non-locality was obvious 50 years ago, but now only a very few physicists realize it’s there. If they’d get banged on the head for another 50 years maybe more will realize it’s there.”<sup>106</sup>

### GEORGE WALD

*Nobelist George Wald is among a growing number of scientists working in biology and medicine who believe that consciousness is fundamental in the universe.*

“Mind, rather than emerging as a late outgrowth in the evolution of life, has existed always..., the source and condition of physical reality.”<sup>107</sup>

### NIELS BOHR

*The name of Niels Bohr is virtually synonymous with modern physics.*

“We can admittedly find nothing in physics or chemistry that has even a remote bearing on consciousness. Yet all of us know that there is such a thing as consciousness, simply because we have it ourselves. Hence consciousness must be part of nature, or, more generally, of reality, which means that, quite apart from the laws of physics and chemistry, as laid down in quantum theory, we must also consider laws of quite a different kind.”<sup>108</sup>

### WERNER HEISENBERG

*Heisenberg, one of the patriarchs of modern physics, was awarded the Nobel Prize for his Principle of Uncertainty.*

“Of course, we all know that our own reality depends on the structure of our consciousness; we can objectify no more than a small part of our world. But even when we try to probe into the subjective realm, we cannot ignore the central order....[I]n the final analysis, the central order, or the ‘one’ as it used to be called and with which we commune in the language of religion, must win out.”<sup>109</sup>

### BARON CARL FRIEDRICH VON WEIZSÄCKER

*Von Weizsäcker, a renowned student of Heisenberg, extended and sharpened my of the philosophical concerns of his mentor.*

“Consciousness and matter are different aspects of the same reality.”<sup>110</sup>

•

“[In scientific discovery] ...we often find the often disturbing and happy experience: ‘It is not I; I have not done this.’ Still, in a certain way it is I – yet not the ego of will but of a more comprehensive self. ...In scientific discovery I encounter something in my achievement which I must acknowledge as non-ego and yet as myself. But the self is still hidden here from my consciousness and manifests itself only through the gift it has given me, through its achievement. In mysticism I must open myself to the self, I must overcome the ego, or what comes to the same thing, I must get to know my ego as a manifestation of the self. In the last analysis, I have to be the self which I have always known.”<sup>111</sup>

### SIR JAMES JEANS

*Sir James Jeans made fundamental contributions to quantum mechanics and was deeply concerned about the role of consciousness in the physical world.*

“When we view ourselves in space and time, our consciousnesses are obviously the separate individuals of a particle-picture, but when we pass beyond space and time, they may perhaps form ingredients of a single continuous stream of life. As it is with light and electricity, so it may be with life; the phenomena may be individuals carrying on separate existences in space and time, while in the deeper reality beyond space and time we may all be members of one body.”<sup>112</sup>

•

“...To-day there is a wide measure of agreement, which on the physical side of science approaches almost to unanimity, that the stream of knowledge is heading towards a non-mechanical reality; the universe begins to look more like a great thought than like a great machine. Mind no longer appears as an accidental intruder into the realm of matter; we are beginning to suspect that we ought rather to hail it as the creator and governor of the realm of matter – not of course our individual minds, but the mind in which the atoms out of which our individual minds have grown exist as thoughts. ...We discover that the universe shows existence of a designing or controlling power that has something in common with our own individual minds.”<sup>113</sup>

### SIR ARTHUR EDDINGTON

*One of the most famous astronomer-physicist- mathematicians of the twentieth century, Eddington was one of the most passionate writers about how consciousness was involved in constructing reality.*

“The idea of a universal Mind or Logos would be, I think, a fairly plausible inference from the present state of scientific theory; at least it is in harmony with it.”<sup>114</sup>

•

“Not once in the dim past, but continuously by conscious mind is the miracle of the Creation wrought.<sup>115</sup> ...To put the conclusion crudely – the stuff of the world is mind-stuff.”<sup>116</sup>

•

“Recognising that the physical world is entirely abstract and without ‘actuality’ apart from its linkage to consciousness, we restore consciousness to the fundamental position instead of representing it as an inessential complication occasionally found in the midst of inorganic nature at a late stage of evolutionary history.”<sup>117</sup>

•

“All through the physical world runs that unknown content, which must surely be the stuff of our consciousness. ...And, moreover, we have found that where science has progressed the farthest, the mind has but regained from nature that which the mind has put into nature.

“We have found a strange foot-print on the shores of the unknown. We have devised profound theories, one after the other, to account for its origin. At last succeeded in reconstructing the creature that made the foot-print. And Lo! it is our own.”<sup>118</sup>

## GREGORY BATESON

*Gregory Bateson, with roots in anthropology and biology, was concerned with the concept of information flow in nature and how consciousness interacted with the physical world. He originated the “double bind” theory in modern psychology.*

“The individual mind is immanent but not only in the body. It is immanent also in the pathways and messages outside the body; and there is a larger Mind of which the individual mind is only a sub-system. This larger Mind is comparable to God and is perhaps what some people mean by “God,” but it is still immanent in the total interconnected social system and planetary ecology.”<sup>119</sup>

## PAUL DAVIES

*Physicist Paul Davies is one of the most respected scientists currently writing books on new physics for the lay public. He has explored the potential spiritual implications of quantum physics and cosmology.*

“In the emerging picture of mankind in the universe, the future (if it exists) will surely entail discoveries about space and time which will open up whole new perspectives in the relationship between mankind, mind, and the universe. ...But what is now? There is no such thing in physics; it is not even clear that ‘now’

could ever be described, let alone explained, in terms of physics....Notions such as 'the past,' 'the present' and 'the future' seem to be more linguistic than physical....There is no universal now, but only a personal one – a 'here and now.' This strongly suggests that we look to the mind, rather than to the physical world, as the origin of the division of time into past, present, and future....There is none of this in physics....No physical experiment has ever been performed to detect the passage of time. As soon as the objective world of reality is considered, the passage of time disappears like a ghost into the night. <sup>120</sup>

### ROBERT G. JAHN

*Robert G. Jahn, former dean of engineering at Princeton University, founded the Princeton Engineering Anomalies Laboratory. He and his colleagues have assembled the largest database in the world demonstrating the ability of consciousness to introduce change into the physical world.*

“[An individual] may report that his consciousness seems to have been totally liberated from its center to roam freely in space and time....[R]ather than forming its experiences in the 'here and now,' consciousness may choose to sample the 'there and then.' [In quantum physics], there is little mathematical distinction between spatial and temporal behavior, so that any [explanation of the] acquisition of information remote in distance would equally well apply to information remote in time. Finally, of course, we might recall Einstein's and Eddington's reminders that the concepts of space and time are themselves constructions of consciousness.”<sup>121</sup>

=x=x=x=

---

## REFERENCES

- <sup>1</sup> Eddington A. Quoted in: Ken Wilber, *Quantum Questions: The Mystical Writings of the World's Great Physicists*. Boston: Shambhala/New Science Library; 1982: back cover quotation.
- <sup>2</sup> Dossey L. The forces of healing: reflections on energy, consciousness, and the beef Stroganoff principle. *Alternative Therapies in Health and Medicine*. 1997;3(5):8-14.
- <sup>3</sup> Komaiko L. Writing up menus: It's a subtle art. *Los Angeles Times*. November 28, 2001: H1-2.
- <sup>4</sup> Rauscher EA, Targ R. The speed of thought: Investigation of a complex space-time metric to describe psychic phenomena. *Journal of Scientific Exploration*. 2001;15(3):331-354.
- <sup>5</sup> Brenda J. Dunne & Robert G. Dunne. Experiments in Remote Human/Machine Interaction, *Journal of Scientific Exploratioin* . 1992;6(4):311-32.
- <sup>6</sup> Robert G. Jahn, Brenda J. Dunne, & Roger D. Nelson, Engineering anomalies Rresearch, *Journal of Scientific Exploration*. 1987;1(1):21-50.
- <sup>7</sup> LeShan L. Language in the human potential movement. *Network*. (The Scientific and Medical Network publication, UK) August 1996;61:11-14.
- <sup>8</sup> LeShan, *ibid.*, 14.
- <sup>9</sup> Astin JA, Harkness E, Ernst E. The efficacy of "distant healing": A systematic review of randomized trials. *Annals of Internal Medicine*. 2000;132(11):903-10.
- <sup>10</sup> Chibnall JT, Jeral JM, Cerullo MA. Experiments in distant intercessory prayer: God, science, and the lesson of Massah. *Archives of Internal Medicine*. 2001;161(21):2529-2536.
- <sup>11</sup> Harris W, Gowda M, Kolb JW, Strychacz CP, Vacek JL, Jones PG, Forker A, O'Keefe JH, McCallister BD. A randomized, controlled trial of the effects of remote, intercessory

---

prayer on outcomes in patients admitted to the coronary care unit. *Archives of Internal Medicine*. 1999;159(19):2273-2278.

<sup>12</sup> Byrd R. 1988. Positive therapeutic effects of intercessory prayer in a coronary care unit population. *Southern Medical Journal*. 1988; 81(7): 826-9.

<sup>13</sup> Sicher F, Targ E, Moore D, Smith HS. A randomized double-blind study of the effect of distant healing in a population with advanced AIDS — report of a small-scale study. *Western Journal of Medicine*. 1998;169(6):356-363.

<sup>14</sup> Cha KY, MD, Wirth DP, Lobo R. Does prayer influence the success of in vitro fertilization-embryo transfer? Report of a masked, randomized Trial.” *J. Reproductive Medicine*. September 2001; 46(9): 781-787.

<sup>15</sup> Dossey L. The case for nonlocality. *Reinventing Medicine*. San Francisco, CA: HarperSanFrancisco; 1999: 37-84.

<sup>16</sup> Benor DJ. *Healing Research*. Vols. 1-2. Munich: Helix Verlag; 1993.

<sup>17</sup> Sagan C. *The Dragons of Eden*. New York: Random House; 1977:7.

<sup>18</sup> Crick F. *The Astonishing Hypothesis*. (New York: Simon & Schuster, 1994.

<sup>19</sup> Searle J. *J. Consciousness Studies*; 2(1):1995. Front cover quotation.

<sup>20</sup> Fodor J. *Times Literary Supplement*, July 3, 1992:20.

<sup>21</sup> Rhine JB. Quoted in: Charles Tart (ed.). *Body Mind Spirit*. Charlottesville, VA: Hampton Roads Publishing; 1997:104. Original source: Rhine JB. Can parapsychology help religion? Paper presented at the Spiritual Frontiers Fellowship Convention, Chicago, IL, 1973.

<sup>22</sup> May EC, Utts JM, Spottiswoode SJP. Decision augmentation theory: Applications to the random number generator database. *Journal of Scientific Exploration*. 1995; 9(4):453-488.

<sup>23</sup> Dobyys YH, Nelson RD. Evidence against decision augmentation theory. *Journal of Scientific Exploration*. 1998;12(2):231-258.

<sup>24</sup> Dobyys YH. Overview of several theoretical models on PEAR data. *Journal of Scientific Exploration*. 2000;14(2): 163-194.

<sup>25</sup> Griffin DR. *Parapsychology, Philosophy, and Spirituality: A Postmodern Exploration*. Albany, NY: SUNY Press;1997.

- 
- <sup>26</sup> Henslee, JA, Christenson, PJ, Hardoin RA, Morse M, Sheehan C. The impact of premonitions of SIDS on grieving and healing. *Pediatric Pulmonology*. 1993;16:393
- <sup>27</sup> Watson L. *The Dreams of Dragons*. Rochester, VT: Destiny Books; 1992:27-32.
- <sup>28</sup> Eccles J, Robinson DN. *The Wonder of being Human: Our Brain & Our Mind*. Boston: Shambhala; 1984: 36-38
- <sup>29</sup> Stapp H. Harnessing science and Religion: Implications of the new scientific conception of human beings." *Research News*, February 2001; 1(6): 8.
- <sup>30</sup> Herbert N. *Quantum Reality*. New York, NY: Duston; 1987.
- <sup>31</sup> Nadeau R, Kafatos M. *The Non-local Universe*. New York, NY: Oxford University Press; 1999.
- <sup>32</sup> Stapp HP. Quantum physics and the physicist's view of nature: Philosophical implications of Bell's Theorem. In: Richard E. Kitchener (ed.). *The World View of Contemporary Physics*. Albany, NY: SUNY Press; 1988:40.
- <sup>33</sup> Bell JS. On the Einstein-Podolsky-Rosen paradox. *Physics I* ; 1964:195-200.
- <sup>34</sup> Nadeau R, Kafatos M. Over any distance in "no time": Bell's Theorem and the Aspect and Gisin Experiments. *The Non-local Universe*. New York, NY: Oxford University Press; 1999:65-82.
- <sup>35</sup> Herbert N. *Quantum Reality*. New York, NY: Duston; 1987: 214.
- <sup>36</sup> Rauscher EA, Targ R. The speed of thought: Investigation of a complex space-time metric to describe psychic phenomena. *Journal of Scientific Exploration*. 2001;15(3):340.
- <sup>37</sup> Vasilescu E, Vasilescu E. Experimental study on precognition. *Journal of Scientific Exploration*. 2001;15(3):369-377.
- <sup>38</sup> Rauscher EA, Targ R. The speed of thought: Investigation of a complex space-time metric to describe psychic phenomena. *Journal of Scientific Exploration*. 2001;15(3):340.
- <sup>39</sup> Robert G. Jahn and Brenda J. Dunne, *Margins of Reality* (New York: Harcourt Brace & Co., 1987), 280-1.
- <sup>40</sup> Dossey L. Healing and modern physics: exploring the small-is-beautiful assumption. *Alternative Therapies in Health and Medicine*. 1999;5(4):12-17, 102-108.
- <sup>41</sup> Mitchell E. Interview with Chris Butterfield, Prophet's Conference, Victoria, BC

---

2001

<sup>42</sup> Radin D. Theory. *The Conscious Universe*. San Francisco: HarperSanFrancisco, 1997:277-287.

<sup>43</sup> Dossey L. Emerging theories. *Be Careful What You Pray For*. San Francisco: HarperSanFrancisco; 1997 :190-192.

<sup>44</sup> Stokes DM. Theoretical parapsychology. In: Krippner S (ed.). *Advances in Parapsychology* — 5. Jefferson, NC: McFarlane; 1987:77-189.

<sup>45</sup> Beichler JE. To be or not to be! A “paraphysics” for the new millenium. *Journal of Scientific Exploration*. 2001;15(1):33-56.

<sup>46</sup> Tiller WA, Dibble WE Jr. On the ‘conditioning’ process for a laboratory and other sacred spaces. Abstract. Personal communication from William A. Tiller. October 30, 2001.

<sup>47</sup> Tiller WA. *Science and Human Transformation: Subtle Energies, Intentionality and Consciousness*. Walnut Creek, CA: Pavior Publishing; 1997. See also: Tiller WA, Dibble Jr WE, Kohane MJ. *Conscious Acts of Creation: The Emergence of a New Physics*. Walnut Creek, CA: Pavior Publishing; 2001.

<sup>48</sup> Jahn RG, Dunne BJ. A modular model of mind/matter manifestations ( $M^5$ ). *Journal of Scientific Exploration*. 2001;15(3):299-329.

<sup>49</sup> Rauscher EA, Targ R. The speed of thought: Investigation of a complex space-time metric to describe psychic phenomena. *Journal of Scientific Exploration*. 2001;15(3):331-354.

<sup>50</sup> Laszlo E. *The Interconnected Universe: Conceptual Foundations of Transdisciplinary Unifed Theory* (River Edge, NJ: World Scientific Publishing Co., 1995.

<sup>51</sup> Josephson BD, Pallikara-Viras F. Biological utilization of quantum nonlocality. *Foundations of Physics* . 21 (1991), pp. 197-207.

<sup>52</sup> Chalmers D. The Puzzle of Conscious Experience, *Scientific American* **3**, 6 (1995), pp. 80-86.

<sup>53</sup> Mitchell E. IONS Workshop, Orlando, FL., July 1999.

<sup>54</sup> Sheldrake R. *A New Science of Life: The Hypothesis of Formative Causation*. London, England: 1981.

- 
- <sup>55</sup> Grinberg-Zylberbaum J, Delaflor M, Attie L, Goswami A. The Einstein-Podolsky-rosen paradox in the brain: The transferred potential. *Physics Essays*. 194;7(4):422-428.
- <sup>56</sup> May EC, Utts JM, Spottiswoode SJP. Decision augmentation theory: Applications to the random number generator database. *Journal of Scientific Exploration*. 1995; 9(4):453-488.
- <sup>57</sup> Jahn RG, Dunne BJ. 1987. *Margins of Reality: The Role of Consciousness in the Physical World*. New York: Harcourt Brace Jovanovich; 1987:204.
- <sup>58</sup> Rauscher EA, Targ R. The speed of thought: Investigation of a complex space-time metric to describe psychic phenomena. *Journal of Scientific Exploration*. 2001;15(3):338-339.
- <sup>59</sup> Rauscher EA, Targ R. The speed of thought: Investigation of a complex space-time metric to describe psychic phenomena. *Journal of Scientific Exploration*. 2001;15(3):338.
- <sup>60</sup> Puchalski CM. The role of spirituality in health care. *Baylor University Medical Center Proceedings*. 2001;14:353-357
- <sup>61</sup> Koenig HG, McCullough ME, Larson DB. *Handbook of Religion and Health*. New York: Oxford University Press; 2001.
- <sup>62</sup> Levin J. *God, Faith, and Health*. New York, NY. John Wiley & Sons; 2001.
- <sup>63</sup> Krucoff MW, Crater SW, Green CL, Maas AC, Seskevich JE, Lane JD, Loeffler KA, Morris K, Bashore TM, Koenig HG. Integrative noetic therapies as adjuncts to percutaneous intervention during unstable coronary syndromes: Monitoring and Actualization of Noetic Training (MANTRA) feasibility pilot. *American Heart Journal*. 2001;142(5):760-767.
- <sup>64</sup> Sicher F, Targ E, Moore D, Smith HS. A randomized double-blind study of the effect of distant healing in a population with advanced AIDS — report of a small-scale study. *Western Journal of Medicine*. 1998;169(6):356-363.
- <sup>65</sup> Cha KY, MD, Wirth DP, Lobo R. Does prayer influence the success of in vitro fertilization-embryo transfer? Report of a masked, randomized Trial.” *J. Reproductive Medicine*. September 2001; 46(9): 781-787.
- <sup>66</sup> Harris W, Gowda M, Kolb JW, Strychacz CP, Vacek JL, Jones PG, Forker A, O’Keefe JH, McCallister BD. A randomized, controlled trial of the effects of remote, intercessory prayer on outcomes in patients admitted to the coronary care unit. *Archives of Internal Medicine*. 1999;159(19):2273-2278.

- 
- <sup>67</sup> Astin JE, Harkness E, Ernst E. The efficacy of "distant healing": a systematic review of randomized trials. *Annals of Internal Medicine*.2000;132:903-910.
- <sup>68</sup> Abbot, Neil C, Healing as a therapy for human disease: a systematic review, *Journal of Alternative and Complementary Medicine*, 2000, 6(2), 159-169.
- <sup>69</sup> Braud W, Schlitz M. A methodology for the objective study of transpersonal imagery, *Journal of Scientific Exploration* 1989, 3(1), 43-63.
- <sup>70</sup> Jonas WB. The middle way: Realistic randomized controlled trials for the evaluation of spiritual healing. *The Journal of Alternative and Complementary Medicine*. 2001;7(1):5-7.
- <sup>71</sup> Schlitz M, Braud W. Distant intentionality and healing: assessing the evidence, *Alternative Therapies in Health and medicine*. 1997, 3(6), 62-73.
- <sup>72</sup> Schrödinger E. *My View of the World*. Woodbridge, CT: Ox Bow Press; 1983:22. Original English publication: Cambridge: Cambridge University Press;1964.
- <sup>73</sup> Schrödinger E. *What Is Life? and Mind and Matter*. London: Cambridge University Press;1969:133.
- <sup>74</sup> Schrödinger E. *My View of the World*. Woodbridge, CT: Ox Bow Press; 1983:31-34. Original English publication: Cambridge: Cambridge University Press;1964.
- <sup>75</sup> Schrödinger E. *What Is Life? and Mind and Matter*. London: Cambridge University Press;1969:139.
- <sup>76</sup> Schrödinger E. *What Is Life? and Mind and Matter*. London: Cambridge University Press;1969:145.
- <sup>77</sup> Schrödinger E. *What Is Life?* London: Cambridge University Press; 1969; page uncertain. Quoted in: Rauscher EA, Targ R. The speed of thought: Investigation of a complex space-time metric to describe psychic phenomena. *Journal of Scientific Exploration*. 2001;15(3):331-354.
- <sup>78</sup> Schrödinger E. The spirit of science.” In: *Spirit and Nature: Papers from the Eranos Yearbooks*, Joseph Campbell, ed., Bollingen Series XXX:1. Princeton: Princeton University Press;1954:341.
- <sup>79</sup> Schrödinger E. *What is Real?* In: *My View of the World*. Cambridge:Uniiversity Press;1960:62-63.
- <sup>80</sup> Schrödinger E. *What is Life? and Mind and Matter*. Cambridge: University Press; 1967:131-133.

- 
- <sup>81</sup> Schrödinger E. *What is Life? and Mind and Matter*. Cambridge: University Press; 1967:137.
- <sup>82</sup> Schrödinger E. *What is Life? and Mind and Matter*. Cambridge: University Press; 1967:164-165.
- <sup>83</sup> Schrödinger E. *What Is Life? and Mind and Matter*. London: Cambridge University Press;1969:145.
- <sup>84</sup> Schrödinger, E. *What Is Life? and Mind and Matter*. London: Cambridge University Press;1969:165.
- <sup>85</sup> Schrödinger E. *My View of the World*. Woodbridge, CT: Ox Bow Press; 1983:22. Original English publication: Cambridge: Cambridge University Press;1964.
- <sup>86</sup> Einstein A. Quoted in: H. Bloomfield, *Transcendental meditation as an adjunct to therapy. Transpersonl Psychotherapy*, Seymour Boorstein, ed. Palo Alto: Science and Behavior Books, 1980;136.
- <sup>87</sup> Einstein A. Quoted in: Max Born, *The Born-Einstein Letters*. New York: Walker;1971:151.
- <sup>88</sup> Einstein A. *Ideas and Opinions*. Quoted in: Ken Wilber, *Quantum Questions: The Mystical Writings of the World's Great Physicists*. Boston: Shambhala/New Science Library;1982:102.
- <sup>89</sup> Dyson F. *Infinite in All Directions*. New York: Harper and Row;1988:297.
- <sup>90</sup> Margenau H. *The Miracle of Existence*. Woodbridge, CT: Ox Bow Press;1984:111. Reprinted by Boston: Shambhala/New Science Library, 1987. The references that follow refer to the Ox Bow Press edition.
- <sup>91</sup> Margenau H. *The Miracle of Existence*. Woodbridge, CT: Ox Bow Press;1984:120.
- <sup>92</sup> Margenau H. *The Miracle of Existence*. Woodbridge, CT: Ox Bow Press;1984:122.
- <sup>93</sup> Margenau H. *The Miracle of Existence*. Woodbridge, CT: Ox Bow Press;1984:122.
- <sup>94</sup> MargenauH. *The Miracle of Existence*. Woodbridge, CT: Ox Bow Press;1984:126.
- <sup>95</sup> Margenau H. *The Miracle of Existence*. Woodbridge, CT: Ox Bow Press;1984:123.
- <sup>96</sup> Margenau H. *The Miracle of Existence*. Woodbridge, CT: Ox Bow Press;1984:125.

- 
- <sup>97</sup> Bohm D. *Wholeness and the Implicate Order*. London: Routledge and Kegan Paul;1980;175.
- <sup>98</sup> Bohm D. Quoted in Renée Weber, *Dialogues with Scientists and Sages*. New York: Routledge and Kegan Paul;1986:41.
- <sup>99</sup> Bohm D. Interview by Thia Bell, *Ojai Valley News* ;December 30, 1987.
- <sup>100</sup> Bohm D. Interview by John Briggs and F. David Peat, *OMNI* ; January 1987:68ff.
- <sup>101</sup> Bohm D. Interview by John Briggs and F. David Peat, *OMNI* ; January 1987:68ff
- <sup>102</sup> Bohm. Quoted in Christopher Rawlence, ed. *About Time*. London: Jonathan Cape;1985:147.
- <sup>103</sup> Bohm D. Quoted in the *Bulletin for Mind-Being Research*. Los Altos, CA;September 1988;3.
- <sup>104</sup> Bohm D. Quoted in: *ReVision*. 4(1):26.
- <sup>105</sup> Bohm D. Quoted in Renée Weber, *Dialogues with Scientists and Sages*. New York: Routledge and Kegan Paul;1986:69.
- <sup>106</sup> Bohm D. Interviewed in P.C.W. Davies and J.R. Brown, eds., *The Ghost in the Atom*. New York: Cambridge University Press;1986:124.
- <sup>107</sup> Wald G. Quoted in *Bulletin of the Foundation for Mind-Being Research*. Los Altos, CA; September 1988:3.
- <sup>108</sup> Bohr N. Quoted in Werner Heisenberg, *Physics and Beyond*. A.J. Pomerans, trans. New York: Harper and Row;1971:88-91.
- <sup>109</sup> Bohr N. Quoted in Werner Heisenberg, *Physics and Beyond*. A.J. Pomerans, trans. New York: Harper and Row;1971:214.
- <sup>110</sup> Von Weizsäcker CF *The Unity of Nature*. New York: Farrar, Straus, Giroux, Inc;1980:252.
- <sup>111</sup> Von Weizsäcker CF. Introduction to: G. Krishna, *The Biological Basis of Religion and Genius*. New York: Harper and Row;1972; pp. 35-36.
- <sup>112</sup> Jeans J. *Physics and Philosophy*. New York; Dover;1981:204.
- <sup>113</sup> Jeans J. *The Mysterious Universe*. New York: Macmillan;1948:186-187.

---

<sup>114</sup> Eddington AS. Defense of mysticism. Quoted in Ken Wilber, *Quantum Questions: Mystical Writings of the World's Great Physicists*. Boston: Shambhala/New Science Library;1984:206.

<sup>115</sup> Eddington AS. *The Nature of the Physical World*. Ann Arbor, Michigan: The University of Michigan Press;1978:241-244.

<sup>116</sup> Eddington AS. *The Nature of the Physical World*. Ann Arbor, Michigan: The University of Michigan Press;1978:276.

<sup>117</sup> Eddington AS. *The Nature of the Physical World*. Ann Arbor, Michigan: The University of Michigan Press;1978:332.

<sup>118</sup> Eddington AS. *Space, Time and Gravitation*. Cambridge: Cambridge University Press;1978:200-201.

<sup>119</sup> Bateson G. *Steps to an Ecology of Mind*. San Francisco: Chandler Press;1972:467.

<sup>120</sup> Davies P. *Space and Time in the Modern Universe* (New York: Cambridge University Press, 1977), 221.

<sup>121</sup> Jahn RG, Dunne BJ. *Margins of Reality: The Role of Consciousness in the Physical World*. (New York: Harcourt Brace & Co., 1987), 280-1.