IN THE YEAR 1900, physicist Max Planck wrote a mathematical formula on a postcard, which he mailed to his friend and colleague, Heinrich Ruben. On this postcard, Planck introduced to the world the notion of tiny, discrete bundles of energy, which behaved both as waves and as particles, and came to be known as quanta. The formula has become the basis of quantum physics, the strange new science that tells us reality is discontinuous and deeply paradoxical—a reality that doesn’t follow the cause-and-effect rules of our ordinary empirical science.

Analyzing the century of progress since Planck’s postcard, theoretical physicist Amit Goswami has summarized the weird nature of reality in a quantum world:

1. A quantum object (for example, an electron) can be at more than one place at a time.
2. A quantum object cannot be said to manifest in ordinary space-time reality until we observe it as a particle.
3. A quantum object ceases to exist here, and simultaneously appears in existence over there; we cannot say it went through the intervening space (the quantum leap).
4. A manifestation of one quantum object, caused by our observation, simultaneously influences its correlated twin object—no matter how far apart they are (quantum action-at-a-distance; nonlocality).

We may know that applications of the principles of quantum physics have led to some high technologies like lasers, transistors, and CAT scans, but we have difficulty contemplating events of our everyday lives as quantum phenomena. For example, when we return to our parked car, it seems to have existed there even when it wasn’t observed, and it is in only one place at a time. When we go to the grocery store, the lettuce doesn’t take a quantum leap from the produce department into the cold beer section or produce any nonlocal, action-at-a-distance upon the broccoli. For building bridges, skyscrapers, or homes, engineers would find the inexplicable principles of quantum physics to be utterly unworkable. So, too, it seems, would doctors and other healers when attending to the sick and injured.

Yet, some of us—including medical doctors—believe that the principles of quantum physics are an essential component of all healing. We point out that although modern medicine claims to be scientific, it operates with an empirical science that is based upon seventeenth-century, Newtonian cause-and-effect, mechanical physics, and the Cartesian split of mind and body. In this spirit of Positivism, both the modern standards of medical care and the laws of our culture demand that the treatment of illness, whether conventional, alternative, complementary, or spiritual, must be supported with the hard evidence derived by classical science’s statistical, clinical studies that prove or disprove the effectiveness of any modality. As a result, the dramatic quantum discoveries of the twentieth century have not yet been included in the practices of the
medical healing arts.

There are those of us who envision a change in consciousness, a paradigm shift, which would include quantum phenomena into the healing of mind and body. Larry Dossey, MD, author of *Reinventing Medicine*, speaks of three eras in the history of healing. Era I is characterized by our conventional, causal, deterministic approach of statistical, empirical science as it has been applied to modern healing methods since the seventeenth century. Era II involves the inclusion of mind-body phenomena, such as found in psychosomatic and various alternative medical techniques. This era postulates that the mind has causal powers of healing within individual human beings.

However, scientists measure the efficacy of these Era II mind-body phenomena by first labeling them "psychosomatics" and the "placebo response," and then subjecting them to ordinary science that seeks the same causal, deterministic, and statistical proofs as Era I medicine. They try to explain mind-body healing in terms of body physiology, through such causal chains as psychoneuroimmunology, skin galvanometer readings, or endorphins and other proteins circulating in the bloodstream, then they subject psychosomatic healing techniques to standard, double-blind, statistical, clinical studies. In other words, although acknowledgement of mind-body phenomena is an advance in the care of the sick, it does not constitute a true shift of either consciousness or paradigm.

Era III medicine attempts to include the strange discontinuities of quantum physics within healing methods. Proponents of Era III medicine focus upon the nonlocal, action-at-a-distance qualities of quantum particles as providing a rationale with which to support the theory that healing can occur between individuals at-a-distance, for example, by prayer. They propose the hypothesis that the empathetic intention of one individual, remote and unknown to another who is ill, can heal the other through some sort of "cosmic consciousness"—or prayer acting through some kind of unknown faster-than-light "energy."

How do those who speak of quantum healing or Era III medicine try to prove its effectiveness? Again, they do not do so by any shift of consciousness or paradigm into a quantum realm. Instead, they try to reduce the strange nature of quanta to the same causality, deterministic, mechanistic science of Era I medicine, essentially trying to impose cause-and-effect upon what seem to be acausal phenomena. They conduct controlled, double-blind, statistical clinical studies in hospitals and clinics as a method by which to try to prove the hypothesis.

The activity of seeking statistical, empirical, scientific proof for extraordinary healing goes far beyond the study of prayer. Hundreds of scientific studies have now been done to try to prove the effect of spiritual intention and other alternative methods upon healing, from measurements of the effect of Qigong upon bacteria growing in Petri dishes to extensive clinical studies that tabulate physical outcomes of patients in coronary care units, surgical wards, AIDS facilities, and infertility clinics (see Endnote, page 23). Not all of the studies are properly designed and controlled, but of those that are, approximately one-half show "statistically significant" results. The incremental results are deemed to be "sta-

THE QUANTUM DISCOVERIES OF THE YET BEEN INCLUDED IN THE PR...
studies, and more rigorous science. From such activities, it is believed that we can more clearly define a conceptual framework, identify new tools, communicate with other scientific researchers, and find empowerment because of our increased objective data.

**ALTERNATIVE MEDICINE, ALTERNATIVE METHOD?**

A presidential commission has been formed, and it is now the policy of the United States Government, in partnership with the medical establishment through the National Center for Complementary and Alternative Medicine of the NIH, that alternative and complementary medicine will be subjected to standard scientific research. The stated goal is that nonconventional healing practices will become evidence-based. The National Institutes of Health, and many private nonprofit foundations, are funding hundreds of millions of dollars each year for Era I, statistical, empirical research to prove or disprove, once and for all, whether or not extraordinary, spiritual, alternative, complementary, or sometimes esoteric healing methods work. Researchers, both conventional and alternative, are competing for these funds so as to carry on their own research.

Our conventional medical wisdom. Many researchers are currently busy with this task.

Aside from the validity or desirability of these trends, it is important to note, again, that none of this scientific activity calls for a true shift of consciousness or paradigm. The method is the same as that of empirical, scientific Era I medicine, which tries to reduce the strange discontinuities of quanta to hard statistical data.

Certainly, no one suggests that we stop engaging in scientific biomedical inquiry. Such research has produced “miraculous” advances in medical care, and will probably continue to do so. However, the question is: Is it enough? Is it time for us to begin “walking the talk” of quantum healing, to include the ideas of space-time discontinuities, quantum leaps, and nonlocal influences in our science, in method as well as theory? Is it time for a true shift in consciousness and paradigm in the healing arts?

We might begin by taking stock. We may begin to wonder whether quantum theory even suggests that an observation that collapses a wave into a particle has anything to do with human goals, desires, or will upon the cells of the body. We may even understand that there is no indication that the concurrent at-a-distance reaction of twin quantum particles is due to this kind of ordinary cause-and-effect. We may note that physicists observe that the change in spin of one quantum particle is accompanied by an instantaneous, concurrent parallel change in spin of a distant twin particle, and they conclude that such an event could not be the result of a contiguous, causal chain in the ordinary sense of energy and work. So, some physicists postulate a nonlocal or noncontiguous causation—involving some kind of unknown faster-than-light “energy.” Yet, we may wonder whether physicists are using the right word when they say that one quantum particle influences a correlated twin particle. We may conclude, rather, that all we

**TWENTIETH CENTURY HAVE NOT PRACTICES OF MEDICAL HEALING ARTS**

Recently, in an issue of the *Journal of the American Medical Association* devoted to alternative medicine, the doctor-editors stated, “There is no alternative medicine. There is only scientifically proven [medicine], evidence-based and supported by solid data, or unproven medicine for which scientific evidence is lacking.” The goal seems to be that eventually all of spiritual and alternative healing will be subsumed under the standard, linear scientific measurements of
can know is that the two parallel spin changes of separated quantum particles are mysteriously simultaneous. That is the bizarre nature of quantum reality.

We may wonder, furthermore, whether the idea that praying for someone at a distance can cause healing that conforms to the nature of quantum nonlocality. In quantum nonlocality, we observe an action upon a near particle, and we notice a concomitant, parallel change in a distant, correlated twin particle. The medical clinical equivalent would be that we observe that someone in this intensive care unit is healed, and then we notice that a correlated twin someone in a distant intensive care unit has been simultaneously healed. Instead, in the current models for investigation of the effects of empathetic intention upon distant healing, we leave out the first step and simply pray for someone in the distant intensive care unit. As effective as such prayers for health might be, this model may not be consistent with our theory and hypothesis.

When we start to think in this way, we begin to enter into a true quantum shift in consciousness. As laudable as the current research might be, we begin to entertain the possibility that perhaps we cannot prove nonlinear, quantum questions by seeking cause-and-effect answers to linear, human-made questions. We begin to wonder whether, in addition to our ordinary research, we must enter into the paradoxical mystery of quanta itself. We may even begin to seek understanding and enlightenment rather than just scientific proof.

SOUL-BODY MEDICINE

In this frame of mind, we might soon admit into our new consciousness the reality that sick human beings cannot view themselves as scientific problems. We might pause to contemplate the words of Virginia Woolf:

"How common illness is, how tremendous the spiritual change that it brings, how astonishing when the lights of health go down, the undiscovered countries that are then disclosed, what wastes and deserts of the soul a slight attack of influenza brings to view, what precipices and lawns sprinkled with bright flowers a little rise of temperature reveals, what ancient and obdurate oaks are uprooted in us by the act of sickness, how we go down into the pit of death and feel the waters of annihilation close above our heads and wake thinking to find ourselves in the presence of angels."

We realize that, in the subjective experience of human beings, mind-body medicine becomes soul-body medicine. And soul-body medicine does not speak in the language of linear, deterministic science. It speaks in images and poetry. It often expresses itself in metaphor and is perceived by intuition. In that context, we note that our current mechanistic concepts of "psychosomatic medicine" and "placebo response" as mind-body healing may be simply another way of imposing linear science upon the quantum nature of soul-body healing. Paradoxically, that imposed science by its very nature cannot measure the nonlinear, subjective, whole, qualitative, open-ended, and spiritual ways of the quantum leaps of nonlocal, soul-body healing.

Healing occurs within the body and soul of a human being. Thus, by acknowledging another twentieth-century development—depth psychology—we note that soul-body healing occurs as an unconscious function of the human psyche, and is expressed not in cognitive, problem-solving arguments but in irrational, imaginative, and poetic images that, like quantum particles, can be in more than one place at the same time, do not exist until they are observed, can be in one place and simultaneously emerge at another without traversing the intervening space, and can affect one another causally, nonlocally, and at-a-distance. These quantum leaps are expressed also in the healing relationships of one human to another through a process of transference and intersubjectivity, those interpersonal, sometimes at-a-distance, noncontiguous human energies which also function in quantum weirdness. That is the poetic nature of the so-called placebo response. And it is the bizarre nature of quantum healing.

Instead of trying to measure quanta with an old science, we might open-mindedly enter into its mysteries, thereby allowing our inquiry to include subjectivity, quality, open-ended discovery, and spirit. Once we enter this poetic and imaginative realm of soul-body healing, we can make a quantum shift not only in consciousness but in paradigm. We can begin to include quantum...
phenomena not only in our theory but in our method. We can begin to "walk the talk" of quantum healing.

QUANTUM ANGELS

But we aren't quite ready to walk in quantum leaps. We might begin, rather, with some quantum baby steps. In his book, *Quantum Philosophy: Understanding and Interpreting Contemporary Science*, Roland Omnés, professor of physics at the University of Paris XI, helps us with these first steps. Seeking a union of classical, deterministic science and the new, strange quantum realities, Omnés seems to be aware that angels behave in the same discontinuous way as quantum particles. Angels can be here and there at the same time, they leap around the universe without traversing the intervening space, they show up only when they are observed, and they have powerful effects at a distance. Omnés imagines an angel learning to have a dialogue with a mechanistic scientist, a dialogue that reveals that if we accept twentieth-century quantum realities, then common sense and quantum weirdness can be reconciled by a method that includes the poetic and the spiritual within science. He says that if we are to rely upon the old science, we must restrict ourselves only to discoveries made before the twentieth century. A new science, however, includes quantum and depth psychology, in which representations of reality include magical, poetic, metaphorical, and other intuitive ways of knowing. It also includes chaos and complexity science, in which reality is constantly, spontaneously, and synchronistically self-emerging in ways that are not predictable by ordinary science.

Although still in their infancy, new research methods are being developed and implemented in social studies, anthropology, and psychology—research that includes not only deterministic, statistical analyses, but also qualitative, intuitive, aesthetic, spiritual, poetic, and mystical aspects of a question or problem. Psychologist and educator, Clark Moustakas, president of the Center for Humanistic Studies in Detroit, speaks of heuristic research methods that seek as much to discover, clarify, and understand events as to prove hypotheses. To conduct this research, Moustakas says that we must gather within ourselves the full scope of our "observations, thoughts, feelings, senses, and intuitions; to accept as authentic and valid whatever will open new channels."

We might imagine what it would be like if, in addition to the quantitative, double-blind clinical studies on prayer and distant healing, researchers included this type of qualitative research. What might we learn from the deep inner experiences of all the researchers, participants, and subjects? What might be discovered heuristically if we pay attention to and record the poetic, emotional, intuitive, and spiritual nature of the actual and the imagined relationships of all involved in the work? Most importantly, what would it be like if those of us who are interested in healing would enter into serious dialogue to begin constructing new qualitative and quantum methods that might be useful in biomedical research? And what would it be like if the National Institutes of Health and private foundations began allocating half of their grants for this new methodology in the healing arts?

It is time for those in the medical healing arts to acknowledge discontinuity and paradoxical self-reference in our work, in addition to a deterministic science. It is time in this twenty-first century to take the next step, to begin a dialogue to develop more up-to-date, qualitative methods. It is time to walk the talk of quantum healing. Nowhere is the quantum nature of reality more applicable than in the healing arts. Sick human beings cannot view their illnesses purely as scientific problems. They stand at the uneasy interface of science and spirituality—of the known with the unknown, of the concrete with the nonmaterial, of matter with spirit, of the measurable with the ineffable, of the understandable with the unknowable, of the literal with the poetic, of the mundane with the divine, of the secular with the sacred, of opposites with one another—of mind, body, spirit, and soul.

Endnote: IONS has sponsored studies on "The Effects of Distant Qigong on Cancer Cells" by Garret Youn, and "The Efficacy of Distant Healing in Advanced AIDS Patients" by Elisabeth Targ.

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