

## NONLOCAL MIND: A (FAIRLY) BRIEF HISTORY OF THE TERM

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In 1987, I coined the term “nonlocal mind” in a manuscript I was writing, which was published in 1989 as the book *Recovering the Soul*.<sup>1</sup> I was unaware in 1987 of any prior use of this term in the printed English language, and I have subsequently been unable to find any earlier use. Since then, “nonlocal mind” has become widely employed. A Google search for “nonlocal mind” yields nearly 6000 links; for “nonlocal consciousness,” almost 11,000 links; and for “nonlocal awareness,” around 3000 results.<sup>2</sup> The reasons that prompted my coining of “nonlocal mind” might perhaps be of interest.

For many years, I had been concerned with the nature of consciousness and the ways in which it manifests in the world, particularly in medicine, my field. My interest was academic and clinical but also quite personal.

Beginning in my early teenage years, I was afflicted with classical migraine syndrome—recurring severe headache, nausea, vomiting, near incapacitation, and temporary partial blindness (scintillating scotomas). No therapy was effective. These symptoms worsened during the stress of medical school. They became so troublesome that I decided to withdraw from medical school because of ethical reasons; I felt it was only a matter of time until I experienced an attack of partial blindness during a critical situation and might injure or even kill a patient. My faculty advisor discouraged my withdrawal however, and assured me the problem would get better. It got worse.

By the time I finished medical school, internship, a year as a battalion surgeon in Vietnam, and post-graduate training in internal medicine, I was desperate for help. I found it in an unexpected quarter—in clinical biofeedback, which emerged on the national scene in the late 1960s and early 1970s. Reports began to surface that mastery of this technique, which employs electronic instruments and mental imagery to achieve profound relaxation, correlated with the improvement or elimination of migraine syndrome in many patients. I traveled to biofeedback seminars and workshops around the country, eager to learn this skill. It was a godsend. In only a few sessions of biofeedback training, my migraine symptoms went almost completely away. Consequently I was deeply impressed with the therapeutic power of the mind. I established a biofeedback laboratory and began to employ biofeedback therapy for a variety of conditions with my patients, with gratifying results.

Consciousness came calling in other ways. During my first year of private practice as an internal medicine physician in the early 1970s, I experienced a series of precognitive dreams—dreams of future events—that proved valid.<sup>3</sup> However, according to prevailing belief, this was not possible; one simply could not acquire knowledge of a future event, because this suggested that an effect had occurred before its cause, or that time had reversed, or that my mind had traveled

to the future, all of which were unthinkable. All such experiences were dismissed as coincidence or fantasies and were pejoratively called paranormal. But to compound matters, my patients also occasionally reported precognitive dreams and waking premonitions that proved to be true. Nurses, and eventually my fellow physicians, did likewise. Some of these were so detailed that it seemed unwise to dismiss them as pure chance, as “one of those things” or “funny coincidences.”

This wasn't my first exposure to these challenging matters. A decade earlier, during medical school, I became interested in experiments in the field of parapsychology or psi. I immersed myself in this literature and was surprised by its depth and precision. I learned that this field has attracted some of the most distinguished figures in psychology, biology, medicine, and physics, including Nobel Prize winners. Sophisticated, replicated studies indicate that individuals mentally can both *acquire* information *from* the environment and also *insert* information *into* the environment, irrespective of spatial separation or distance, and often outside the present, which my precognitive dreams later seemed to confirm. Many of these events were health related, such as premonitions of future events that portended physical threats, danger, or illness. If these were avoided, this ability would constitute a Darwinian advantage for the individual. This implied that precognition might have a biological foundation, since abilities that promote survival and procreation might be incorporated genetically and passed down through succeeding generations. And in any case, the nature of consciousness was—and remains—such a mystery that, it seemed to me, we should be cautious in declaring what the mind can and cannot do. We should, I decided early on, keep all options open.

I found that it was impossible to explore parapsychology—what I prefer to call consciousness research—without bumping into modern physics. Many of the most prominent recent researchers in consciousness were internationally known physicists, such as Russell Targ and Harold Puthoff, both formerly at Stanford Research Institute, and nuclear physicist Edwin C. May, who for years headed the parapsychology research effort of the US government. Others psi researchers came from an engineering background, such as Dean Radin, chief scientist at the Institute of Noetic Sciences, and Robert G. Jahn, former dean of engineering at Princeton University. Jahn headed the Princeton Engineering Anomalies Research (PEAR) laboratory, where a team of investigators were engaged in a three-decades-long project of investigating mind/matter interactions. I read widely in the field of quantum physics, accumulating a small library in the process. It was refreshing to discover that talk of the activities of consciousness was alive and well among many physicists and was not tabooed as in most of medicine.

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When California's Esalen Institute sponsored their landmark Physics and Consciousness seminars in the mid 1970s, I attended. There I met several passionate, gifted young physicists who were exploring the role of the mind in physics. Among them was physicist Nick Herbert, an expert in nonlocality. Dr. Herbert would later author *Quantum Reality*, *Elemental Mind*, and other seminal books. He took me under his wing as a mentor and over several years guided me through the labyrinth of nonlocality, entanglement, and other features of quantum physics that distinguish it from the classical, mechanical view of the world.

I began to realize that medicine, my profession, rested on a view of the world that has been transcended by the quantum-relativistic worldview. My first book, in 1982, *Space, Time & Medicine*,<sup>4</sup> explored the question: What would medicine and healing look like if the new worldview were taken seriously? What changes would be necessary in our fundamental assumptions about birth, life, health, therapy, disease, and death?

*Space, Time & Medicine* was well received. It found its way to India and attracted the attention of the eminent physicist D. S. Kothari (1905–1993), who helped structure India's university science program following independence from Great Britain in 1947. Professor Kothari was internationally known for his research on statistical thermodynamics and his theory of white dwarf stars, and was a former president of the Indian National Science Academy. He brokered an invitation for me to deliver the annual Mahatma Gandhi Memorial Lecture at the Gandhi Peace Foundation in New Delhi in 1988. Professor Kothari, who knew Gandhi, explained that my explorations in *Space, Time & Medicine* of the role of consciousness in healing were congruent with Gandhi's non-violent doctrine of *ahimsa*. Consciousness, Kothari said, could be considered the ultimate nonviolent approach to health, when compared with the comparatively violent effects of many modern drugs and surgical procedures. Thus the invitation and our memorable conversations that followed.

Prior to my journey to India, Professor Kothari had sent me a copy of his inspiring paper "Atom and Self," in which he dissected the relationships (and the lack thereof) between physics and consciousness.<sup>5</sup> His ideas seemed to flow from a seamless fusion of intellect, intuition, and experience. Clearly, this was not idle philosophy, but a voice speaking from a lifetime of deep scientific and personal understanding.

At the time of our meeting, I was working on the above-mentioned book *Recovering the Soul*, in which, as I said, I introduced the term "nonlocal mind"—mind not localized to specific points in space, such as the brain and body, or to specific points in time, such as the present moment. Nonlocal mind, I asserted, appeared to be *infinite* in space-time, resembling the age-old concept of the soul, thus the title of the book. But I was tentative about these concepts, because no one in modern medicine had ever applied the concept of nonlocality to the mind. Professor Kothari assured me that he shared my view that consciousness is nonlocal and infinite, therefore immortal and eternal. I was on firm ground with "nonlocal mind," he said. As we spent many hours exploring these ideas, he gave me confidence to proceed. I owe him a debt I can never repay.

## MIND, CONSCIOUSNESS, AND BRAIN

My view of the relationship of mind and consciousness accords with that of consciousness researcher and philosopher K. Ramakrishna Rao, Chancellor at India's Gandhi Institute of Technology and Management (GITAM) University. It is a view in which consciousness is fundamental—neither produced by the brain, nor reducible to the workings of the brain:

Consciousness in the Indian tradition is more than an experience of awareness. It is a fundamental principle that underlies all knowing and being. Various forms of manifest awareness are images of consciousness revealed to the person as reflections in her mind. The cognitive structure does not generate consciousness; it simply reflects it; and in the process limits and embellishes it. In a fundamental sense, consciousness is the source of our awareness. In other words, consciousness is not merely awareness as manifest in different forms but it is also what makes awareness possible. There is a kind of intrinsic reflexivity between awareness and the source from which it emanates. For this reason, it becomes difficult to separate them. It is said in *Kena Upanisad* that consciousness is the ear of the ear, the thought of the thought, the speech of the speech, the breath of the breath and the eye of the eye. Therefore, the varieties of forms and states of consciousness...are in the strict sense the images the psychophysical structures reflect. Consciousness is the light which illumines the things on which it shines. Awareness of them constitutes the cognitively revealed essence of things. Consciousness *as-such* has no attributes of its own. It has no form. It is nonrelational and self-subsisting. Consequently, it is not accessible to sensory experience.<sup>6</sup>

In this view, mind can be viewed as the *contents* of consciousness: thoughts, feelings, emotions, and so on. Mind contains levels and degrees of awareness such as the unconscious, subconscious, preconscious, and conscious. In what follows, I hope you will be able to distinguish "mind" and "consciousness" from the context in which they are used.

A vibrant dialog is emerging in Western science about the nature of consciousness. While the dominant view remains that of materialism, in which consciousness is essentially equated with the workings of the brain, other views are on the table and have been for some time. Max Planck, the Nobel Prize-winning physicist, was an early dissenter of the materialistic perspective. In 1931 he said, "I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness."<sup>7</sup> Psychiatrist Carl G. Jung similarly observed, "It is almost an absurd prejudice to suppose that existence can only be physical. As a matter of fact, the only form of existence of which we have immediate knowledge is psychic. We might as well say, on the contrary, that physical existence is a mere inference, since we know of matter only in so far as we perceive psychic images mediated by the senses."<sup>8</sup> Nobel Prize-winning physicist Erwin Schrödinger<sup>9</sup> agreed, saying, "If we have to decide to have only one sphere, it has got to be the psychic one, since that exists anyway." And cognitive scientist Donald D. Hoffman<sup>10</sup> of the University of California, Irvine, states,

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I believe that consciousness and its contents are all that exists. Space–time, matter and fields never were the fundamental denizens of the universe but have always been, from their beginning, among the humbler contents of consciousness, dependent on it for their very being. ... If this is right, if consciousness is fundamental, then we should not be surprised that, despite centuries of effort by the most brilliant of minds, there is as yet no physicalist theory of consciousness, no theory that explains how mindless matter or energy or fields could be, or cause, conscious experience.

An increasing number of consciousness researchers believe that conscious operates *through* the brain, but is not produced by it, contrary to the assumptions of mind-equals-brain materialists. Psychologist William James held this view, and he distinguished between a *transmissive* and a *productive* property of the brain.

Many observers have endorsed a brain-as-filter metaphor.<sup>11</sup> As British psychologist Cyril Burt<sup>12</sup> said,

Our sense organs and our brain operate as an intricate kind of filter which limits and directs the mind's clairvoyant powers, so that under normal conditions attention is concentrated on just those objects or situations that are of biological importance for the survival of the organism and its species.... As a rule, it would seem the mind rejects ideas coming from another mind as the body rejects grafts coming from another body.

According to this view, the brain, rather than *producing* consciousness, largely *eliminates* it, diminishing the richness of the human mental experience. As astrophysicist David Darling<sup>13</sup> observed in his book *Soul Search*, we are conscious not because of the brain, but in spite of it.

### NONLOCALITY: NOT JUST PHYSICS

Nonlocality is a concept that physicists apply to a class of events whose description relates to the speed of light.<sup>14</sup> As physicist Herbert explains, “A non-local connection links up one location with another without crossing space, without decay, and without delay.” These connections have three identifying characteristics, says Herbert. They are *unmediated* (no connecting signal is involved), *unmitigated* (the strength of the correlations does not fade with increasing distance), and *immediate* (they are instantaneous).<sup>15</sup>

Nonlocality is subdivided by some physicists into three types. Type I is spatial nonlocality; type II is temporal nonlocality; and type III nonlocality is both spatial and temporal.<sup>16</sup>

But physics does not own nonlocality, and physicists do not have a monopoly on nonlocal events and the language that describes them. People were routinely having nonlocal experiences millennia before quantum physics was invented in the 20th century, and we are not obligated to cede nonlocality to scientists who have chosen to nuance the term differently.

There are compelling scientific, historic, and experiential reasons for believing that consciousness behaves nonlocally in space and time—that it is spatially unconfined to brains and

bodies, and that it is temporally unconfined to the present. The evidence suggests that space and time are simply not applicable to certain operations of consciousness.<sup>17,18</sup> This evidence suggests that consciousness is both trans-spatial and trans-temporal, that it is *not in* space and time.<sup>19</sup>

Nonlocal mind is as necessary a concept as nonlocal subatomic particles, because distant correlations between thoughts and behaviors occur in the macroscopic, human domain, just as remote correlations between particles occur in the invisible subatomic domain. Moreover, these distant human-level connections appear to demonstrate the three essential characteristics of nonlocal subatomic events mentioned above: they appear to be *unmediated*, *unmitigated*, and *immediate*.

This does not mean that subatomic nonlocality necessarily explains or underlies nonlocality among humans, despite the widespread temptation to assign a “quantum” explanation to the nonlocal experiences of humans. Caution is required. There is no conclusive evidence that quantum nonlocality *causes* nonlocal human experiences. Indeed, we may be dealing with correspondences in terminology and nothing more.

This is only a brief summary of the concept of nonlocality and how it differs from the classical worldview. I have painted in broad strokes.

For a fuller discussion of nonlocality, I suggest the groundbreaking book by Vernon M. Neppe and Edward R. Close,<sup>20</sup> *Reality Begins with Consciousness: A Paradigm Shift that Works*. Neppe and Close substantially expand and deepen my cursory discussion. So too does R. W. Boyer<sup>21–23</sup> in his books *Linking Mind and Matter: A New Perspective for a Scientific Model That Unifies Nonlocal Mind and Local Matter*, *Think Outside the Bang: Beyond Quantum Theory and Hidden Dimensions to a Holistic Account of Consciousness, Mind and Matter*, and *Bridge To Unity: Unified Field-Based Science and Spirituality*. Boyer provides thoughtful discussions of the similarities and differences of nonlocality in modern physics and as expressed in India's ancient Vedic philosophy. I also recommend quantum theorist Henry P. Stapp's<sup>24,25</sup> *Mind, Matter and Quantum Mechanics* and his *Mindful Universe: Quantum Mechanics and the Participating Observer*. Menas Kafatos and Robert Nadeau's<sup>26,27</sup> *The Conscious Universe: Part and Wholes in Physical Reality* and *The Non-Local Universe: The New Physics and Matters of the Mind* are essential guides in this field, as is Bruce Rosenblum and Fred Kuttner's<sup>28</sup> *Quantum Enigma: Physics Encounters Consciousness*. And physicist Nick Herbert's<sup>15,29</sup> books *Quantum Reality* and *Elemental Mind* have never been surpassed for clarity and cogence.

### ENTANGLEMENT

Some consciousness researchers believe that the nonlocal behaviors of subatomic particles may indeed underlie the distant, nonlocal connections in humans. This possibility is explored at length in the pioneering book *Entangled Minds* by Dean Radin,<sup>17</sup> chief scientist at California's Institute of Noetic Sciences. Radin reviews hundreds of experiments that suggest that quantum entanglement is more than a metaphor for how minds are linked at the human level.

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“Entanglement” is a term introduced by physicist Erwin Schrödinger in 1935 (Schrödinger was awarded the Nobel Prize in Physics in 1933). An object is said to be entangled if it cannot be fully described without considering one or more additional objects.<sup>30</sup> If they are entangled, distant entities comprise a single system and may display nonlocal connections, even though they are separated at arbitrary distances. Entanglement has been experimentally verified many times over the past three decades and is now accepted by most physicists as a fundamental feature of nature.<sup>31</sup>

Quantum theorist Henry P. Stapp,<sup>32</sup> of the University of California, Berkeley, has said that nonlocality could be the “most profound discovery in all of science.” Indeed, the implications of entanglement and nonlocality are stunning—so stunning that some physicists have had great difficulty believing them. This includes Einstein, who described nonlocal connections as “spooky action at a distance.”<sup>33</sup> Given our current understanding, Einstein may have been incorrect or at least incomplete in his view because what appeared to be unbelievable has come to pass. As above-mentioned physicist Menas Kafatos and science historian Robert Nadeau<sup>34</sup> say in their book *The Conscious Universe: Parts and Wholes in Physical Reality*, “[T]he universe on a very basic level could be a vast web of particles that remain in contact with one another over any distance in no time in the absence of the transfer of energy or information.”

In order for distant particles to be nonlocally entangled, theorists insist that they must have once been in contact. According to the Big Bang theory, all the matter in the universe was originally in contact, concentrated in a “very hot dot” of matter–energy that exploded around 14 and a half billion years ago, resulting in the universe we see.<sup>35</sup> So, if the Big Bang theory is valid, a requirement for nonlocal connections—original contact—was met early on.

## BIOENTANGLEMENT

Until recently, scientists believed that entanglement is limited to the invisible micro-world of atoms and subatomic particles. However, entanglement has been proven to be a feature of the biology of living creatures, including ourselves.<sup>36–38</sup>

Standard physics textbooks haven’t caught up. They describe how the mid-sized world of bricks, brains, and beasts and the colossal world of planets, stars, and galaxies are the domain of classical physics and are described by Newton’s laws and Einstein’s theories of relativity. And as we descend in scale to atoms and subatomic particles however, we cross an invisible boundary where classical physics no longer applies, and the strangeness of quantum behavior takes charge. The framework provided by quantum mechanics governs this microscopic, invisible level. The workings of our bodies and our experiences in our meso- or middle world are off limits to quantum effects. So it has been said.

How things change! The June 2011 cover of the journal *Scientific American* displays a human head made of tiny particles and the caption “Living in a quantum world: small-scale physics has a ‘spooky’ power over the world at large.” In his lead article, Oxford physicist Vlatko Vedral<sup>36</sup> explains what this fuss is all about:

Quantum mechanics is not just about teeny particles. It applies to things of all sizes: birds, plants, maybe even people.... Quantum mechanics is commonly said to be a theory of microscopic things: molecules, atoms, subatomic particles.... [T]his convenient partitioning of the world is a myth.... It is but a useful approximation of a world that is quantum at all scales.... Over the past several years experimentalists have seen quantum effects in a growing number of macroscopic systems. *The quintessential quantum effect, entanglement, can occur in large systems as well as warm ones—including living organisms—even though molecular jiggling might be expected to disrupt entanglement....* Until the past decade, experimentalists had not confirmed that quantum behavior persists on a macroscopic scale. Today, however, they routinely do. These effects are more pervasive than anyone ever suspected. They may operate in the cells of our body.... We can’t simply write [quantum effects] off as mere details that matter only on the very smallest scales.... The entanglements are primary [emphasis added].

Nonlocally entangled linkages may also unite human consciousness to the material world. As quantum theorist Stapp<sup>39</sup> 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 affect what is true elsewhere in the universe....[O]ur thoughts... DO something” [emphasis in original]. Schrödinger also believed in an unlimited, all-encompassing connectivity. He observed, “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.”<sup>40</sup> This view has long been recognized in premodern traditions, stated by mythologist Joseph Campbell<sup>41</sup>:

[We] think of consciousness as being something peculiar to the head, that the head is the organ originating consciousness. It isn’t. The head is an organ that inflects consciousness in a certain direction, or to a certain set of purposes. But there is a consciousness here in the body. The whole living world is informed by consciousness.

There are apparently no limits to the extent of entanglement. As physicist N. David Mermin<sup>42</sup> has shown, quantum entanglement grows exponentially with the number of particles involved in the original quantum state, and that there is no theoretical limit on the number of these entangled particles.

The evolutionary advantage of entanglement in the biological domain has been emphasized by several observers, such as physicist Johann Summhammer,<sup>43</sup> of the Vienna University of Technology, who stated in 2005:

Entanglement would lead to a Darwinian advantage: Entanglement could coordinate biochemical reactions in different parts of a cell, or in different parts of an organ. It could allow correlated firings of distant neurons. And...it could coordinate the behaviors of members of a species, because it is independent of distance and requires no physical link. It is also conceivable that entanglement correlates processes between members of different species, and even between living systems and the inanimate world.

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## THE EXPERIMENTAL RECORD

Reports of nonlocal actions of consciousness that are biologically relevant have been accumulating for decades.<sup>44</sup> Many controlled clinical trials of remote healing intentions in humans have been conducted.<sup>45–56</sup> Many demonstrate statistically positive results, far more than would be expected by chance. Several systematic or meta-analyses of this body of research have been done; most report positive findings.<sup>57–66</sup> Humans have influenced the physiology of each other at a distance through the simple act of staring, even when the distant individual is unaware that the effort is being made.<sup>67–69</sup> Several studies show that the social environment becomes more harmonious, coherent, and transformed as a result of a group of people's entering into a state of so-called "pure consciousness" through meditation.<sup>70–73</sup> In addition to human studies, scores of experiments reveal that human intentions can remotely influence cellular function,<sup>74</sup> microbial growth,<sup>75–77</sup> the growth of tumors in animals,<sup>78,79</sup> the germination of seeds and the growth of plants,<sup>80</sup> the healing of surgical wounds in animals,<sup>81</sup> and the kinetics of biochemical reactions.<sup>82–84</sup> These studies in biological systems are buttressed by hundreds of experiments in non-biological settings in which human intentions exert statistically significant effects.<sup>18,85–87</sup> In 1991, Braud and Schlitz<sup>88</sup> reported, "[I]n the English-language scientific literature alone, there are approximately 100 published reports of experiments in which persons have been able to influence mentally and at a distance, a variety of biological target systems including bacteria, yeast colonies, fungus colonies, motile algae, plants, protozoa, larvae, wood lice, ants, chicks, mice, rats, gerbils, cats, and dogs, as well as cellular 'target persons,' eye movements, gross motor movements, electrodermal activity, plethysmographic activity, respiration, and brain rhythms...."

Since Braud and Schlitz's 1991 assessment, the experimental corpus has expanded considerably. In 2003, Jonas and Crawford reported in a systematic analysis, "We found over 2200 published reports, including books, articles, dissertations, abstracts and other writings on spiritual healing, energy medicine, and mental intention effects. This included 122 laboratory studies, 80 randomized controlled trials, 128 summaries or reviews, 95 reports of observational studies and non-randomized trials, 271 descriptive studies, case reports, and surveys, 1286 other writings including opinions, claims, anecdotes, letters to editors, commentaries, critiques and meeting reports, and 259 selected books." Jonas and Crawford used strict Consolidated Standards of Reporting Trials (CONSORT) criteria to evaluate the quality of these studies. They gave an "A," the highest grade, to mind-matter interaction studies (such as the ability of individuals to influence the output of random number generators), and a "B" to the experiments in distant healing.<sup>89</sup>

Many experiments indicate that human intentions can operate nonlocally not only in space but also in time. In these studies, intentions appear to influence certain types of events in the past, even though they presumably already have happened.<sup>90,91</sup> Moreover, individuals also appear capable of acquiring accurate information from the future before it has occurred.<sup>92–94</sup>

Categories of experiments suggesting nonlocal events that appear especially relevant to human function include the following:

### Neuron-To-Neuron Connections

In 2009, a team of Italian researchers led by neuroscientist Rita Pizzi demonstrated that when one group of human neurons was stimulated by a laser beam, a distant group of neurons registered similar changes, although the two were completely shielded from each other.<sup>95</sup>

### Brain-To-Brain Connections

In the 1960s, pioneer psychologist Charles Tart at the University of California-Davis and researchers Duane and Berendt demonstrated correlated patterns in the electroencephalography (EEG) of distant individuals. The latter research involved identical twins. In order to test anecdotal reports that twins share feelings and physical sensations at a distance, even when far apart, they altered the EEG pattern of one twin and observed the effect on the other. In 2 of 15 pairs of twins tested, eye closure in one twin produced not only an immediate alpha rhythm in his own brain, but also in the brain of the other twin, even though he kept his eyes open and sat in a lighted room.<sup>96,97</sup>

The publication of this study in the prestigious journal *Science* evoked enormous interest. Ten attempted replications soon followed by eight different research groups around the world. Of the 10 studies, eight reported positive findings and were published in mainstream journals such as *Nature* and *Behavioral Neuroscience*.<sup>98–107</sup>

In the late 1980s and 1990s, a team headed by psychophysicist Jacobo Grinberg-Zylberbaum<sup>108–110</sup> at the University of Mexico published experiments that, like most of the previous studies, demonstrated correlations in the EEGs of separated pairs of individuals who had no sensory contact with each other. Two of the studies were published in the prominent journals *Physics Essays* and *International Journal of Neuroscience*, drawing further attention to this area.<sup>111–113</sup>

Experiments in this field became increasingly sophisticated. In 2003, Jiri Wackerman, an EEG expert from Germany's University of Freiberg, attempted to eliminate all possible weaknesses in earlier studies and applied a refined method of analysis. Following his successful experiment he concluded, "We are facing a phenomenon which is neither easy to dismiss as a methodological failure or a technical artifact nor understood as to its nature. No biophysical mechanism is presently known that could be responsible for the observed correlations between EEGs of two separated subjects."<sup>114</sup>

As functional magnetic resonance imaging (fMRI) brain-scanning techniques matured, these began to be employed, with intriguing results. Psychologist Leanna Standish at Seattle's Bastyr University found that when one individual in one room was visually stimulated by a flickering light, there was a significant increase in brain activity in a person in a distant room.<sup>113</sup>

In 2004, three new independent replications were reported, all successful—from Standish's group at Bastyr University,<sup>115</sup> from the University of Edinburgh,<sup>116</sup> and from researcher

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Dean Radin and his team at the Institute of Noetic Sciences.<sup>117</sup>

### Person-To-Person Connections

Researcher Jeanne Achterberg, a pioneer in the use of imagery and visualization in medicine, and her colleagues performed a study to assess whether healers could influence the physiology of distant subjects. They recruited eleven indigenous healers from the island of Hawaii. Each healer was asked to recruit a person they knew, with whom they felt an empathic, compassionate connection, to be the recipient of their healing efforts, which the researchers roundly referred to as distant intentionality (DI). The healers were not casually interested in healing; they had pursued their healing work for an average of 23 years. They described their healing efforts in a variety of ways—as sending energy, prayer, or good intentions, or as simply thinking of the individual subject and wishing for them the highest good. No sensory contact between healer and subject was possible. Each subject underwent an fMRI brain scan while the healers sent their individual form of DI at randomized, two-minute intervals that could not have been anticipated by the recipient. Significant differences in the subjects' fMRI patterns between the experimental (“send”) and control (“no-send”) conditions were found in 10 of the 11 subjects. The areas of the brain that were activated during the send periods included the anterior and middle cingulate areas, the precuneus, and the frontal areas. There was less than approximately one chance in 10,000 that the results could be explained by chance. This study suggests that compassionate healing intentions can exert distant, measurable effects on the recipient that can be detected via fMRI, and, that an empathic connection between the healer and the recipient is a vital part of the process.<sup>118</sup>

Evidence that our thoughts, emotions, and behaviors may influence someone remotely has surfaced in recent analyses of social networks. James H. Fowler, a political scientist at the University of California-San Diego, and Nicholas A. Christakis,<sup>119</sup> a physician and social scientist at Harvard Medical School, published a provocative article in 2008 in the *British Medical Journal*, “Dynamic Spread of Happiness in a Large Social Network.” Christakis states, “[H]appiness is more contagious than previously thought.... Your happiness depends not just on your choices and actions, but also on the choices and actions of people you don't even know who are one, two and three degrees removed from you. ... Emotions have a collective existence—they are not just an individual phenomenon.”<sup>120</sup>

From 1983 to 2003, Fowler and Christakis collected information from 4739 people enrolled in the well-known Framingham Heart Study and from several thousand other individuals with whom they were connected—spouses, relatives, close friends, neighbors and co-workers. They found, says Fowler, that, “[I]f your friend's friend's friend becomes happy, that has a bigger impact on you being happy than putting an extra \$5,000 in your pocket.” The idea that the emotional state of your friend's friend's friend could profoundly affect your psyche created a sensation in the popular media. As a *Washington Post* journalist put it, “[E]motion can

ripple through clusters of people who may not even know each other.”<sup>121</sup>

It is not just happiness that gets around. The team also found that depression, sadness, obesity, drinking and smoking habits, ill-health, the inclination to turn out and vote in elections, a taste for certain music or food, a preference for online privacy, and the tendency to think about suicide are also contagious.<sup>122,123</sup>

Christakis and Fowler published their findings about the spread of obesity in large social networks in the elite *New England Journal of Medicine*. They showed that obesity in people you don't know and have never heard of could ricochet through you. They attributed the contagiousness of obesity to a “social network phenomenon” without proposing any specific physiological or psychological mechanism.<sup>124</sup> To label something, however, is not to explain it, and to merely call this sort of thing a “social network phenomenon” has all the explanatory value of saying “what happens happens.” In the commentary that accompanied their *NEJM* article, the experts who weighed in took the same tack. They discussed the genetic factors that influence obesity and the connections within and between cells in an individual that may contribute to being overweight, but they too were mute about how distant humans might influence one another when they are beyond sensory contact.

Some suggest that the ripples work through the action of mirror neurons, which are brain cells believed to fire both when we perform an action ourselves and when we watch someone else doing it. But when people are remote from each other, there is no one to watch, and therefore no stimulus for the mirror neurons to fire. Others suggest that the spread is through mimicry, as when people unconsciously copy the facial expressions, body language, posture, and speech of those around them. There is a hint of desperation in these attempts to find some sneaky physical factor that mediates changes between distant individuals. But when all is said and done, Fowler and Christakis say they do not really know how happiness, obesity, etc. spread.<sup>125</sup>

The fact that your friend's friend's friend, someone you've neither seen nor heard of, is affecting your health has begun to rattle many of the gatekeepers in medicine. This field may be a bomb with a delayed fuse that is getting ready to explode in the very heart of materialistic medicine. A few medical insiders are raising the possibility that something heretofore unthinkable may be going on, such as a nonlocal, collective aspect of consciousness that links distant individuals. Among them is Dr. Robert S. Bobrow, a courageous clinical associate professor in the Department of Family Medicine at New York's Stony Brook University. In discussing the spread of obesity in his article “Evidence for a Communal Consciousness,” he says, “Frankly, obesity that develops from social connection, without face-to-face interaction, suggests emotional telepathy.”<sup>126</sup>

### IMPLICATIONS

A mind that is local—confined to the brain, the body, and the here-and-now—is incapable of the activities demonstrated in the above experiments. Only nonlocal mind, mind that is unlimited in space and time, can behave this way.

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Therein lies the rub. In contemporary neuroscience, consciousness is equated with the workings of the brain—a thoroughly local, finite view. This implies that when the brain dies consciousness is annihilated; nothing survives death. In the graphic words of philosopher Michael Grosso,<sup>127</sup> “According to [this] official view, consciousness peeps out momentarily, a flickering phosphorescence of nerve tissue, and is destined to vanish forever after death.” In striking contrast, the premise of nonlocal mind affirms ancient concepts such as “soul” and “spirit” that designate an ongoing something that survives the death of the physical body. In short, if something about the mind is nonlocal, as evidence suggests, immortality is mandated. Why mandated? A limited nonlocality is a contradiction in terms. Temporal nonlocality does not imply “for quite a while” or “a long time,” but *infinitude* in time: eternity or immortality.

Immortality has been ridiculed in science in the twentieth century, and the results, many observers believe, have been unfortunate. As author George Orwell<sup>128</sup> put it, “The major problem of our time is the decay of belief in personal immortality.” Swiss psychologist C. G. Jung<sup>129</sup> thought similarly. “As a doctor,” he said, “I make every effort to strengthen the belief in immortality.” However, the dilemma posed by a failed belief in immortality, which has helped sustain human hope for perhaps the entire span of human history, is not admitted within science. The public stance of many scientists is to keep a stiff upper lip, flex one’s intellectual muscle, and deny any desire or need for such a belief. Even addressing the topic of immortality can be considered a sign of intellectual weakness or of “going mystic.” Yet the old channels within the psyche run deep, and merely declaring immortality dead and worthless does not make it so.

The fear of death is humanity’s Great Disease, the terror that has caused more suffering throughout history than all the physical diseases combined. As Ernest Becker<sup>130</sup> said in his Pulitzer Prize-winning book *The Denial of Death*, “[T]he idea of death, the fear of it, haunts the human animal like nothing else; it is the mainspring of human activity—activity designed largely to avoid the fatality of death, to overcome it by denying in some way that it is the final destiny for man.” Nonlocal mind is the Great Cure for this Great Disease, because it suggests that the most essential aspect of who we are cannot die, even though the physical body perishes.<sup>131</sup> Evidence suggesting survival is extraordinarily varied and abundant. Too extensive to be reviewed here, it has been chronicled by University of Virginia psychiatrist Edward F. Kelly *et alia*<sup>132</sup> in their landmark book *Irreducible Mind: Toward a Psychology for the 21st Century*, philosopher Chris Carter’s<sup>133</sup> *Science and the Near-Death Experience*, philosopher Robert Almeder’s<sup>134</sup> *Death & Personal Survival: The Evidence for Life After Death*, consciousness research Charles T. Tart’s<sup>135</sup> *The End of Materialism*, psychiatrist Jim B. Tucker’s<sup>136</sup> *Life Before Life: Children’s Memories of Previous Lives*, philosopher Stephen E. Braude’s<sup>137</sup> *Immortal Remains: The Evidence for Life After Death*, philosopher Michael Grosso’s<sup>127</sup> *Experiencing the Next World Now*, cardiologist Pim van Lommel’s<sup>138</sup> *Consciousness Beyond Life*, astrophysicist David Darling’s<sup>139</sup> *Soul Search: A Scientist Explores the Afterlife*, philosopher Carl B. Becker’s<sup>140</sup> *Paranormal Experience and Survival of Death*, psychiatrist Raymond

Moody’s<sup>141</sup> *Life After Life*, social historian Julia Assante’s *The Last Frontier: Exploring the Afterlife and Transforming Our Fear of Death*, neuropsychiatrist Vernon Neppe and physicist-mathematician Edward Close’s<sup>142</sup> *Reality Begins with Consciousness*, neurosurgeon Eben Alexander’s<sup>143</sup> *Proof of Heaven: A Neurosurgeon’s Journey Into the Afterlife*, neuropsychiatrist Peter Fenwick and Elizabeth Fenwick’s<sup>144</sup> *Truth in the Light*, and many, many others. Unfortunately, this evidence is often ignored as if it does not exist. As philosopher David R. Griffin<sup>145</sup> observes, “[P]robably not one intellectual in a thousand, including college and university professors, is conversant with the kinds of evidence [relevant to the question of survival of bodily death].”

## TEMPORAL MEDICINE, ETERNITY MEDICINE

Attention to nonlocal mind could radically transform modern medicine.<sup>146,147</sup> The type of medicine that currently prevails in our culture could be called Temporal Medicine, because it assumes linear, flowing time with its inevitable correlates of aging, infirmity, disease, and death. But nonlocal mind reveals another possibility—Eternity Medicine, based on the evidence of a temporally infinite aspect of consciousness.<sup>148,149</sup> Eternity Medicine comes into play anytime we honor our temporally infinite, nonlocal nature. Eternity Medicine recognizes that something, however it is named, exists prior to the physical body, and endures beyond physical death. The beginning assumption of Temporal Medicine is death and annihilation; Eternity Medicine involves immortality—not as something to be acquired, cultivated, or engineered, but as something innate and fundamental, a consequence of our nonlocal mind. This transforms the fatalistic premise of modern scientific medicine. As a result, fear relents, the pressure eases, and the future brightens. A lightness and perhaps a sense of humor enter. Life, not death, is now our birthright and a condition of our being.<sup>150-152</sup>

Close examination of the studies in distant healing and prayer reveals something else that is extraordinary about this nonlocal mind. Distant healing appears to be intimately connected with love, compassion, and deep caring, just as healers throughout history have maintained.<sup>153,154</sup> This is one of the greatest lessons of the healing experiments: love and compassion, operating through nonlocal mind, can change the state of the physical body.

But not *just* love. Studies in remote influence show also that *harm* can be extended to living things: microbes can be inhibited, cellular function can be retarded and cells killed,<sup>155</sup> and the activity of biochemical reactions can be reduced.<sup>156</sup> Negative, nonlocal intentions may be indistinguishable from the curses, hexes, and spells that perhaps all premodern cultures have believed in. In acknowledging this side of nonlocal mind, these cultures demonstrate a more complex, sophisticated understanding of consciousness than do we. They accept a dark side of consciousness as simply the way things are, and they gracefully devise methods of protection against this aspect of the world. It is cultures such as our own, which deny a negative, nonlocal factor of consciousness, that often get blindsided by it. In any case, the capacity of humans to extend harm mentally and nonlocally to living things should not be rejected, because this ability can be used for

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good, for healing, as when human intentions are used to kill cancer cells.<sup>78</sup>

The experiments in nonlocal, distant healing show that the healing intentions and prayers of perhaps all religions appear to be effective. Even non-theistic healing intentions, as in some forms of Buddhism, can result in healing, as do secular and so-called pagan intentions that are not associated with any traditional religion. These findings are important. They democratize and universalize healing intentions. These studies reveal that no religion enjoys a monopoly on these nonlocal effects. These experiments are therefore the enemy of religious intolerance and narrowness. Our tortured world is aflame with the countless hatreds of a thousand sects, and “me against you” has become the order of the day. Nonlocal mind is the enemy of this madness. It enlarges the compass of existence and opposes barriers, boundaries, and bigotry.<sup>157</sup> It is an imprimatur for humans to behave kinder and gentler toward one another and to the earth and all its creatures.

### THE ONE MIND

If mind is genuinely nonlocal, this might imply that individual minds cannot be completely separated and isolated from one another, and may in some ways be enjoined even if they experience themselves individually. In some dimension, minds might therefore come together to form a single, unitary mind. As Nobel physicist Erwin Schrödinger<sup>158</sup> put it, “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.<sup>159</sup> The overall number of minds is just one.... In truth there is only one mind.” Astrophysicist Sir Arthur Eddington<sup>160</sup> agreed: “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.” And as the eminent physicist David Bohm<sup>161</sup> observed, “Deep down the consciousness of mankind is one. This is a virtual certainty... and if we don’t see this it’s because we are blinding ourselves to it.”

Do we lose our individuality in a single, unitary One Mind? Is individuality swallowed up in a homogeneous, featureless totality? This is a common objection to the concept of nonlocal, shared, unitary mind, but it appears largely groundless in actual experience. Those who enter into the awareness of the One Mind generally report that their sense of individuality does not disappear, but exists seamlessly alongside a shared sense of unity. This is an example of what physicist Niels Bohr called *complementarity*—the coming together of apparent opposites to produce a more accurate picture of the whole. One is reminded of a maxim from the field of transpersonal psychology: “In order to transcend the ego, you must first *have* one. In order to go beyond the self, you must first *be* one.”

Psychologist William James<sup>162</sup> saw that individuality and a sense of self and personhood are preserved, not extinguished, in the One Mind:

We with our lives are like islands in the seas, or like trees in the forest. The maple and the pine may whisper to each other with their leaves... [but] the trees also commingle their roots in the darkness underground, and the islands also hang together through the ocean’s bottom. Just so there is a continuum of cosmic consciousness, against which our individuality builds but accidental fences, and into which our several minds plunge as into a mother-sea or reservoir. Our “normal” consciousness is circumscribed for adaptation to our external earthly environment, but the fence is weak in spots, and fitful influences from beyond leak in, showing the otherwise unverifiable common connection.

The One Mind may also be crucial in confronting the great challenges we humans face on Earth. Our problems are enormous: global climate change, environmental degradation, pollution, overpopulation, water scarcity, the acidification and degradation of our oceans, food insecurity, endless wars, religious strife, and so on. Many of these problems are caused by unremitting greed and selfishness in individuals who cannot see beyond their own ego and hypertrophied sense of self. It is difficult to confront these problems intelligently without dealing with our fragmentation and sense of separateness from one another and the natural world. We need a profound shift in our sense of relatedness. I believe this shift may be possible by re-imagining how we connect with others through consciousness. A shift to a One-Mind perspective may be our best hope—a sense of unity that is experienced at the deepest emotional levels.

A dramatic example of this shift is the “Overview Effect” experienced by astronauts and cosmonauts on returning to Earth. While observing the whole Earth from outer space, they typically sense that our planet is an integral whole. The customary borders of our planet dissolve into a greater unity. From space, disagreements and divisions are sensed as petty and arbitrary. This shift in perception can be an epiphany that proves life-changing for the astronaut. An example is Edgar Mitchell, the lunar module pilot of the Apollo 14 mission, whose epiphany transformed his life on return to one of service to others and to explorations of consciousness.

If we genuinely believe we are “of One Mind” with all others, our existential premises shift. Our resentment and hatred of “the other” diminish and are replaced by love. A shared, universal mind implies that what we do to others, we do to ourselves. In the One Mind, the Golden Rule can be recalibrated from the self-oriented “Do unto others as you would have them do unto you,” to “Be compassionate toward others because in some sense *they are you*.” Not only can our relationship toward other humans be transformed, but our attitude toward the Earth and all its creatures as well. As novelist Alice Walker said, “Anything we love can be saved”—including the natural world that sustains us.

### THE FUTURE

Any assessment of what lies ahead in our understanding of consciousness must begin with an honest appraisal of where we now stand. It is widely assumed that scientists are closing in on the mysteries of consciousness and that these mysteries are to be understood materialistically. As neuroscientist

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Antonio Damasio, of the University of Southern California, confidently predicted in 1999, "In an effort that continues to gain momentum, virtually all the functions studied in traditional psychology—perception, learning, and memory—are being understood in terms of their brain underpinnings. The mystery behind many of these functions are being solved, one by one, and it is now apparent that even consciousness, the towering problem in the field, is likely to be elucidated before too long."<sup>163</sup> Or as psychiatrist and sleep researcher Allan Hobson<sup>164</sup> pithily put it, "Consciousness, like sleep, is of the Brain, by the Brain, and for the Brain. A new day is dawning."

These ardent positions have been particularly buttressed by the advent of functional magnetic resonance imaging (fMRI), by which activity in specific areas of the brain can be correlated with more or less imprecise mental functions. The conclusion drawn is that "the mind, self, and consciousness are now entirely within the purview of neuroscience. It follows that all other theories of the mind...are consigned to the trash heap," philosopher Stan V. McDaniel<sup>165</sup> of Sonoma State University says. Among the discarded "trash" are the hypotheses that consciousness might exist external to the brain, that it might operate *through* the brain without being identical with it, and that it might survive the death of the brain and body.

However, many science insiders do not share the sunny predictions of Damasio, Hobson, and their materialist colleagues. They believe that our current knowledge of the essential nature of consciousness is embryonic, and that the unyielding, materialistic conclusions are premature and overreaching. In order to show that this objection is not a renegade view of marginal scientists, I offer the following flurry of opinions of several prominent scholars:

Donald D. Hoffman,<sup>166</sup> the above-mentioned cognitive scientist at University of California, Irvine: "The scientific study of consciousness is in the embarrassing position of having no scientific theory of consciousness." Steven A. Pinker, experimental psychologist at Harvard University, on how consciousness might arise from something physical, such as the brain: "Beats the heck out of me. I have some prejudices, but no idea of how to begin to look for a defensible answer. And neither does anyone else."<sup>167</sup> Stuart A. Kauffman,<sup>168</sup> theoretical biologist and complex-systems researcher: "Nobody has the faintest idea what consciousness is.... I don't have any idea. Nor does anybody else, including the philosophers of mind." Roger W. Sperry,<sup>169</sup> Nobel Prize-winning neurophysiologist: "Those centermost processes of the brain with which consciousness is presumably associated are simply not understood. They are so far beyond our comprehension at present that no one I know of has been able even to imagine their nature." Eugene P. Wigner,<sup>170</sup> Nobelist in physics: "We have at present not even the vaguest idea how to connect the physiochemical processes with the state of mind." Physicist Nick Herbert,<sup>171</sup> an expert in nonlocality: "Science's biggest mystery is the nature of consciousness. It is not that we possess bad or imperfect theories of human awareness; we simply have no such theories at all. About all we know about consciousness is that it has something to do with the head, rather than the foot." Physicist Freeman J. Dyson<sup>172</sup>: "The origin of life is a total mystery, and so is the existence of human consciousness. We have no clear idea how the electrical discharges occurring

in nerve cells in our brains are connected with our feelings and desires and actions." Philosopher Jerry A. Fodor,<sup>173</sup> of Rutgers University: "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." Sir John R. Maddox,<sup>174</sup> former editor of *Nature*: "What consciousness consists of.....is.....a puzzle. Despite the marvelous successes of neuroscience in the past century....., we seem as far from understanding cognitive process as we were a century ago." Philosopher John R. Searle,<sup>175</sup> of the University of California, Berkeley: "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."

I suggest that, in view of our ignorance about the essential nature of consciousness, and considering the experimental evidence we've reviewed, among the "different ideas," Searle proposes should the concept of nonlocal mind.

### TAKING THE STUFFING OUT OF THE KEYHOLE

Nonlocal mind—what novelist Aldous Huxley called Mind at Large—expands our view of human possibility. As he wrote in *The Doors of Perception*:

[E]ach one of us is potentially Mind at Large. But in so far as we are animals, our business at all costs is to survive. To make biological survival possible, Mind at Large has to be funneled through the reducing valve of the brain and nervous system. What comes out at the other end is a measly trickle of the kind of consciousness which will help us to stay alive on the surface of this particular planet.<sup>176</sup>

How can we freshen the "measly trickle"? Novelist Arthur Koestler<sup>177</sup>: "[We are] Peeping Toms at the keyhole of eternity. But at least we can try to take the stuffing out of the keyhole, which blocks even our limited view." The stuffing in our keyhole of awareness can be removed, and the evidence for nonlocal mind is a removal agent that can do the trick.

Opposition toward a nonlocal view of the mind is not surprising and is even predictable. As Sir Edward Bullard,<sup>178</sup> the distinguished geoscientist of Cambridge University said in 1975, in discussing the resistance in geology to the idea of plate tectonics and continental drift:

There is always a strong inclination for a body of professionals to oppose an unorthodox view. Such a group has a considerable investment in orthodoxy: they have learned to interpret a large body of data in terms of the old view, and they have prepared lectures and perhaps written books with the old background. To think the whole subject through again when one is no longer young is not easy and involves admitting a partially misspent youth.... Clearly it is more prudent to keep quiet, to be a moderate defender of orthodoxy, or to maintain that all is doubtful, sit on the fence, and wait in statesmanlike ambiguity for more data...

The radical concepts of plate tectonics and continental drift eventually prevailed because of empirical evidence.<sup>179</sup> So, too, will the premise of nonlocal mind prevail, and for the

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same reason: replicable empirical data, which is the criterion which, in science, makes all the difference.

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