

Healing and the Mind: Is There a Dark Side?

LARRY DOSSEY

*Co-chair, Panel on Mind/Body Interventions, Office of Alternative Medicine,
National Institutes of Health*

Abstract — Although intra- and interpersonal influences have long been acknowledged in medical science to affect an individual's health both positively and negatively, the impact of non-local, transpersonal influences are generally denied in contemporary medical science. The present paper examines anecdotal, ethnographic, anthropological, clinical, and experimental evidence suggesting that non-local, transpersonal influences may exist, and that these may exert a negative and even fatal impact on human health. The possible relationship of these negative influences to scientific findings in other anomalous areas, such as the studies in human/machine interaction at the Princeton Engineering Anomalies Research (PEAR) Laboratory, are discussed. The author concludes that the evidence favoring the existence of non-local, negative, transpersonal influences is considerable, and that the implications for medical research and clinical practice are profound.

Introduction

"...it is held in most sacred traditions that virtually any capacity can be communicated without sensory cues. Such capacities... can be used destructively. The same religious traditions that celebrate metanormal transmission of illumined states also bear witness to communication abilities employed for egocentric, bullying, even monstrous purposes. There is a lore in virtually every religious culture about adepts who use their special powers... for selfish ends. This lore... is supported by modern research." — Michael Murphy, *The Future of the Body*, 1992

If we take the widest possible view of what is currently known about how mind and body interact in the processes of healing, these interactions appear to fall into two basic categories, local and *non-local* (see Table 1).

Local events are mediated energetically and by the senses — speech, hearing, touch, smell, sight, and so on — and are describable by the known laws of physics and human physiology. They may be *intrapersonal*, occurring within an individual, or *interpersonal*, occurring between two or more people.

Contemporary psychology affirms that an individual's thoughts, attitudes, emotions, and beliefs can be a two-edged sword that can either help or harm, and that the words and behaviors of others may do the same (Justice, 1987).

MIND-BODY INTERACTIONS					
LOCAL EFFECTS (sensory mediated)				NONLOCAL EFFECTS (nonsensory mediated)	
INTRAPERSONAL		INTERPERSONAL		TRANSPERSONAL	
POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE
Conscious and unconscious thoughts, attitudes, emotions, feelings, beliefs, perceived meanings, self-suggestions, images, and visualizations taking place within an individual.		Conscious and unconscious suggestions, statements, behaviors, both verbal and nonverbal, taking place <i>between</i> individuals.		<u>Anecdotal evidence:</u> Distant/psychic/spiritual healing Intercessory prayer Telesomatic events <u>Laboratory evidence:</u> Transpersonal imagery Controlled experiments in humans as well as many nonhuman species involving actual prayer or a prayer-like state ("prayerfulness")	<u>Anthropological evidence:</u> Observations of "distant hexing" such as the Polynesian/Hawaiian "death prayer" <u>Laboratory evidence:</u> Many nonhuman species harmed or retarded in controlled experiments

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Therefore intra- and interpersonal effects may be either positive or negative, as indicated in the table.

Local Negative Phenomena

Intrapersonal Effects

Evidence for local, intrapersonal, negative mind-body effects is abundant. These go far beyond the tension headaches, peptic ulcers, and anxiety usually associated with psychological stress.

Engel (1971) has reported extensively on the capacity of negative emotions, such as the unexpected hearing of bad news, to trigger sudden death, and has speculated on the physiological mechanisms involved. Lown (1980), who also has studied these events in detail, has proposed that they are most common in people with underlying coronary artery disease.

Many of the negative effects of noxious emotions appear tied to the impact of perceived meanings — what an event symbolizes, represents, or generally stands for in the mind (Dossey, 1991). This body of literature suggests strongly that it is not merely the presence of psychologically stressful events that can be life-threatening, but the interpretation one accords them. Life-events that are connected with feelings of hopelessness, helplessness, and despair seem particularly dangerous. Engel (1971) has described an emotional complex that seems to set the stage for emotional sudden death — a feeling of impasse, in which no choices of action appear possible.

Bruhn et al. (1974) have examined the relationship between the psychological characteristics associated with one's occupation, and sudden cardiac death. The most common pattern is that of an effort-oriented person who strives against odds, but with very little sense of accomplishment or satisfaction — a situation they term the "Sisyphus reaction" or the "syndrome of joyless striving," after the mythological Greek figure who was condemned for the rest of his life to repetitively push a rock up a hill, only to have it roll down again. Karasek et al. (1988) have also examined the impact of job environment on health. They have discovered that the combination of high psychological demands and low decision latitude creates "high job strain" and is associated with a higher prevalence of myocardial infarction. Occupations at risk include waiters, assemblers, and gas station attendants, among many others. In these and similar occupations, one cannot down-regulate the demands of the job (low decision latitude), but can only struggle harder to keep up with the work load.

Studies of heart attacks in the United States, West Germany and throughout Western Europe reveal an excess occurrence on Mondays, particularly in men (Thompson, Pohl, and Sutton, 1992; Rabkin, Mathewson, and Tate, 1980). Other studies reveal that heart attacks occur most commonly around 9:00 a.m. (Muller, 1987). The fact that heart attacks occur more frequently on Monday mornings, around 9:00 a.m., may indicate that "the meaning of Monday" — i. e., how one views one's occupation and the return to work — is a crucial factor in susceptibility to myocardial infarction. This possibility is supported by the finding in one survey that the best predictor of heart attack is the level in one's life of job dissatisfaction (Work in America Report, 1973).

Negative perceptions of the state of one's health have been shown in several large-scale studies to exert significant impact on longevity. In a study done at Yale Medical School, people were asked, "Is your health excellent, good, fair, or poor?" This question essentially was an inquiry into what peoples' health meant to them. The results correlated with five previous studies which, collectively, included more than 23,000 people, and showed that negative opinions were correlated with an increased likelihood of death during the coming

decade — a local, intrapersonal, negative effect. In fact, one's personal opinion about one's health was a better predictor of longevity over the next decade than objective factors such as extensive examinations and laboratory tests, or behaviors such as smoking (Idler and Kasl, 1991).

The intra- and interpersonal effects of suggestion and belief are occasionally dramatically illustrated in the use of placebos — substances or procedures that have no significant physiological effect. (Placebo responses are positive in their effects, by definition; "nocebo" is used to denote a "negative placebo" response.) In a placebo-controlled study of the treatment of stomach cancer with chemotherapy, one-third of the patients who received placebos developed nausea, one-fifth developed vomiting, and almost one-third lost their hair (Fielding et al, 1983). In another study, two-thirds of patients receiving a placebo developed evidence of "streptomycin toxicity," the antibiotic they believed they were taking, including high- and low-tone hearing loss, a known side-effect of streptomycin (Wolf and Pinsky, 1954). In another experiment, a patient who received a placebo suddenly collapsed fifteen minutes later in an anaphylactoid shock reaction with nausea, lowering of the blood pressure, clammy pale skin, and fainting (Wolf and Pinsky, 1954; Rhein, 1980). Cases have been reported in which patients have become addicted to placebos. During a single year, one such patient was reported to take approximately 10,000 placebo tablets (Rhein, 1980).

People apparently can sometimes decide the time of their death and "let go." Typical examples may be the deaths of founding fathers Thomas Jefferson and John Adams, who both died on July 4, 1826, the 50th anniversary of the signing of the Declaration of Independence (Lavender, 1988). As recorded by his doctor, Jefferson's last words were, "Is it the Fourth?" (Ferguson, 1989).

Sociologists have identified an association between meaningful events such as birthdays and religious holidays, and death. When the birthdays and dates of death were examined for 400 "notable Americans" (for whom good public records were available), they discovered a "death dip" in the month preceding the birthday, suggesting that they were "not inclined to die" during that period. They also discovered a "death peak" — an increase in the number of deaths — in the four months following the birthday (Phillips and Feldman, 1973; Justice, 1987b).

Interpersonal Effects

Local, interpersonal, negative effects may occur between two or more individuals as a result of spoken words, suggestions, and behaviors.

These effects are far more common than generally thought, and can have devastating consequences.

Perhaps the best-known local, interpersonal, negative mind-body event is voodoo. But less dramatic examples are commonplace in medical practice, such as the deplorable habit of physicians called "hanging crepe." This custom derives its name from the practice of hanging black crepe at morbid events such as funerals. Accordingly, the doctor paints the very worst picture to the

patient. If things turn out the way he predicts, he is wise and is a prophet; if better, he is a hero and the patient is grateful. In either case, the physician wins.

This practice takes other forms, such as reciting, in sometimes bitter detail, the so-called "survival" statistics in serious illnesses such as heart disease or cancer. If the doctor tells a patient he has a fifty percent chance of being alive in five years, the patient usually interprets this as meaning he or she has a fifty percent chance of dying in five years. While many physicians engage in this practice thoughtfully and compassionately, often out of a desire to avoid giving "false hope," they need always to be aware of the potential for harm in these customs and to recall that patients, like victims of voodoo, can cooperate with dire predictions and "die on time."

Interpersonal influences generate secondary, intrapersonal responses, and cannot be considered in isolation from them. These interactions are particularly obvious in the dynamics of voodoo (Cannon, 1942), in which harm is deliberately visited upon a victim, sometimes resulting in death. Voodoo seems to be a local phenomenon, mediated by sensory cues of various types. Although the hex may be initiated at a distance by the sorcerer, the victim is eventually informed of it (the interpersonal vector), and a cascade of secondary physiological responses ensues within the victim as a result of fear, terror, or dread (the intrapersonal component). We shall see a similar overlap when we examine non-local, negative events.

The following example illustrates the interplay of intra- and interpersonal influences, and how they can be both positive and negative in the same individual.

A man with far-advanced lymphoma, a type of lymph node cancer, heard of the unproved drug Krebiozen, which was regarded as a "miracle cure" by many enthusiasts. He insisted on being admitted as a subject into a clinical trial of the drug. His doctors agreed, although they believed he would live no more than two weeks. His condition was perilous; he was bedridden and gasping for air.

Within ten days after receiving Krebiozen, his tumors shrank remarkably — "like snowballs on a hot stove" according to one of his physicians. He was discharged from the hospital. Two months later, discouraging information about the drug was being circulated in the media, and the man returned to the hospital with an enlargement of his tumors. His physician chose to tell him that the first batches of Krebiozen had deteriorated during storage, but that a new, more potent shipment was on its way.

The doctor proceeded to give the man injections of plain water. The tumors shrank once more and the patient improved dramatically. His health persisted for several months until another news report announced, "Nationwide AMA tests show Krebiozen to be worthless as a cancer treatment."

Less than two days later, the man died. (Klopfer, 1957; Justice, 1987c).

This case illustrates the hallmarks of local, negative effects on health: they are mediated by the senses and by the words, suggestions, behaviors, and thoughts of self or others; the mechanisms involved are thought to be explainable, or potentially explainable, by the laws of contemporary physics and physiology.

Non-local Negative Phenomena

The other major division of mind-body effects is non-local in nature (Dossey, 1989, 1992). Non-local mind-body events are initiated between individuals who are too far apart to communicate by the senses. For this reason these events are said to be transpersonal in nature (Achterberg, 1985, 1992). Although several candidate theories exist, at present it is unclear how any form of energy currently known to modern physics could account for these distant influences.

Abundant anecdotal and experimental evidence supports the existence of non-local, transpersonal, positive phenomena — distant, psychic, or spiritual healing (Solfvin, 1984; Benor, 1990, 1993); intercessory prayer (Byrd, 1988; Dossey, 1993); and so-called telesomatic events, in which symptoms and occasional physical changes seem to be experienced simultaneously by distant individuals, and which appear generally to serve a benevolent purpose (Stevenson, 1970). It should be emphasized that the laboratory evidence surrounding non-local, transpersonal events is overwhelmingly positive, not negative, in nature. Experimenters are understandably hesitant to engage in studies designed to harm living organisms; and such studies involving humans would be unethical. Nonetheless, a few controlled studies have revealed that certain species have — at a distance — been harmed, died, or had metabolic functions retarded or inhibited (Benor, 1986).

The Contemporary Attitude

The attitude within contemporary science toward the existence of non-local, transpersonal, distant mental phenomena is hardly cordial. Though written over seventy years ago, Frazer (1922) summed up the objections to distant, "magical" events in his epochal book *The Golden Bough* :

"Magic is a spurious system of natural law...it is a false science as well as an abortive art....[Such beliefs are typical of] the crude intelligence not only of the savage, but [of] ignorant and dull-witted people everywhere."

Biblical Accounts

Westerners erroneously tend to believe that sorcery, hexing, and cursing are engaged in only by "uncivilized" peoples. But these activities permeate all re-

ligions and cultures, including those of the West. Carey (1992) states: "Many saintly curses would be right at home in the Bible." Elisha, for example, caused forty-two children to be devoured by bears for making fun of his baldness (2 Kings 2:23-23). The apostle Paul struck a sorcerer blind (Acts 13:11). And even Christ blasted an apparently innocent fig tree for not bearing fruit (Matthew 21:19, Mark 11:13-14, 20-22).

Telesomatic Events

Although non-local mind-body interactions appear largely positive or health-promoting in nature (Dossey, 1993), the so-called telesomatic events may represent a transition or gray zone, as it were, from benevolence and benignity toward a disturbing and possibly "dark" side of these phenomena. "Telesomatic" comes from Greek words for "the distant body," and seems to have been introduced into the medical lexicon in 1967 by Schwarz (1967). An example, reported by the English social critic John Ruskin, concerns the case of Arthur Severn, a leading landscape painter of the day. Mr. Severn, it seems, was an insomniac. Unable to sleep, he arose very early one morning and went to the lake for a sail. Mrs. Severn, who stayed in bed, was suddenly awakened with the painful feeling of a blow to the mouth. The pain finally went away, and she eventually arose to prepare breakfast. Mr. Severn then entered the house, clutching a cloth to his bleeding mouth. A storm had arisen on the lake; the wind had caught the tiller, which swung and hit him in the mouth, and almost knocked him out of the boat (Gurney, Myers, and Podmore, 1886).

There is no proof, of course, that a causal connection existed in this case history. So it is with all telesomatic events. They cannot be compelled to happen in the laboratory or on command; one must always scrutinize them after they have already happened. In spite of these limitations, there are at least two reasons why they perhaps command attention. First, they are exceedingly common; hundreds of such instances have been reported over the past few decades, some in medical journals. Schwarz (1967), for instance, reported a series of 504 examples suggesting telesomatic influences between parent and child. Secondly, these cases display an internal consistency that is striking. They almost always take place between people who share empathic, loving bonds — parents and children, spouses, siblings, lovers.

Even though these phenomena usually serve a benevolent purpose — as in the oft-heard example of a mother who experiences a suffocating sensation "just knows" her child has fallen into the swimming pool, and rushes home to save her just in time — sensations that are quite painful or noxious are frequently involved. Rhine (1967) describes three cases that suggest the possibility that these harmful, hurtful symptoms might "get the upper hand" and interfere drastically with health. In one instance, when a soldier's legs were blown off, the "receiving" person suffered temporary paralysis. In the other example, when a soldier was fatally wounded in the hip and leg, the "receiving" person was paralyzed in one leg. In the third case, a woman's arm became numb when

her husband's arm was badly smashed and broken while at work (Rhine, 1967).

These profound disturbances may indicate a potentially negative or "dark" side of the telesomatic pathway, and raise the question: Could they occur in a way not associated with any redeeming value, and could they *intentionally* be perpetrated to bring about harm, non-locally, to a distant, unsuspecting person?

Anthropological and Ethnographic Evidence

One of the most dramatic pieces of anthropological lore suggesting this possibility is the custom of *ana-ana*, or the "death prayer," which originated in Polynesia and spread to the Hawaiian Islands. This practice was reported in great detail by an American psychologist, Max Freedom Long, who went to Hawaii in 1917. Long took a position as a school teacher in the area of the Kilauea volcano, which afforded him an opportunity to investigate this shocking custom (Long, 1976).

Quite simply, shamans would "pray to death" a victim who often lived on a distant island. Long takes great pains to make clear that the victim is completely unaware he is being victimized, and that this has nothing to do with negative suggestion. He thus distinguishes this phenomenon from classic voodoo. He also insists that the use of this extraordinary intervention was used only as a last resort and had redeeming social value: It was only used against members of society who were causing social upset and who were incorrigible.

One of the most remarkable features of the death prayer is that the victim always dies in the same way — what we today call an "ascending paralysis." First, the lower extremities would become numb and paralyzed, beginning in the toes and feet. These symptoms would gradually rise. When the numbness and paralysis reached the level of the diaphragm, the victim would die of respiratory failure (suffocation).

Guillain-Barré syndrome (acute idiopathic polyneuritis) is a disease known to modern medicine that is virtually identical clinically to the victim's illness in the death prayer. Although cases of this illness sometimes follow an upper respiratory or gastrointestinal viral illness, this is not true in half the cases, and the cause of this devastating disease is considered idiopathic or unknown (Adams and Asbury, 1974). Today it is not fatal, because mechanical ventilation keeps people alive until the disease subsides. It is interesting to speculate whether or not this disease, and perhaps other current diseases of unknown origin, might be due, in whole or part, to non-local, transpersonal, negative influences. Unless we lift our current embargo on considering the possibility, we may never know.

In addition to the ascending paralysis that is the mode of death in the "death prayer" described by Long, additional modes of demise in distant, non-local hexing have been described — accidents, lassitude ending in coma, gastric pains and loss of appetite ending in starvation, and so on (Bramley, 1979).

Anthropologist Michael Harner has lived with the Jivaro Indians of the Amazon drainage for extended periods of time, learning their language and

penetrating their customs. He believes that "distant hexing" is common among them and that it is employed for a utilitarian purpose, basically as a security measure for the shaman. If the hex is perpetrated at a distance, outside the victim's awareness, he is less likely to discover the perpetrator and take revenge. Moreover, Harner states, a perpetrator may join forces with other shamans to instigate the distant hex. This provides safety in numbers, should the victim discover the plot and decide to get even (Harner, 1990).

Halifax-Grof (1974) and Kalweit (1982) have offered evidence from ethnographic and medical sources for similar non-local, negative happenings (see also Boitnott 1967).

A problem with studying these phenomena experimentally is that if non-local hexing worked, the subject might die. Halifax describes a professor who took this risk. He taught a course at an American university called "Parapsychology of the Occult." One of his students claimed that he had the ability to perform distant hex deaths. For his term paper, he wanted to demonstrate this talent. The professor agreed — but said, "...We couldn't have him try to kill just anyone — that wouldn't be fair or nice... So we agreed that he would attempt by hex death to kill me." The professor left a sealed envelope with the registrar on which he wrote, "Open this upon my death if it occurs within the next year." Inside the envelope a note instructed the registrar to give the student an "A" if the professor died. The student agreed that if the professor did not die, he would receive an "F." The student flunked. Said the professor, "I think there are a lot of people around who would be willing to be targets for people who claim they can perform hex deaths...we can test [this hypothesis]" (Halifax-Grof, 1974).

Medical Experimentation: Is the Double-Blind Blind ?

Several experiments suggest that the thoughts of experimenters — positive and negative — may be capable of penetrating the classic double-blind experimental design and influence the outcome of medical studies, a possibility that would undoubtedly be regarded as a "dark" event by hosts of medical researchers. Solfvin (1984) has surveyed several double-blind studies on the effectiveness of vitamin E in angina pectoris, and the minor tranquilizer, meprobamate (Equanil®, Miltown®), in treating anxiety. These were done at different institutions by several investigators. In seven of eight studies, the outcome of the double-blind experiment correlated with the positive or negative beliefs of the experimenter going into the study.

In what has been called a landmark study, Solfvin showed that experimenters who believed they were injecting mice with two different doses of malaria found appropriately differing degrees of illness in the mice, even though there was no difference in the strength of the malaria injections. Moreover they found that the mice they believed were receiving distant healing did better, even though no healing was given (Solfvin, 1982). "If Solfvin's study can be verified, the likelihood that experimenter beliefs and expectations (the Rosenthal effect [Rosenthal & Rubin, 1978]) may be extended through para-

psychological mechanisms seems so great that it is likely that any hypothesis may be proved by experimenters who strongly believe in it" (Benor, 1993b).

Other Experimental Findings

Several controlled experiments suggest that ordinary people can use their minds either to promote or inhibit the growth and mutation characteristics of microorganisms and plants at a distance (Nash, 1982, 1984). These effects have been shown to occur when the "influencer" is from 1.5 meters to 15 miles away from the organisms (Barry, 1968).

These studies may support the folk idea that some people seem naturally to have a "black thumb" that sabotages the growth of their house plants, flowers, and so on. Folk wisdom also recognizes the opposite "green thumb" effect, in which plants seem to thrive in the presence of some persons. Luther Burbank is an example of someone who seemed capable of affecting living things positively at the genetic level. Benor states that "he appeared to have a paranormal ability to produce new strains of plants, developing more than 800 new varieties in his lifetime — an unmatched record in horticulture" (Benor, 1990). Burbank was convinced that humans and plants can interact, and once remarked, "They [plants] are as responsive as children to thought" (Peel, 1977).

These studies should perhaps give us pause. If persons can retard or inhibit the growth of microorganisms at a distance, with whom we share many identical biochemical responses, this raises the possibility that biochemical pathways that are intrinsic to humans may also be susceptible to being negatively influenced at a distance.

Exotic Events: Local Explanations

When you hear hoof beats in Texas,
think of horses, not zebras.

— Medical school aphorism

Although the goal of this paper is to examine mind-body effects that are chiefly *negative*, we shall engage in a digression at this point to discuss the *positive* phenomenon of prayer in order to emphasize a central point: It is not always necessary to postulate exotic, non-local mechanisms for many of the effects we have examined.

Levin (1993) is the primary architect of an evolving field called the "epidemiology of religion" and is perhaps the most knowledgeable investigator of the local effects of prayer and religious practices. But Levin does not discount non-local explanations. "I have no doubt that these [non-local] mechanisms are real," he states. "I have experienced... these types of healing.... [But] naturalistic explanations exist [for prayer's healthful effects] which do not require... a leap of faith."

In his research, Levin has uncovered over 250 empirical studies published in the epidemiologic and medical literature since the nineteenth century in which spiritual or religious practices have been statistically associated with particular health outcomes. This literature, "lying forgotten at the margins of medical

research," is virtually unknown by physicians and not taught in medical schools. Positive effects for both morbidity and mortality have been found for cardiovascular disease, hypertension, stroke, nearly every type of cancer, colitis and enteritis. These findings hold regardless of how spirituality is defined and measured, whether according to beliefs, behaviors, attitudes, experiences, and so forth. Over two dozen studies demonstrate the health-promoting effects of simply attending church or synagogue on a regular basis (Levin & Vanderpool, 1987). These benefits have been found to be widely distributed, appearing in studies of Whites, Blacks, and Hispanics; in older adults and adolescents; in U. S., European, African, and Asian subjects; in prospective, retrospective, and case-control studies; in Protestants, Catholics, Jews, Parsis, Buddhists, and Zulus; in studies measuring spirituality as belief in God and religious attendance, among other things; and in studies of self-limiting acute conditions, of fatal chronic diseases, and of illnesses with lengthy, brief, or absent latency periods between exposure and diagnosis and mortality. "In short," Levin states, "something worthy of serious investigation seems to be consistently manifesting in these studies, and understanding the 'what,' 'how,' and 'why' of this apparent spiritual factor in health. . . may be critical for reducing suffering and curing the sick" (Levin, 1993).

How do prayer and spiritual practices act locally to influence physical health? There are many possibilities, according to Levin:

- Many spiritual paths or belief systems require certain austerities of the devout which are healthful. Mormons, Seventh-day Adventists, and Orthodox Jews, among others, are commanded to follow certain precautions regarding diet, alcohol, hygiene, and other health-related behaviors which are known to favorably impact morbidity and mortality.
- The collective aspect of spiritual practices provides social support, which has been documented as a potent protective factor against illness.
- The psychodynamics of religious beliefs and religious rites can also promote health. For example, rituals such as prayer may trigger a myriad of emotions which, in turn, may lead to changes in health by positively impacting the immune and cardiovascular systems.

The psychodynamics of faith can be indistinguishable from the placebo effect, if one expects God's blessings (or the nocebo or "negative placebo" effect, if one expects God's wrath and punishment!) (Levin, 1987; Levin & Schiller, 1987).

Experiencing the presence of a healer or healers may foster a sense of belonging or support, which research shows is healthful.

- Being the object of prayer or of laying on of hands or other ritualized activity may stimulate an endocrine or immune response facilitative of healing.
- The physical preparations for healing (e.g., preliminary fasts, meditation, abstentions of one sort or another) may themselves be promotive of health.

These findings have been affirmed for mental health by Larson and Larson (1991). They surveyed 12 years of publication of the *American Journal of Psychiatry* and *Archives of General Psychiatry* and found that, when measuring participation in religious ceremony, social support, prayer, and relationship with God, 92 percent of the studies showed benefit for mental health, 4 percent were neutral, and 4 percent showed harm.

Craigie et al. (1990) reviewed 10 years of publication of the *Journal of Family Practice*, finding similar results for physical health: 83 percent of the studies showed benefit, 17 percent were neutral, and none showed harm.

Mind/Machine Interaction: Analogs of Non-local Mind-Body Events?

In recent years a very large data base has been produced at the Princeton Engineering Anomalies Research (PEAR) Laboratory in a variety of experiments designed to test the nature of human consciousness. One of the most common PEAR Laboratory experiments involves the interaction of humans with a Random Event Generator (REG). These machines typically are based on a source of electronic "white noise" generated by some random microscopic physical process, such as a thermal electron current in a solid-state diode or a radioactive decay. Electronic logic circuitry transforms this noise into a string of randomly alternating binary pulses, which eventually are displayed to an individual operator, who attempts to influence the output according to some prestated intention — either to shift the output of a Gaussian distribution away from the mean in a positive or a negative direction. After several million trials, it has become clear that a variety of talents exist among individual operators. Some are capable of shifting the random output of the REG in both directions of intention, some in only a positive direction, some in only a negative direction, and some in neither direction. Some individuals bias the output in the direction opposite to their intention. The results of these intentions are relatively consistent, such that characteristic patterns or "signatures" can be discerned on analyzing the results of the intentions of individual operators (Jahn & Dunne, 1987).

The fact that humans can apparently bias processes *at a distance, and in negative as well as positive directions* in controlled laboratory settings, may be important in understanding the apparently negative interactions of mind and body described above.

The Body: a "bio-REG" ?

Some people believe that the ability of humans to interact with random, microscopic events is completely irrelevant to human health and the large-scale world of organ systems and bodies. By the time microscopic events in the body are "biologically amplified" to the macroscopic level, the influence of any single event on physiological function is swamped through the laws of large numbers and therefore meaningless.

In recent years, however, the physics laboratory and medical clinic have drawn closer together. We now realize that many diseases begin with distur-

bances at the microscopic level. For example, melanoma, a skin cancer, can develop when ultraviolet irradiation triggers a mutation in a single molecule in the skin. Abnormal "channels" in various tissues may cause impaired flow of calcium and other substances and lead to heart disease, high blood pressure, and other problems. While an illness may thus appear to be a macroscopic process originating in whole organs such as the lungs, heart, or kidneys, its most fundamental site of origin may be in microscopic processes.

A great many bodily processes are inherently random, as are the events that are influenced in REG devices. For example, the excitation of nerves by electrical stimuli around the threshold level has long been known to take place probabilistically (Pecher, 1939), because the electrical potential across the membrane fluctuates in a random manner (Verveen & De Felice, 1974). The changes in post-synaptic membrane potentials caused by chemical transmitters also show random fluctuations (Katz & Miledi, 1966), which apparently are due to the probabilistic opening and closing of ionic channels across the membrane (Stevens, 1977; Sheldrake, 1985).

Because these random phenomena are so widespread, it is possible to regard the human body in many respects as a Random Event Generator — what we might call a "bio-REG." This would imply that mind-body interactions may be analogs of the PEAR Laboratory-type REG experiments. This would also suggest that the various "bio-PK" experiments that have surfaced in recent years might be analogous to the PEAR Laboratory-type human/machine studies.

Bio-PK experiments are quite numerous. According to Braud (1991), who has been centrally involved in many of them, "In 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 preparations (blood cells, neurons, cancer cells) and enzyme activity. In human 'target persons,' eye movements, gross motor movements, electrodermal activity, plethysmographic activity, respiration, and brain rhythms have been influenced."

Quantum and Biological *Non-Locality*: Speculation

Josephson and Pallikara-Viras (1991) have asserted that "direct interconnections [exist] between spatially separated objects..." possibly including human beings. They propose that human ways of knowing, particularly our capacity to perceive patterns and meaning in our experience, may make possible the operation of "psi functioning" between humans, currently denied possible in biomedical science. Currently, however, these proposals are speculative; quantum non-locality can neither be regarded as a rationale for biological non-locality, nor proof that biological non-locality exists.

There is a curious resemblance of telesomatic events occurring at the biological level to non-local events occurring at the microscopic dimension. Knowledge that a non-local correlation has actually occurred in the microscopic

realm can be determined only in retrospect, when a record of some sort is examined. One of the implications of this restriction is that non-local, microscopic phenomena cannot be manipulated in order to "send messages" or be "used" (Herbert, 1987; Pagels, 1982). Most telesomatic events appear identical in this regard. We never know immediately that these distant correlations have occurred; we know they have transpired only in retrospect, when distant individuals compare their experiences. This suggests that the telesomatic pathway cannot ordinarily be used to send messages or to communicate intentionally (Dossey, 1993).

There is laboratory evidence, however, that this prohibition may not be absolute. In their work with transpersonal, distant imagery, Braud and Schlitz (1989, 1991) found that the mental intent of an imager to influence autonomic events in a distant subject frequently resulted in definite physical sensations in the target.

This constraint also does not apply to other non-local events that take place between humans, such as remote sensing, in which information is deliberately shared at a distance (Jahn and Dunne, 1987).

The possible relevance of quantum non-locality to non-local occurrences within and between living organisms would seem to be a legitimate concern of future research. And the fact that non-local events are now studied by physicists in the micro-world suggests a greater permissiveness and freedom to examine phenomena in the biological and mental domains that may possibly be analogous (Achterberg, Dossey, & Gordon, 1993).

Conclusion: Relevance to Modern Medicine

The widespread resistance to examining non-local events in general, and non-local, negative phenomena in particular, deserves scrutiny. Even researchers who are sympathetic to non-local influences in healing frequently shy away from the possibility that a dark side to these events exists. There appears to be something in the human psyche that wants distant influences to be helpful, benign, or neutral, but never harmful. After examining the anthropological, ethnographic, anecdotal, clinical, and experimental evidence, the dark side of mind-body events cannot be so easily dismissed.

There are several areas in which non-local, negative events may have particular relevance for modern medicine:

1. The possible influence of these phenomena in severe diseases currently considered idiopathic, such as the Guillain-Barre syndrome.
2. The possible role of these events in diseases of lesser severity — the so-called psychosomatic illnesses. These maladies are extremely common. They account for why most people seek professional medical help, and they range from headaches to spastic colon to back pain. They are the bane of the existence of all doctors. Currently it is said that they are largely due to the "inner psychological conflicts" of the individual, working in the context of his or her unique physiology — the typical

"local" interpretation. This explanation, however, is often inadequate, as all clinicians know. We should consider that there may be additional factors at work in psychosomatic illnesses that are non-local, transpersonal, and negative.

3. If the negative thoughts, judgments, and attitudes of investigators can penetrate the double-blind safeguards of medical experiments, which is suggested by several studies, it will be difficult to continue to regard the double-blind experiment as the "gold standard" in assessing medical and surgical interventions. This would not, however, mean the end of empirical science, as some have implied — such as Gardner (1991), who has stated, "[I]f such an effect is real it would throw doubt on all empirical findings since Galileo." Some therapies seem so resoundingly "physical" — e.g. cardiopulmonary resuscitation (CPR) and appendectomy — that it seems unlikely that mental factors, whether local or non-local, strongly influence their effectiveness (although this is by no means certain), in which case the double-blind experimental design may remain a valuable method of evaluation.
4. The doctor-patient relationship must be reexamined in the light of possible inter- and transpersonal effects. Like most scientists, physicians differ in their inherent psychological makeup. Some are skeptical by nature, some depressive, some pessimistic. If these attitudes set in motion negative mind-body events in the patients they serve, and if they limit the effects of the therapies they employ, physicians will have to become more attentive to their own inner states.
5. As a consequence of the recognition of the influence of physicians' attitudes and thoughts on their patients, medical schools would need to expand the scope of training to afford more than technical expertise to students.
6. Research institutions would be required to inspect and analyze the mindset of the investigators in any experimental design, in order to avoid having the outcome unduly influenced by pre-existing beliefs and opinions.

The recognition of the non-local manifestations of consciousness, both good and bad, could lead to a profound reappraisal of the nature of the mind and its relationship to the body — which is perhaps the most crucial question that has ever been encountered in the history of healing.

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