

# The Influence of Consciousness in the Physical World: A Psychologist's View

William G. Braud

*Institute of Transpersonal Psychology*

I am pleased to have been given the opportunity to address this plenary session of the Symposium on Science and Consciousness on the topic of "the influence of consciousness in the physical world." I approach this topic from the points of view of experimental psychology and experimental parapsychology, since those have been my areas of training and experience over the past 20 years.

"What is consciousness?" and "How does consciousness bring about its effects?" are complex and difficult questions. More readily addressed are less intricate inquiries about the *range* of influences consciousness can bring about, the *conditions* that support these effects, and the *specific processes* that facilitate these influences. Indeed, it may be argued that if we knew, in a precise and detailed way, what consciousness can accomplish under conditions that are known, in a precise and detailed way, then we would have made great progress in our understanding of the nature of consciousness.

## RANGE OF EFFECTS

### *Indirect Influences*

For purposes of completeness, it should be mentioned that consciousness has countless *indirect* influences upon the physical world that are obvious and not at all controversial. As the driver of an automobile or as the pilot of an airplane, the quality of my consciousness (i.e., fluctuations in my level of alertness and vigilance and in the focus of my attention) can have a dramatic influence upon my vehicle, my passengers, and the surrounding landscape. As a scientist, the content, tendencies, and characteristics of my individual consciousness may influence what I study, the manner in which I study it, and the types of observations and measurements that I decide to make; the outcomes of these studies could have important impacts upon our understanding of the physical world and may have dramatic impacts upon the physical world itself. As a citizen of the planet, the quality of my consciousness will influence my interactions with other persons, other life forms, and the environment; thus, it will have important physical, psychological, and societal impacts. All of these influences, although they can be quite dramatic, are *mediated* by my bodily reactions and through persons and objects in my vicinity.

### *Direct Influences on Physical Systems*

Of far greater interest to participants of this Symposium are possible influences of consciousness upon the physical world that are much more *direct*. Can consciousness have *direct, immediate impact* upon physical, biological, psychological, and social systems—effects that cannot be accounted for through conventional mechanisms? The empirical answer to this question appears to be "yes". Under certain special conditions (some of which we are beginning to specify and understand), human consciousness does indeed appear to be able to reach out through space and

time and directly influence a variety of "remote" systems. Some of these effects have been examined in three recently published, comprehensive meta-analyses.

Meta-analysis is a method for *quantitatively* reviewing a domain of published scientific literature and for quantitatively determining the degree to which a particular finding has been successfully replicated. Just as conventional statistical tests can be applied to subjects or to scores within a given experiment in order to determine whether the obtained results reliably differ from chance, so too can the same types of tests be applied to *experiments* themselves—i.e., to *an entire set* of experiments conducted in different laboratories by different investigators—in order to determine whether the overall replication record is other than what would be expected on the basis of chance variations. Meta-analyses are usually applied to the effect sizes obtained in each experiment. Effect sizes are measures of statistical significance that have been "corrected" for differences in sample size; these are being used increasingly in behavioral and biomedical research in addition to the mere reporting of statistical significance levels. A homogeneous distribution of effect sizes that depart consistently from zero (chance) indicates successful replication of an effect, and the magnitude of the deviation of the mean from zero provides an estimate of the magnitude of the investigated effect.

A useful reference for the rationale and techniques of meta-analysis is the book, *Meta-Analytic Procedures for Social Research*, by Harvard University psychologist, Robert Rosenthal (Rosenthal, 1984).

Of particular interest are three recent meta-analyses of direct mental influences upon remote physical and biological systems. The first of these meta-analyses was published by Dean Radin and Roger Nelson in a 1989 issue of *Foundations of Physics* (Radin & Nelson, 1989). Radin and Nelson analyzed the results of over 800 studies, conducted between 1959 and 1987, in which persons attempted direct mental influences, in pre-specified directions, of the statistical outputs of electronic random event generators. The "targets" in these experiments are devices that operate on the basis of truly random radioactive decay, electronic noise (thermal noise in semiconductors), or pseudorandom number sequences seeded by true random sources. Sufficiently extensive control tests indicate that these devices do, in fact, exhibit the requisite randomness in their alternative outputs (typically, strings of ones and zeros that are indicated by different lights or sounds). If, however, a human participant directs differential intentionality and attention toward the two possible types of random outcomes—i.e., if one specific type of outcome is made momentarily more meaningful, significant, important, or desirable—then the random output of the generator shifts to a statistically significant degree in the intended direction. This careful meta-analysis indicated: (a) unequivocal non-chance effects in the experimental conditions (i.e., there was strong evidence for reliable replication of a direct mental influence effect), (b) random outcomes conforming to chance expectation in 235 control studies in which data were recorded without conscious intention to influence the generator, and (c) significantly larger effect sizes for the experimental condition than for the control condition. Radin and Nelson also concluded that contrary to assertions by critics, the effect did not decrease with increases in study quality (this was objectively and quantitatively assessed), nor could a reasonable estimate of a "file drawer" of unreported chance studies account for the effect.

A similar meta-analysis was performed on the results of 148 studies, published between 1935 and 1987, designed to examine possible influences of consciousness on a random *mechanical*

system—the fall of tossed dice. These studies were reported by a total of 52 investigators and involved more than 2 million dice throws contributed by more than 2500 participants; over 150,000 dice-casts in 31 control studies were also examined. The authors (Radin & Ferrari, 1991) concluded that the experimental effect size was independently replicable, significantly positive, and not explainable as an artifact of selective reporting or differences in methodological quality; results for the control studies did not depart significantly from chance expectation. The full report of these analyses may be found in volume 5, number 1 of the *Journal of Scientific Exploration*.

### *Direct Influences on Biological Systems*

We have just published, in the most recent issue of the journal, *Subtle Energies*, a meta-analysis of our own work on direct mental influence (Braud & Schlitz, 1991). Whereas the two meta-analyses just mentioned dealt with influences upon inanimate physical systems, the targets in our experiments were living systems. We sought to determine, in a series of still ongoing laboratory experiments, whether persons are able to exert direct mental influences upon a variety of biological systems that are situated at a distance from the influencer and shielded from all conventional informational and energetic influences. In these experiments, the spontaneously fluctuating activity of a biological target system is monitored objectively during randomly interspersed influence and non-influence (control) periods while, in a distant room, a person attempts to influence the system's activity in a prespecified manner (increasing or decreasing the system's ongoing activity) using mental processes of intentionality, focused attention, and imagery or visualization of desired outcomes. The experimental designs rule out subtle cues, recording errors, expectancy and suggestion (i.e., "placebo") effects, artifactual reactions to external stimuli, confounding internal rhythms, and coincidental or chance correspondences. Overall, this research program has included 37 experiments, 655 sessions, 449 different human "influencees", 153 different influencers, and 13 different experimenters; it has also included 154 sets of nonhuman biological target systems (namely, fish, small mammals, and cellular preparations). The distantly influenced systems include: another person's electrodermal activity (a peripheral indicator of degree of sympathetic nervous system activation or arousal which also reflects emotional or mental activity), another person's blood pressure, another person's muscular activity, the spatial orientation of fish, the locomotor activity of small mammals, and the rate of hemolysis (destruction by osmotic stress) of human red blood cells in test tubes in a distant room (monitored spectrophotometrically). The meta-analysis provided strong evidence for replicable direct mental influence effects within the specific target biosystems and across the entire set of experiments. Analysis for all systems combined yielded a Stouffer  $z$  score (a recommended method of combining multiple statistical results) of 7.72, which has an associated probability of  $2.58 \times 10^{-14}$ . Fifty-seven percent of the experiments were independently significant; this is to be compared with a five percent experiment success rate expected on the basis of chance alone. The mean obtained effect size was .33, which compares favorably with moderate effect sizes typically found in behavioral and biomedical research.

In addition to our own work, there exists a relatively large literature of experiments by other investigators (approximately 100 papers in the English language alone—see Benor, 1991 and Solvín, 1984) in which persons have attempted to exert direct mental influences upon remote biological target systems including bacteria, yeast colonies, fungus colonies, motile algae, plants, protozoa, larvae, woodlice, 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 (blood volume) activity, respiration, and brain rhythms have been influenced. When my colleague Marilyn Schlitz and I (see Braud, 1985) surveyed this literature in 1985, we found reports of 149 such experiments, of which 79 experiments (53 percent) yielded evidence for significant direct mental influence effects. This was a non-evaluative summary of the conclusions of the original experimenters. A detailed evaluative meta-analysis of this entire literature is currently in progress.

Of special interest are indications that remote biological systems may be more susceptible to direct mental influence than are remote inanimate physical systems. These indications take the form of larger mean z score, a greater proportion of significant experiments, and the ability to yield significant effects with much smaller sample sizes for the animate as opposed to the inanimate target systems. Direct comparative studies are needed to determine whether this apparent greater susceptibility is genuine and not merely an artifact of other indirect contributing factors. It is possible to design experiments in which direct mental influences could be measured simultaneously in animate and inanimate target systems selected so as to be as equivalent as possible in their other characteristics (such as their time-varying and statistical properties). The comparative tests would be designed so that the two systems would be influenced under identical physical, physiological, and psychological conditions.

The outcomes of these experiments would have important methodological, theoretical, and practical implications and applications. Methodologically, the use of target systems with greater susceptibility to direct mental influence could increase the frequency, magnitude, and stability of these effects and make them more amenable to laboratory study. Additionally, participant motivation is high in studies involving human targets or other biosystems, and optimal motivation has been found to be crucial to obtaining positive results. Theoretically, a differential susceptibility of animate and inanimate target systems could increase our understandings of life and of consciousness and could provide important additions to our models and theories about these processes. Practically, findings derived from studies of direct mental influences upon biological systems are relevant to our more complete understanding of clinically useful processes such as physiological and psychoimmunological self-regulation, medical psychology or behavioral medicine techniques, and mental healing (sometimes called absent healing, spiritual healing, or psychic healing). Indeed, experiments on direct mental influence of remote biological systems can be conceptualized as experimental models or analogs of remote mental healing. If the effects can be sufficiently strong and controllable, judicious selection of targeted organs, tissues, or cells would promote direct mental influence from the rank of a laboratory anomaly to a process that could be used for actual healing purposes.

### *Psychological Influences*

If biological systems are indeed more susceptible or "sensitive" to direct mental influence than are inanimate systems, might not *psychological* systems be still more sensitive? We have explored one of many possible methodologies that could be used to investigate this question. In that experiment (Braud & Jackson, 1983) one person attempted to directly influence the "intensity" of mental

imagery of another person who was situated in a distant room. Although a significant effect was observed in that study, no attempts were made to compare such a psychological effect with those of comparable biological effects. However, such comparisons could be made in future experiments, with suitable attention being devoted to equating the statistical and other relevant characteristics of the two systems as carefully as possible. It would also be possible to investigate possible direct mental influences upon additional psychological processes of distantly situated persons—effects upon, for example, emotion, various cognitive processes, susceptibility to perceptual illusions, and so on.

It is indeed possible to consider the variety of *anomalous cognition* effects typically referred to as extrasensory perception, telepathy, clairvoyance, and precognition as special instances of the influence of consciousness upon the physical world; in these cases, the physical "targets" happen to be the neural activities, behaviors, thoughts, images, and feelings of another person. The databases for these *direct knowing* phenomena are much more extensive than those for the direct influence phenomena we have been considering. The experiences have been reported throughout history, and formal investigations have been carried out for more than a century. Perhaps the most concise and trenchant summaries of impressive laboratory investigations of these phenomena may be found in another set of recently published meta-analyses. Such meta-analyses are available for studies conducted under perceptual isolation (using a *ganzfeld* procedure), hypnotic induction, forced-choice precognition, and extraversion/introversion testing conditions (see, respectively, Honorton et al., 1990; Schechter, 1984; Honorton & Ferrari, 1990; and Honorton, Ferrari & Bem, 1990). Each of these meta-analyses provides strong evidence for replicable direct knowing effects in which human observers become accurately aware of events that are geographically or temporally remote and beyond the reach of the conventional senses.

If we expand our definition of consciousness to include momentarily "unconscious" personal activities such as "unintentional", "non-deliberate", or "non-verbal" decisions and actions, still another class of interesting phenomena becomes available for our consideration. These are the events that psychologist Rex Stanford has termed "psi mediated instrumental responses" (Stanford, 1974a, 1974b, 1990). Here, direct knowledge of important events that are not yet accessible to the senses need not be revealed only through verbal reports of what is "fully conscious". Stanford provides convincing rationales and empirical support for the notion that some direct knowledge may be revealed "unintentionally" through adaptive, survival-enhancing, need-fulfilling changes in behavior or behavioral tendencies. Subtle changes in memory, timing of actions, or decisions may result in being at the right place at the right time and thereby gaining access to important information, people, or objects or may result in the avoidance of accidents or other forms of distress. The point to be made is that persons exhibiting such psi (or direct knowing) mediated decisions or actions need not be aware of those actions or why they are happening at the moments those actions or decisions occur. Often, they are identified as possibly psi-mediated only after the fact—after their adaptive significance has been recognized. The tacit knowledge is dramatized through adaptive action. Important adaptive, physical world consequences may result from information available at certain "levels" of consciousness but not yet at others. It is possible that direct mental influence *itself* (of the types described previously in connection with physical and biological targets) may provide a vehicle for encountering or accomplishing goals even in the absence of deliberate intention.

## *Social Influences?*

We may extend our consideration even further by asking whether consciousness might directly influence social systems and, if so, whether social systems (perhaps because of their greater complexity, their increased potential for change or reorganization, and their more numerous and more varied opportunities for synergistic interactions) might be more susceptible or sensitive to direct mental influence than physical, biological, or psychological systems? Empirical investigations of this question should not be intractable. At perhaps the simplest level, one might explore direct conscious influences of more "primitive" social systems such as ant colonies or other animal groupings that appear to exhibit "hive mentality" or various forms of group behavior. One could explore possible influences upon decision-making in small groups of people, gradually increasing the size and complexity of the human group or of the process being influenced. Related projects have already been attempted within the context of possible social and economic influences of group meditation within the Transcendental Meditation tradition. It has been claimed that the practice of Transcendental Meditation by a group of individuals can lower the manifestations of social conflict, reduce crime rates and other social problems, and increase indications of positive social change in a much wider circle of individuals not in any contact with the meditators (e.g., Orme-Johnson et al., 1988). The interpretations of these empirical tests of these remarkable claims remain controversial and, not surprisingly, the research has been seriously criticized (e.g., Schrodt, 1990). The domains in which these controversies are being played out indicate the potential power of direct influences of consciousness and of particular states of consciousness.

## PROCEDURES AND CONDITIONS

A number of psychological procedures or conditions have been found to be favorable to processes of *direct knowing* (telepathy, clairvoyance, and precognition). These include hypnosis, relaxation, sensory restriction (in the form of the *ganzfeld* technique), and meditation. With the exception of meditation (see Braud, 1990), very few of these conditions have been explored in the context of *direct influence*. However, these conditions are rich in psychological processes which may provide keys to an understanding of how direct influences come about. The conditions share important features. They serve to reduce "noise" or distractions to attention. They alter the quality of intentionality. They reduce external and internal constraints that ordinarily structure the mind in particular directions; freed from these constraints, the mind becomes less inert and more susceptible to change. The conditions and procedures allow attention to be focused more readily, directed more efficiently, and applied to more "internal" content such as thoughts, images, and feelings that otherwise are ignored. All of these characteristics would be expected to increase the likelihood of *accessing* information that had already been "acquired" through direct knowing. Through their de-structuring or de-constraining effects, these procedures and conditions would be expected to provide more favorable opportunities for the very *occurrence* of direct knowing.

## MENTAL PROCESSES

In our own work, we have found five mental processes to be especially useful in bringing about effective direct conscious influences of remote physical and biological target systems.

### *Relaxation and Quietude*

We help our participants to self-produce conditions of relaxation and quietude at as many "levels" as possible. They relax the muscles (using variations of progressive relaxation exercises), quiet the autonomic nervous system and the emotions (using autogenic training), and still the mind (using concentrative meditative techniques). All of this eliminates distractions, facilitates attentional control, and sets the stage for the more effective use of the remaining techniques.

### *Attention Training*

Focusing of attention upon any object (whether inside of the body or outside of it) establishes an efficient two-way communication channel with that object that allows us to learn about it directly and to influence it directly. Concentrative and opening up (full awareness) meditative techniques can be used to train attention. In several experiments, we have found that simply directing attention to a remote biological system, without a deliberate attempt to influence it in a particular direction, can change the activity of that system to a significant degree (Braud, Shafer & Andrews, 1990); other investigators have observed similar effects of "pure attention" (e.g., Pleass & Dey, 1990).

### *Imagery and Visualization*

Once attention has provided a communication and influence channel, nonverbal images provide vehicles for accessing information and for bringing about desired influences. Imagery appears to be a preferred "language" for body-mind and mind-body communication, and perhaps its nonverbal nature facilitates interactions with nonverbal systems within or outside of the body. Filling one's mind with strong and realistic imagery of some desired outcome or goal event (even one involving a spatially or temporally remote system) somehow facilitates the desired outcome. Perhaps the goal imagery provides a kind of "template" to which, under special conditions, a freely-changing remote system can come to conform.

### *Intentionality*

For direct influence of remote systems, the most effective form of intentionality appears to be one that is goal-orientated and thorough, yet not excessively effortful or egocentric. Excessive striving seems to produce additional distractions or noise that interferes with goal-accomplishment. The effectiveness of this form of intentionality points to the reality of a truly teleonomic, goal-directed process in Nature that complements the more familiar process-oriented, causal principles.

### *Motivation*

Motivation provides the driving force behind direct mental influence, and also serves to direct or select the appropriate outcome. Factors of meaningfulness, importance, significance, salience, need-satisfaction, emotion, and novelty have all been implicated in the likelihood of occurrence and in the strength and accuracy of remote knowing and remote influence effects, and these are all motivational factors. High motivational levels are commonplace in every day life situations. In the laboratory,

however, appropriate motivation often does not occur naturally but must be artificially arranged. This difference could account for the typically small and undramatic effects observed in the laboratory, as compared with those occurring in more natural, every day settings.

These five processes are interrelated and mutually supporting, and they can interact synergistically. The abilities to produce and to properly use them are skills that can be enhanced through practice. Once developed, they may be directed volitionally to learn about or to influence remote physical and biological systems. They appear to be the important processes through which consciousness brings about its effects in the physical world, and they are certainly factors that *guide* or *direct* consciousness/physical world interactions.

## MODELS

In attempts to understand how consciousness can influence remote events, three classes of models have been proposed. In *transmission* models, it is suggested that remote influence or remote knowing is accomplished through some physical or quasi-physical force that carries information from one locus to another through some channel or medium in a manner analogous to mental radio: There is transmission and reception of information, intelligence, or energy. Such models have many difficulties. The mediating force has not been identified, nor has the "channel", nor do we know of mechanisms through which conscious content at the "source" can be coded into or modulated onto the "carrier" then decoded or demodulated from the carrier at the "destination". The process does not behave as other forms of transmission customarily behave with respect to physical factors such as distance, shields, screens, amplifiers, attenuators, the nature of the "target" or of the conveyed information (message content), or (perhaps most problematically) time.

In *reorganization* models, nothing is posited to be transmitted from point to point. Rather, the "noise", randomness, or disorder already present at the "target" is reorganized in a manner that creates the desired goal outcome (and *appears* force-like) or that results in some intelligence or information at the "target" that resembles or corresponds to that at the "source". The process is one that is analogous to resonance, but without the typical mediators of familiar forms of resonance. The challenges facing such models are determinations of what precisely "feeds" the reorganization process at the target end and what precisely specifies the particular form the reorganization will take.

In the third class of models, which could be called "holonomic" or "correspondence" models, nothing is either transmitted or reorganized. All information is already present throughout all parts of all systems, in some implicate or potential form, in a manner not unlike the complex interference patterns in which information is represented in a hologram. The problem then becomes one of accessing or reading out information that is already available at all points, specifying the grounds or fields that make all of this possible, and accounting for creation of novelty within such a system. How do the *intended* read-outs or effects occur at some particular time, as opposed to a vast number of alternative possibilities?

The second and third classes of models call to mind similar statements found in Jung's concept of synchronicity, in Leibniz's monadology in which "monads have no windows" but nonetheless



perfectly mirror one another, and in the ancient Hermetic maxim, "As it is above, so it is below." Contemporary parallels are Bohm's implicate and explicate realities and Sheldrake's morphogenetic fields.

## IMPLICATIONS

If we adjudge the transmission model inadequate in accounting for all of the empirical findings regarding direct conscious influence, and we gravitate instead toward the reorganization or holonomic models, it becomes impossible to escape certain major implications or conclusions regarding consciousness. One of these is that mind or consciousness can do things that the brain or other physical organ cannot do: It can have nonlocal effects. This at once implies that mind or consciousness is more than brain and more than an epiphenomenon of brain, and that consciousness or mind itself may be nonlocal, extending throughout space and time. This implies a profound and extensive *interconnectedness* between mind and body, among all people, and, indeed, among all of Nature's "ten thousand things." This, in turn, is rich in ethical and ecological implications for our relations with and treatment of one another and the environment. We are also forced to the conclusion that there is indeed a goal-directed or teleonomic principle in Nature that complements Nature's familiar deterministic principles, and that such a principle is of great importance in the functioning of consciousness.

Another implication is that the contents of consciousness (our thoughts) may not only reflect our bodily conditions but may importantly influence our bodies as well, and that these influences may extend to social processes and may result in either benefit or harm. Direct physical and biological influences of consciousness could play important roles in guiding the course of evolution, and direct psychological and social influences have important implications for the issues of "free will" and "determinism."

In the realm of science, if the consciousness of the investigator can interact, even more directly than we have heretofore recognized, with what is studied, it becomes unclear which findings and laws of Nature are merely "discovered" and which are in some way "created" by a single investigator or "by consensus" by teams of investigators who share a particular focus of attention or intentionality. Further, we are reminded that it is impossible to study or to understand any "thing" or process in isolation, but only in relation to a vast field of multiple interactions that include that "thing" or process as merely one "node" or aspect.

A scientific worldview that does not comprehend consciousness and the full range of its effects is incomplete. We do not yet know the extent to which additions or changes in that worldview will be necessary in order to encompass all consciousness phenomena. We do know that the conventional scientific method is adequate to "capture" at least some of these phenomena; we know this because, at least some percentage of the time, experiments on direct conscious influence of remote systems do in fact succeed. However, the fact that often such experiments do not "succeed", combined with the peculiar "operating characteristics" of the effects we are studying suggests that perhaps conventional scientific method alone can never grasp consciousness completely and that there are important limitations of that method itself. Our challenge is to find complementary methodologies that are perhaps more appropriate to the subject matter and thereby create a new and more adequate

science of consciousness.

Scientific studies of consciousness are now exploring and confirming views and principles that were initially proposed in other areas such as religion, philosophy, spirituality, and certain meditative and mystical traditions. This is only to be expected if these are alternative pathways to a single truth. It is also quite exciting. And it is a pleasure to be discussing these issues in this wonderful location where the old is joined by the new.

I thank you for your kind attention.

## REFERENCES

Benor, D. (1991). Survey of spiritual healing research. *Complementary Medical Research, 4*, 9-32.

Braud, W. (1985). The two faces of psi: Psi revealed and psi obscured. In B. Shapin & L. Coly (Eds.), *The Repeatability Problem in Parapsychology* (pp. 150-182). New York: Parapsychology Foundation.

Braud, W. (1990). Meditation and psychokinesis. *Parapsychology Review, 21*(1), 9-11.

Braud, W., & Jackson, J. (1983). Psi influence upon mental imagery. *Parapsychology Review, 14*, 13-15.

Braud, W., & Schlitz, M. (1991). Consciousness interactions with remote biological systems: Anomalous intentionality effects. *Subtle Energies, 2*(1), 1-46.

Braud, W., Shafer, D., & Andrews, S. (1990). Electrodermal correlates of remote attention: Autonomic staring detection. *Proceedings of Presented Papers: 33rd Annual Parapsychological Association Convention* (pp. 13-25), Chevy Chase, MD, August.

Honorton, C., et al. (1990). Psi communication in the ganzfeld: Experiments with an automated testing system and a comparison with a meta-analysis of earlier studies. *Journal of Parapsychology, 54*, 99-139.

Honorton, C., & Ferrari, D. (1990). "Future telling": A meta-analysis of forced-choice precognition experiments, 1935-1987. *Journal of Parapsychology, 53*, 281-308.

Honorton, C., Ferrari, D., & Bem, D. (1990). Extraversion and ESP performance: A meta-analysis and a new confirmation. *Proceedings of Presented Papers: 33rd Annual Parapsychological Association Convention* (pp. 113-135), Chevy Chase, MD, August.

Orme-Johnson, D., et al. (1988). International peace project in the Middle East: The effects of the Maharishi Technology of the Unified Field. *Journal of Conflict Resolution, 32*, 776-812.

Pleass, C., & Dey, N. (1990). Conditions that appear to favor extrasensory interactions between

Homo sapiens and microbes. *Journal of Scientific Exploration*, 4(2), 213-232.

Radin, D., & Ferrari, D. (1991). Effects of consciousness on the fall of dice: A meta-analysis. *Journal of Scientific Exploration*, 5(1), 61-83.

Radin, D., & Nelson, R. (1989). Consciousness-related effects in random physical systems. *Foundations of Physics*, 19, 1499-1514.

Rosenthal, R. (1984). *Meta-analytic Procedures for Social Research*. Beverly Hills, CA: Sage Publications.

Schechter, E. (1984). Hypnotic induction vs. control conditions: Illustrating an approach to the evaluation of replicability in parapsychology data. *Journal of the American Society for Psychological Research*, 78, 1-27.

Schrodt, P. (1990). A methodological critique of a test of the effects of the Maharishi technology of the unified field. *Journal of Conflict Resolution*, 34(4), 745-755.

Solfvin, J. (1984). Mental healing. In S. Krippner (Ed.), *Advances in Parapsychological Research, Volume 4* (pp. 31-63). Jefferson, NC: McFarland and Company.

Stanford, R. (1974). An experimentally testable model for spontaneous psi events: I. Extrasensory events. *Journal of the American Society for Psychological Research*, 68, 34-57. (a)

Stanford, R. (1974). An experimentally testable model for spontaneous psi events: II. Psychokinetic events. *Journal of the American Society for Psychological Research*, 68, 321-356. (b)

Stanford, R. (1990). An experimentally testable model for spontaneous psi events: A review of related evidence and concepts from parapsychology and other sciences. In S. Krippner (Ed.), *Advances in Parapsychological Research, Volume 6* (pp. 54-167). Jefferson, NC: McFarland and Company.

#### CORRESPONDENCE:

Institute of Transpersonal Psychology  
744 San Antonio Road  
Palo Alto, California 94303 U.S.A.

---

Originally presented as an Invited Plenary Address to the Second International Symposium on Science and Consciousness, Athens, Greece, January 3-7, 1992.

{ see next page }

**William Braud, Ph.D. is Professor and Research Director at the Institute of Transpersonal Psychology in Palo Alto, California.**

**Copyright Notice**

You may forward this document to anyone you think might be interested. The only limitations are:

1. You must copy this document in its entirety, without modifications, including this copyright notice.
2. You do not have permission to change the contents or make extracts.
3. You do not have permission to copy this document for commercial purposes.

The contents of this document are Copyright © 1992 by William Braud. This article originally appeared in the European Journal of Parapsychology, Volume 10, 1994, pp. 66-77. Used with permission.