Hope Springs Eternal
Science, the Afterlife & the Meaning of Life

by Michael Shermer

I once saw a bumper sticker that read:

Militant Agnostic: I Don't Know and You Don't Either.

This is my position on the afterlife: I don't know and you don't either. If we knew for certain that there is an afterlife, we would not fear death as we do, we would not mourn quite so agonizingly the death of loved ones, and there would be no need to engage in debates on the subject.

Because no one knows for sure what happens after we die, we deal with the topic in diverse ways through religion, literature, poetry, science, and even humor. The perpetually anxious Woody Allen has this workaround: "It's not that I'm afraid to die. I just don't want to be there when it happens." Steven Wright thinks he's figured out a solution: "I intend to live forever. So far, so good."

Humor aside, since I am a scientist and claims are made that there is scientific evidence for life after death, let us analyze the data for that doubtful future date, and consider what its possibility may mean for our present state.

21 Grams: The Nature of the Soul

What is it that supposedly survives the death of the physical body? The soul. There are about as many different understandings of the nature of the soul as there are religions and spiritual movements. The general belief is that *the soul is a conscious ethereal substance that is the unique essence of a living being that survives its incarnation in flesh*.

The ancient Hebrew word for soul is *nephesh*, or "life" or "vital breath"; the Greek word for soul is *psyche*, or "mind"; and the Roman Latin word for soul is *anima*, or "spirit" or "breath." The soul is the essence that breathes life into flesh, animates us, gives us our vital spirit. Given the lack of knowledge about the natural world at the time these concepts were first formed, it is not surprising these ancient peoples reached for such ephemeral metaphors as mind, breath, and spirit. One moment a little dog is barking, prancing, and wagging its tail, and in the next moment it is a lump of inert flesh. What happened in that moment?

In 1907 a Massachusetts physician named Duncan MacDougall tried to find out by weighing six dying patients before and after their death. He reported in the medical journal *American Medicine* that there was a 21-gram difference. Even though his measurements were crude and varying, and no one has been able to replicate his findings, it has nonetheless grown to urban legendary status as the weight of the soul. The implication is that the soul is a thing that can be weighed. Is it?

In science we define our terms with semantic precision. I define the "soul" as *the unique pattern of information that represents the essence of a person*. By this definition, unless there is some medium to retain the pattern of our personal information after we die, our soul dies with us. Our bodies are made of proteins, coded by our DNA, so with the disintegration of DNA our protein patterns are lost forever. Our memories and personality are stored in the patterns of neurons firing in our brains, so when those neurons die it spells the death of our memories and personality, similar to the ravages of stroke and Alzheimer's disease, only final.

Because the brain does not perceive itself, it imputes mental activity to a separate source — hallucinations of preternatural entities such as ghosts, angels, and aliens are perceived as actual beings; out-of-body and near-death experiences are sensed as external events instead of internal states. Likewise, the neural pattern of information that is our memories and personality — our "self" — is sensed as a soul. In this sense, the soul is an illusion.

Can Science Save Us?

There are many scientistic scenarios for how we might cheat death that I have evaluated in my books and columns, but here I wish to focus on the latest claim for evidence of an afterlife presented in Deepak Chopra's 2006 book, *Life After Death: Burden of Proof*. According to Chopra, there are six lines of evidence that convince him that the soul is real and eternal:

1. **Near-Death Experiences and Altered States of Consciousness.** There are thousands of people who have been pronounced dead, usually from heart attacks, who are subsequently resuscitated and report experiencing some aspect of the afterlife — floating out of their bodies, passing through a tunnel or white light, and seeing loved ones or witnessing God, Jesus, or some manifestation of the divine on the other side. If these patients were brain dead, then their conscious "self," their "soul," must survive the death of the body.
2. **ESP and Evidence of Mind.** Here Chopra relies on *psi* research in remote viewing and telepathy, in which subjects locked in a room alone can apparently receive images from senders in another room without the use of the five senses.
3. **Quantum Consciousness.** The study of the actions of subatomic particles through quantum mechanics produces what Einstein called "spooky action at a distance," where the observation of a particle in one location instantaneously effects a related particle at another location (which could theoretically be in another galaxy), in apparent violation of Einstein's upper limit of the speed of light. Chopra takes this to mean that the universe is one giant quantum field in which everything (and everyone) is interconnected and can influence one another directly and instantly. Deepak and others also apply quantum mechanics to the study of consciousness to explain how the brain represents the entire tangible world through biochemical signals. Through quantum consciousness "we may find out how the brain might create subtler worlds, the kind traditionally known as heaven. If the secret lies not in brain chemistry but in awareness itself, the afterlife may turn out to be an extension of our present life, not a faraway mystical world."
4. **Psychic Mediumship and Talking to the Dead.** Deepak reviews the extensive studies on psychic mediums and their apparent ability to communicate with the dead, and then reveals that he participated in an experiment in which contact was apparently made with his father, whose recent death triggered his research and writing of this book.
5. **Prayer and Healing Studies.** Chopra discusses research on distant intercessory prayer, in which patients who are prayed for from a distance by strangers appear to get well faster and more often than non-prayed for patients. This implies that action at a distance through thought alone — whether through the intervention of a deity or through some cosmic force — is real, can be manifested, and connects us to the cosmos and everything in it.
6. **Information Fields, Morphic Resonance, and the Universal Life Force.** Chopra claims that nature preserves data in the form of information fields, and he cites experiments conducted by the Cambridge University-trained scientist Rupert Sheldrake, who presents evidence that people can sense when someone is staring at the back of their head and neck, that dogs know when their owners are coming home, that it is easier to complete the Sunday crossword puzzle later in the day because others have already solved it, and that these and many other mysterious psychic phenomena can be explained by "morphic resonance fields" that connect all living organisms to one another. Information cannot be created or destroyed, only recombined into new patterns, so

> our personal patterns — our "souls" by my definition — are packages of information that precede birth and survive death.

For Deepak Chopra, these six lines of scientific evidence point to something already described thousands of years ago by the *rishis*, or sages of Vedic India, first spiritual leaders of Hinduism. "The rishis believed that knowledge wasn't external to the knower but woven inside consciousness. Thus they had no need for an external God to solve the riddle of life and death," Chopra explains. Our essence is what the rishis called *Atman*, and what we call the soul. "Soul and Atman are a spark of the divine, the invisible component that brings God's presence into flesh and blood. The biggest difference between them is that in Vedanta the soul isn't separate from God. Unlike the Christian soul, Atman cannot come from God or return to him. There is unity between the human and the divine."

I confess that my Western scientific worldview makes it exceedingly (and often frustratingly) difficult for me to truly grasp what Deepak is talking about. I am quite sure that he will correct me on the following summary, but near as I can figure this is what he is saying. The universe is one giant conscious information field of timeless energy of which all of us are a part. Life is simply a temporary incarnation of this eternal field of consciousness, whose properties, he says, include: "The field works as a whole. It correlates distant events instantly. It remembers all events. It exists beyond time and space. It creates entirely within itself. Its creation grows and expands in an evolutionary direction. It is conscious." Chopra says that what the rishis discovered long ago is consistent with the findings of modern science: "The field of consciousness is primary to every phenomenon in Nature because of the gap that exists between every electron, every thought, every instant in time. The gap is the reference point, the stillness at the heart of creation, where the universe correlates all events."

In Chopra's theory of the afterlife, birth and death are merely transitions to and from different manifestations of consciousness. "Without death there can be no present moment, for the last moment has to die to make the next one possible." Thus, he deduces, "We live in an endlessly re-created universe." There is no need to fear death, because "Death isn't about what I possess but about what I can become. Today I see myself as a child of time, but I may become a child of eternity." Finally, Chopra concludes, "We move from one world to another, we shed our old identity to experience 'I am,' the identity of the soul, and we assemble the ingredients of a completely unique life in our next body." Chicken soup for the New Age soul.

Reality Check: What Science Really Says

Okay, back to earth. Here is the reality. It has been estimated that in the last 50,000 years about 106 billion humans were born. Of the 100 billion people born before the six billion living today, every one of them has died and not one has returned to confirm for us beyond a reasonable doubt that there is life after death. This data set does not bode well for promises of immortality and claims for an afterlife. But let's review them one by one.

Near Death Experiences and Altered States of Consciousness

Five centuries ago demons haunted our world, with incubi and succubi tormenting their victims as they lay asleep in their beds. Two centuries ago spirits haunted our world, with ghosts and ghouls harassing their sufferers all hours of the night. Last century aliens haunted our world, with grays and greens abducting captives out of their beds and whisking them away for probing and prodding. Today people are experiencing near-death and out-of-body experiences, floating above their bodies, out of their bedrooms, and even off the planet into space.

What is going on here? Are these elusive creatures and mysterious phenomena in our world or in our minds? New evidence indicates that they are, in fact, a product of the brain. Neuroscientist Michael Persinger, in his laboratory at Laurentian University in Sudbury, Canada, for example, can induce all of these experiences in subjects by subjecting their temporal lobes to patterns of magnetic fields. I tried it and had a mild out-of-body experience.

Similarly, the September 19, 2002 issue of *Nature*, reported that the Swiss neuroscientist Olaf Blanke and his colleagues discovered that they could bring about out-of-body experiences (OBEs) through electrical stimulation of the right angular gyrus in the temporal lobe of a 43-year old woman suffering from severe epileptic seizures. In initial mild stimulations she reported "sinking into the bed" or "falling from a height." More intense stimulation led her to "see myself lying in bed, from above, but I only see my legs and lower trunk." Another stimulation induced "an instantaneous feeling of 'lightness' and 'floating' about two meters above the bed, close to the ceiling."

In a related study reported in the 2001 book *Why God Won't Go Away*, researchers Andrew Newberg and Eugene D'Aquili found that when Buddhist monks meditate and Franciscan nuns pray their brain scans indicate strikingly low activity in the posterior superior parietal lobe, a region of the brain the authors have dubbed the Orientation Association Area (OAA), whose job it is to orient the body in physical space (people with damage to this area have a difficult time negotiating their way around a house). When the OAA is booted up and running smoothly there is a sharp distinction between self and non-self. When OAA is in sleep mode — as in deep meditation and prayer — that division breaks down, leading to a blurring of the lines between reality and fantasy, between feeling in body and out of body. Perhaps this is what happens to monks who experience a sense of oneness with the universe, or with nuns who feel the presence of God, or with alien abductees floating out of their beds up to the mother ship.

Sometimes trauma can trigger such experiences. The December 2001 issue of *Lancet* published a Dutch study in which of 344 cardiac patients resuscitated from clinical death, 12 percent reported near-death experiences (NDEs), where they floated above their bodies and saw a light at the end of a tunnel. Some even described speaking to dead relatives.

The general explanation for all of these phenomena is that since our normal experience is of stimuli coming into the brain from the outside, when a part of the brain abnormally generates these illusions, another part of the brain interprets them as external events. Hence, the abnormal is thought to be the paranormal. In reality, it is just brain chemistry.

More specifically, NDEs and OBEs have biochemical correlates. We know, for example, that the hallucination of flying is triggered by atropine and other belladonna alkaloids, some of which are found in mandrake or jimson weed and were used by European witches and American Indian shamans. OBEs are easily induced by dissociative anesthetics such as the ketamines. DMT (dimethyl-tryptamine) causes the feeling of the world enlarging or shrinking. MDA (methylenedioxyamphetamine) stimulates the feeling of age regression where things we have long forgotten are brought back to memory. And, of course, LSD (lysergic acid diethylamide) triggers visual and auditory hallucinations and gives a feeling of oneness with the cosmos, among other effects. The fact that there are receptor sites in the brain for such artificially processed chemicals, means that there are naturally produced chemicals in the brain which, under certain conditions (the stress of trauma or an accident, for example) can induce any or all of the feelings typically described in a NDE. Thus, NDEs and OBEs are forms of wild "trips" induced by the extreme trauma of almost dying.

Psychologist and paranormal researcher Susan Blackmore has taken the hallucination hypothesis one step further by demonstrating why different people would experience similar effects, such as the tunnel. The

visual cortex on the back of the brain is where information from the retina is processed. Hallucinogenic drugs and lack of oxygen to the brain (such as sometimes occurs near death) can interfere with the normal rate of firing by nerve cells in this area. When this occurs, "stripes" of neuronal activity move across the visual cortex, which is interpreted by the brain as concentric rings or spirals. These spirals may be "seen" as a tunnel. Similarly, in the OBE the experience of visualizing things from above is actually just an extension of a normal process we all do called "decentering" — picture yourself sitting on the beach or climbing a mountain and it will usually be from above looking down.

These studies are evidence that mind and brain are one. All experience is mediated by the brain. Large brain areas like the cortex coordinate imputes from smaller brain areas such as the temporal lobes, which themselves collate neural events from still smaller brain modules like the angular gyrus. This reduction continues all the way down to the single neuron level, where highly-selective neurons, sometimes described as "grandmother" neurons, fire only when subjects see someone they know. Caltech neuroscientists Christof Koch and Gabriel Kreiman, in conjunction with UCLA neurosurgeon Itzhak Fried, have even found a single neuron that fires when the subject is shown a photograph of Bill Clinton. The Monica neuron must be closely connected.

The search for the neural correlates of consciousness begin at this fundamental level, and then we ratchet up from there, as we look for emergent properties of complex systems of thought that arise from these simpler systems of neuronal connections. Of course, we are not aware of the workings of our own electrochemical systems. What we actually experience is what philosophers call *qualia*, or subjective states of thoughts and feelings that arise from a concatenation of neural events. But eventually even the grand mystery of consciousness will be solved by the penetrating tools of science.

This is the fate of the paranormal and the supernatural — to be subsumed into the normal and the natural. In fact, there is no paranormal or supernatural; there is only the normal and the natural … and mysteries yet to be explained.

ESP and Evidence of Mind

For over a century claims have been made for the existence of psi, or psychic phenomena. In the late 19th century, organizations like the Society for Psychical Research were founded to employ rigorous scientific methods in the study of psi, and they had many world-class scientists in support. In the 20th century, psi periodically found its way into serious academic research programs, from Joseph Rhine's Duke University experiments in the 1920s to Daryl Bem's Cornell University research in the 1990s.

In January 1994, for example, Bem and his late University of Edinburgh parapsychologist colleague Charles Honorton published "Does Psi Exist? Replicable Evidence for an Anomalous Process of Information Transfer" in the prestigious review journal *Psychological Bulletin*. Conducting a meta-analysis of 40 published experiments, the authors concluded: "the replication rates and effect sizes achieved by one particular experimental method, the ganzfeld procedure, are now sufficient to warrant bringing this body of data to the attention of the wider psychological community." (A meta-analysis is a statistical technique that combines the results from many studies to look for an overall effect, even if the results from the individual studies were insignificant; the ganzfeld procedure places the "receiver" in a sensory isolation room with ping pong ball halves covering the eyes, headphones playing white noise over the ears, and the "sender" in another room psychically transmitting photographic or video images.)

Despite finding evidence for psi (subjects had a hit rate of 35 percent when 25 percent was expected by chance), Bem and Honorton lamented: "Most academic psychologists do not yet accept the existence of

psi, anomalous processes of information or energy transfer (such as telepathy or other forms of extrasensory perception) that are currently unexplained in terms of known physical or biological mechanisms."

Why don't scientists accept psi? Daryl Bem has a stellar reputation as a rigorous experimentalist and he has presented us with statistically significant results. Aren't scientists supposed to be open to changing their minds when presented with new data and evidence? The reason for skepticism is that we need both replicable data and a viable theory, both of which are missing in psi research.

Data. Both the meta-analysis and ganzfeld techniques have been challenged. Ray Hyman from the University of Oregon found inconsistencies in the experimental procedures used in different ganzfeld experiments (that were lumped together in Bem's meta-analysis as if they used the same procedures), and that the statistical test employed (*Stouffer's Z*) was inappropriate for such a diverse data set. He also found flaws in the target randomization process (the sequence the visual targets were sent to the receiver), resulting in a target selection bias: "All of the significant hitting was done on the second or later appearance of a target. If we examined the guesses against just the first occurrences of targets, the result is consistent with chance." Richard Wiseman from the University of Hertfordshire conducted a meta-analysis of 30 more ganzfeld experiments and found no evidence for psi, concluding that psi data are non-replicable. Bem countered with 10 additional ganzfeld experiments he claims are significant, and he has additional research he plans to publish. And so it goes … with more to come in the data debate.

Theory. The deeper reason scientists remain skeptical of psi — and will even if more significant data are published — is that there is no explanatory theory for how psi works. Until psi proponents can explain how thoughts generated by neurons in the sender's brain can pass through the skull and into the brain of the receiver, skepticism is the appropriate response. If the data shows that there is such a phenomena as psi that needs explaining (and I am not convinced that it does), then we still need a causal mechanism.

Quantum Consciousness

Deepak Chopra and others will counter that there is, in fact, a perfectly cogent theory of psi, and that is quantum consciousness, which was recently featured in the wildly popular and improbably-named film, *What the #@*! Do We Know?!* Artfully edited and featuring actress Marlee Matlin as a dreamy-eyed photographer trying to make sense of an apparently senseless universe, the film's central tenet is that we create our own reality through consciousness and quantum mechanics. I met the producers of the film the weekend it opened when we were both on a Portland, Oregon television show, so I got an early screening. I never imagined that a film on consciousness and quantum mechanics would succeed, but it has grossed millions and a created cult following.

The film's avatars are scientists with strong New Age leanings, whose jargon-laden sound bites amount to little more than what Caltech physicist and Nobel laureate Murray Gell-Mann once described as "quantum flapdoodle." University of Oregon quantum physicist Amit Goswami, for example, says: "The material world around us is nothing but possible movements of consciousness. I am choosing moment by moment my experience. Heisenberg said atoms are not things, only tendencies." Okay, Amit, I challenge you to leap out of a 20-story building and consciously choose the experience of passing safely through the ground's tendencies.

The work of a Japanese researcher Masura Emoto, author of *The Message of Water*, is featured to show how thoughts change the structure of ice crystals — beautiful crystals form in a glass of water with the

word “love” taped to it, whereas playing Elvis’s “Heartbreak Hotel” causes a crystal to split into two. Would his “Burnin’ Love” boil water?

The film’s nadir is an interview with “Ramtha,” a 35,000-year-old spirit channeled by a 58-year-old woman named J. Z. Knight. I wondered where humans spoke English with an Indian accent 35,000 years ago. Many of the films’ producers, writers, and actors are members of Ramtha’s “School of Enlightenment,” where New Age pabulum is dispensed in costly weekend retreats.

The attempt to link the weirdness of the quantum world (such as Heisenberg’s uncertainty principle, which states that the more precisely you know a particle’s position, the less precisely you know its speed, and vice versa) to mysteries of the macro world (such as consciousness) is not new. The best candidate to connect the two comes from physicist Roger Penrose and physician Stuart Hameroff, whose theory of quantum consciousness has generated much heat but little light in scientific circles.

Inside our neurons are tiny hollow microtubules that act like structural scaffolding. The conjecture (and that’s all it is) is that something inside the microtubules may initiate a wave function collapse that leads to the quantum coherence of atoms, causing neurotransmitters to be released into the synapses between neurons and thus triggering them to fire in a uniform pattern, thereby creating thought and consciousness. Since a wave function collapse can only come about when an atom is “observed” (i.e., affected in any way by something else), neuroscientist Sir John Eccles, another proponent of the idea, even suggests that “mind” may be the observer in a recursive loop from atoms to molecules to neurons to thought to consciousness to mind to atoms….

In reality, the gap between sub-atomic quantum effects and large-scale macro systems is too large to bridge. In his book *The Unconscious Quantum,* the University of Colorado particle physicist Victor Stenger demonstrates that for a system to be described quantum mechanically the system’s typical mass *m*, speed *v*, and distance *d* must be on the order of Planck’s constant *h*. “If *mvd* is much greater than *h*, then the system probably can be treated classically.” Stenger computes that the mass of neural transmitter molecules, and their speed across the distance of the synapse, are about three orders of magnitude too large for quantum effects to be influential. There is no micro-macro connection. Subatomic particles may be altered when they are observed, but the moon is there even if no one looks at it. So what the #$*! is going on here?

Physics envy. The history of science is littered with the failed pipedreams of ever-alluring reductionist schemes to explain the inner workings of the mind — schemes increasingly set forth in the ambitious wake of Descartes’ own famous attempt, some four centuries years ago, to reduce all mental functioning to the actions of swirling vortices of atoms, supposedly dancing their way to consciousness. Such Cartesian dreams provide a sense of certainty, but they quickly fade in the face of the complexities of biology. We should be exploring consciousness at the neural level and higher, where the arrow of causal analysis points up toward such principles as emergence and self-organization. Biology envy.

Psychic Mediumship and Talking to the Dead

Deepak Chopra recounts his experience of participating in a university study of three psychics who claimed that they could communicate with those who had already “passed over” to the other side. Even though none of the psychics were told that Deepak was present, two of them identified him by name, two of them told him that he wanted to contact his recently deceased father, and one knew his childhood nickname in Hindi. He declared it a genuine experience, even while admitting that he had his doubts, especially since “My ‘father’ knew things I knew, but nothing more.”

That is more skepticism than most people muster, especially in emotion-laden readings that promise people a connection to a lost loved one. How do psychics appear to talk to the dead? I have written about this extensively, but in short, it's a trick that involves utilizing two techniques:

1. **Cold Reading**, where you literally "read" someone "cold," knowing nothing about them. You ask lots of questions and make numerous statements and see what sticks. "I'm getting a P name. Who is this please?" "He's showing me something red. What is this please?" And so on. Most statements are wrong. But as B.F. Skinner showed in his experiments on superstitious behavior, subjects only need an occasional reinforcement to be convinced there is a real pattern (slot machines need only pay off infrequently to keep people involved). In an exposé I did on psychic medium John Edward for WABC New York, for example, we counted about one statement per second in the opening minute, as he riffled through names, dates, colors, diseases, conditions, situations, relatives, keepsakes, and the like. It goes so fast that you have to stop tape and go back to catch them all. His hit rate was below 10 percent, but those handful of hits were all his subjects needed to feel that they had made contact with a loved one.
2. **Warm Reading** utilizes known principles of psychology that apply to nearly everyone. The British mentalist and magician Ian Rowland's insightful and encyclopedic book on how to do psychic readings, *The Full Facts Book of Cold Reading*, provides a list of high probability guesses, including identifying such items found in most homes that are sure to convince the mark that their loved one is in the room: A box of old photographs, some in albums, most not in albums; old medicine or medical supplies out of date; toys, books, mementoes from childhood; jewelry from a deceased family member; pack of cards, maybe a card missing; electronic gadget that no longer works; notepad or message board with missing matching pen; out of date note on fridge or near the phone; books about a hobby no longer pursued; out of date calendar; drawer that is stuck or doesn't slide properly; keys that you can't remember what they go to; watch or clock that no longer works. Here are some common peculiarities about people that are bound to give the impression that something paranormal is at work: Scar on knee; the number 2 in the home address; childhood accident involving water; clothing never worn; photos of loved ones in wallet or purse; wore hair long as a child, then shorter haircut; one earring with a missing match, and so forth. Mediums such as James Van Praagh, Sylvia Browne, Rosemary Altea and others on whom I have conducted extensive investigations are also facile at determining the cause of death by focusing either on the chest or head areas, and then exploring whether it was a slow or sudden end. They work their way through the half dozen major causes of death in rapid-fire manner. "He's telling me there was a pain in the chest." If they get a positive nod, they continue. "Did he have cancer, please? Because I'm seeing a slow death here." If they get the nod, they take credit for the hit. If the subject hesitates, they will quickly shift to heart attack. If it is the head, they go for stroke or head injury from an automobile accident or fall.

I played a psychic for a day for a television special and found it remarkably easy to convince my subjects that I was really talking to the dead. Of course, anyone can talk to the dead. The hard part is getting the dead to talk back. Psychic mediums use trickery to give the illusion that the dead are communicating with us, and because people who come to mediums for help are emotionally fragile, they are also vulnerable to such effectual methods.

Prayer and Healing Studies

In April, 2006, *The American Heart Journal* published the most comprehensive study ever conducted on the effects of intercessory prayer on the health and recovery of patients. Directed by Harvard University Medical School cardiologist Herbert Benson, a long-time proponent of the salubrious effects of prayer, and partially funded by the Templeton Foundation, known for its support of research linking science and

religion, the findings were eagerly awaited by members of both communities. There were a total of 1,802 patients from six U.S. hospitals that were randomly assigned to 1 of 3 groups: 604 received intercessory prayer and were told that they may or may not receive prayer; 597 did not receive intercessory prayer and were also told that they may or may not receive prayer; and 601 received intercessory prayer and were told they would receive prayer. Prayers began the night before the surgery and continued daily for two weeks after. The prayers were allowed to pray in the manner of their choice, but they were instructed to ask "for a successful surgery with a quick, healthy recovery and no complications."

The results were unequivocal: there were no statistically significant differences between any of the groups. Prayer did not work. Worse, there were slight elevated complications (although not statistically significant) for the patients in the group who knew that they were being prayed for — a "nocebo" effect. Case closed.

As for previous studies in which the positive effects of prayer were claimed, there were numerous methodological problems with all of them, including:

1. **Lack of Controls.** Many of these studies failed to control for such intervening variables as age, sex, education, ethnicity, socioeconomic status, marital standing, degree of religiosity, and the fact that most religions have sanctions against such insalubrious behaviors as sexual promiscuity, alcohol and drug abuse, and smoking. When such variables are controlled for, the formerly significant results disappear. One study on recovery from hip surgery in elderly women failed to control for age; another study on church attendance and illness recovery did not consider that people in poorer health are less likely to attend church; a related study failed to control for levels of exercise.
2. **Outcome differences.** In one of the most highly publicized studies of cardiac patients prayed for by born-again Christians, 29 outcome variables were measured but on only six did the prayed-for group show improvement. In related studies, different outcome measures were significant. To be meaningful, the same measures need to be significant across studies, because if enough outcomes are measured some will show significant correlations by chance.
3. **File-drawer problem.** In several studies on the relationship between religiosity and mortality (religious people allegedly live longer), a number of religious variables were used, but only those with significant correlations were reported. Meanwhile, other studies using the same religiosity variables found different correlations and, of course, only reported those. The rest were filed away in the drawer of non-significant findings. When all variables are factored in together, religiosity and mortality show no relationship.
4. **Operational definitions.** When experimenting on the effects of prayer, what, precisely, is being studied? For example, what type of prayer is being employed? (Are Christian, Jewish, Muslim, Buddhist, Wiccan, and Shaman prayers equal?) Who or what is being prayed to? (Are God, Jesus, and a universal life force equivalent?) What is the length and frequency of the prayer? (Are two 10-minute prayers equal to one 20-minute prayer?) How many people are praying and does their status in the religion matter? (Is one priestly prayer identical to ten parishioner prayers?) Most prayer studies either lack such operational definitions, or there is no consistency across studies in such definitions.
5. **Theological difficulties.** If God is omniscient and omnipotent, He should not need to be reminded or inveigled that someone needs healing. And what about all those patients who were prayed for and died? Scientific prayer makes God a celestial lab rat, leading to bad science and worse religion.

Information Fields, Morphic Resonance,
and the Universal Life Force

Have you ever noticed how much easier it is to do a newspaper crossword puzzle later in the day? Me neither. But according to Rupert Sheldrake it is because the collective wisdom of the morning successes resonates throughout the cultural morphic field. In Sheldrake's theory of "morphic resonance," similar forms (morphs, or "fields of information") reverberate and exchange information within a universal life force. "As time goes on, each type of organism forms a special kind of cumulative collective memory," Sheldrake writes in his 1981 book *A New Science of Life*. "The regularities of nature are therefore habitual. Things are as they are because they were as they were."

Morphic resonance, says Sheldrake, is "the idea of mysterious telepathy-type interconnections between organisms and of collective memories within species," and explains phantom limbs, homing pigeons, how dogs know when their owners are coming home, and such psychic phenomena as how people know when someone is staring at them. "Vision may involve a two-way process, an inward movement of light and an outward projection of mental images," Sheldrake explains. Thousands of trials conducted by anyone who downloaded the experimental protocol from Sheldrake's Web page "have given positive, repeatable, and highly significant results, implying that there is indeed a widespread sensitivity to being stared at from behind."

Let's examine this claim more closely. First, science is not normally conducted by strangers who happen upon a Web page protocol, so we have no way of knowing if these amateurs controlled for intervening variables and experimenter biases. Second, psychologists dismiss anecdotal accounts of this sense to a reverse self-fulfilling effect: a person suspects being stared at and turns to check; such head movement catches the eyes of would-be starers, who then turn to look at the staree, who thereby confirms the feeling of being stared at. Third, in 2000 John Colwell from Middlesex University, London, conducted a formal test utilizing Sheldrake's suggested experimental protocol, with 12 volunteers who participated in 12 sequences of 20 stare or no-stare trials each, with accuracy feedback provided for the final nine sessions. Results: subjects were able to detect being stared at only when accuracy feedback was provided, which Colwell attributed to the subjects learning what was, in fact, a nonrandom presentation of the experimental trials. When the University of Hertfordshire psychologist Richard Wiseman also attempted to replicate Sheldrake's research, he found that subjects detected stares at rates no better than chance. Fourth, there is an experimenter bias problem. Institute of Noetic Sciences' researcher Marilyn Schlitz (a believer in psi) collaborated with Wiseman (a skeptic of psi) in replicating Sheldrake's research, and discovered that when *they* did the staring Schlitz found statistically significant results, whereas Wiseman found chance results.

Sheldrake responds that skeptics dampen the morphic field's subtle power, whereas believers enhance it. Of Wiseman, Sheldrake remarked: "Perhaps his negative expectations consciously or unconsciously influenced the way he looked at the subjects."

Perhaps, but how can we tell the difference between negative-psi and non-psi? As it is said, the invisible and the nonexistent look the same.

Middle Land

So where does this leave us? I am, by temperament, a sanguine person, so I really hate to douse the flame of that doubtful future date with the cold water of skepticism in this present state. But I care what is actually true even more than what I hope is true, and these are the facts as I understand them to be.

I want to believe Messrs. Chopra, Bem, Goswami, Sheldrake, and the others. Really I do. I gave up on religion in graduate school, but I often catch myself slipping back into my former evangelical fervor now directed toward the wonders of science and nature. But this is precisely why I am skeptical. What they

offer is too much like religion: it promises everything, delivers nothing (but hope), and is almost entirely based on faith, the very antithesis of science.

I am especially skeptical whenever people argue that the Next Big Thing will save us, in our lifetime, and fulfills our deepest emotional needs. Evangelicals never claim that the Second Coming is going to happen in the *next* generation (or that they will be "left behind" while others are saved). Likewise, secular doomsayers typically predict the demise of civilization within their allotted time (and, of course, that they will be part of the small surviving enclave). In parallel, prognosticators of both religious and secular utopias always include themselves as members of the chosen few, and paradise is always within reach.

Where is paradise? It is here. It is now. It is within us and without us. It is in our thoughts and in our actions. It is in our lives and in our loves. It is in our families and in our friends. It is in our communities and in our world. It is in the courage of our convictions and in the character of our souls.

Hope springs eternal, even if life is not.

Taking the Afterlife Seriously

by Deepak Chopra

"The most beautiful and profound emotion we can experience is the sensation of the mystical. It is the power of all true science."

–Albert Einstein

I. Thanks for Coming — or Did You Even Show Up?

I have put Michael Shermer at a disadvantage by writing a book that bases the afterlife on the survival of consciousness. He has little interest in consciousness compared to his interest in laboratory-induced hallucinations and altered states. It's a shame that he doesn't grasp that the afterlife is about nothing but consciousness. (I don't offhand know anyone who took their bodies with them.) Shermer's focus on God is irrelevant to the argument. I give seven versions of life after death in my book, collected from every religious and philosophical tradition. He fails to address them or to realize that certain traditions (Platonism, Buddhism, Taoism, Vedanta) do not posit a personal God.

Shermer's retelling of the flaws in prayer studies is germane to my argument but only to a small degree — it by no means forms a sixth of my book, more like three pages. I must point out, however, that the 2006 Benson-Harvard refutation of prayer is far from being authoritative. Critics have found methodological flaws in it, and there are 19 other studies in the field that arrive at differing results, 11 of them showing that "prayer works." Now to the holes in Shermer's own approach. It may be curious that stimulating some area of the brain can induce out-of-body experiences or the feeling of sinking into a bed, or that Buddhist monks have low activity in their Orientation Association Area (OAA), as cited by Shermer. Unfortunately, these experiments have little bearing on the afterlife. Induced states are quite feeble as science. I can put a tourniquet on a person's arm, depriving the nerves of blood flow, and thereby eliminate the sensation of touch. This doesn't prove that quadriplegics with paralyzed limbs aren't having a real experience. I can induce happiness by giving someone a glass of wine and having a pretty girl flirt with him. That doesn't prove that happiness without alcohol isn't real. The point is that a simulation isn't the real thing or a credible stand-in for it.

Shermer doesn't adhere to the scientific impartiality he so vocally espouses. Loading the dice turns out to be fairly standard for him. For example, he cites the December 2001 issue of *Lancet* that published a Dutch study in which, out of 344 cardiac patients resuscitated from clinical death, 12 percent reported near-death experiences. (The actual figure was 18 percent, by the way.) Immediately he skips on to say that near-death experiences can be induced in the laboratory. Hold on a minute. Did Shermer miss the point entirely? The patients in the Dutch study, who suffered massive heart attacks in the hospital, had their near-death experiences *when there was no measurable activity in the brain*, when they were in fact brain dead. Did he quote the astonishment of Dr. Pin van Lommel, the Dutch cardiologist who observed this effect? No. Did he go into the baffling issue of why the vast majority of resuscitated patients (over 80 percent) *don't* report near-death experiences? That's pretty important if you are claiming that all this near-death hokum can be induced in the lab with a few electrodes.

Leaving out the heart of the matter, as Shermer does, smacks of unfairness, for I rely on this same Dutch study and give all the particulars. Skepticism is only credible when it's not being devious. But Shermer often deliberately misses the point. I cite a University of Virginia study that to date has found over 2,000 children who vividly remember their past lives. In many cases they can name places and dates. The facts they relate have been verified in many cases. Even more astonishing, over 200 of these children exhibit birthmarks that resemble the way they remember dying in their most recent lifetime. (One boy, for example, recalled being killed with a shotgun, and his chest exhibited a scatter-shot of red birthmarks). Unable to refute this phenomenon or imagine a counter-study, Shermer fails to mention it. He snipes at the easy targets to bolster his blanket skepticism. I wish Shermer realized that true skepticism suspends *both* belief and disbelief. Being a debunker of curiosity is something science doesn't need.

This points to a broader problem with his arguments: the problem of dueling results. Let's say a skeptic offers in evidence a study that asks five children to describe a previous incarnation, and let's say that only those who are coached, either by parents or researchers, come up with such stories. Has skepticism refuted the original research? Of course it hasn't. The first study stands on its own, by sheer force of numbers, demanding explanation. But by Shermer's logic if some children don't remember a past lifetime, those who do must be categorically dismissed. By analogy, if I study twenty mothers who smile when shown their baby's picture, anyone can find twenty others (suffering from post-partum depression, for example) who don't. But that doesn't prove that mothers don't love their babies. The second experiment is an anomaly.

No doubt Shermer will want to lecture me on the need for replication in science. Yet this is the very thing he conveniently ignores. Studies on near-death experiences, out-of-body experiences, memories of past lifetimes, remote viewing, and so forth — all crucial to the reality of life after death — have been well replicated. Shermer finds one study that induces similar states ("similar" being a very tricky word here) and he walks away satisfied. He already knows *a priori* that "paranormal" findings must be false, so why bother to engage them seriously? Extending our understanding of normal doesn't interest him.

The focus of science should be on the survival of consciousness after death, not on the sideshow of fraud, pseudoscience, religious dogma, and the other straw men Shermer knocks down. For example, I rely a great deal on the possibility that mind extends outside the body. This is obviously crucial, since with the death of the brain, our minds can only survive if they don't depend on the brain.

There are astonishing results in this area. One of the most famous, performed at the engineering department at Princeton and validated many times over, asked ordinary people to sit in the room with a random number generator. As the machine printed out a random series of 0s and 1s, the subjects were instructed to try to make it produce more zeroes. They didn't touch the machine but only willed it to

deviate from randomness. Did they succeed? Absolutely. Did other identical or similar experiments succeed? Over and over. Does Shermer even touch on this matter, so crucial to my argument? No.

He displays an amazing ability to avoid the important stuff. He writes, for example, "The ultimate fallacy of all such prayer and healing research is theological: If God is omniscient and omnipotent, He should not need to be reminded or inveigled that someone needs healing." This is simplistic theology at best second-guessing an omniscient and omnipresent God is a tautology by definition, since such a God, being everywhere and performing all acts, makes no choices at all. Such a consciousness encompasses good and bad, disease and health, equally. (As much as possible I avoid using a personal pronoun for God, but it's awkward since "It" doesn't work in English. I am referring to a God that is closer to a universal field than anything else we can imagine.) Does an omnipotent God even need a creation to begin with? The question is logically unanswerable. Fortunately, Shermer's Sunday School God, a patriarch with a white beard sitting above the clouds, plays no role in my argument — or in the traditions of Buddhism, Vedanta, etc. mentioned at the outset. Did my book defend the Judeo-Christian God? Did it argue for a physical place called heaven (or hell)? Did I praise the joys of the hereafter in order to denigrate life here on earth? Not for a moment. I specifically rooted the afterlife in ordinary states of consciousness that no one doubts, such as dream, imagination, projection, myth, metaphor, meditation, and other aspects of awareness that give us clues about the workings of the mind overall. Shermer doesn't engage those connections, either.

Since he often lumps me in with other authors whom he disdains and treats cavalierly, I can only assume that he uses the same slipshod reasoning on them, too. I certainly know for a fact that Shermer misrepresents and distorts the groundbreaking work of Rupert Sheldrake, a biologist who graduated with first-class honors from Cambridge and whose *curriculum vitae* (not to mention acumen, curiosity, and intelligence) a gaggle of skeptics can only envy.

But let's concede that Shermer knows he's preaching to the choir and can afford all this rhetorical by-your-leave. His review hasn't actually offered anything beyond a self-indulgent expansion on his first sentence, borrowed from a bumper sticker: I DON'T KNOW AND YOU DON'T EITHER. He takes this to be humorous; in fact it is distressingly dogmatic. Is he so proud of his skepticism that literally he can tell what someone else *doesn't know?* Without dragging him into philosophical deep waters, I must point out that dismissing opposing views even before they are stated seems like fairly spooky solipsism.

In the end, debating tactics offer entertainment value but are a dubious way to get at truth. Ralph Waldo Emerson wrote that the true test of any scientific or philosophical system is how much it can explain. I believe that Shermer sincerely agrees with this, despite his often unfair tactics and his condescension to spirituality in general. The old-fashioned materialism that underlies his opinions stands in stark contrast to quantum physics, which long ago opened up an unseen world where linear cause-and-effect no longer operates, where intuition has made more breakthroughs than logic. Virtual reality, populated with virtual photons and subatomic interactions that operate beyond the speed of light — a realm where events are instantaneously coordinated across billions of light years — is the foundation of our physical world. *Pace* Shermer, the possibility of intelligence and consciousness in the universe is completely viable; we must arrive at new theories to account for life after death (among many other mysteries) by opening ourselves to the origins of our own consciousness. It's all very well to watch various parts of the brain light up on an MRI, but to claim that this is true knowledge of the mind is like putting a stethoscope to the roof of the Astrodome and claiming that you understand the rules of football.

If Shermer wants to have a serious debate about the persistence of consciousness after physical death, I eagerly invite it. But I must in all candor ask him to look at consciousness first. He hasn't made the slightest effort so far, and yet that was the entire subject of my book.

II. Science and the Afterlife

To catalog how much Shermer gets wrong isn't the same as proving that the afterlife is real. But the proofs that it isn't are not very sound. Hamlet refers to death as "the undiscovered country from whose bourne no traveler returns." For all intents and purposes, this argument has sufficed for materialists ever since. But people do cross the boundary between life and death only to return — the number of near-death experiences is many thousands by now. (For anyone who wants an in-depth exposure to the phenomenon, see www.near-death.com. Contrary to what Shermer claims, these aren't artifacts of an oxygen-deprived brain; they are meaningful experiences full of detail and coherence, and often they appear after the brain ceases all activity. The existence of studies in which people do not have such experiences seems irrelevant. I can offer experiments where people can't identify the notes of the musical scale, but that doesn't mean perfect pitch is an illusion.

I was particularly interested in the resemblance between modern near-death experiences and those reported for hundreds of years in Tibet. People who return from the dead in that culture are known as delogs, and what they experience isn't a Christian heaven or hell — in this country 90 percent of near-death experiences, by the way, are positive — but the complex layers of the Buddhist Bardo. In our society heaven is generally reported by those who have near-death experiences as being like green pastures or blue skies; children tend to report a child's heaven populated by scampering lambs and other baby animals.

This made me realize that Hamlet was right to call death an undiscovered country, not because the living cannot reach it but because heaven's geography keeps shifting. If we look at how various cultures perceive the afterlife, there are roughly seven categories:

1. **Paradise:** Your soul finds itself in a perfected world surrounding God. You go to Paradise as a reward and never leave. (If you are bad, you go to Satan's home and never leave it.)
2. **The Godhead:** Your soul returns to God, but not in any particular place. You discover the location of God as a timeless state infused with his presence
3. **The Spirit World:** Your soul rests in a realm of departed spirits. You are drawn back to those you loved in this life. Or you rejoin your ancestors, who are gathered with the great Spirit.
4. **Transcendence:** Your soul performs a vanishing act in which a person dissolves, either quickly or gradually. The pure soul rejoins the sea of consciousness from which it was born.
5. **Transmigration (or Metempsychosis):** Your soul is caught in the cycle of rebirth. Depending on one's karma, each soul rises or falls from lower to higher life forms — and even may be reborn in objects. The cycle continues eternally until your soul escapes through higher realization.
6. **Awakening:** Your soul arrives in the light. You see with complete clarity for the first time, realizing the truth of existence that was masked by being in a physical body.
7. **Dissolution:** Eternity is nothingness. As the chemical components of your body return to basic atoms and molecules, the consciousness created by the brain disappears completely. You are no more.

There is no common denominator here except one: consciousness itself. We have to shift our notion of the afterlife from being a place to being a state of awareness. Once we do that, life after death becomes much more plausible. Instead of arguing over religious beliefs, we can ask rational questions:

- Can consciousness survive the body's death?
- Is there mind outside the brain?
- Can we know the states of consciousness that belong to the afterlife without dying?
- Does consciousness have a basis outside time and space?

To me these are rational questions, and we can devise experiments to answer them. But before going into that, the issue most people want to settle is "What happens after we die?" Since this remains such a pressing question, let me offer the evidence that surfaced when I looked at cultures East and West. Leaving aside the place a person might go to (my position is that there is no "where" after death; everything is projected in consciousness, including heaven and hell), the afterlife appears to unfold in the following stages:

1. The physical body stops functioning. The dying person may not be aware of this but eventually knows that it has occurred.
2. The physical world vanishes. This can happen by degrees; there can be a sense of floating upward or of looking down on familiar places as they recede.
3. The dying person feels lighter, suddenly freed of limitation.
4. The mind and sometimes the senses continue to operate. Gradually, however, what is perceived is non-physical.
5. A presence grows that is felt to be divine. This presence can be clothed in a light or in the body of angels or gods. The presence can communicate to the dying person.
6. Personality and memory begin to fade, but the sense of "I" remains.
7. This "I" has an overwhelming sense of moving on to another phase of existence.

As much as possible I have eliminated religious wording here because the persistence of consciousness has to be universal. It can't depend on specific beliefs, which change over time and from place to place. (When he dies, Michael Shermer will be relieved to survive, but perhaps he will be disappointed that his long service to fundamental Christianity in youth, followed by long service to skepticism, won't give him a special place in heaven. Nor will it lock the gates against him.)

Right now there are many reasons why science is reluctant to test any of these propositions about the survival of consciousness. First and foremost is the ideology of materialism. Shermer stands in for thousands of actual scientists who see the world entirely in material terms. For them, consciousness is as alien as the soul. Both are invisible, immaterial, and unmeasurable and therefore ipso facto unreal. By these standards virtual photons should also be unreal, but they aren't (not that Shermer has bothered to become conversant with quantum physics). Other reasons include peer pressure — i.e., ridicule — even when a researcher is brilliant and scrupulous to the *n*th degree. Lack of funding is a problem, naturally, and above all there is the time-honored antithesis between science and religion. In an either/or world, it's hard to convince the religionists that rationality has a spiritual place or the scientists that your research isn't just a stalking horse for the Bible — see the recent social debate over Intelligent Design where neither side was willing to see the slightest merit in the other.

None of these obstacles, however, has proven insurmountable. Let me offer some highlights in the research devoted to answering the most crucial questions about the possibility of life after death:

Mind Over Matter

My core argument is based on consciousness being a field, like matter and energy fields, that we are all imbedded in, whether here and now or after death. It would help us greatly if our minds could alter the field. Then we would have a link between the two models of mind and matter. Such a link was provided by Helmut Schmidt, a researcher working for Boeing's aerospace laboratory in Seattle. Beginning in the mid-Sixties, Schmidt set out to construct a series of "quantum machines" that could emit random signals, with the aim of seeing if ordinary people could alter those signals using nothing more than their minds. The first machine detected radioactive decay from Strontium-90; each electron that was given off lit up

either a red, blue, yellow, or green light. Schmidt asked ordinary people to predict, with the press of a button, which light would be illuminated next.

At first no one performed better than random, or 25 percent, in picking one of the four lights. Then Schmidt it on the idea of using psychics instead, and his first results were encouraging: they guessed the correct light 27 percent of the time. But he didn't know if this was a matter of clairvoyance — seeing the result before it happened — or something more active, actually changing the random pattern of electrons being emitted.

So he built a second machine that generated only two signals, call them plus and minus. A circle of lights was set up, and if the machine generated a plus, a light would come on in the clockwise direction while a minus would make one light up in the counter-clockwise direction. Left to itself, the machine would light up an equal number of pluses and minuses; what Schmidt wanted his subjects to do was to will the lights to move clockwise only. He found two subjects who had remarkable success. One could get the lights to move clockwise 52.5 percent of the time. An increase of 2.5 percent over randomness doesn't sound dramatic, but Schmidt calculated that the odds were 10 million to one against the same thing occurring by chance. The other subject was just as successful, but oddly enough, he couldn't make the lights move clockwise. Hard as he tried, they moved counter-clockwise, yet with the same deviation from randomness. Later experiments with new subjects raised the success rate to 54 percent, although the strange anomaly that the machine would go in the wrong direction, often persisted. (No explanation was ever found for this.) In effect, Schmidt was proving that an observer can change activity in the quantum field using the mind alone.

In an earlier part of this article I refer to replications of these experiments at Princeton and other laboratories. After 12 years of study, it was found that about two-thirds of ordinary people could influence the outcome of the machine, unlike in Schmidt's study, where only talented psychics were used. After examining the results in detail in her excellent book, *The Field*, writer Lynne McTaggart sees a complete revolution in consciousness: "On the most profound level, the [Princeton] studies also suggest that reality is created by each of us *only by our attention*. At the lowest level of mind and matter, each of us creates the world."

Remote Viewing

If someone could alter the field simply by looking at it, that would come even closer to the premise that each of us is imbedded in the field. An intriguing proof of this was provided by a machine built by physicists at Stanford called a SQUID, or superconducting quantum interference device. It's enough for us to know that this device, which measures the possible activity of subatomic particles, specifically quarks, is very well shielded from all outside magnetic forces. This shielding begins with layers of copper and aluminum, but to insure that no outside force can affect the mechanism, exotic metals like niobium and "mu metal" wrap the inner core.

In 1972 a SQUID was installed in the basement of a laboratory at Stanford, apparently doing nothing except tracing out the same hill-and-valley S-curve on a length of graph paper. This curve represented the constant magnetic field of the earth; if a quark passed through the field the machine would register it by changes in the pattern being drawn. A young laser physicist named Hal Puthoff (later to become a noted quantum theorist) decided that aside from its main use, the SQUID would make a perfect test of psychic powers. Very few people, including the scientists at Sanford, knew the exact inner construction of the machine.

A letter Puthoff wrote in search of a psychic who would take up the challenge was responded to by Ingo Swann, a New York artist with psychic abilities. Swann was flown to California without being told in advance about either the test or the SQUID. When he first saw it, he seemed a bit distracted and baffled. But he agree to "look" inside the machine, and as he did, the S-curve on the graph paper changed pattern — something it almost never did — only to go back to its normal functioning as soon as Swann stopped paying attention to it.

A startled Puthoff asked him to repeat this, so for 45 seconds Swann concentrated upon seeing the inside of the machine, and for exactly that interval the recoding device drew a new pattern, a long plateau on the paper instead of hills and valleys. Swann then drew a sketch of what he saw as the inner workings of the SQUID, and when these were checked with an expert, they perfectly matched the actual construction. Swann was vague about whether he had changed the magnetic input that the machine was built to measure; he offered that he thought he was affecting its niobium core. But it also turned out that if he merely thought about the SQUID, not trying to change it at all, the recording device showed alterations in the surrounding magnetic field. In the years since 1972, many other experiments in remote viewing have successfully taken place.

Intelligence in Nature

If we survive death in our consciousness, we'd like to take human qualities with us, such as intelligence. Is there proof that intelligence is innate in nature? I will skip over the argument by design since it isn't logically irrefutable and give an amusing practical example. Many dog owners will attest to the ability of a dog or cat to know what the owner is thinking. A few minutes before going on a walk, a dog gets excited and restless; on the day when a cat is going to be taken to the vet, it disappears and is nowhere to be found. These casual observations led the ingenious British researcher Rupert Sheldrake, a trained biologist now turned speculative thinker, to conduct a few controlled studies. He wanted to know if dogs and cats can actually read their owners' minds. One study was very simple: Sheldrake phoned up 65 vets in the London area and asked them if it was common for cat owners to cancel appointments because their cats had disappeared that day. Sixty-four vets responded that it was very common, and the sixty-fifth had given up making appointments for cats because too many couldn't be located when they were supposed to come in.

Sheldrake decided to perform an experiment using dogs. The fact that a dog gets excited when the time comes for going on a walk means little if the walk is routinely scheduled for the same time very day, or if the dog gets visual cues from its owner that he is preparing to go out. Therefore Sheldrake placed dogs in outbuildings completely isolated from their owners; he then asked the owner, at randomly selected times, to think about walking the dog five minutes before going to fetch them. In the meantime the dog was constantly videotaped in its isolated location. Sheldrake found that more than half the dogs ran to the door, waging their tails, circling restlessly, or otherwise showing anticipation of going for a walk, and they kept up this behavior until their owners appeared. No dog showed anticipatory behavior, however, when their owners were not thinking about taking them for a walk.

So far, this suggests something intriguing, that the bond between a pet and its owner could result in a subtle connection at the level of thought. Polls show that about 60 percent of Americans believe they have had a telepathic experience, so this result is not completely startling. The next leap is quite startling, however. After writing up his results with telepathic pets, Sheldrake received an email from a woman in New York City who said that her African grey parrot not only read her thoughts but responded to them with speech. The woman and her husband might be sitting in another room, out of sight from the bird, whose name is N'kisi, and if they were feeling hungry, N'kisi would suddenly say, "You want some

yummy." If the owner and her husband were thinking about going out, N'kisi might say, "You gotta go out, see ya later."

Greatly intrigued, Sheldrake contacted the owner, an artist named Aimee Morgana. The situation he found was remarkable even without telepathy. African gray parrots are among the most linguistically talented of all birds, and N'kisi had a huge vocabulary of over 700 words. More remarkable still, he used them like human speech, not "parroting" a word mindlessly but applying it where appropriate; if he saw something that was red, he said "red," and if the object was another color, he said that color. A decade ago this talent would have been unbelievable, until a researcher named Dr. Irene Pepperberg, after twenty years of work with her own African gray, had proved beyond a doubt that it could use language meaningfully. Now associated with MIT, Pepperberg made a breakthrough, not just in our understanding of animal intelligence, but in the possibility that mind exists outside the brain.

It was this possibility, which Sheldrake and others call "extended mind," that N'kisi seemed to prove. Aimee had some astonishing anecdotes to relate. When she was watching a Jackie Chan movie on television, one shot showed Chan perilously perched on a girder. When the shot came on, N'kisi said, "Don't fall down," even though his cage was behind the television with no line of sight to the picture. When an automobile commercial came on next, N'kisi said, "That's my car." Another time Aimee was reading a book that had the lines, "The blacker the berry, the sweeter the juice," and simultaneously from another room the bird said, "The color is black."

Sheldrake wanted to confirm all of this for himself. On his first visit, Aimee gave him a taste of N'kisi's telepathy: she looked at a picture of a girl from a magazine, and with remarkable clarity from the adjoining room the parrot said, "That's a girl." The next step was a formal experiment. If N'kisi could understand words and also had telepathic abilities, could the two be tested together? The experiment Sheldrake devised was quite strange if he hadn't already seen what N'kisi could do — he proposed that Aimee would look at pictures that corresponded to words her parrot already knew. Aimee would sit in one room while N'kisi remained isolated in another. The bird would have two minutes to utter a "key word" that matched the picture. If he said the word in that time, it would count as a hit. If he didn't say the word, or if he said it after the two minutes were up, it counted as a miss.

To insure neutrality, someone besides Aimee chose both the pictures and the key words that matched each one. (This proved unfair to the bird, actually, since the neutral chooser picked a word like "TV" that N'kisi had only said once or twice before; it didn't utter these words at the right time during the experiment, nor did he say them at all.) After all the trials were over, the tapes of what N'kisi had said were played for three judges, who wrote down what they heard; unless N'kisi distinctly said the right word, as transcribed by all three judges, a hit wouldn't count. The results were beyond ordinary comprehension. For example, when Aimee looked at a picture showing scantily clad bathers on a beach, N'kisi mumbled for a bit, then all three judges heard him say, "Look at my pretty naked body." He didn't say other, irrelevant key words; in between saying the right words twice, the bird only whistled and made vocal tones. When Aimee looked at a picture of someone talking on the telephone, N'kisi said, "What'cha doin' on the phone?" Perhaps the most intriguing response was when Aimee concentrated on a picture of flowers. Instead of simply uttering the key word "flower," N'kisi said, "That's a pic of flowers."

How did he do overall? Out of 71 trails, N'kisi got 23 hits, as compared to the 7.4 hits that would have been expected if the results were random. Sheldrake points out that this is quite a significant outcome, all the more because N'kisi wasn't aware that he was being tested and often said the right key word after the allotted time was up. In a small Manhattan apartment another bit of proof added to mounting evidence that the mind isn't solely human property and in fact might exist outside the brain. Communication between the animal kingdom and us has an eerie ring, but pets can't cheat and they have no ulterior

motive for proving that they are special in their abilities. India's Vedic rishis long ago asserted that the entire universe is intelligent, because it is permeated by consciousness.

The Mind Field

If consciousness is an aspect of the field, then our brains should operate along the lines of a field. This seems to be true. For one thing, it's impossible to explain how the brain coordinates millions of separate events simultaneously unless something like a mind field is present. Take a compass out of your pocket anywhere on earth, shake it, and a few seconds later the wobbly needle will always settle pointing north. If every person on the planet did this at exactly twelve midnight, billions of compasses would be doing the same thing simultaneously, a fact that doesn't surprise us because we know that the Earth's magnetic field is responsible. It would be absurd to claim that each compass decided randomly to pick north.

Yet we say that about the brain. For you to think the word "rhinoceros" and see a mental image of that animal, millions of brain cells have to act simultaneously. (We will leave aside the more difficult question of why you picked "rhinoceros" out of all the words you could have chosen, since that choice can be based on reason, emotion, nonsense, or private associations in memory. A computer can be taught to select any given word using an pre-set algorithm, but it has no ability to decide on what personal, emotional, or imaginative basis to pick words — you do.) The neurons involved in word choice don't jumble through the alphabet to find one letter at a time; they don't sound out an array of words one syllable at a time; nor do they leaf through a photo archive to match the right word to the right animal. Instead, the correct brain activity arises simultaneously.

Neurologists can watch various portions of the brain light up at the same time, but this is one area where subjective experience is stronger, since we all know first hand that we can utter words in any order and call up any image in our imagination. The brain is acting holistically like a field, coordinating different events at the same time, except that we know the brain isn't literally a field. It's an object. Fields are invisible, and their basic components are energy and information. Which sounds much more like a mind than a physical organ, however complex.

You would think that since the brain depends on electrical signals, it would be affected by the soup of radio, television, microwave, and many other electromagnetic emissions that surround us. Apparently this isn't so, and psychic researchers have gone so far as to isolate subjects in Faraday cages that block all electromagnetic energy without altering their abilities to see at a distance or exhibit other psychic phenomena. It will be fascinating to explore the field phenomena that are subtler than electromagnetism — the afterlife could well be one of them.

Can it be that the universe is organic, holistic, and aware? I am perfectly willing to accept Shermer's declaration that the burden of proof lies with those who claim this rather than with skeptics. But logically that's not actually true. We cannot prove that the universe *doesn't* have a mind, because we aren't mindless. Even when we declare that atoms and molecules act mindlessly, that is a mental statement. Nobody has ever experienced mindlessness; therefore we have nothing to base it on, just as a fish has nothing but wetness to base its reality on — dryness is a theological fancy under the sea.

In the end, I realize that Shermer and I are speaking two different languages. He makes no reference to consciousness, the field, quantum mechanics, advanced neurology, or philosophy. I'd like to hear arguments from someone more up to date in these fields. It's a strange feeling when somebody in a Model A Ford challenges you to a race when you are in a Lexus, but even stranger when he thinks he's going to win.

Finally, Shermer adopts a word like “soul” in order to refute it when he doesn’t even understand or clarify what the soul is. Does the soul contain the total information stored in our brains? Is it a personal localization in the quantum field? Is it our connection to the realm of archetypes and myths? Information does persist, and so do archetypes. Without a doubt the electrical activity in the brain is a localization of quantum probabilities. How, then, can these phenomena be objects of serious scientific study while Shermer feels nothing but disdain for the soul? He simply assumes a Sunday School definition, and like his assumptions about God on his throne and other childish notions, it’s no wonder his arguments against life after death are scientific non-starters.