

## What is the Purpose of Psi?

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(Original publication and copyright: *Journal of the American Society for Psychological Research*, 2004, Volume 98, pp. 1-27.)

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**ABSTRACT:** According to the prevailing view in biology, the driving force for biological evolution is self-serving enhancement of reproductive and associated material success through competition and struggle for existence. However, the evolution of consciousness in humans has resulted in symbolic thought and culture that can disengage from the instinctive self-interests underlying evolution. This evolution of consciousness includes the emergence of spirituality, and motivations for transcendence and ethics beyond self-interest. Experimental parapsychology has assumed that psi is directed by needs and motivations based on self-interest. However, both experimental and spontaneous case findings suggest that psi is generally not guided by conventional motivations and needs. The parapsychological assumptions have not produced significant scientific progress and the experimental results appear capricious and actively evasive. On the other hand, paranormal phenomena tend to inspire an enhanced sense of connectedness, meaning in life, and spirituality, and have had a major role in most spiritual traditions. Psi appears to have the function of drawing attention to spiritual matters. The instances of striking psi draw attention away from the material world, and the capricious, actively evasive characteristics of psi thwart efforts to use psi for material self-interests. Enhanced consciousness can be viewed as the self-evident result of biological evolution, the ultimate goal of spirituality, and the primary effect of paranormal experiences. Interest in spirituality and related paranormal phenomena appears to be associated with personality traits that have significant genetic components.

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The lack of progress in psychical research may be due in large part to the inability to identify the role of psi in life. Instances of seemingly purposeful psi inspire the belief that psi may have a prominent, readily identified place in nature. On the other hand, the replication problems, the lack of practical application, and the seemingly capricious, actively evasive, trickster nature of psi (Beloff, 1994; Hansen, 2001; Kennedy, 2003a) leave an incomprehensibly inconsistent and more skeptical view.

The difficulty in identifying the role of psi may be due to a more general lack of understanding about the nature of life itself. In order to understand where psi fits in, we must have reasonably correct basic assumptions about the nature of life.

The purpose of the present article is to summarize some key issues about

the nature of life and how these issues may clarify and be clarified by available information on paranormal phenomena.

#### A PERSPECTIVE FROM BIOLOGY

Several fundamental mysteries remain in the understanding of biological evolution. For example, Franklin Harold (2001), Emeritus Professor of Biochemistry and Molecular Biology, argues that reductionistic approaches to biology have not and cannot provide fundamental understanding of the nature of life. He believes that entirely new realms of scientific understanding remain to be discovered that will greatly enhance the understanding of life. He says that as a scientist, he believes the new levels of understanding will be physical rather than supernatural, and suggests that a good place to start looking is in the emergent, self-organizing properties of complex systems. However, he leaves open the possibility that answers will be found in realms that are very different from what he imagines now. Several relevant points are discussed below.

##### *What is Life?*

There are several general characteristics of life that can readily be agreed upon, although, as Harold (2001) notes, definitions of life seem to depend on the scientific subspecializations of writers and tend to be controversial.

Living organisms have a surface or membrane that separates them from their environment and have mechanisms that exchange nutrients and energy with their environment. A living organism is a process like a flame more than an object (Harold, 2001, p. 10).

Living things self-replicate with extreme accuracy. The replication process is based on transmitting instructions for the next generation. All known life on earth replicates by means of DNA sequences that are decoded and converted to proteins that provide structure for living systems and serve as catalysts for reactions and processes. Cell reproduction requires a myriad of biochemical processes in exquisite order with complex regulatory mechanisms.

Living things have organization and complexity. The constituents of living organisms have functions that symbiotically work together to contribute to the continuance and propagation of life. For example, the genome for the bacteria *E. coli* encodes about 4,000 proteins that are used for specific purposes by this relatively simple single cell (Harold, 2001).

Living organisms have the ability to adapt to their environment and evolve across generations. Adaptation results from reproduction with variation combined with natural selection from the environment.

### *The Origin of Life*

The available evidence strongly suggests that life originated on earth at one time and all forms of life evolved from this one ancestor. The fundamental mechanisms for certain cellular processes are the same throughout known life on earth. Most notably, the genetic code, the code mapping DNA sequences to amino acids for proteins, is the same for all known life. This code appears to be arbitrary in the same way that mapping letters to numbers for storage and processing on computers is arbitrary. Similarly, basic molecular mechanisms of energy storage and transfer and certain other fundamental cellular mechanisms are the same throughout life, although alternative mechanisms appear to be equally viable. If life spontaneously developed at different points, these arbitrary mechanisms would be expected to vary.

Other factors suggest that the origin of life is a very rare event that is not close to being explained by established principles of chemistry and molecular biology. Evolution requires biological mechanisms for storing, reproducing, and manifesting genetic information. However, these mechanisms are assumed to have developed through evolution itself, even though evolution as currently understood could not occur in the absence of such mechanisms. The highly integrated processes of a living organism are so interdependent that it is difficult to imagine how they could have evolved incrementally. The chemical processes and structures of a cell are both a result and cause of genetic processes.

In commenting on these points, Harold (2001) notes that no convincing scheme for the origin of life has been developed and suggests that there is more to this mystery than is currently recognized in molecular biology (p. 251).

### *Complexity*

If the origin of the first living cell is the greatest mystery in biology, the next greatest mystery is the development of eukaryotic cells. These are cells with DNA contained in a nucleus and with other internal structures. Eukaryotic cells are the foundation for the evolution of the higher plants and animals. In comparison, (non-eukaryotic) bacteria have shown little evolutionary development over billions of years.

Available evidence indicates that the first eukaryotic cell developed from the symbiotic combination of bacterial cells. It is relatively easy to imagine that such cells could somehow combine in ways that are mutually beneficial, but much more difficult to imagine how their DNA and reproductive mechanisms became entwined in a way that resulted in successful reproduction of a relationship.

The symbiotic combination of bacteria into eukaryotic cells was followed by the evolution of multicelled organisms. Here also, cells devel-

oped specialized complimentary functions and became part of a larger order. The human body with specialized cells and organs for respiration, digestion, the heart, liver, blood, brain, etc. is a result of the evolution of multicellular organisms.

Cells, organs, and the organism form an interdependent hierarchical organization that is exquisitely coordinated. Each cell contains the full genome, but utilizes only a small part of the genetic information for its specialized function as part of an organ and organism.

Harold suggests that the mysteries of biology indicate that fundamental principles of science remain to be discovered. He is skeptical of the reductionistic belief that physics will explain chemistry, which will explain biology, which will explain psychology. He believes that there are properties of a living system that cannot be predicted or understood from the physical properties of the individual components of the system, including the sequence of proteins encoded by DNA. He suggests that looking in the realm of properties of complex systems may be fruitful.

In looking for explanations, he notes "we [scientists] are compelled by our calling to insist at all times on strictly naturalistic explanations" (p. 250), and later says:

I know of no evidence for the existence of vital forces unique to living organisms, and their erratic history gives one no reason to believe that life's journey is directed toward a final destination in pursuit of a plan or purpose. If life is the creation of some cosmic mind or will, it has taken care to hide all material traces of its intervention. Now one can argue that so long as we confine our inquiries to the material side of life, material answers are all we can expect; they do not warrant the assumption that there are no other questions to be asked, with altogether different answers. Science alone may not be sufficient to make sense of all the world, but I insist that science is privileged; for of all the ways of questioning nature, science alone holds the promise of objective knowledge, (p. 254)

Proponents of "intelligent design" discuss the dilemmas of complexity and integration in biological systems similar to Harold, but then draw the conclusion that this is evidence for an intelligent creator (Behe, 1998; Dembski, 2002). From a scientific perspective, that conclusion seems premature. Harold's conclusion that new principles of science remain to be discovered seems more appropriate than trying to interpret a lack of understanding as evidence supporting a specific model.<sup>2</sup>

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<sup>2</sup> Similarly, proponents of the *anthropic principle* argue that the values of many constants in the laws of physics seem finely tuned to support life and this indicates a purposeful design (e.g., Barrow & Tipler, 1986). They argue that life would not exist if these parameters were different. However, this argument is based on assumptions about possible forms of life in alternative universes. Given the lack of understanding of the origin of this universe and the origin of life in this universe, it seems premature to make assumptions about what other universes and forms of life are possible.

*Consciousness*

From a biological perspective, the evolution of consciousness is well established, but the definition and boundaries of consciousness are controversial (e.g., Deacon, 1997; Donald, 2001; Giambone & Povinelli, 2002). Simple living organisms sense and respond to their environment in self-serving ways. With evolution, the perceptual systems became more sophisticated and the responses became more flexible and context dependent. Animals evolved the capability to generate variations in behavior and to select adaptive behavior during their lifetimes (i.e., learning) rather than being limited to adaptation through changes in genetic programming with reproduction. Donald (2001) pointed out that learning is a conscious activity for humans, but behaviors become automatic and more unconscious once learned.

The ability for self-awareness is widely recognized as consciousness, but the extent to which nonhuman animals have such consciousness is controversial. Self-awareness and abstract thought allow learning and adaptation without death as the primary mechanism for selecting optimal behavior.

Various writers (e.g., Donald, 2001; Deacon, 1997) have concluded that human consciousness evolved as an ability to develop adaptive behavior in novel or changing circumstances. Humans can adapt by imagining and evaluating the effects of hypothetical alternative actions. Thus, imagination and creativity, as well as self-awareness, are key features of human consciousness. From this perspective, entertainment may be a manifestation of consciousness seeking or creating novelty and opportunities to exercise its ability for imagination.

Communication and culture are also extremely valuable results of consciousness. The evolution of a brain that supports symbolic thought and language is the foundation for self-awareness, communication, culture, and planning based on hypothetical futures (Deacon, 1997; Donald, 2001). Symbolic communication allows storage of useful information in human culture that goes well beyond the information capacity in the biochemical processes of traditional genetics. Consciousness and culture appear to have coevolved, with consciousness creating culture and culture influencing consciousness (Deacon, 1997; Donald, 2001).

As humans became more dependent on social relationships and culture (including tools and technology), individuals became part of a higher level of organization and complexity. It is noteworthy that mutually beneficial cooperation and specialization of living entities that were initially in conflict appeared on the level of single cells and carried through to the evolution of organs in a body, sexual reproduction, and occupational specialization in modern societies. The interplay between cooperation and competition has a fundamental role in evolution. The underlying competition and struggle for existence drives natural selection to favor greater intelligence, awareness, communication, and cooperation, which results in more complex living systems.

Deacon (1997) suggests that humans evolved an innate motivation to become part of something larger than one's self. This motivation has adaptive value for teamwork and promotes the type of hierarchical organization that occurs throughout the evolution of living systems. Deacon also suggests that this motivation, combined with a propensity to try to find meaning or symbolic relationships in all experiences, underlies religious and mystical beliefs.

Biologists generally view the evolution of consciousness as driven by the same principles of self-serving struggle for existence and survival of the fittest that guided the evolution of other abilities.

### *Summary*

Fundamental questions about biological evolution remain unresolved. Scientific developments that are well beyond anything that is currently anticipated are likely.

The evolution of complex living systems includes the evolution of consciousness with abilities for symbolic thought, memory, imagination, creativity, language, culture, planning, and awareness of self, others, and relationships. As a result of consciousness, humans have been able to adapt, survive, and reproduce in a wide variety of conditions, which has resulted in large populations, reduced pressure of survival of the fittest, and enhanced diversity among people and cultures. The relaxed role of genetic imperatives offers the potential for humanity to move beyond the competitive, self-serving constraints associated with biological evolution. However, the extent to which that is actually occurring is debatable.

## A PERSPECTIVE FROM PARAPSYCHOLOGY

Since the advent of experimental parapsychological research in the 1930s, the working assumption has been that psi is a human ability with the basic purpose of fulfilling a person's motivations, intentions, and needs. Psi must be guided by intention and motivation if parapsychological experiments are to be successful. The successful outcomes of some experiments have resulted in the presumption, generally accepted without question or empirical evaluation, that all psi effects are the result of motivation (Weiner & Geller, 1984). Research with animals has raised the possibility that nonhuman species also have psi abilities (Randall, 1975), but the assumption that psi is guided by motivation and need has been assumed throughout.

However, the findings of both experimental research and spontaneous cases raise serious doubts about the assumed role of motivation.

### *Experimental Research*

Concepts such as that psi is "actively evasive" (Beloff, 1994), is "self-obscuring" (Braud, 1985), has characteristics of a "trickster" (Hansen, 2001), "seems to avoid those positions in space and time when we are actively looking for it" (Batchelder, 1994, p. 93), "can act capriciously, as if ... to resist complete verification" (McClenon, 1994, p. 75), and is "intended ... to remain *baffling*" (James, 1960, p. 310) all suggest that psi effects are influenced or guided by something other than the identifiable motivations and intentions of the people directly involved. These descriptions have been proposed to explain the unintended and undesired (a) reversal of direction of psi effects within and between studies, (b) loss of intended psi effects while unintended internal or secondary effects occur, (c) declines in effect for subjects, experimenters, and lines of research, and (d) failure to develop successful applications of psi (Kennedy, 2003a).

These results suggest that the desired outcomes in experiments are being actively avoided, not just a signal in noise. A signal in noise would be expected to cause results approaching chance, not significant avoidance of the target (psi missing) or unintended internal effects (position effects) in the absence of primary, intended effects.<sup>3</sup> Similarly, a poor signal-to-noise ratio would not be expected to produce declines across studies. The results would be expected to increase across studies if relevant variables were controlled, or to be relatively uniform if no progress was made in understanding the phenomena. In addition, statistical signal enhancement methods can be used to develop useful applications for a signal in noise. However, efforts to develop reliable applications of psi have not been successful (Kennedy, 2003a). The most straightforward explanation for these effects is that the outcomes that are desired and intended by the participants and experimenters become actively avoided.

Throughout the history of parapsychology, new lines of research have initially had exciting results and great promise, but then the results became evasive. Beloff (1994, p. 7) described this pattern as a "succession of false dawns and frustrated hopes."

The failure to develop practical applications of psi indicates a lack of tangible scientific progress and may justify the skepticism of most scien-

<sup>3</sup> The skeptical explanation for these effects is that they are the result of post hoc data scrounging on nonsignificant studies. That explanation may apply in some cases but does not appear to apply in others. For example, position effects were typically initially discovered in studies that obtained statistical significance on the primary, intended outcome. Usually the psi effects were concentrated at the beginning of an experimental run for a participant, which is consistent with a better signal-to-noise ratio at those times. However, in later experiments, the primary effects were not significant, but the pattern of internal differences was still significant. The positive effects in the early part of a run were cancelled by below chance scoring later in the run. This pattern does not fit a model of a signal in noise. As discussed previously (Kennedy, 2003a), this sequence of events occurred at the Duke laboratory and notably similar events have been reported at the Princeton Engineering Anomalies Research laboratory.

tists toward parapsychology. If psi were a human ability directed by motivations and intentions as assumed for experimental research, gambling industries such as casinos, horse races, commodity markets, and lotteries would have become unviable long ago. The issue is not so much that the claims of parapsychology conflict with the known laws of science, but that the worldview of experimental parapsychology is inconsistent with everyday experience.<sup>4</sup>

The inability to develop practical applications of psi is related to the now convincing evidence that the likelihood of obtaining significant results on psi experiments generally does not increase with sample size as assumed for statistical research (Kennedy, 2003b, 2004). These findings undermine the application of standard statistical methods, including meta-analysis and signal enhancement techniques.<sup>5</sup> Attempts to use majority-vote methods to enhance psi accuracy have consistently found evidence that psi deviates from the properties assumed for applying these methods (Kennedy, 1995).

Within parapsychology, the most common explanation for the capricious, ineffectual nature of psi involves psychoanalytical speculations about unconscious resistance to psi (Batchelder, 1984; Braude, 1997; Ehrenwald, 1978; Eisenbud, 1992; Radin, 1989; Tart, 1984). One common argument is that people often display behavior that is contrary to their interests. Unconscious resistance to psi fits this pattern. However, Taylor (2003) noted that this hypothesis may apply for some people, but to propose that it applies to virtually all people "seems to be stretching a point beyond credibility" (p. 10).

I find it implausible that people who appear to have a profound interest in paranormal phenomena and devote great effort to eliciting the phenomena are actually harboring an even greater unconscious resistance to and fear of the phenomena. This fear of psi would be similar to the instinctive propensity to fear snakes (Tallis, 2002, pp. 135-138). Some people overcome the fear of snakes and handle them and make them pets. Similarly, some people are attracted to psi; however, even those people are not able to demonstrate psi in a convincing, sustained manner. This suggests that more is involved than overcoming instinctive fears.

Although the scientific validity of the psychoanalytic underpinnings is doubtful, the more revealing issue is that these speculations about uncon-

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<sup>4</sup> Working in corporate and entrepreneurial environments for the past decade has greatly increased my understanding and appreciation of the intensity of the pragmatic, entrepreneurial personality of certain individuals and their drive to develop, apply, and materially profit from any human ability or technology. The relentless creativity, energy, and persistence of these individuals and their role in the development of technology and culture should not be underestimated. I believe it is safe to assume that if the basic assumptions of experimental parapsychology were true, entrepreneurs would have developed profitable applications by now and psi research would be well funded by private venture capital.

<sup>5</sup> As has been noted previously (Eisenbud, 1992; Kennedy, 2004), psi effects by definition do not conform to known physical laws, but the psi effects in experiments are assumed to conform to the standard physical properties and processes of experimental research. It is not surprising to find evidence that this tenuous assumption is not valid.

scious resistance have not produced useful scientific predictions about when psi experiments will be successful. These speculations are generally retrospective, ad hoc efforts to maintain the assumption that psi is guided by motivation. The obstacles for psi appear to be more pervasive and effective than the hypothesized internal conflicts.

Bergson (1914) and various others (e.g., Ehrenwald, 1978; Koestler, 1972) have proposed that psi is limited or filtered to prevent information overload. However, the basic prediction from this model would be an absence of psi, not actively evasive psi such as psi missing. Further, Bergson (1914) proposed a dualistic philosophy with psi being a preexisting property of nonphysical mind rather than an ability that evolved through biological evolution or has any practical benefit. In fact, he argued that the brain suppresses psi because most psi information does not have practical value and would hinder attention to and action in the material world.

The assumption in experimental parapsychology that psi is directed by motivations, intentions, and needs appears to conflict with this filter hypothesis. According to this filter hypothesis, the detrimental effects of psi overshadow the kinds of motivated benefits that are assumed in experimental parapsychology. This situation is very different from abilities such as vision, hearing, and memory, which have obvious, practical benefits and mechanisms that prevent information overload without suppressing the abilities to near nonexistence.

From an evolutionary perspective, psi ability that needs to be so thoroughly suppressed in order for people to function effectively in the physical world would not be expected to evolve and its existence could be considered miraculous. The filter hypothesis appears to have spiritual as well as scientific implications and to require fundamental changes in the basic assumptions of both experimental parapsychology and evolution.

Similarly, the psychoanalytic speculations about instinctive resistance to psi imply that psi has more adverse effects than benefits and therefore would not be expected to evolve as an ability. Such instinctive fears make sense for reacting to external threats like snakes, but do not offer a rationale for the evolution of an ability that is predominantly detrimental and needs to be suppressed. In order for biological evolution to produce an instinctive fear of psi, the psi itself would need to be external to people or outside of biological evolution (as suggested by Bergson).

The results of psi experiments appear to have little or no reliable application related to survival, reproduction, or material success, and therefore little direction or control by conventional motivations and evolutionary needs. The existing pattern of sporadic occurrences of sometimes striking but generally useless psi that are followed by active avoidance of desired outcomes is not consistent with normal evolutionary processes. The effects would be expected to be more consistent and more useful, at least for certain individuals.

Efforts to understand psi must consider both the occasional cases of

striking success and the more common absence of psi or capricious, evasive effects. Most models in parapsychology have focused on either the instances of striking psi or the capricious nature of psi, without adequately integrating these properties. The overall findings suggest that psi is often influenced or controlled by some type of consciousness that is separate from the identifiable motivations and intentions of the living people traditionally assumed to be the source of psi in parapsychology.

### *Spontaneous Cases*

Spontaneous cases also generally do not support the assumption in parapsychology that psi is directed by conventional human motivations, needs, and intentions. Although a few cases have striking practical benefits, in the great majority, there is no material or direct benefit that can reasonably be attributed to human motivation. This fact is obvious by browsing the experiences in virtually any spontaneous case collection. For example, in Louisa Rhine's collection, approximately 90% of the precognition cases did not involve any effort to change the outcome of the event (L. E. Rhine, 1981). McClenon (2002a) reported that his case collection did not support the hypothesis that psi experiences generally provide direct benefits. Eisenbud (1992) similarly commented, "That psi-derived information is on the whole quite useless in the ordinary sense of the word is one of the most obvious facts of parapsychology" (p. 13).

Some spontaneous cases are more reasonably interpreted as psi guiding a person rather than the person guiding psi (Kennedy, 2000). For example, Dossey (1999, p. 3) described how three precognitive dreams during his early medical career influenced the direction of his career. The dreams occurred within a week of each other and he has not had other such dreams. He summarized the situation as "It was as if the universe, having delivered the message, hung up the phone. It was now up to me to make sense of it." In a survey of people with paranormal or transcendent experiences, 72% agreed with the statement "As a result of my paranormal or transcendent experience, I believe my life is guided or watched over by a higher force or being" and 25% agreed with the statement "One or more paranormal or transcendent experiences motivated me to make a major life change that I was not previously thinking about making" (Kennedy & Kanthamani, 1995).

Similar to the findings from experimental studies, efforts to understand spontaneous cases must give appropriate recognition to the occasional instances of striking psi with clear practical benefits and the much larger number of cases with no material benefit. Most spontaneous cases appear to be controlled by factors other than the identifiable motivations of the people involved, and in some cases, the most straightforward explanation for the experience is guidance by an independent, higher consciousness.

### *Shamans and Mediums*

Shamanism conceptualizes most paranormal effects as the result of spirits of some type being temporarily enticed to fulfill human wishes (Inglis, 1992; McClenon, 2002b; Winkelman, 1992). This model involves more than just human motivation and recognizes the independent nature of the phenomena and limited human control. It also recognizes that certain people have innate talents for paranormal phenomena. Shamans have been found in all hunting, gathering societies that anthropologists have investigated (McClenon, 2002b; Winkelman, 1992). Winkelman and McClenon propose that modern religions evolved from shamanism.

McClenon (2002b) argued that ostensible paranormal demonstrations by shamans promote supernatural beliefs and expectations that produce healing through placebo and hypnotic effects. He suggested that this process also applies with other types of paranormal or spiritual healing practitioners. He stated that this mechanism can produce benefits even if the paranormal effects are not real, but did not take a position on whether paranormal effects are valid.

Deception and misinterpretation appear to be pervasive in the anomalous demonstrations by shamans (Hansen, 2001; McClenon, 1994). McClenon (1994) suggested that shamans may sometimes perform deception in dissociated states that avoid conscious awareness of the deception. At the same time, the literature on shamans contains some reports of inexplicable, remarkable events (Inglis, 1992).

Some of the most powerful spirit entities in shamanism were thought to be tricksters whose role was "to show how egocentric, selfish behavior resulted in humiliation and bad outcomes, or how the spirit world could play unpredictable tricks on people and thus prevent them from becoming too self-confident or haughty" (Hayden, 2003, p. 119). Hansen (2001) has argued that paranormal phenomena in general are best characterized as an irrational, disruptive trickster.

Mediumship provides a similar model of spirit causation, limited human control, certain individuals with special talents, and also widespread deception. Apparent paranormal information from mediums is typically embedded within a great deal of what Braude (2003, p. 54) describes as "rubbish."

The apparent paranormal information from mediums primarily serves to provide evidence for the existence of paranormal phenomena and rarely has practical value. In fact, Inglis (1992) argued that interest in research on spiritualism declined due to a lack of meaningful explanation and utility for the phenomena more than a lack of evidence. For example, he quoted Maeterlinck (1914) describing the "strange, inconsistent, whimsical, and disconcerting" character of the phenomena that seem to be "without rhyme or reason, and keep to the providence of supernaturally vain and puerile recreations" (Inglis, 1992, p. 437).

### *What Does Psi Do?*

Research on the effects of psi experiences has found the predominant effect is to alter the person's worldview and increase his or her sense of spirituality, connectedness, and meaning in life (Kennedy & Kanthamani, 1995; McClenon, 1994, 2002b; Palmer, 1979; White, 1997a). Ring (1984) reported that psychic experiences can have the same aftereffects as near-death experiences. White (1997a, 1997b) has devoted the greatest effort to collecting and summarizing the effects of psychical and other exceptional experiences, and describing the transformative aftereffects.

The relatively few spontaneous psi cases that appear to have direct benefits related to motivation may actually serve as vehicles for this transformative aspect of psi. In a previous article, I described a personal experience that in retrospect appeared to be contrived to be a dramatic exceptional experience (Kennedy, 2000). The practical benefit of the apparent psi experience could have been achieved much more easily in a less dramatic and less conspicuously paranormal manner, but that would have had little impact on my worldview. Similarly, spontaneous psi experiences of awareness of a traumatic event happening to a loved one affects the recipient's worldview pertaining to the event, but rarely allows the event to be avoided as would be expected if psi were guided by practical motivations and needs.

These findings suggest that the primary purpose of psi experiences may be transformative. Spontaneous experiences may be intended to be noticed as exceptional experiences that expand a person's sense of connectedness, meaning in life, and spirituality. Belief in paranormal phenomena is associated with spirituality, particularly for people with the strongest beliefs (Kennedy, 2003c).

### *Summary*

Paranormal phenomena tend to inspire an altered worldview and enhanced sense of connectedness, meaning in life, and spirituality. Psi effects usually appear to produce these transformative results with minimal alteration of the material world. Psi effects rarely have practical, material benefit. For experimental research, the common pattern is for psi results to be initially impressive, but then to actively avoid the desired outcome. Those who claim to consistently demonstrate reliable psi at will virtually always practice a great deal of deception, or misinterpretation, or both. Scientific efforts to control psi with human motivation and intention have provided little progress in understanding or demonstrating psi after 70 years of effort.

Spirits of some type were widely assumed to have a causal role in paranormal phenomena throughout history prior to the advent of Rhine's research program. That model appears as consistent or more consistent

with the overall research experience than the model that psi is controlled by human motivation. Interest in and the occurrence of paranormal phenomena varies greatly among people and appears to be due in part to innate factors such as genetics (Kennedy, 2000, 2001, 2003c).

#### A PERSPECTIVE FROM SPIRITUAL TRADITIONS

Throughout Eastern and Western spiritual writings, paranormal miracles are reported and interpreted as evidence for a nonphysical, transcendent level of reality (McClenon, 1994; Woodward, 2000). In the New Testament, various paranormal effects were specifically described as having a decisive role in convincing people that Jesus was a great or unique spiritual teacher. The occurrence of miracles in later centuries had a key role in the proliferation of Christianity (McClenon, 1994; Woodward, 2000). Similar paranormal phenomena and interpretations have been frequently described for Eastern spiritual teachers or masters (e.g., McClenon, 1994; Rama, 1978; Woodward, 2000; Yogananda, 1946). McClenon (1994) argued that the formation and initial growth of religious groups has hinged on demonstrations of paranormal effects that were more impressive than those by competing religious groups.

Spiritual traditions view the purpose of life as spiritual growth and attainment. This growth usually involves aspiring toward wisdom and ethics beyond self-interest in preparation for some type of union with a transcendent realm.

Spiritual experiences interact with and reinforce these beliefs and values. Spiritual experiences include a sense of a profound unity or merging of self with a higher realm, noetic or direct intuitive knowledge, and feelings of sacredness (Hamer, 2004; Hood, Spilka, Hunsberger, & Gorsuch, 1996). Paranormal experiences are frequently reported in surveys of mystical experiences and are generally found to be a component of a single mystical experience factor (Hood, Spilka, Hunsberger, & Gorsuch, 1996, p. 248).

Interest in spirituality appears to have a significant genetic component (Hamer, 2004; Kirk, Eaves, & Martin, 1999; Waller, Kojetin, Bouchard, Lykken, & Tellegen, 1990). The emerging evidence suggests that the genetic component primarily relates to the tendency to have spiritual experiences, altered states of consciousness, and associated belief in non-physical realities. The cultural aspects of spirituality are reflected in religion, which may serve as an outlet for the innate spiritual inclinations and also may have nonspiritual psychosocial functions. As would be expected, emerging evidence also indicates that extreme skeptics of spirituality and paranormal phenomena have genetic tendencies for rational, controlling, materialistic personalities (Kennedy, 2003c, in press).

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<sup>6</sup> Religious participation can include benefits such as social support and professional networking. Unfortunately, the nonspiritual aspects of some fundamentalist religions include closed worldviews and hostility, conflict, and aggression toward people with different beliefs.

Within the general theme of spiritual growth, there are notable differences in ideas about the source of paranormal phenomena. Some paranormal phenomena have been viewed as direct intervention by a transcendent power, usually God, but sometimes an evil force. In other cases, paranormal phenomena have been considered to result from a human ability that emerges with spiritual development. One of the more detailed explications of this view is the yoga sutras of Patanjali (Prabhavananda & Isherwood, 1981). Another alternative is a combination of these two possibilities. A spiritually advanced person could become attuned with and a channel for transcendent purposes, but have little or no stand-alone paranormal ability for self-serving uses.

There are also notable differences in the perceived value of paranormal phenomena. In some cases paranormal phenomena have been thought to be an indicator of high spiritual attainment. Alternatively, paranormal phenomena could serve to stimulate spiritual growth in less developed individuals rather than indicate high spiritual attainment. Some people believe that most paranormal phenomena are the result of evil forces such as the devil and should be avoided. There is also a middle ground as represented by the yoga teachings that view paranormal phenomena as naturally occurring with spiritual growth, but at the same time as a distraction or hindrance to spiritual progress (Prabhavananda & Isherwood, 1981; Rama, Ballentine, & Ajaya, 1976).

Another important distinction is whether paranormal phenomena are associated with personal or global evolution of consciousness. Some writers consider paranormal phenomena as evidence that humanity as a whole is reaching a new level of evolution of consciousness. This hypothesis predicts increasing occurrence of psychic phenomena and seems to be particularly popular among writers with backgrounds in paranormal research who become interested in the spiritual implications of the phenomena (Grosso, 1992; Murphy, 1992; Ring, 1984; Thalbourne, in press).

However, McClenon (1994) and Hansen (2001) argue that paranormal phenomena are stifled and discredited as societies evolve toward greater complexity, rationality, and hierarchical bureaucracy. My experience is consistent with that position. Contrary to the idea that psi is associated with global evolution of consciousness, I see no evidence that skepticism is decreasing or that psi is occurring more consistently as more complex societies emerge on this planet.

Alternatively, some spiritual traditions focus on personal spiritual growth, which can happen without global spiritual evolution. Certain spiritual traditions, particularly those that accept reincarnation, view life on earth as analogous to attending school. Lessons are learned and then one moves on, leaving the learning environment behind for others to pass through. With this model, the optimal learning environment may be a few spiritual teachers in a world with limited spiritual evolution. This situation might be maintained for as long as the learning environment was needed.

The desire to demonstrate paranormal miracles that support certain

beliefs has resulted in frequent deception and misinterpretation in religious contexts (McClenon, 1994). McClenon (1994) also noted that throughout history claims of paranormal miracles have stimulated skepticism among certain people.

McClenon (1994) suggested that spiritual groups are usually started by a charismatic leader who reports paranormal contact with divinity. However, as the group grows within society, it forms a hierarchical organization with new leaders who have rational administrative, legalistic skills rather than inclinations for anomalous experiences. Direct contact with divinity becomes a threat to the authority of these leaders and they suppress such experiences. This idea is consistent with the emerging evidence that belief in psi is associated with personal spirituality more than with organized religion (Kennedy, 2003c).

The tendency for leaders of large organizations to be opposed to paranormal phenomena appears to extend beyond religious organizations. Han-sen (2001) has presented extensive arguments that paranormal phenomena are incompatible with large bureaucratic institutions. In addition, emerging evidence indicates that males have genetic tendencies for rational, controlling personalities and social dominance, and also tend to be more skeptical of paranormal phenomena and spirituality (Kennedy, 2003c). These characteristics may have adaptive value for competing for resources, developing tools, and producing descendents. People with a more extreme degree of these characteristics may tend to rise to positions of authority in complex organizations (Kennedy, 2003c). Fudjack and Dinkelaker (1994) summarize the masculine "extraverted/rational-empirical/pragmatic/materialist" bias in Western culture (Myers-Briggs personality type ESTJ) and evidence that this personality bias is even greater within hierarchical organizations and is highest at the top of the hierarchy.

### *Summary*

Spiritual interests and experiences can be viewed as the evolution of consciousness beyond the materialistic, self-interests of biological evolution (Hood, Spilka, Hunsberger, & Gorsuch, 1996, pp. 230-231). Spiritual beliefs and experiences typically include supernatural phenomena. The variation in spiritual interests among people appears to have a genetic component. The rational, pragmatic, materialistic type of personality that tends to rise to positions of authority in complex hierarchical organizations also tends to be skeptical of paranormal experiences and sometimes threatened by their implications.

## DISCUSSION

Enhanced consciousness can be viewed as the self-evident result of biological evolution, the ultimate goal and purpose of spirituality, and the

primary effect of paranormal experiences. This description is relatively straightforward. The controversial issue is whether the evolution of consciousness is a purposeful result or the culmination of a series of random events.

Science cannot at present compellingly refute the general hypothesis that the purpose of life is the evolution of consciousness.<sup>7</sup> Open minded scientists like Harold (2001) admit that fundamental mysteries remain that may well lead to entirely new realms of scientific discovery. These new discoveries may further blur the distinctions between science and spirituality and between normal and paranormal. The hypothesis that evolution of consciousness is a primary purpose of life implies that there is another realm of reality or consciousness that influences or has influenced the world as we know it. At present, science can neither prove nor disprove such assertions. They are widely ignored within science because of scientific parsimony (Kennedy, 1994) and because of the materialistic personality and worldview of most prominent scientific leaders.

Psi appears to promote enhanced awareness of relationships with others, sense of meaning in life, interest in a nonphysical spiritual realm, and values beyond self-interest. Psi phenomena rarely have material benefit and generally appear to operate in a way that produces minimal alteration of the physical world. The evidence for the unsustainable and generally ineffectual nature of psi (Kennedy, 2003a) appears consistent with Harold's (2001) observation that any cosmic mind or will "has taken care to hide all material traces of its intervention" (p. 254). The effects of psi experiences generally appear to conflict with the rational, instrumental, materialistic dispositions that dominate Western society (Kennedy, 2003c).

The assumption in parapsychology that psi is an ability of humans and possibly other animals that is directed by conventional motivations and needs is a relatively simple, testable hypothesis. J. B. Rhine's approach of experimental parapsychology was an important and appropriate scientific step because it focused on the most simple, testable model (Kennedy, 1994). The prior prevailing view that spirits of some type had a role in psi is a more difficult hypothesis to investigate.

However, as discussed in the section on parapsychology above, experimental and spontaneous case research indicate that psi often is not controlled or guided by the types of human motivations and needs assumed in this research. The lack of scientific progress after 70 years of research efforts with Rhine's model is clear evidence that alternative approaches are needed (Kennedy, 2000, 2001, 2003a, 2004).

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<sup>7</sup> The term evolution normally applies to changes that occur across generations. The term development is normally used for changes of an organism during its life. However, this distinction may be inappropriate for consciousness and culture that include substantial, rapidly changing nongenetic information. For the discussion here, the phrase evolution of consciousness is used to describe systematic changes in consciousness that may occur within or across living systems.

In addition, if psi fulfilled human needs as assumed for experimental research, psi would be expected to have evolved to a much more useful degree. The basic premise of biological evolution is that abilities that have adaptive value for meeting the needs of the organism are enhanced and maintained through evolution.

The fact that psi has not become obviously useful is so inconsistent with evolution that it may be interpreted as evidence that psi is not real (Levin, 1996). After considering various explanations, Levin favored a dualistic worldview in which psi is a function of mind or consciousness that is decoupled from physical evolutionary processes. Unfortunately, this proposal offers no explanation for the purpose of psi or why it sometimes operates very effectively and at other times seems to be actively evasive.

Hypotheses such as pervasive unconscious fear of psi and suppression of psi to prevent information overload imply that psi is more detrimental than beneficial. These hypotheses further weaken any ideas about psi emerging from biological evolution or being guided by motivation and intention as assumed for experimental research.

Psi appears to have a function that is outside the domain of normal physical evolutionary processes, but may be related to evolution of higher aspects of consciousness. Three models that may be relevant are discussed below.

#### POTENTIAL MODELS OF EVOLUTION AND PSI

##### *Spiritual Creator*

The characteristics of evolution are generally not consistent with the theological idea that an omnipotent being created and guides life. Over 99% of the species that have existed on earth have become extinct (Guttman, 2002). Randall (1975) summarized the situation by saying:

the Mind which reveals itself in the development of life on this planet is clearly not omnipotent, otherwise it would have assembled perfectly designed organisms directly from the dust of the earth without having to go through the long process of trial and error which we call evolution. If the biosphere reveals a god,... he seems to be an Experimenter-God, constantly trying new kinds of living structures, and sometimes making serious mistakes, (p. 235)

Theodicy, the explanation for why an omnipotent god would create or allow suffering and evil, is a related and classic problem for theological models. The unreliable nature of psi may also reflect the principle that supernatural beings or powers have limited abilities.

Randall (1975) proposed a dualistic model to explain paranormal phenomena. According to this model, nonphysical mind is attempting by trial and error "to produce a living organism capable of expressing its own creative desires" (p. 234).

Unfortunately, this model does not explain why psi sometimes operates very effectively but at other times seems actively evasive. Likewise, the model does not offer scientific predictions or explanations.

### *Psi as Self-Limiting Mental Lapses*

In describing the similarities and differences between the concepts of yoga and Western psychology, Rama, Ballentine, and Ajaya (1976) commented that "[essentially yoga is based on evolution. . . . The evolution of physical and mental potentialities as well as those of the higher consciousness are not considered separate, unrelated phenomena" (p. 281) and "This process of growth moves ultimately toward higher states of consciousness" (p. 282).

Rama, Ballentine, and Ajaya describe the "lower mind" (*manas*) consisting of sensory perceptions, instincts, and basic emotions and motivations. This lower mind is the center of attention for most people. As consciousness and awareness increase, a person makes use of a higher aspect of mind (*buddhi*) that has discrimination and wisdom. This expanded awareness can ultimately lead to awareness of pure consciousness, which is beyond time, space, and causality. In this yoga perspective, the purpose of life and evolution is for individuals to achieve higher states of consciousness.

According to this model, most instances of psychic phenomena occur when a person's sense of self is temporarily interrupted and the mind opens to unconscious material, which may include consciousness beyond the limitation of space and time. When this happens, Rama, Ballentine, and Ajaya note:

the "information" from those who report "psychic experiences" is notoriously unreliable even when they are sincere and honest. There is a large admixture of distorting influences from their personal unconscious. The psychic's prophecies may be occasionally accurate, but often they are embarrassingly wrong, (p. 132)

In yoga it is traditionally accepted that when through inner discipline one learns to step, with full awareness and control, outside the limits of the personal reality of the ordinary ego, he can see from a perspective that is no longer limited by time, space, and causality. . . . But the accurate perception of some future event, for example, when it is involuntary and does not result from such a systematic mastery of higher consciousness is not considered worthy of much attention. An "extrasensory perception" which comes as an involuntary flooding of consciousness is not highly valued in the context of yogic training. It is of passing interest however, since it indicates that one is beginning to open himself to new awareness. . . . Focusing one's attention and energy on it can become a serious obstacle to further movement along the path of growth and evolution, (pp. 133-134)

According to this model, the great majority of psychic phenomena result from brief, uncontrolled lapses in normal mental activity that give glimpses

of a consciousness beyond space and time buried in noise from the unconscious. In most cases, the reaction to these experiences, and particularly efforts to control psi with motivation and intention, result in mental states that inhibit psi. However, the yogis also say it is possible to have controlled access to these higher states of consciousness with extended, intensive spiritual practices.

The self-limiting nature of these mental lapses is consistent with the elusive, ineffectual nature of psi. It appears to be implied in yoga writings that when a person has evolved to the point that psi can be controlled, then the person has little interest in the types of motivations, needs, and intentions that occur with normal psi experiments and particularly with efforts to apply psi.

The idea that most psi is a result of brief, self-limiting lapses in normal mental activity is consistent with the techniques found to be most successful in psi experiments. White's (1964) influential review of ESP test methods noted that "deliberate attempts are made to still the body and mind" (p. 28). She also discussed the potentially inhibiting effect of having a conscious intention to produce a spontaneous, unconscious ESP response, and commented, "Perhaps we shall never be able to produce ESP at will" (p. 48). Experimental procedures such as the Ganzfeld that attempt to reduce external awareness followed White's review and also recognized the yogic ideas (Honorton, 1977). However, these experimental procedures are a very superficial implementation of the yogic principles.

The mental lapses that allow uncontrolled psi impressions may be more likely when a person's mental state is fluctuating. For example, Rama, Ballentine, and Ajaya (1976) note "the psychotic may happen upon such psychic perceptions during his drastic shift from one massive identification to the next" (p. 133). Fluctuations in mental state may be related to Hansen's (2001) hypothesis that psi results from and causes disruption of psychological and social processes.

Richards (1996) argued that the evidence for psi in animals, children, and the mentally ill indicates that psi is not a consequence of higher consciousness as proposed in yoga and by transpersonal psychologists such as Wilber (1980). He pointed out supportive findings from spontaneous cases and experimental research.

However, Richards's examples appear to be instances of uncontrolled psi that are consistent with the yoga concepts above. The yoga model above distinguishes controlled versus uncontrolled psi, not psi versus no psi as apparently assumed by Richards. Virtually all psi research is based on instances the yoga model considers as brief, uncontrolled psi.

This model from yoga basically describes a signal in noise and does not explain the actively evasive nature of psi. Psi missing and cases when intended primary effects are lost but unintended secondary effects occur appear to result from an active avoidance of desired outcomes rather than brief, noisy contact with psi information.

### *Psi in the Spiritual Realm*

The motivations and dynamics for spirituality are very different from the motivations and dynamics in the materialistic realm of biological evolution. According to the prevailing view in biology, the driving force for biological evolution is self-serving enhancement of reproductive and associated material success through competition and struggle for existence.

With the evolution of consciousness, humans have developed the capability to move beyond the self-serving biological realm. Richard Dawkins, outspoken materialist, skeptic, atheist, and writer on evolution noted: "We are unique in the animal kingdom in having brains big enough not to follow the dictates of the selfish genes" (Dawkins & Lanier, 1997, p. 60). Similarly, Ernst Mayr (2001), a premier authority on evolution, commented that cooperative or altruistic feelings toward members of the same social group appear to be favored by natural selection, but that "[g]enuine ethics is the result of the thought of cultural leaders. We are not born with a feeling of altruism toward outsiders, but acquire it through cultural learning... . There is great variation in the altruistic propensity of different individuals" (p. 259).

Spirituality is motivated by aspirations for transcendence and ethical values beyond self-interest. These motivations became manifest as consciousness evolved with symbolic thought and culture that provided information and values decoupled from the selfish, need-driven biological realm.

Psi appears capricious and not useful from the perspective of the materialistic, need-driven biological realm. Psi apparently is rarely aligned with those needs and values, and cannot be understood within that worldview.

However, psi appears optimal for directing attention to the spiritual realm and away from material self-interests. Instances of striking psi force attention to connections, dynamics, and values beyond the material world. At the same time, the elusive, capricious aspects of psi prevent the use of psi for material gain. The actively evasive characteristics of psi, such as psi missing, send a clear message that another realm exists but that it cannot be controlled or diverted for self-interests in spite of persistent, instinctive efforts to do so. Hansen's (2001) wide ranging review and discussion of evidence that psi "both accompanies and stimulates change and disorder" (p. 430) and that psi conflicts with rational, bureaucratic values appears generally consistent with these ideas.

Psychologists, particularly those with psychoanalytic leanings, will probably favor the idea that the source of psi resides in human unconsciousness and responds to internal spiritual motivations. This may be an appropriate, parsimonious hypothesis for scientific investigation that is an advance from the unproductive need-driven models of the past. However, it is basically a minor modification of the traditional approach in experimental parapsychology. It appears to me to have a high likelihood of continuing the same lack of progress.

The hypothesis that psi is caused or influenced by some type of consciousness or intelligence separate from living persons appears to me to be more consistent with the overall evidence. Psi appears to guide people more than people guide psi (Kennedy, 2000) and to be outside of known biological evolutionary processes. The model of separate consciousness does not require the dubious assumption that biological evolution produced an ability that is materially detrimental and causes instinctive fear and suppression of the ability. This model also does not necessarily require that a spiritual realm existed eternally or has advanced intelligence. Spiritual consciousness could evolve concurrently with physical life, as proposed with reincarnation. Alternatively, Grosso (1992) proposed that human mental activities can create independent spiritual entities or thought forms similar to the ideas of theosophy. These emergent entities or processes may then interact with living people and contribute to mutual evolution. Of course, the methods for empirical investigation of such ideas have yet to be developed.

Rather than trying to identify the source of psi, the more important empirical issue at this point is to understand and investigate the motivations and dynamics that apply in the spiritual realm. This may be the starting point for scientific progress in parapsychology. Insight into the sources of psi may be more likely after the relevant motivations and dynamics are better understood.

#### CONCLUSIONS AND FINAL THOUGHTS

Psi appears to be optimized for directing attention to spiritual matters and away from material self-interest. The instances of striking psi draw attention away from the material world, and the capricious, actively evasive characteristics of psi prevent using psi for personal material gain. Both aspects of psi are important for promoting spiritual awareness. The best hope for making meaningful scientific progress in understanding psi may be to investigate motivations that apply in the spiritual realm rather than the more materialistic, self-serving needs that have driven biological evolution.<sup>8</sup>

Psi may have the function of inducing transformation or change. Psi may not result from or be associated with any particular stable psychological condition, including spiritual state. For example, Braud's (1990-1991)

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<sup>8</sup> Hansen (2001) characterizes psi as a trickster that is intrinsically capricious, irrational, and associated with disorder. If that is true, the recommendations here to investigate psi from a spiritual perspective may not be productive and scientific understanding in general will be minimal. Given the existing experience with psi, Hansen's ideas ultimately may be correct, but the basic strategy for science is to investigate more testable hypotheses before accepting that type of conclusion (see, Kennedy, 1994). The proposal presented here is that psi has the characteristics of a trickster when viewed from a materialistic, self-serving perspective, but may be more meaningful and orderly when viewed in context of spirituality.

suggestion that charity or love facilitates psi may give undue emphasis to steady state conditions. The hypothesis that the function of psi is transformation appears consistent with available data, but further research on the effects and circumstances of psi would provide more direct evidence testing the hypothesis.

Another important topic for research is the relationship between attitude toward the paranormal and personality dispositions. These attitudes may fall into three basic categories with very different worldviews and values.

A *materialist skeptical* attitude is associated with a materialistic, reductionistic, and skeptical worldview and style of thinking. It is likely that competition and self-interest are prominent with this disposition, which is common in science, industry, and business, and provides a foundation for material success. Assertive people with this personality may rise to positions of authority and status in large organizations.

A *spiritual psi* attitude is associated with a spiritual worldview and an intuitive, integrative, transcendent style of thinking. People with this disposition tend to have motivations for transformation and transcendence, to be attracted to altered states of consciousness, and to view paranormal experiences subjectively and as guidance from a higher or transcendent power. They may tend to be altruistic because they view and experience the world as an interconnected whole, without dividing people into an in-group versus outsiders.

An *instrumental psi* attitude is associated with attraction to paranormal phenomena for instrumental rather than spiritual reasons. People with this attitude are motivated more by self-interest and need for control than by transcendence. They tend to view psi as a magical power or ability for fulfilling their wants. They also tend to have beliefs about psi that are the most inconsistent with reality.

The distinction between spiritual and instrumental psi may be important for making progress in parapsychology. Experimental parapsychology basically assumes instrumental psi. On the other hand, investigations of the actual effects of psi experiences have quickly converged to spiritual psi. Of course, these attitudes and dispositions may not be mutually exclusive. Research on the psychology of religion has identified similar distinctions between *intrinsic* and *extrinsic* religious orientations (Donahue, 1985)<sup>9</sup>, which suggests that integration of spiritual and paranormal research may be productive. Examining the association of these factors with a measure of a disposition for a controlling, materialistic worldview and style of thinking may be a good starting point. New measurement scales may be needed for this research.

The materialistic personality type appears to become more prominent and influential for human culture as large complex hierarchical organiza-

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<sup>9</sup> Intrinsic and extrinsic religious orientations were originally conceptualized as the ends of a bipolar continuum. However, subsequent research found that they are more appropriately considered as separate factors (Donahue, 1985).

tions of government and corporations have an increasing role in human life. Fudjack and Dinkelaker (1994) argue that the extraverted, rational, pragmatic, materialistic type of personality (ESTJ) is the most common in Western society and that hierarchical bureaucracies that focus on power more than creativity and flexibility are the preferred form of organization for this personality type. They also argue that this dominance of personality type is not healthy for organizations or for society. From an evolutionary perspective, alternative values and strategies will eventually emerge if they are more adaptive.

Skeptics will likely agree that some people have strong innate spiritual motivations, but argue that these motivations cause them to misinterpret normal events as paranormal. This point appears to have at least partial validity. Available evidence suggests that the majority of reported spontaneous psi cases are not actually psi (Kennedy, 2000). More carefully distinguishing actual psi from wishful interpretations may be an important prerequisite for scientific progress. At the same time, the capricious, actively evasive nature of psi may make it impossible to provide evidence that would overcome the skeptics' basic disposition. The most productive strategy may be to recognize the nature of the personality differences and that neither the skeptic nor believer can provide scientific evidence at this point that will overcome the dispositions of the other.

For example, the origin of life appears to be an extremely rare event that has not been explained by current principles of science. This situation is consistent with a miraculous or paranormal genesis, but could also be due to other as yet unrecognized principles of nature. Likewise, the question of whether or not spiritual consciousness is a predetermined, ultimate goal of evolution cannot be convincingly answered now.

Given the prevalence and properties of hierarchical organization throughout known life, it might not be surprising to find that humans are elements of a higher level of organization. Humans could be interdependent with, and simultaneously contribute to and be constrained by that higher organization. Psi may be a manifestation of the interaction with the higher level. Spirituality may reflect enhanced awareness of this higher (perhaps emerging) unity and purpose.

Greater understanding of the evolution of life and the properties of psi will be needed before these questions can be addressed scientifically. For the indefinite future, genetic personality factors may have a pivotal role in the attitudes that many people have toward these topics.

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