

The Psychology of Life After Death

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ABSTRACT: *Traditionally, people's concern with an afterlife has been of interest only to philosophy and religion. The recent explosion of popular articles and books about life after death has now reached the medical and psychiatric journals, in which "scientific" reports cite evidence from survivors of clinical death and from deathbed visions of terminal patients, among other sources of data. This article critically reviews the evidence in light of ethological, anthropological, and psychological findings. The similarity of afterlife visions to drug-induced hallucinations invites a rational framework for their experimental analysis. From observations of animals burying their dead, through awareness of the seasonal rebirth of nature, to recognition of inherited characteristics, early homo sapiens developed the concept of life after death in an effort to explain these behaviors and their underlying feelings. Cross-cultural studies confirm that the experiences of dying and visiting "the other side" involve universal elements and themes that are predictable and definable. These phenomena arise from common structures in the brain and nervous system, common biological experiences, and common reactions of the central nervous system to stimulation. The resultant experience can be interpreted as evidence that people survive death, but it may be more easily understood as a dissociative hallucinatory activity of the brain.*

The time is 1920. Thomas Edison had always been a believer in electrical energy. He once wrote that when a person dies, a swarm of highly charged energies deserts the body and goes out into space, entering another cycle of life. Always the scientist, Edison felt that some experiment demonstrating the immortal nature of these energies was necessary. In an interview in the October 1920 *Scientific American* he stated,

I have been thinking for some time of a machine or apparatus which could be operated by personalities which have passed onto another existence or sphere. . . . I am inclined to believe that our personality hereafter does affect matter. If we can evolve an instrument so delicate as to be affected by our personality as it survives in the next life, such an instrument ought to record something.

Edison never built his machine, but on his death-

bed he had a vision of the next life and remarked, "It is very beautiful over there" (quoted in Sandberg, 1977, p. 65).

The time is 1973. Based on pioneering research started at the University of California, Los Angeles, Raymond Western had just completed the development of a vast electronic computer nicknamed MEDIUM. Operating on complex electromagnetic principles, MEDIUM was designed to communicate with unique electromagnetic configurations orbiting in a space-time continuum separate from that which we call reality. These unique configurations were the energies of departed human personalities. Although Western did not like the word *soul*, he agreed with the theologians and scientists who tried his device that communication with the dead was possible. Life after death was a reality.

Although the above 1973 scenario was constructed by science fiction writer Philip José Farmer (1973), the science fiction genre has always been the barometer of the social times, predicting and even designing future scientific realities. And so it is not surprising that in 1976 author Arthur Koestler would write a serious essay in which he would claim that evidence of life after death may be based on survival of electromagnetic energies that exist independent of the brain matter.

The time is now 1978. The California Museum of Science and Industry had opened an exhibit based on the thesis that energy is indestructible, that consciousness can exist independent of the physical body, and that consciousness continues after death. Entitled *Continuum*, the exhibit proclaimed the words of great philosophers who have supported the belief in a life after death. Displays bombarded the visitor with reports of visions of the dead and descriptions of the afterlife in order to demonstrate that consciousness can exist

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without the physical body. However, the exhibit avoided the tricky philosophical problem posed by the fact that a conscious physical body is always the one to make such reports!

Epistemological difficulties aside, the belief in life after death thrives. A 1978 Gallup poll reveals that approximately 70% of the people in the United States believe in the hereafter. An earlier survey conducted in the Los Angeles area (Kalish & Reynolds, 1973) indicated that 44% of respondents had had encounters with others known to be dead. On June 20, 1978, the *National Enquirer* ran a front-page headline declaring "New Evidence of Life After Death" and advertised "science's answer to the afterlife" for a mere \$3. That money procures a copy of *The Circular Continuum* (Masterson, 1977), which explains the eternal Einsteinian nature of energy and matter as proof of life after death and provides an illustration depicting a man falling through a long spiraling tunnel into the afterlife. Masterson's book is a poor adaptation of psychologist LeShan's (1975) longer, and cheaper, explanation of the phenomenon in terms of the field theory of modern physics.

Hollywood took notice as Sunn Classic Pictures released *Beyond and Back* (1977), a documentary look at this new evidence. The film contains many reports from people who were on "the other side" following near-death accidents or resuscitation from clinical death. All had similar experiences of passing through that long spiraling tunnel, hearing a strange noise, seeing their own physical bodies from a distance, reviewing memories, meeting with deceased relatives and friends, confronting a blinding white light, and transcending with love and acceptance to a realm of heavenly scenery. The National Film Board of Canada recently produced an animated film about a trip to the afterlife (*Après La Vie*, 1979), and comic books carry visions of the hereafter to children and adults (e.g., Chick, 1972; Schrier, 1977). Art books provide vivid documentation of the death and rebirth concepts of many cultures (e.g., Grof & Grof, 1980), as do scholastic primers for school-children (e.g., Maynard, 1977).

Popular books abound with stories of reincarnation, mediums, spirits, ghosts, parapsychology, and other evidence for human beings' survival after death (e.g., Bayless, 1976; Phillips & Phillips, 1971; Rogo, 1973; Sibley, 1975). Even a Nobel laureate's speculations on paranormal phenomena, including life after death, are reprinted for popular

audiences (Maeterlinck, 1975). Readers are told that the light of the soul may burn forever, that you *do* take it with you (Miller, 1955), and that the evidence is not ridiculous but must be accepted on faith (Bendit, 1965). And if you try to escape from it all at your local airport, Hare Krishna cultists may try to sell you a copy of *Beyond Birth and Death* (Prabhupada, 1972), with the assuring, albeit cryptic, message that there is no death because there is no birth, for the soul is eternal.

Even popular science books have joined the growing body of "literature" on life after death (e.g., Fiore & Landsburg, 1979; Meek, 1980). Rogo (1977) presents evidence of tape-recorded voices as a breakthrough into the paranormal spirit world. There is even a do-it-yourself manual on recording voices from the beyond (Welch, 1975), whereby one discovers that we weep at funerals not for the dearly departed, but for we the living who are deprived of the glorious hereafter. And if some people cannot (or will not) hear such evidence, Weinberger (1977) argues that Venus's-flytraps can and presents "experimental evidence" of this plant's ability to communicate with disincarnate persons!

Television programs, both documentary and fictional, capture prime-time audiences with the lure of the afterlife. In 1978, a "Twilight Zone" episode depicted a young boy who was able to speak to his dead grandmother over a toy telephone. According to Rogo and Bayless (1979), such calls have been received by numerous people; presenting anecdotal evidence in *Phone Calls From the Dead*, they offer several explanations: the dead have survived, extradimensional beings are playing tricks on us, or the witnesses are using psychokinetic powers to produce the calls. In one case, the witness received a collect call from a dead person, but the telephone company had no records of the call. (If Ma Bell is a medium par excellence, it would seem uncharacteristic of her not to bill for such service.) Rogo and Bayless hastily discount the possibility of hallucinations because the phone rings loud and clear and anyone who hallucinated such conversation "would be quite insane and need immediate institutionalization" (p. 159). There is no discussion of alternative and perhaps more relevant factors, such as imaginary companions experienced by the bereaved (see Siegel, 1977b) or misinterpretation of ambiguous noise on the phone as a "signal."

Life after death themes are increasingly reflected in the science fiction literature as well. In his

novel *Messiah*, Vidal (1954) creates the character of John Cave, who becomes the prophet of a new religion based on the worship of death and the quest for the experience through suicide. Science fiction writers Nolan and Johnson (1967) envision a world in which inhabitants voluntarily submit to death in order to be "renewed" and reincarnated (and thus keep the population controlled). And Farmer (1971) has written an extremely popular novel based on the theme that everyone who has ever died on Earth is resurrected on another planet. Other writers envision reincarnation in special ghettos on Earth (Silverberg, 1974) or in the bodies and brains of the living (Robinson, 1979; Silverberg, 1978). Several writers combine fictional plots with nonfictional accounts from the near-death accident literature (e.g., Bishop, 1979) or the psychical literature (e.g., Katz, 1979). Richard Matheson (1978) has gained critical acclaim for his science fiction novel based directly on the current life after death literature, which is uniquely referenced in the novel itself.

Science fiction writers have even suggested the "ideal" experiments to resolve the question of survival. Shapiro (1977) describes a research team of five physicians, equipped with the latest medical gadgetry, who investigate life after death by killing a team member and tracking the brain waves (decoded into thoughts) as the soul departs into the hereafter. Former *Newsweek* science editor Charles Panati (1979) based his novel *Links* on an actual experiment involving two hypnotized subjects who visited the threshold of the beyond while in a trance.

In the 1970s, medical journals started publishing reports of patients who had afterlife visions following near-death experiences (e.g., MacMillan & Brown, 1971). New therapeutic approaches to dying, based on a sympathetic assurance that life continues after bodily death, were developed (e.g., Gordon, 1970; Grof & Halifax, 1977; Huxley, 1968). A major psychiatric journal, the *Journal of Nervous and Mental Disease*, set a precedent by publishing a literature review of reincarnation and life after death research (Stevenson, 1977b). Aware of the controversial nature of such a report, the journal invited a commentary on the work. Regrettably, the commentary (written by Stevenson's close friend, admitted "admirer," and colleague of 25 years) was not critical, but heavy with superfluous platitudes. The journal published another related article (Rodin, 1980) and devoted part of an issue to five separate commen-

taries on that work. By the end of the 1970s, near-death reports appeared in most major medical journals (e.g., Sabom & Kreutziger, 1977; Stevenson & Greyson, 1979; Vaisrub, 1977). A group of researchers formed the Association for the Scientific Study of Near-Death Phenomena in 1978 and launched *Anabiosis*, a quarterly newsletter, in 1979.

Omega, an international journal for the study of death and related issues, began publishing some of the more responsible papers in the field during the 1970s. Its editor, psychologist Robert Kastenbaum, authored a 1977 article in *Human Behavior* cautioning against hasty acceptance of popular works (e.g., Moody, 1975) that allow one to imagine death as less than death. Kastenbaum (1977) noted that there are useful research questions to be asked about life after death experiences, but "from the logical and methodological standpoint, the difference between those who stay dead and those who return may defy all efforts to examine" (p. 32).

How should one judge such evidence? Should there be a trial by faith, by fact, or perhaps by combat—reminiscent of the holy wars of bygone days? Perhaps a modern jury trial (i.e., peer review) could weigh the evidence. Indeed, such a trial was conducted in 1969 (see *The Great Soul Trial* by John Fuller), with the testimony of numerous expert witnesses supporting the belief in survival of the soul after death. The evidence to be presented here can be considered exhibits in such a trial. The reader, as trier of fact, must decide the case on the merits of the facts, not on the eloquence of the advocates. The reader must resist influence by the passionate and romantic pleadings of highly credentialed "expert" witnesses, since equally qualified experts with opposing viewpoints can always be found. Freud wrote, for example, that "we really survive as spectators" in the afterlife, and German poet-scientist Goethe agreed that "the soul is indestructible . . . its activity will continue through eternity." Conversely, philosopher Auguste Comte replied that "to search for the soul and immortality is a product of a childish phase of human development" (quotations from *Continuum* exhibit, 1978).

Nonetheless, our concern with life after death has been more than a passing amusement of childhood, and numerous facts and much logic have emerged for us to judge. Modern writers who are "pro" life after death are not transparently unscientific in method or data. They acknowledge

that their "data" arise spontaneously and cannot be subjected to controlled experimentation (e.g., Osis & Haraldsson, 1977). They also note that "visits to the other side" can be simulated by ingestion of hallucinogenic substances, but they curiously discount the possibility of controlled studies with these drugs. Rather, they endorse the use of parapsychological approaches. The bulk of the resultant data consists of phenomenological reports from individuals who have "experienced" life after death. A few surveys and questionnaire studies exist, but many of these are conducted with individuals who only observe dying patients and make inferences as to the nature of deathbed visions of the afterlife. Other studies use highly selective data, although the authors are honest enough to say so (e.g., Osis & Haraldsson, 1977). The better documented studies admit that the reported phenomena are open to several interpretations. Most writers do not appear to be self-styled "cranks" who rationalize their interpretations with strong religious convictions, unjust attacks upon opposing viewpoints, or complex neologisms. A rare few (e.g., Matson, 1975) compare themselves with Einstein, Columbus, or Galileo in respect to their unconventional investigation of sacred scientific doctrine. But unlike the pseudoscientists, described by Gardner (1952), who manifest strong compulsions to attack the greatest scientists and best established theories, many current investigators of life after death try to accommodate their interpretations to established scientific thinking. These quasi-scientific orientations are all the more deserving of scrutiny because they give the appearance of valid scientific thinking and testing. Neither the evangelism of the true believers and the popularity of their books nor the crudeness of their phenomenological inquiries should deter us from evaluation of the data on their own merits.

Taken as a whole, the evidence to be discussed here views life after death as a series of phenomena involving physical, biological, behavioral, imaginal, experiential, cognitive, and cultural variables. But all nature presents itself to humankind primarily as phenomena with such attributes. In perceiving natural phenomena, people recognize groups of events that share many cohesive features, in contrast with other events displaying less stability and persistence of pattern. As P. A. Weiss (1969) points out, the "success of science over the ages has validated the abstractions involved in our dealing with such reasonably constant entities as if they had an autonomous existence of their own" (p. 32).

Life after death is such an abstraction, and its phenomena of behavior, experience, and theory are the subject of this article.

Origins of Belief in Afterlife

Historian Arnold Toynbee (1976) has noted that all living organisms which are subject to death exert themselves to stay alive, whether or not they have produced progeny. Though many species grieve, like humans, at the loss of mates or members of their social grouping, the popular notion, echoed by Toynbee, is that human beings are unique in being *aware* that death comes to all. Death, in terms of its physical sequelae, is no mystery. After death the body disintegrates and is reabsorbed into the inanimate component of the environment. The dead person loses both life and consciousness. Toynbee asks the age-old question of what happens to consciousness after death, since both life and consciousness are invisible and intangible. The most logical guess is that consciousness shares the same fate as that of the corpse. Surprisingly, this commonsense view is not the prevalent one, and a majority of humankind rejects the hypothesis of annihilation at death. Instead, people continue to exert their basic motivation to stay alive and formulate a myriad of beliefs concerning survival after death. Many of these beliefs revolve around the notion that the intact human personality survives in another dimension—an afterlife. Toynbee finds this idea suspicious, for although the body disintegrates, ghosts and spirits of the dead are always embodied in the familiar form of a human being: "Moreover, ghosts appear not naked, but clothed, and this sometimes in the dress of an earlier age than the ghost-seer's gown. . . . It seems more likely that the apparent visibility of a ghost is an hallucination" (Toynbee, 1976, p. 4). Conversely, Holzer (1969), a contemporary writer, believes that the apparitions of the dead wish to be recognized and thus, being considerate, appear as they did in physical life (p. 88).

Other versions of survival emphasize reincarnation, whereby humans have many successive lives in this world, each life within a different body, interrupted by short stays in another dimension (e.g., Addison, 1932; Gould, 1919; Miles, 1907). This idea of immortality through reincarnation seems to have been suggested to humans both by their dreams (Hillman, 1979) and by inherited resemblances of the living to the deceased, resem-

blances in both physical and behavioral traits (cf. Frazer, 1913). Recent LSD research has also suggested that under suitable conditions individuals often have transpersonal experiences in which they experience their own identities but in different times, places, or contexts (Grof & Halifax, 1977, p. 55). These experiences also include the distinct feeling of reliving memories from a previous incarnation. The allied ability of these LSD subjects to identify with various animals or even inanimate objects, however, strongly suggests that the reincarnation stories are little more than vicariously retrieved memories and fantasies. While some writers, such as psychologist William James, have termed such experiences mere "dream creations," others have given serious philosophical and theological thought to the topic (see reviews by Hick, 1976; Reynolds & Waugh, 1977). In the face of continuing uncertainty about death, religious systems provide much reinforcement for human beings' belief in rebirth (Berman, 1974; Jahoda, 1974). Thus, the uncertainty of dying gives way to the certainty of immortality after death whether in the Christian *grace*, the Hindu *Atman*, the Buddhist *Dharma* Body, the Japanese *Kami*, the Polynesian *mana*, the Roman *noumen*, or the Eskimo *tungnik*.

Psychoanalysts have enjoyed a long history as commentators on such beliefs. Freud viewed the belief in immortality as a denial of death and a refusal to face annihilation. Jung took the position that the concept of immortality, universally present in the individual's unconscious, plays an important role in "psychic hygiene." Gutman (1977) views the belief in rebirth as a person's confirmation of narcissism and the result of his or her search for power and self-esteem in the face of uncertainty. Lifton (1973) calls it symbolic immortality, whereby a person attempts to maintain an inner sense of continuous relationship, over time and space, with the various elements of life. Yet the evidence accumulating in support of "literal" survival puzzles Lifton, who feels we may be on the verge of another scientific revolution. Hick (1976) echoes this conviction and states that both reincarnation and survival of the mind without the body are not impossible.

These thoughts are reflected throughout literature. Until the 19th century, death was viewed as the fulfilling of a destiny, sacred or human. It was portrayed as a beginning as well as an end. Poets and writers attempted to perpetuate what was doomed and therefore precious. From the

19th century on, death was presented as more and more unacceptable. Death became the brutal and ubiquitous mystery, a private and collective obsession (Marks, 1973). The notion of an afterlife increasingly became a proper solution to the mystery. It was in the midst of this atmosphere that psychology began its early investigations into life after death.

EARLY PSYCHOLOGICAL AND PSYCHICAL INVESTIGATIONS

The investigation of life after death has always been a delicate matter for experimental psychologists. Gustav Fechner, writing under the name of Dr. Mises (1875), cautiously speculated about the afterlife and the "soul-life of plants." Fechner's ghost came out of the closet, so to speak, in the year of his death, when he wrote that there is an eternal waking for human beings after bodily death (Fechner, 1887). Fechner could afford to drop his protective penname because inquiry into life after death became respectable with the founding of the Society for Psychical Research in 1882. Members of that society included William James, Sir Oliver Lodge, and a host of Nobel laureates such as Lord Rayleigh. They wanted to take the psychic material out of the hands of sensationalists and examine the phenomena scientifically. The Society thus collected narrative descriptions of messages from the dead and allied data, cases that are still among the most useful descriptions available today (Gurney, Myers, & Podmore, 1886/1970). Many of the early reports collected by the society, including cases of hauntings and ghosts, were judged too weak to support the belief in life after death (Sidgwick, 1885). A committee formed by the society conducted a "census of hallucinations" (Sidgwick, Johnson, Myers, Podmore, & Sidgwick, 1894) and reported that many reliable cases of recognized apparitions occurred within 12 hours of the death of the person represented, the death being unknown to the percipient at the time. Gurney (1889) examined 27 of these cases in detail and concluded that phantasms of the dead are real. Hudson (1901) attributed the phantasms to the brain's ability to reach maximum power at the very hour of death and project itself into another's mind. Myers (1903/1961) came to a similar conclusion: that ghosts are manifestations of persistent personal energies and that the soul is a definable component of the organism which can survive the body at death. However, Myers,

like many society members, remained unconvinced of a permanent survival in an afterlife. The nature of survival and afterlife remained a mystery for members of the society. Equally mysterious were the deaths of some members: Myers suffered from a fatal disease, which encouraged his thoughts of death and spiritualism; Gurney died from a mysterious overdose of chloroform; and Podmore was found mysteriously drowned in a few inches of water.

More "experiments" followed. MacDougall (cited in Carrington, 1908) weighed bodies at the time of death and determined that the immediate loss of weight indicated that the human soul weighs roughly one ounce! Other investigations were carried out on spiritualists and mediums (e.g., Barrett, 1918; Hyslop, 1918a, 1918b; Lodge, 1909). A committee to investigate mediums was formed in 1924 by *Scientific American* and included the magician Harry Houdini. Together they exposed several frauds, including the famous Margery who was caught ringing the bells herself without the help of the dead with whom she claimed communication (Christoper, 1969). Nonetheless, evidence of apparitions of the dead and medium communications continued to accumulate, and prior to 1950, there were 63 books dealing with life after death phenomena and almost as many theories. Apparitions were a particularly popular phenomenon (Hart, 1956, 1959). And Rogo (1974) has assured us that they will continue to appear and that anyone might see a phantom of the dead, even a psychologist!

Psychical research continues today, and societies in England and the United States are still active. Taking the evidence they have collected, primarily through mediumship, at face value, they interpret it as supporting the view that something, whether mental or physical, survives death of the body (Gauld, 1977).

EVIDENCE FROM PHYSICS

These beliefs in life after death have recently been connected to several scientific theories, including those of physics and biology. Author Arthur Koestler has noted that the elementary particles of modern physics, like photons of light, can behave as both waves and particles. Similarly,

the contents of consciousness that pass through the mind, from the perception of colour to thoughts and images, are un-substantial "airy nothings," yet they are somehow linked to the material brain, as the unsubstantial "waves" and

"fields" of physics are somehow linked to the material aspects of the sub-atomic particles. (Koestler, 1976, p. 242)

Furthermore, Koestler believes that such waves of consciousness can exist independently of brain matter, but he is unable to describe this association. He argues that perhaps ghosts and spirits are simply the reverberating waves of humans who, like radio transmitters, generate signals somewhere in the universe even after being turned off (dead). This idea is related to the "energy body" that parapsychologists claim leaves the physical body at death (Moss, 1974). Surely we can hear the sounds of distant dead stars through our radio telescopes. Koestler would have us believe that personalities or souls of dead humans persist in a similar way and, like the phantom limbs of amputees, can only be "felt" by those who have been attached to them in the past. With imperialistic zeal he carries speculation one step farther and suggests that these dead souls go on to join some "cosmic mind-stuff" that contains the record "of the creative achievements of intelligent life not only on this planet, but on others as well" (Koestler, 1976, p. 258). (May the Force be with you Arthur!)

Arguing from a field theory viewpoint, LeShan (1969) uses the analogy that human survival of biological death is no more ethereal than an electron whose field can be detected but that cannot itself be perceived. Accordingly, survival must be hypothesized in order to account for clairvoyance and other mystical effects that cannot be explained in any other way. Ignoring the mathematical proof of electrons that is lacking in survival research, LeShan (1976) concludes that consciousness as revealed through clairvoyance is not limited by death, since this would be an "illegitimate" constraint on the construct. His model, conceptually useful, has little more explanatory power than those employed by psychologists when other physical phenomena were in vogue (e.g., magnetism and hypnosis, reverberating electrical circuits and memory).

EVIDENCE FROM EVOLUTIONARY BIOLOGY

Charles Darwin wrote a scholarly paper in 1871 in which he stated his belief that ghosts and spirits are really visions of the departed (from *Continuum* exhibit, 1978). He expressed the traditional assumption of biologists that humans are the only living creatures who entertain the idea of immortality. This idea was further examined by Ger-

man biologist August Weisman (1892), who noted the "continuity of the germplasm" and "the immortality of unicellular beings and of the reproductive cells of multicellular organisms" (p. 74). Weisman compared biological immortality to a certain form of perpetual motion, like the cycle of water evaporation and rain, whereby the cycle of life repeats itself. While the individual and its body cells "perish utterly" at death, the germ cells (i.e., genetic material) maintain a continuity of life through reproduction—a type of immortality. But in the sense of a discrete soul or mind that survives death, both Weisman and contemporary biologist Ashley Montagu (1971) reject the immortality principle. Montagu adds that our belief in survival after death is probably related to some deep biological craving of the organism. The belief is maintained and strengthened because it contributes to the stability of social groups and other human endeavors.

EVIDENCE FROM ETHOLOGY

Since nonhuman animals are governed by physical and biological principles similar to those discussed above for humans, the analysis of their behavior associated with dying and death may reveal important insights into related human behaviors. Though it is presently impossible to ask an animal if it believes in life after death (although at least one ape has indicated in American Sign Language that death is equivalent to "finished"), much of our belief in the afterlife is manifested in non-verbal, albeit overt, behaviors (Desmond, 1979). These behaviors include religious ritual and ceremony, burial rites, and the superstitious association of events in nature with ongoing behavioral acts.

Anthropologists cite the deliberate interments of the dead by Neanderthals (circa 100,000 years ago) as the first evidence of humans' belief in life after death. Excavations at the famous Shanidar cave in Iraq show evidence of Neanderthal funeral rites, including feasts, burials with flowers and food, and carefully prepared graves with markers. Even the skeletal remains of Cro-Magnons are found buried in the fetal position, in adherence with the primitive myth that such a position facilitates rebirth (cf. Jonas, 1976). The study of allied behaviors in nonhuman animals provides further understanding of the nature and function of these behaviors in humans. Whether animals believe in an afterlife or not, however, there is as much evidence that they survive death as there is

for humans. For example, when asked if dogs exist in the next world, a famous psychic named Betty, who was already on the "other side" at the time, replied "yes" (White, 1940). Bayless (1970, 1973) reports that the spirits of departed animals, like those of humans, have an ectoplasm that can be shaped and molded into ghosts when triggered by the thoughts of those still alive. And in the ambitiously titled book *The Evidence For Life After Death*, Ebon (1977) reports that ghosts of dead animals have been seen and heard almost as often as ghosts of departed humans.

If deliberate burials are signposts of the belief in life after death for humans, one cannot ignore the elaborate burying behavior of elephants as a similar sign of ritualistic or even religious behavior in that species (Siegel, 1977c). When encountering dead animals, elephants will often bury them with mud, earth, and leaves. Animals known to have been buried by elephants include rhinos, buffalos, cows, calves, and even humans, in addition to elephants themselves (Douglas-Hamilton & Douglas-Hamilton, 1975, pp. 240ff.). Ethologists have observed elephants burying their dead with large quantities of food, fruit, flowers, and colorful foliage. Not only do these large animals display death rituals, but some of the smallest social insects also display stereotyped patterns of "necrophoric" behavior in regard to corpses. Wilson (1971), for example, notes that ants of the genus *Atta* carry their dead into deserted nest chambers and galleries. And the *Strumigenys lopotyle* ant of New Guinea "piles fragments of corpses of various kinds of insects in a tight ring around the entrance of its nest in the soil of the rain forest floor" (Wilson, 1971, p. 279). Other types of burial rites have been observed among both elephants and chimpanzees in Africa (Jonas, 1976, p. 174).

Teleki (1973) has documented a case in which a chimpanzee troop in the Gombe National Park (Tanzania) witnessed the accidental death of one member. The group tore up vegetation, threw stones at the corpse, and then gathered around the body in a circle. They sat in silence while staring at the corpse or made plaintive wailing sounds. They eventually walked away, leaving the corpse alone. Reactions by primitive Australian tribes to death consist of virtually identical behaviors, including wailing, gashing of body parts, and collective wrath. The anger, grief, and final acceptance seen in chimpanzees are also present in contemporary human reactions to death.

Ethologist Eugene Marais describes an equally mysterious and quasi-religious behavior among South African baboons, which ritually huddle together with the setting of the sun, gaze at the western horizon, observe a period of silence, and "then from all sides would come the sound of mourning, a sound never uttered otherwise than on occasions of great sorrow—of death or parting" (Marais, 1969, p. 139). Similar behavior has been observed among the Colobus monkeys of Madagascar at sunrise and sunset. Moreover, elephants are aware of natural cycles, as they practice "moon worship," waving branches at the waxing moon and engaging in ritual bathing when the moon is full (Siegel, 1977c).

Given the similarity of some human and non-human death behaviors, should we postulate the existence of an animal soul or belief in the afterlife? Human vanity has traditionally denied this position. But the hypothesis of a soul or belief in life after death is also unnecessary for explaining parallel human behaviors. Rather, we can speculate that burials and associated religious behaviors came about through a gradual shaping of "instinctive" behaviors. For humans, such religious behaviors might have included copying the observed behaviors of other animals. It is well-known that many primitive peoples learned the rudiments of medicine by observing what animals do when they are sick and wounded (see Siegel, 1973). For example, Cherokee Indians learned to treat snake bites and fever with cold baths after watching deer stand in cold rivers after being bitten by venomous snakes. Both Old World and New World peoples learned about the healing properties of mud and clay applied to open wounds after observing wounded animals roll around in these substances. In Africa, elephants engage in similar mud-rolling behavior to regulate temperature, cover wounds, and treat attacks by parasites. When elephants encounter a sick or dying elephant, they attempt to apply mud or offer food to the stricken animal. When the animal dies, they continue applying mud until the corpse is gradually covered. Elephants bury dead or decaying elephants they encounter, and some ethologists speculate that this is done to remove the olfactory aromas and thereby avoid the smell (and perhaps sight) of the decomposing bodies.

In a recent series of elegant studies, Pinel and his colleagues (Pinel & Treit, 1978, 1979; Wilkie, MacLennan, & Pinel, 1979) have shown that bury-

ing behavior is a defensive response in rats, as these animals bury aversive stimuli such as an electric prod or noxious food. The behavior is highly dependent on availability of burial materials in the immediate environment. These authors acknowledge the possibility that burying is an innate defensive reaction, but they also offer the intriguing speculation that it may be an inherited "altruistic" reaction with a status similar to the danger-warning calls of other species.

Early Africans may have copied this burying behavior of animals or initiated it for similar reasons. A common explanation is found in the basic animal and human motivation to avoid the sick and dying if one cannot help them (cf. Ardrey, 1970). Healthy social animals isolate themselves from unhealthy ones in response to this helplessness, either by leaving the dying or sick animals behind or by segregating them. The burial behavior can be viewed as a gradual extension of this isolation, which is particularly useful when death occurs in a habitat where living must go on. And although most human cultures remove their dead, in some human societies the dead are left where they die and the living move away (Raether & Slater, 1977, p. 241).

ANTHROPOLOGICAL ORIGINS

Like other animals, humans have a strong instinct to survive. Unlike other animals, humans are credited with the capability of realizing that death comes to all. As Cavendish (1977) states the problem, "The human solution to this grim dilemma is a life in some different world after death" (p. 7). Anthropologists have endorsed this opinion (e.g., La Barre, 1972), praising humans for their "discovery" of the afterlife. Early humans' awareness of their own repeating biological cycles (e.g., regeneration of tissue or renewal of deciduous/baby teeth with permanent teeth) may have provided a basis for this belief. Cavendish credits the belief in an afterlife to people's cognizance of seasonal cycles, wherein "death" in winter is followed by "rebirth" in spring. Similarly, people may have been influenced by other natural cycles, as in the rising and setting of the sun, day and night, full and waning moon, low and high tide, and so on (cf. MacHovec, 1975). Indeed, many primitive people have religious ceremonies celebrating life after death in close association with natural seasonal events. The Hindus made the direct connection by comparing life after death to the flour-

ishing of this year's grass and flowers, their dying, and their replacement by similar yet not identical grass and flowers in the next year. Ancient Egyptians believed in eternal life associated with the sun: "The sun rose each day in renewed strength and vigour, and the renewal of youth in a future life was the aim and object of every Egyptian believer" (Budge, 1967, p. 1v). The sun was the symbol of afterlife for the Aztecs, who believed that if one died properly, as in battle or sacrifice, one was reborn as a hummingbird or butterfly. Among many indigenous groups in South America, the mysterious cyclical appearances of mushrooms following rains were considered gifts from the gods, and the hallucinations resulting from subsequent ingestion of certain species of mushrooms confirmed the reality of an afterlife.

Early humans' inevitable ecological encounters with animal life suggested similar fates for non-humans as well. The butterfly was an ancient Greek symbol of reincarnation, and St. Theresa of Avila (1515-1582) used the metamorphosis of a caterpillar from grave-like cocoon to beautiful butterfly to symbolize resurrection. Among the Burmese and Maori (New Zealand) societies, during sleep the soul becomes a butterfly that leaves the body to wander into the afterlife (Sheils, 1978). Contemporary psychiatrist Elisabeth Kübler-Ross (1969, 1975) tells her terminal patients that dying is like a butterfly shedding its cocoon and emerging into a new life. *The Egyptian Book of the Dead* (circa 1500-1400 B.C.) describes the snake that sheds its skin for a new body as a symbol of reincarnation. And where nature did not provide examples, people invented them. In Babylon, India, Egypt, and Persia, the phoenix was an ancient mythological bird symbolizing reincarnation. According to the legend, when a bird dies, another bird wraps the body in myrrh and brings it to a funeral pyre in a temple. There it is burned and rises again from its own ashes to begin another life cycle (cf. Clair, 1967). Finally, many primitive hunting societies conceive of animals with souls. Just as they attempt to appease the ghosts of the people they have slain, so the hunters try to propitiate the spirits of the animals they have killed that survive in an afterlife.

Other anthropological origins may have been somewhat accidental. For example, when the early Egyptians buried their dead, they must have observed that the hot, porous sands of Egypt naturally disinfected and preserved the corpses buried in them. This probably gave rise to a belief in

an eternal physical hereafter, since the body itself did not disintegrate (cf. Cavendish, 1977, p. 17). Similar accidents may have reinforced and strengthened this belief in an afterlife. If the body survives, then it needs assistance; the contents of graves, tombs, and pyramids testify to the gradual development of this belief in survival after death.

The nature of this survival has been embellished by individuals' descriptions, which are examined below as additional evidence for life after death.

Descriptions of the Afterlife

Our study of life after death is highly dependent on the words, pictures, and other symbols used in description. Many of these words have sensory qualities and describe such properties as sight, sound, taste, and smell. Accident victims who have had near-death experiences often report visions of long, dark tunnels or sounds of ringing and buzzing. Surgical patients who are resuscitated following cardiac or respiratory failure frequently report floating out of their bodies and watching the operation from a distant perspective. Terminal patients often experience unbidden memory images of long forgotten childhood events and deceased relatives. These images arise with such startling vividness that they often prompt the patient to react by speaking with the image or moving toward it. British psychiatrist Maudsley (1939) described such images as "mental representation so intense as to become mental presentation" (p. 98).

Descriptions of the afterlife have also included words with affective and evaluative qualities. Many see a blinding white light and regard it as a higher being or god. In a similar way, the vivid voices and visions that often accompany epileptic seizures were once thought to be so mysterious that the sufferer believed "he really saw or heard an angel from heaven, or had a visit with the Holy Ghost, or was carried up into heaven or down into hell" (Maudsley, 1939, p. 89).

There are numerous commonalities in descriptions from various cultures of death experiences and afterlife (Eliade, 1951/1964; Sheils, 1978). Shamans in both the Old and the New World have contributed greatly to our knowledge through their ecstatic voyages to the world of the dead. Through their experiences, the unknown and terrifying world of death assumes form, structure, and function (Eliade, 1977). These descriptions are similar to reports (examined below) gathered in Western cultures from persons or groups involved in

dying experiences. It seems plausible that common processes and mechanisms underlie these descriptions. After reviewing this evidence in more detail, I discuss a hypothesis offered by La Barre (1975) and others that such supernatural psychic phenomena are caused by dissociative or hallucinatory activities of the brain.

REPORTS FROM INDIVIDUALS

Many reports from individuals are generated from communication with the dead via mediums, spiritualists, ghosts, apparitions, automatic writing, clairvoyance, and related techniques. Such methods may appear tenuous to the skeptic, but Spraggett (1974) typifies the field by responding that "if we are to examine the evidence for an after-life honestly and dispassionately we must free ourselves from the tyranny of common sense" (p. 6). Accordingly, he argues that ghosts and apparitions are indeed hallucinations but that they are projected telepathically from the minds of dead people to those of the living. Both classic and contemporary literature are replete with these reports (e.g., A. Ford, 1969, 1971; Harlow, 1968; Mehta, 1977; Stearn, 1976; Taylor, 1975; J. E. Weiss, 1972; Wetzl, 1974; White, 1937).

In one report a dead man communicated to his living wife that the afterlife had "a lawn that would put any Earth golf club to shame. Flowers I've never seen before. Even new colors. And everywhere, people. Thousands of them. Happy people, doing things they really liked to do" (Loehr, 1976, p. 48). But not everyone in the afterlife is happy. Wickland (1924/1974), who communicated with departed spirits for thirty years through the medium of his wife, reported that narcotic addicts continue to experience agonizing withdrawal after death and can satisfy their craving only by possessing living mortals and compelling them to become addicts of the same drug. Other reports can be humorous when read with the proper frame of mind. Ebon (1977), for example, describes a séance (wherein ghosts often ring bells or tap tables) in which he heard the name Margery, though "the name 'Margery' rang no bell with me" (p. 8)! Reports can be extremely specific. Sandberg (1977) relates that the "City of God" is a cube 1,500 miles on each side wherein children continue to mature (do they age and die as well?). Drawing heavily on accounts published in the *National Enquirer*, M. Ford (1978) tells us there are 57 mansions in

this city, all in separate parks, but some people have to live in one-room apartment units. Travel is by "teleportation," but city residents can also walk, jog, or catch a "chariot of light," which might be seen by the living as a UFO.

Other reports are less casual and present descriptions in a more serious tone. A classic case that initiated much of the contemporary research in the field occurred in 1943 (the year that also witnessed the birth of Bob Dylan and LSD). George Ritchie (1978) died of pneumonia for nine minutes (although there are no medical records to document this), was revived, and reported a journey to the afterworld in which he met Jesus and was shown heaven. Descriptions of hell are harder to find, but cardiologist Rawlings (1978) has resuscitated several patients who describe it as a lake of fire and brimstone, just as Revelations 21:8 says it is. Rawlings appropriately labels these reports "strange encounters of the last kind." Wheeler (1976) provides an interesting collection of reports from the clinically dead, near-death accidents, out of body experiences, and deathbed visions. He acknowledges that it may be impossible to separate these reports from hallucinations, but he feels that hallucinations are much more idiosyncratic and varied than these reports. His collected descriptions of the afterlife are highly consistent, which is evidence, he argues, of a singular separate reality in the hereafter. In the reassuringly titled *You Cannot Die*, sociologist Ian Curries (1978) agrees that reports of the afterlife could be considered hallucinatory only if they were more variable. Yet his examples include a ghost whose hair and clothing remained unruffled by a real breeze and another ghost who threw and broke real objects. Such variable "capacities" of the dead are excused under the supposition that different laws of physics operate in the beyond and that the dead often hang around the living in a state of frustration as they await reincarnation or union with God.

MOODY'S WORK

Physician Raymond Moody (1975, 1977) has also attempted to describe the prototypical vision of life after death. Moody was neither the first to do so (cf. Crookall, 1961) nor the most careful in his methods (cf. Osis & Haraldsson, 1977). But he has been the most popular author on the contemporary scene and, along with Kübler-Ross, can be credited with stimulating the current interest in

the field. Moody collected a series of reports from and interviews with people who had near-death experiences, which he defined as "an event in which a person could very easily die or be killed (and even may be so close as to be believed or pronounced clinically dead) but nonetheless survives, and continues physical life" (Moody, 1977, p. 124). His initial study consisted of 150 case reports from which he selected 50 in order "to reduce the number of cases studied to a more manageable level," but he later examined "a large number of accounts." Moody (1977) interviewed these individuals, but was admittedly "sympathetic" and noted "in a couple of cases I did ask very loaded questions" (p. 131). Although aware that his investigation was consequently unscientific, he did not even attempt to provide statistics or complete patient histories, which would have contributed greatly to the value of his work. Nonetheless, he has combined a useful inventory of afterlife descriptions.

Moody's prototypic experience. According to Moody, the prototypical experience of the dying person includes the following elements: ineffability; hearing doctors or spectators pronouncing one dead; feelings of peace and quiet; a loud ringing or buzzing noise; a dark tunnel through which one may feel oneself moving; out of body experiences; meeting others, including guides, spirits, dead relatives, and friends; a being of light; a panoramic review of one's life; a border or limit beyond which there is no return; visions of great knowledge; cities of light; a realm of bewildered spirits; supernatural rescues from real physical death by some spirit; a return or coming back with changed attitudes and beliefs.

Moody's explanation. Moody refrains from interpreting these experiences as proof of life after death (despite the publisher's claims to the contrary on the book covers), but he does admit that "their near-death experiences were very real events to these people, and through my association with them the experiences have become real events to me" (Moody, 1977, p. 183). Six alternative explanations are discussed briefly and dismissed. Moody naively equates supernatural explanations with demonic possession and dismisses them because of the renewed interest in God and love he found in his subjects. Explanations based on dissociative drug reactions are dismissed, since many cases did not involve drugs. Experiences of death induced by drugs or neurological dysfunction, according to Moody, are vague and are unlike "real"

death experiences. Physiological explanations employing stress models are also dismissed because Moody incorrectly equates stress with observable injury or oxygen deficiency, neither of which was seen in many of his cases. Psychological explanations are also discarded by Moody, evidently because phenomena that produce deathlike experiences (e.g., autoscopic hallucinations, out of body experiences, isolation) are equally mysterious to him; he seems unaware of the considerable research in these areas (he cites only the work of John Lilly, the *Bible*, and one obscure journal article). Like many popular writers, Moody equates vivid and sincere reports with veridicality. Without the benefit of psychological or physical examinations, subjects are judged normal and objective. Consequently, the common features of their descriptions are viewed as indicative of a common objective reality—never a common subjective reality.

REPORTS FROM STUDIES

The prototypic experience described by Moody is not new. It appears in canonical literature and other writings of religious movements and folklore (Holck, 1978–1979). The basic phenomenology has been verified by several studies. The first investigator to systematically analyze the evidence was Crookall (1961). Just as Klüver (1942) extrapolated constants from the voluminous and seemingly idiosyncratic hallucination literature, Crookall tackled the copious psychic communications from the "dead," as received by mediums, and provided good documentation for several common features of life after death experiences. These common elements include call or communications from those in the beyond; a review of one's past life; out of body experiences and a sensation of rising and falling; passing through a tunnel; expansion of consciousness; glimpses of discarnate friends; a silver cord linking the physical body and the soul; momentary darkness; an awakening; judgment; and assignment to an individual place in the afterlife. The remarkable similarity of these "travellers' tales" convinced Crookall that there is survival of death.

In a questionnaire study, parapsychologist Karlis Osiris (1961) obtained information from 640 physicians and nurses who had observed the behavior of dying patients. A high frequency of deathbed visions was reported, and these included the phenomena described by Moody and "scenes

of indescribable beauty and brilliant colors resembling those experienced under the drug influence of mescaline or LSD" (p. 104). But Osis argued that the dying patient's otherwise clear sensorium indicated the experiences were not hallucinations. It is important to note, however, that hallucinations can occur in states in which consciousness is "clear." Indeed, drug-induced hallucinations are frequently marked by heightened perceptual and cognitive sensitivity. In addition, Mitchell (1972) has shown that hallucinations of dead relatives and friends can occur in states of clear consciousness when triggered by emotional states surrounding death (e.g., mourning).

Another study (Osis & Haraldsson, 1977) presents a more detailed examination of deathbed visions. The investigators confirm once again the typical phenomenology; although they argue that the visions only appear similar to dreams, hallucinations, or depersonalization (Noyes & Kletti, 1976a), their evidence fails to show any significant differences. These authors remain convinced that there is a real "postmortem survival" out there somewhere, and they suggest that only those individuals sensitive to ESP and telepathy can experience it. But if deathbed visions are similar to other hallucinatory visions, they may have similar explanations that do not require belief in untestable constructs such as afterlife, soul, or ESP.

If the study of death and of the soul's voyage to the afterlife is chasing old ghosts out of their bodies, then the study of the soul's reincarnation can be regarded as chasing old ghosts in new bodies. Perhaps the best ghost chaser of the latter type is Stevenson (1977a, 1977b). Surveying approximately 1,600 cases, most reported from cultures in which belief in reincarnation is strong (e.g., India), Stevenson describes several "universal" characteristics that recur among these cases. His subjects, mostly children, started speaking about their previous lives between the ages of 2 and 4 and usually stopped by age 8. Furthermore, death-related events, usually violent, were prominent among the subjects' memories of their previous personalities. Stevenson favors a reincarnation interpretation of these data, but he mentions alternative hypotheses, including "inherited memory" and possession, and resists definitive conclusions. However, a particularly attractive hypothesis not mentioned by Stevenson is derived from recent work in child psychology. The age at which reincarnation stories appear in children corresponds to the age at which imaginary-

companion phenomena (Siegel, 1977b) and imitative make-believe play (Singer, 1973) begin. This make-believe activity is characterized by invention, with some stimulus input from the environment. Stevenson reports that many subjects were related to their previous personalities, others lived within close physical proximity to their former personality, and members of the children's (subjects') families often knew the previous personality. These conditions could allow for the incorporation of spurious verbal information into the child's story material. Indeed, such make-believe stories and fantasies from "normal" children tend to be as long and detailed as reincarnation stories, and they tend to contain spurious verbal and visual material from others. When such stories emerge from a culture in which belief in reincarnation is strong, social reinforcement could further shape the verbal responses as well as guide the interpretations.

However, notions based on children's fantasies and make-believe play cannot explain all the evidence. Remembrances of past lives are also reported by adults, many of whom reside in Western countries and deny any belief in reincarnation. Philosopher Frederick Lenz (1979) has interviewed 127 of these people, many of whom recalled their past lives in dreams. He has compiled a prototypical past-life remembrance that parallels the experiences described by Moody. According to Lenz, the quintessential experience involves hearing a loud sound; a floating sensation; seeing colored lights; feelings of ecstasy; watching a play or movie flashing events of a past life; seeing oneself in the movie; experiencing oneself in the movie; fading of visions; and awareness of returning to the physical body.

Similarity to Hallucinations

All of the above descriptions of the afterlife bear a strong resemblance to people's descriptions of drug-induced hallucinations or hallucinations produced by other conditions (see Siegel & Jarvik, 1975). For example, ineffability is a characteristic of peak religious and mystical experiences, including those induced by psychedelic drugs. These hallucinatory episodes are marked by suppression of verbal behavior, which has been related to states of central nervous system activity. The hearing of voices or other sounds is reminiscent of the experience of surgical patients recovering from anesthesia, who often recall auditory

stimuli that occurred during surgery. It is particularly common with the dissociative anesthetics nitrous oxide, ether, and ketamine, all of which permit sensory input to the brain.

The bright light is characteristic of many types of mental imagery and is the result of stimulation of the central nervous system that mimics the effects of light on the retina. It can also occur when the electrical activity in the brain is altered in such a way that the threshold for perception of phosphenes (electrical activity in the visual system) is lowered and bright lights are seen in otherwise dark surroundings. Such light has occurred in sensory isolation conditions as well as in a variety of nondrug hallucinatory experiences (Lilly, 1977). This light can create a tunnel perspective, and individuals report viewing much of their imagery from this regard. Compare the following reports from afterlife experiences and drug hallucinations:

Tunnels in Afterlife Reports

"My awareness of the room dimmed, and the world immediately around me became like a tunnel with walls that glowed with a slight orange-red, reflected light." (Wheeler, 1976, p. 2)

"I felt like I was riding on a roller coaster train at an amusement park, going through this tunnel at a tremendous speed." (Moody, 1975, p. 32)

"I found myself in a tunnel—a tunnel of concentric circles . . . [a] spiralling tunnel." (Moody, 1975, p. 33)

Tunnels in Drug Hallucinations

"I'm moving through some kind of train tunnel. There are all sorts of lights and colors." (Siegel & Jarvik, 1975, p. 116)

"It's sort of like a tube, like I sort of feel . . . that I'm at the bottom of a tube looking up." (Siegel & Jarvik, 1975, p. 117)

"I am traveling into a tunnel and out into space." (Siegel & Jarvik, 1975, p. 117)

The cities of light and other geometric patterns in afterlife visions resemble the geometric forms, often seen from aerial perspectives, that dominate early hallucinogenic intoxication and other hallucinatory experiences. Like the bright light and tunnel, these geometric forms are partially produced by entoptic phenomena (structures within the eye) and electrical activity in the visual system. Consider the similarity of these accounts of afterlife experiences and drug hallucinations:

Cities and Lights in Afterlife Reports

"There were colors—bright colors—not like here on Earth, but just indescribable. . . . I could see a city. There were

buildings—separate buildings . . . a city of light." (Moody, 1977, p. 17)

"I believe that it was at the very instant when I felt myself die that I started moving at very high speed toward a net of great luminosity and brilliance." (Wheeler, 1976, p. 11)

Cities and Lights in Drug Hallucinations

"There are tall structures all around me . . . it could be buildings, it could be anything . . . and in all colors." (Siegel, Note 1, p. 81)

"Like extremely futuristic architecture, something like you would see at Expo '84 or something like that, like spheres and things constructed very differently." (Siegel, Note 1, p. 79)

"And it seems like I'm getting closer and closer to the sun, it's very white . . . and there's like a geometric network or lattice in the distance." (Siegel, Note 1, p. 80)

Out of body experiences are common in a wide variety of altered states and hallucinations. Moody (1975) quotes one respondent who lost part of a leg in a near-death accident: "I could feel my body, and it was whole. I know that. I felt whole, and I felt that all of me was there, though it wasn't" (p. 53). On the basis of this single case, Moody hastily concludes that severe damage to the physical body does not adversely affect the spiritual body. It seems more likely that the patient was reporting a "phantom limb" experience, an experience common among recent amputees and associated with persisting neurological activity in sensory cerebral centers.

The meeting of others in afterlife reports is similar to the encounter with guides in hallucinatory states who appear to lead the individual through novel and potentially anxious experiences. Such meetings are also similar to encounters with "imaginary companions" who guide lonely explorers and shipwrecked sailors and "imaginary playmates" who amuse young and lonely children (Siegel, 1977b). The guides and spirits often are dead relatives or religious figures. Osiris and Haraldsson (1977) call them "otherworldly messengers" from "a postmortem mode of existence." However, neither the fact that such relatives may be dead now nor the fact that such religious figures may never have existed proves that they are alive and well in the hereafter. Rather, these experiences support the argument that deathbed visions are retrieved memory images (or fantasy images) that were alive and well when originally stored. This explanation could also account for the appearance of memory imagery in both afterlife and drug visions. Panoramic memory reviews are also commonly reported by drowning victims

and accident victims threatened by death (Noyes & Kletti, 1977). Though possibly based on temporal lobe activation and recall of stored information, these "memories" also include anticipated future events. The panoramic review or "flash of life" is vivid, spontaneous, colorful, three-dimensional, kinetic, and veridical, all common features of hallucinations produced by states of central nervous system arousal. Compare the following descriptions of this imagery in afterlife and drug visions:

Memory Imagery Format in Afterlife Reports

"It just flashed before me like a motion picture that goes tremendously fast, yet I was fully able to see it, and able to comprehend it." (Moody, 1975, p. 70)

"The best thing I can think of to compare it to is a series of pictures like slides. It was just like someone was clicking off slides in front of me very quickly." (Moody, 1975, p. 71)

Memory Imagery Format in Drug Hallucinations

"Everything's changing really fast, like pictures in a film, or television, just right in front of me. I am watching it happen right there." (Siegel & Jarvik, 1975, p. 116)

"People standing in the office, appearing like slides crossing my field of vision." (Siegel & Jarvik, 1975, p. 116)

Osis and Haraldsson (1977) assume that hallucinations portray only information stored in the brain and, unlike real perceptions of the afterlife, cannot portray "strange new environments" or novel experiences. But hallucinations (like dreams, images, thoughts, and fantasies) often are elaborate cognitive embellishments of memory images and not just mere pictorial replicas. This constructive aspect of hallucinations can be illustrated by a simple exercise. Recall the last time you went swimming in the ocean. Now ask yourself if this memory includes a picture of yourself running along the beach or moving about in the water. Such a picture is obviously fictitious, since you could not have been looking at yourself, but images in the memory often include fleeting pictures of this kind. Hallucinations also include equally improbable images, such as aerial perspectives, feelings of flying, and panoramic vistas of incredible beauty and novelty. Like hallucinations, visions of the afterlife are suspiciously similar to this world. Following is an account from a dying patient:

"[There were] beautiful surroundings where green grass and flowers grow. She seemed very pleased, happy that she could see these pleasant things. She said that it was like a garden with green grass and flowers. She was

fond of flowers and had a garden at home." (Osis & Haraldsson, 1977, p. 162)

Osis and Haraldsson argue that the word "like" in the above account indicates a glimpse of the beyond and not an "actual" garden. Here they are confusing similes with veridicality. The phrases "like," "as if," and "it is as though" are characteristic of hallucinatory reports in which individuals do not perceive a reality to the images or in which the images are modified sufficiently so as to prevent convenient description. Even when individuals attribute reality to afterlife or drug visions, the reports possess all the elements of vivid dreams, complete with feelings of flying and "supernatural" rescues. This is why hallucinations are sometimes called "waking dreams." Consider the following similar reports:

Perceived Reality in Afterlife Reports

"I floated down to a grassy field which had horses, cows, lions, and all kinds of wild and tame animals. It was a painting at first, then it became real. I was in that field looking at all those great things when you [indicating doctors] pulled me back." (Wheeler, 1976, p. 98)

Perceived Reality in Drug Hallucinations

"In fact, the scenes in my head are very real. . . . I mean if you get right into it it's as though you are there sort of like in a movie or something . . . that's a mental image not a real one. I guess it's hard to tell the difference. . . . Now it looks like a comic book scene, not all vivid only I'm not daydreaming, I see these things!" (Siegel, Note 1, pp. 78; 88)

"My mind left my body and apparently went to what some describe as the 'second state.' I felt I was in a huge, well-lit room, in front of a massive throne draped in lush red velvet. I saw nothing else but felt the presence of higher intelligence tapping my mind of every experience and impression I had gathered. I begged to be released, to return to my body. It was terrifying. Finally I blacked out and slowly came to in the recovery room. That's my ketamine experience." (Anonymous, *High Times*, 1978, p. 8)

The border or limit in afterlife reports is similar to states of "ego loss" or "psychological death" experienced in altered states of consciousness, including drug-induced hallucinations. These experiences can include transcendence of space and time; awe, wonder, and a sense of sacredness; a deeply felt positive mood, often accompanied by intense emotions of peace and tranquility; a feeling of insight or illumination or of understanding some universal truth or knowledge (the "noetic quality"); and changed attitudes and beliefs that pass into an afterglow and remain as a vivid memory. Collectively these experiences constitute the

ineffable mystical experience induced by both psychedelic drugs and true religious or other peak experiences. They are triggered by a variety of stimuli that result in massive cortical disinhibition and autonomic arousal (Siegel, 1977c).

Explanations of the Afterlife as Hallucination

The remarkable similarity of imagery in life after death experiences and imagery in hallucinatory experiences invites inquiry about common mechanisms of action. The experiences can be considered a combination of simple and complex imagery. The simple imagery consists of tunnels, bright lights and colors, and geometric forms. As discussed above, they are probably caused by phosphenes, visual sensations arising from the discharge of neurons in structures of the eye. They also reflect the electrical excitation of organized groups of cells in the visual cortex of the brain (see Siegel, 1977a).

Most of the investigators undertaking to explain the complex imagery of people and places have described the visions as being the result of excitation of the central nervous system. As early as 1845 French psychiatrist Jacques Moreau (1845/1973) maintained that hallucinations resulted from cerebral excitation that enabled thoughts and memories to become transformed into sensory impressions. Recent electrophysiological research (Winters, 1975) has confirmed that hallucinations are directly related to states of excitation and arousal of the central nervous system, which are coupled with a functional disorganization of the part of the brain that regulates incoming stimuli. Behaviorally, the result is an impairment of perceptions normally based on external stimuli and a preoccupation with internal imagery (Fischer, 1975).

These states of excitation can be triggered by a wide variety of stimuli, including psychedelic drugs, surgical anesthetics, fever, exhausting diseases, certain injuries and accidents, and emotional and physiological processes involved in dying. In studies with the fatally ill, Verwoerd (1966) found that in the transition from health to fatal illness patients pass through a period in which they are alone with their symptoms. Sensory signals from the body, albeit subliminal at times, trigger a mental awareness of feeling different or peculiar followed by flights into fantasy

and imagery in order to direct attention away from physical concerns and escape into private comforting thoughts. Visions of the afterlife can be among these reactions. Weinberg (1975) describes a similar experience in the dying based on physiological changes. He notes that as organs degenerate, the perception of physical stimuli may not go beyond the point of the sensory receptor and the stimuli may become blocked from awareness. Consequently, the individual becomes disengaged from physical concerns and turns attention inward to self-reflection, reminiscence, and thoughts of approaching death. These experiences may be coupled with a fear of death, a fear that is an effective trigger of altered states of consciousness in death and near-death situations (Garfield, 1975). Such physiological and psychological triggers are undoubtedly present in many deathbed visions of afterlife, as Osis and Haraldsson (1977) report that 75% of their respondents suffered from cancer, heart attacks, or painful postoperative conditions.

The deathbed itself may be a unique setting for the production of hallucinatory phenomena. Zuckerman (1969) has found that both the reclining position and anxiety facilitate reported visual sensations in perceptual isolation. This isolation can be as simple as closing one's eyes for 10 minutes. In addition, one of the first effects of a serious threat to the body, including a death threat, is activation of fantasies, including the memories and fantasies of childhood (Fisher, 1970). In this sense, an individual turns away from his or her sick or disabled body, minimizes its presence in the perceptual field, and exists in a world in which the threat does not exist. This defensive reaction accounts for the illusory restitution of lost body parts in amputees and could be a factor in the perception of intact healthy bodies in the afterlife.

Depersonalization can be considered a special form of hallucinatory phenomena. Psychiatrist Russell Noyes has contributed greatly to the understanding of death and dying in terms of this reaction (Noyes, 1972; Noyes & Kletti, 1972, 1976a, 1976b, 1977; Noyes & Slymen, 1978-1979). He reports a series of common subjective reactions to the threat of death including altered perception of time; lack of emotion; a feeling of unreality; altered attention; a sense of detachment; loss of control; panoramic memory; ineffability; and transcendence (mystical consciousness). Taken together, these phenomena constitute depersonal-

ization, a common reaction to life-threatening danger:

As an adaptive pattern of the nervous system it alerts the organism to its threatening environment while holding potentially disorganizing emotion in check. As a psychological mechanism it defends the endangered personality against the threat of death and, at the same time, initiates an integration of that reality. And, as a meaningful experience, a mystical elaboration of the phenomenon may achieve spiritual significance. (Noyes & Kletti, 1976b, p. 103)

Though not commenting directly on the afterlife experience, Noyes acknowledges that this type of encounter with death may include visions of anticipated future events coupled with a sense of rebirth.

These depersonalization reactions may be compounded by dissociation. The latter is considered a defense mechanism, usually operating unconsciously, through which emotional significance and affect are separated and detached from an idea, situation, or object. Dissociation has been postulated to underlie a variety of psychical phenomena, including trance and possession states, séances, automatic writing, crystal gazing, mystical states, and other behaviors that have brought us so many descriptions of the afterlife. A classic example of a dissociative death experience is found in intoxication with phencyclidine, a dissociative anesthetic drug with mixed excitatory, sedative, and hallucinatory properties. Domino and Luby (1973) describe salient features of phencyclidine (also known as PCP or Angel Dust) intoxication as including reduced verbal productivity, the appearance of calm, and experiences of sheer "nothingness." The authors describe one subject's vision of lying in a meadow: "This meadow was a place that he has often considered he would like to be buried in. The theme of death ran through most of his retrospective account of the episode. Possibly the experience of combined cutoff of interoceptive and exteroceptive cues is close to one's conception of what death must be like" (Domino & Luby, 1973, p. 42). Other common deathlike experiences in phencyclidine intoxication include ineffability of the experience and difficulty in verbal behavior; feelings of peace and quiet; disturbances in space and time perception; out of body experiences (including ecstatic feelings of timelessness, weightlessness, peace, serenity, and tranquility); no perception of smells, odors, temperature, or kinesthesia; fear; and confusion. Naturally, these can lead to a concern with death and deathlike thoughts for the intoxicated in-

dividual. This state of preoccupation with death has been termed *meditatio mortis* and may develop into a transient psychotic state that predisposes certain individuals to suicidal or homicidal behavior (Siegel, Note 2).

The specific content of complex hallucinatory imagery is determined largely by set (expectations and attitudes) and setting (physical and psychological environments). For many dying and near-death experiences, the sets (fear of approaching death, changes in body and mental functioning, etc.) and settings (hospital wards, accident scenes, etc.) can influence specific eschatological thoughts and images. Grof and Halifax (1977) suggest that the universal themes of this imagery may be related to stored memories of biological events that are activated in the brain. Accordingly, these authors propose that the feelings of peace and quiet may be related to the original state of intra-uterine existence, when there is complete biological equilibrium with the environment. The experience of moving down a dark tunnel may be associated with the clinical stage of delivery, in which the cervix is open and there is gradual propulsion through the birth canal. The border or limit may be related to the experience of incipient emergence from the mother, which is followed by delivery and feelings of transcendence. In a sense, Grof and Halifax are suggesting that the dying or near-death experience triggers a flashback or retrieval of an equally dramatic and emotional memory of the birth experience. Thus, the state of arousal present at death evokes memories or feelings associated with previous states of arousal, such as that which may have occurred during birth. Such a process is similar to what occurs when a specific song or melody spontaneously evokes an image of a loved one or when a child's behavior causes the remembrance of one's own long forgotten childhood. To the extent that this reasoning is correct, the experience of dying and rebirth in the afterlife may be a special case of state-dependent recall of birth itself.

Perhaps the most integrated explanation of life after death hallucinations is based on the perceptual-release theory of hallucinations, formulated by the British neurologist Hughlings Jackson in 1931. As recently updated by psychiatrist L. J. West (1975), the hypothesis assumes that normal memories are suppressed by a mechanism that acts as a gate to the flow of information from the outside. The input of new information inhibits the emergence and awareness of previous perceptions and

processed information. If the input is decreased or impaired while awareness remains (e.g., as in dying or shock), such perceptions are released and may be dynamically organized and experienced as hallucinations, dreams, or fantasies. Or if the store of perceptions in the brain is sufficiently stimulated (e.g., by drugs, fear, etc.) for a suitable amount of time, the released perceptions can enter awareness and be experienced as hallucinations.

West offers an analogy to illustrate the process. Picture a man in his living room, standing at a closed window opposite the fireplace and looking out at the sunset. He is absorbed by the view of the outside world and does not visualize the interior of the room. As darkness falls outside, however, the images of the objects in the room behind him can be seen reflected dimly in the window. With the deepening darkness the fire in the fireplace illuminates the room, and the man now sees a vivid reflection of the room, which appears to be outside the window. As the analogy is applied to the perceptual-release hypothesis of life after death experiences, the daylight (sensory input) is reduced while the interior illumination (the general level of arousal in the central nervous system) remains bright, so that images originating within the rooms of the brain may be perceived as though they came from outside the windows of the senses. Thus, when the Book of John tells us, "In my Father's house there are many mansions," or when the Apache tells us, "there are many tents in the camps of the dead," there are probably no more mansions and tents than there are images of those structures in our own brains.

Overview

From early observations of animals burying their dead, through awareness of the seasonal cycles of nature, to recognition of inherited resemblances of the living to the dead, early homo sapiens developed the concept of life after death in an effort to explain these behaviors and their underlying feelings. Anthropological studies show that afterlife concepts and descriptions of the soul's posthumous journey are strikingly similar for all human cultures. The state of death may have idiosyncratic meanings for different individuals, but the experience of dying involves common elements and themes that are predictable and definable. These elements and themes arise from common structures in the human brain and nervous system, common biological ex-

periences, and common reactions of the central nervous system to stimulation. The resultant experience, universally accessible, is interpreted by self-referential humankind as evidence of immortality, which is little more than a metaphor to describe a common subjective state of consciousness (Koestenbaum, 1976). This subjective state can be remarkably real and convincing for many individuals. While faithful that Western science may explain many elements of life after death phenomena, believers in the afterlife, like believers in other paranormal experiences, are nevertheless dubious when anyone dismisses the value of the total experience too readily (cf. Slater, 1977).

The concept of life after death postulates *survival* of bodily death. That elementary particles of physical matter survive corporate annihilation to become reabsorbed into the environment is well accepted. The degree to which such matter can be imprinted with consciousness, personality patterns, individual memories, or other "essences" of the body is less certain. And it is not clear if the afterlife in which surviving personas can be found is in mental or physical space. Since death is a precondition for rebirth in this afterlife, we the living may never know the answer. Glimpses from the beds of the dying, from near-death accidents, and from the resuscitated are sufficiently similar to dissociative hallucinatory experiences to caution against acceptance of these data alone as proof of survival. The voices of the dead, whether echoed through phone calls or mediums, may seem like more direct communication, but this evidence lacks important controls and scientific testing. Chasing ghosts in haunted houses, in out of body experiences, or into reincarnated bodies reveals phenomena identical to both dissociative hallucinatory states and cognitive processes in fantasy and make-believe play. However, finding parallels with satisfactory explanations of their own is not the same as finding proof against survival per se. The concept of life after death is not likely to rest in peace with explanations such as those proposed here.

If the experience of dying leads to an actual afterlife, and not merely a solipsistic fantasy, its proof will probably have to await changes in scientific and psychological thinking, not to mention future technology that may be necessary for its demonstration. To get to the afterlife, according to the Menangkabu of Sumatra (Eliade, 1951/1964), the soul must cross the edge of a razor. And then one finds the afterlife buried in what

Heidegger once called a mountain stronghold. While dissociative hallucinatory explanations and the application of our own Occam's razor may reduce the necessity of constructs such as the soul, psychology is not yet capable of moving mountains to know for sure. The afterlife, like children's dreams of a mountain paradise in Robert Browning's *Pied Piper of Hamelin*, remains an elusive yet fetching possibility. Thus far, investigations, both spiritual and scientific, remind us that we are still like children playing a game of hopscotch, children who are unaware they are reenacting an initiatory game whose goal is to penetrate into and successfully return from a labyrinth leading to the afterlife (de Vries, 1957). Future investigators must appreciate that the stakes of the game are no less than our basic cosmology of life and death, and they must play seriously and honestly—as if their lives depended on it.

Even if the experience of life after death does not lead to a "real" otherworld, the belief in such an afterlife may very well change behavior in this life. Contemporary literature has already glorified the afterlife trip. Popular writer Matson (1975) titled a chapter "The Thrill of Dying" and made the experience seem as harmless as an amusement park ride. Weldon and Levitt (1977), in a chapter in their book called "The Wonderful World of Death," assure the reader he or she will be born again. But Kastenbaum (1977) warns that continuing to write popular stories about the thrill and fun of dying and the bliss of the hereafter may threaten the living by making suicide more acceptable. Conversely, Hynson (1978–1979) has pointed out that those with a belief in the afterlife experience a change in attitudes whereby they become more positive about social relationships.

The belief in life after death is also contributing to changes in the meaning of death itself (see Feifel, 1977). These changes are manifested in the clinical management of the dying as well as in the reactions of survivors to death. Even the trend of freezing whole bodies instead of donating body parts confirms people's obsession with corporate survival. And though our inheritance and probate laws continue to underwrite the belief in real economic and legal survival, if not bodily survival itself, some changes are apparent in this arena as well. Consider the recently deceased wealthy woman who directed that in preparation for the journey beyond, her body be attired in a negligee and placed in a slightly reclining position in her sports car and buried. According to La-

sagna (1979), this kind of thinking will lead ad absurdum to Berkeley students' having a new cause—CADAVER, or Citizens Activated to Defend the Aspersed Value of the Eternally Reposed:

The group is demanding better living conditions for the dead, jobs for the dead, an end to media stereotyping of the dead, creation of a Dead Studies Department and inclusion of the dead in affirmative action. (p. 17)

In the past, dying and death were often accompanied by fear and loneliness, as if the individual were possessed by Pan, the Greek god of lonely places and panic. The belief in life after death provided much comfort and security. Through the research and explanations discussed here, investigators have begun to examine the nature of these life after death experiences as hallucinations, as based on stored images in the brain. Like a mirage that shows a magnificent city on a desolate expanse of ocean or desert, the images of hallucinations are actually reflected images of real objects located elsewhere. The city is no less intriguing and no less worthy of study or visitation because it is not where we think it is. With such understanding, we can counsel the dying to take the voyage not with Pan at their side, but with Athena, Greek goddess of wisdom.

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