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# Journal of Near-Death Studies

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THE JOURNAL OF NEAR-DEATH STUDIES (formerly ANABIOSIS) is sponsored by the International Association for Near-Death Studies (LANDS). The Journal publishes articles on near-death experiences and on the empirical effects and theoretical implications of such events, and on such related phenomena as out-of-body experiences, deathbed visions, the experiences of dying persons, comparable experiences occurring under other circumstances, and the implications of such phenomena for our understanding of human consciousness and its relation to the life and death processes. The Journal is committed to an unbiased exploration of these issues, and specifically welcomes a variety of theoretical perspectives and interpretations that are grounded in empirical observation or research.

THE INTERNATIONAL ASSOCIATION FOR NEAR-DEATH STUDIES (LANDS) is a world-wide organization of scientists, scholars, near-death experiencers, and the general public, dedicated to the exploration of near-death experiences (NDEs) and their implications. Incorporated as a nonprofit educational and research organization in 1981, LANDS' objectives are to encourage and support research into NDEs and related phenomena; to disseminate knowledge concerning NDEs and their implications; to further the utilization of near-death research by health care and counseling professionals; to form local chapters of near-death experiences and interested others; to sponsor symposia and conferences on NDEs and related phenomena; and to maintain a library and archives of near-death-related material. Friends of LANDS chapters are affiliated support groups in many cities for NDErs and their families and for health care and counseling professionals to network locally. Information about membership in LANDS can be obtained by writing to LANDS, Department of Psychiatry, University of Connecticut Health Center, Farmington, CT 06032.

MANUSCRIPTS should be submitted in triplicate to Bruce Greyson, M.D., Department of Psychiatry, University of Connecticut Health Center, Farmington, CT 06032. See inside back cover for style requirements.

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Editor's Foreword

This issue's contents span a wide range of interdisciplinary near-death studies. Social scientist Roger Cook's Guest Editorial attempts to explain near-death experiences (NDEs) by speculating on the psychology of the dying process, without any recourse to an entity actually surviving bodily death. His theory borrows heavily from psychologist Susan Blackmore; and in our lead article, Blackmore carries her ideas further in comparing various testable theories on the physiological origins of the tunnel experience.

This issue also includes a neurophysiological model for near-death phenomena, by pediatrician Melvin Morse and his colleagues, based on the role of the neurotransmitter serotonin in triggering genetically imprinted experiences. Their model differs from the one presented in our last issue by Juan C. Saavedra-Aguilar and Juan S. Gómez-Jeria both in the specific neurochemical mechanisms postulated and in their implications for the meaning of NDEs.

Psychiatrist and psychoanalyst Stuart Twemlow places out-of-body experiences in a meaningful clinical perspective and presents a psycho-educational approach that allows appreciation of the consciousness expanding effects of these experiences.

The two book reviews in this issue explore the role of NDEs within different religious and ethical systems. Philosopher Carl Becker reviews a new authoritative translation and interpretation, by lama Lati Rinbochay and Jeffrey Hopkins, of a Buddhist text on the spiritual potential of the death experience; and psychologist John McDonagh reviews an investigation of the meaning of NDEs from a Christian framework, sociologist Charles Flynn's After the Beyond.

Finally, we end this issue with a letter from educational psychologist Raymond Babb describing his controversial technique for hypnotic induction of NDE-like experiences, and his equally problematical results.

Bruce Greyson, M.D.
Editor
Guest Editorial: A Theory of Death

Roger B. Cook, M.A.
The Open University

Dying is considered by most people to be a gradual process. Charles II apologized for taking an unconscionable time over it, whereas he probably thought death itself would be instantaneous, like the snuffing out of a candle.

But death is also a process, which commonly starts with cardiac arrest. Some minutes elapse before stoppage of the circulation becomes lethal to the brain. The mind can remain alert until the brain stem, into which are packed the control mechanisms for speech, sight, and hearing, ceases to function. What takes place in the mind during that interval is crucial. A considerable body of evidence has been assembled indicating that a unique experience is in fact in progress.

Certain stages of this near-death experience (NDE) can be aligned with corresponding physical events. For example, the thump that accompanies the return to the body in many autoscopic NDEs appears to coincide with the heart being restarted by a successful resuscitation procedure (Sabom, 1982, pp. 56-58).

To align the failure of every individual system or component within the dying brain with a corresponding stage in the deterioration of personality is beyond the scope of an enquiry such as this. Nevertheless, it is possible to focus on certain stages of loss of function in the brain and infer the corresponding perceptions in the conscious mind.

The most significant event is the irreversible loss of the capacity for consciousness that is the inevitable effect of death of the brain stem. A distinction must be made here between the capacity for consciousness,
which is a function of the brain stem, and the content of consciousness, which resides in the cerebral hemispheres. The survival of the former is essential for activation of the latter.

From the evidence of the NDE, it is clear that during the minutes that elapse between cardiac arrest and death of the brain stem, the mind experiences vivid and various images. These, I suggest, lead into a final experience that totally resolves all personal conflicts, all unanswered questions, all emotional loose ends, all guilt, remorse, and sorrow, as the consciousness enters a state of warmth, joy, and release from pain, characterized by NDErs as being overwhelmingly suffused with love.

Another universal feature of NDEs is the disappearance of all sense of time. The logical extension of this is the atemporal sense of being that, I suggest, achieves ascendancy at the moment of death. This is not the same as a “hereafter,” but is rather a permanent “here-and-now.” The “after” in “life after death” or “hereafter” is an outcome of the sequential habit of thinking derived during this life, which has always colored our consideration of the next.

To reinforce this assertion, it is worth pointing out that from birth the human organism is programmed in the “And then... and then...” mode, the “What happens next?” perspective. But if this imperative ceases to govern one’s perceptions, as NDErs suggest, such a question ceases to formulate itself. Eternity becomes infinite in both past and future durations, having neither beginning nor end, outside of “time” in its restricted sense of duration measured by the succession of physical phenomena. In a very real sense, timelessness will be all-pervasive.

**Does Something Leave the Body?**

Perhaps the most powerful impression noted by NDErs is the reality of the NDE. There is every reason to accept that it was “realer than here, really,” as one of Michael Sabom’s subjects put it (Sabom, 1982, p. 33). But accepting this impression is not the same as accepting that the events related in the NDE, particularly in the autoscopic NDE, actually happened. Because they were experienced as real does not mean that they were actual.

As indicated above, the NDE may be an altered state of consciousness, and I will shortly examine the consequences of that. But first it is important to investigate the notion that the autoscopic NDE can add
substance to the idea that a "soul" leaves the body at death and has some independent existence.

Those who have undergone an autoscopic NDE have reported being able to watch the activities of the medical team at work on their bodies, typically from a point near the ceiling. For this actually to occur, the retina of an eye would have to record the relevant images and pass them via the optic nerve to the visual cortex. The requisite organs, together with their support systems of veins, arteries, glands, and the like, must therefore be in place. Such a disembodied assemblage has never been recorded by anyone present in such a setting; the very process of enumerating them in this way serves to highlight the absurdity of the notion.

But the intention here is not to devalue such accounts; quite the reverse. As noted above, such testimony is overwhelmingly suffused with the reality of what was experienced. What both NDErs and researchers fail to acknowledge is that what took place in their minds was also produced there.

Such an assertion appears to dismiss the subsequently corroborated testimony of subjects who observed instrumental readings, or accurately reported the conversations of relatives located elsewhere in the hospital. I will address this aspect later, but first I must establish that the NDE, like other out-of-body experiences, is a product of the mind.

**The Altered State of Consciousness**

Most of the surroundings that are taken for granted during our waking hours are in fact the constructs of our mental processes. We unconsciously and continuously create a model of the world around us, a model that constitutes reality. This model comprises self-image, body image, and an input-driven model of the external world (Blackmore, 1984, 1988a, 1988b). It can be instructive to specify one’s reality model, listing which phenomena have been selected for notice, and which have been filtered out.

In the activity of writing, for example, the mind blots out such irrelevant input as the pressure of the chair, the hum of a fan, the sound of traffic passing, and the image of physical objects that impinge on the writer's peripheral vision. The sequence of thoughts and correlated impulses that initiate the muscular contractions needed to propel a pen across the paper in a series of meaningful squiggles is what remains after the conscious mind has experienced and discarded all
background noise. A person's model of the real world comprises both this deliberately selected material, and a range of richly varied, though irrelevant, input from the external world. Sense data are entered into one's model of reality from the bottom up, so to speak: from peripheral sensory receptors to the cerebral cortex.

In the everyday situations in one's waking life, the conscious mind experiences a stable model of reality: a combination of sensory input together with mental constructs derived from habit and memory. But there are times when this stable model is displaced by an alternative model; for example, in dreams, drug-induced states, and out-of-body experiences. All such states involve worlds of truly imaginary, that is, imaged in the mind, origin, which seem as real, and often more real, than one's waking life.

In effect, the model of reality fueled by sensory inputs has been challenged and superseded by a model derived from images and memory, and constructed from the top down (Blackmore, 1984, 1988a, 1988b). The conscious model of reality is dislocated so radically that the mind seeks something to put in its place; the model based on memory and experience becomes dominant over the bottom-up reality model as sensory input becomes weaker and less definite. In a dream this dominance may be temporary and transient, so that we forget not only what we dreamed, but if we dreamed at all.

But some dreams remain in the mind for longer. In others, known as lucid dreams, one is aware that one is dreaming, and may choose between staying in the dream or returning to the bottom-up reality model.

It is clear, then, that models vary in their degree of dominance. Most of the time a bottom-up reality model is in control, but in a reverie a memory-based model may hold sway for a while.

Under anesthetic, however, it is possible that the mind responds to physical sensations originating from surgery by displacing them onto a mental construct, specifically an image of the surgeon at work on the subject's body. In other words, the personality adopts the survival strategy of combining sensory input, dulled by anesthetic, with memory and previous knowledge of medical procedures. From these sources it constructs a model of what is happening to the body. This becomes dominant in the out-of-body experience, during which patients report observing the activities of the medical team from a point near the ceiling.

This explanation can be applied in the case of autoscopic NDEs reported by patients undergoing surgery. But in six cases of resuscitation from cardiac arrest reported by Sabom (1982, pp. 123–157), sub-
jects confirmed details recorded on medical instruments and conversations of waiting relatives that could only have been perceived from a position outside the body. The altered-state-of-consciousness theory cannot account for these phenomena, unless it is modified to allow for extrasensory perception.

There are other situations in which it is generally accepted that the mind adapts to unmanageable physical situations by shifting from one state of consciousness to another. Faced with an inevitable car crash or similar accident situation, people frequently report experiencing a vivid replay of their lives. "My whole life seemed to flash before my eyes" is a typical formulation of what has been termed "depersonalization in the face of life-threatening danger" (Noyes & Kletti, 1976).

The onset of death presents the mind with its most extreme condition of sensory deprivation, as the sense organs lose their functions and the brain is denied sensory stimuli. But there is one significant compensation: it its weakened state of anoxia, the brain is no longer called upon to initiate motor functions or muscular contractions. Nevertheless, the brain stem is still alive, and able to orchestrate the activity of the cortex.

It seems fair to suggest that the preconditions for an altered state of consciousness are then met. Sensory input has ceased, so the mind searches for a model to replace the fading bottom-up reality model. It can only build one from the top down, that is, using memory, images, and experience in a totally unfettered way. Having labored since birth in the service of the organism, the mind can now give complete precedence to the uprush of images and feelings stored away over the years. Relieved of the necessity to monitor, filter, and suppress external perceptions, the mind is freed to experience totally the joys, sorrows, loves, hates, pleasures, and pains that make up this flood.

Whatever form the experience takes, it will be unique for each individual, based entirely on his or her biography, and hence not part of some universal or shared other world. But the universal factor in the situation is that it will not be subject to limits of duration. It will be outside time, having no beginning or end, conspiring to convince the spirit that its condition is unique, personal, and eternal.

Whether this interpretation convinces or not, three points need to be made about the brain as an organ. First, it is capable of immense amounts of activity over a very short time. Second in death it is in a unique situation, untrammelled by any sensory input or requirement to originate output, so that all its dwindling resources can be devoted to receiving images and experiencing emotions. And third, it has great recuperative power when damaged.
Beyond Scientific Enquiry?

What I have said so far is neither particularly novel nor controversial, and most of the evidence is in the public domain. The assumption that the irreversible loss of function of the brain stem coincides with the transition from the near-death state to a state of euphoria or ecstasy for that individual is not susceptible to scientific proof, but the evidence supports such an interpretation.

Further enquiry raises methodological issues. The problem of obtaining evidence from a dead brain stem is insurmountable: such evidence must necessarily disqualify itself, since its very existence would depend on a functioning, and therefore not irreversibly damaged, brain stem.

In such circumstances I feel justified in adopting a pragmatic approach, that leads to the following proposition: where two or more items of evidence and experience combine to establish an unshakable belief, that belief attains the status of proof for the person holding it.

In my own case, the items concerned happened to be something I read and something I experienced, which confirmed each other, and became a certainty. The particular items that combine to afford such a significant perception must be unique to each individual, so the above proposition can never attain the status of a universal law, or established theory based on replicable experiment. But if each individual finds correspondences between, say, the research findings of others and his or her own personal experiences in real life, then in a limited sense the proposition tends toward universality.

I will describe the items of evidence I encountered as an example of how the above formulation may apply. The first item was a dream experienced a few years ago, the details of which have faded. However, it was very pleasant and I remember wanting very much to remain in it. But awareness that I was going to have to wake up gradually asserted itself.

At that point it was borne in on me, almost as if to compensate for my disappointment, that eventually—which, to me, meant at death—I would receive complete satisfaction. The phrase "so that's how it is!" came into my mind, triggered by the central message of the dream, which was that during the concluding moments of life the perception of time gets transformed. No longer is it a linear sequence in which minute follows minute, hour follows hour, and day follows day. Instead, the mind stands outside time, and experiences a resolution of all conflicts, all emotional loose ends, all guilt, remorse, and sorrow, and enters a state of warmth, joy, and freedom from pain.
In short, the experience makes sense of one's life. It may be regarded as a final flowering of the mind, a fulfillment of all dreams, a resolution of all regrets. Numerous reports of NDEs suggest it is all these and more. But the crucial point is that the main parameter of life—time present, past, and future—is cancelled out, made null.

The logic behind such a marked change is very clear: the continuance of life, for any animal, hinges on its acquiring sufficient nourishment to continue living. The basic question posed by life is "Where is the next meal coming from?" This puts mankind into the "And then... and then..." mode referred to earlier. But in death the only parameter is the present. Time past and to come fall out of the picture.

The idea that all this, the resolution of all regrets and fears in some personal paradise, can be a creation of the isolated mind in its dying moments may seem implausible. But again there is a logic behind it. Once out of the womb, the child embarks on a life centered on others; everything thereafter is increasingly social, in a context of other-directed and frequently dependent relationships.

But death is a total reversion to the singular. The dimensions of both time and a responsive world are displaced by a state of timelessness and solitariness—not, however, loneliness, since the interior world of death is peopled with those who have meant most to us in life, and reportedly such encounters, though imaginary, are profoundly significant.

I derived this conclusion from relating the message of my dream described above to the written testimony of those who have approached death. Combining the evidence of the two convinced me that on the mind of the dead individual there is imprinted an indelible state of "nowness," which is so complete and all-embracing that it totally displaces the life-derived preoccupation with filling time's unforgiving minutes.

English does not have a vocabulary comprehensive enough for most NDErs to explain satisfactorily what the experience of death was like for them. I am similarly constrained in my attempts to convey the idea of the end-state. But my dream convinced me of three things: (1) that nothing leaves the body at death; everything that is experienced takes place within the brain of the dying person; (2) in those dying seconds, as the brain finally succumbs to the dislocation of its fuel supply, the conscious mind undergoes a uniquely vivid experience of happiness, combined with a resolution of all stress, tension, guilt, and remorse; and (3) as the life force ceases, this experience is indelibly imprinted on the consciousness; it lasts forever in this world's terms, but for the dying person it is literally timeless. The first statement is hard to
disprove; the second and third on the other hand are impossible to substantiate, though one can make a case for them.

"Just" Imagination?

The notion that such an intense and powerful experience might originate entirely from resources lodged in the mind may seem inadequate. But it is worth remembering that our species is very logical in its behavior. Death confronts us with a completely novel set of circumstances that cause us to reorder our priorities and adopt a radically different strategy.

Paradoxically, at the point of death, survival is no longer an issue, as most NDErs will confirm. Therefore, the brain is not constrained to engage and operate survival mechanisms. All the promptings and schemings that go with attaining the next meal, even the muscular contractions required to draw the next breath, become superfluous. In any case, all sense data will have been cut off, freeing the brain to concentrate exclusively on interior activity.

The majority of NDEs suggest that the subject turns inward, advancing to meet dead loved ones rather than striving to rejoin the living; the only exceptions being those who feel some of the living still have a call on them, in which case a conscious decision is made to return, thus aborting the death process.

For those who have not experienced an NDE, it may be hard to accept that the product of the mind at such a time will be so unique and exceptional. Our experience of the brain's capacity in this regard is not very encouraging. If we try to dredge up some happy childhood memories, friends' faces, good holidays, and the like, we may conclude that the raw material is not that promising.

Similarly, if we consciously seek to conjure up a picture of the joys and pleasures that paradise might comprise, we do not get very far. But that may be because we make the attempt from within a context that is neither relevant nor propitious: that is, the dominant reality model of our waking hours.

As a result, the potential performance of the human mind at the point of death has long been seriously undervalued. Susan Blackmore, in noting that many people dismiss out-of-body experiences as "just imagination," commented (1983, p. 149):

Imagination is far too vast and exciting a word to be denigrated with the word "just". . . It [the OBE] is imagination, and that may be quite the most exciting thing it could be.
I suggest that the potential of the imagination is commonly dis-
counted because we conceive of it only from the context of real life,
where its activities are subordinated, except when permitted brief
diversion as in dreaming, to creative thinking and activity necessary
for the survival of the organism. But from being just an instrumental
adjunct to survival in life, it becomes the totally dominant core of a
person's being in the process of dying, his or her very self. The experi-
ence is more all-embracing, intense, and totally fulfilling than we,
from our perspective in this life, can possibly envisage.

The central conundrum, then, can be reexpressed in the following
form: Nothing leaves the body at death, yet we do experience a per-
sonal heaven. This experience occupies only a moment of time, yet
creates an eternity in death, at which point the dimension of time is
totally erased.

I accord the imagination, or whatever function of the mind comes
into play uniquely at death, the status of a slumbering giant: its
potential, while only dimly apprehended, is clearly enormous.

Conclusion

The second element, which was combined with my dream to establish
an unshakeable belief, is the body of testimony about NDEs collected
by many researchers. Such evidence, however, is secondary material,
whereas my dream was, to me, primary. However, the written evi-
dence reinforced the full significance and implications of that dream
and provided intellectual underpinning to my argument for the NDE
as precursor of the final experience. Since conditions at the moment of
death preclude many conventional research techniques, I propose that
each individual should seek his or her own corroborative evidence,
whether in the research findings of others or the events and experi-
ences of his or her own life, which may resonate with or echo the
findings of others.

Opportunities for speculation in the area of near-death studies are
many and varied. Let me therefore conclude by restating my assump-
tions. An important initial premise is that nothing leaves the body.
There can therefore be no surviving entity to inhabit some other
dimension or plane. On the other hand, the NDE can be taken as fact,
even though the evidence is by its nature not amenable to scientific
testing. It is impossible to verify any theory concerning the complete
death process. The solution I offer is as firmly based and objective as is
possible under the circumstances.

The brain's behavior at death is the proper concern of neurologists,
and the patterns of the conscious mind can be further analyzed by psychologists. But for individuals it may be their own responses that provide the surest guide, so long as they can be ratified by what science is able to tell us about the last frontier.

References


The Physiology of the Tunnel

Susan J. Blackmore
Tom S. Troscianko
University of Bristol

ABSTRACT: Several theories to account for the origin of tunnel hallucinations and tunnel experiences near death are considered: (1) the idea of a "real" tunnel; (2) representations of transition; (3) reliving birth memories; (4) imagination; and (5) physiological origins. Three different physiological theories are considered that relate the tunnel form to the structure of the visual cortex. All can account for much of the phenomenology of the tunnel experience, and all lead to testable predictions. It is argued that the tunnel experience involves a change in the mental model of the self in the world. Because of this, an experience of purely physiological origin, with no implications for other worlds or for survival, can nevertheless produce lasting changes in the sense of self and reduce the fear of death.

The tunnel is dark. The light at the end is bright, beautiful, and alluring. We want to reach the light. It is coming nearer.

The tunnel experience is exciting and somehow mysterious. It gives the impression of mysteries about to be solved or secrets about to be revealed. And yet it seems likely that its origin lies in the structure of the visual cortex. We suggest that these two aspects are not incompatible. We shall explain possible physiological origins of the tunnel and explore the reasons for its numinous qualities.

Here is an example of a tunnel experience occurring as part of a near-death experience (NDE). It was reported to us by a 70-year-old widow and occurred in 1960 when she was operated on for a spinal tumor.

Dr. Blackmore and Dr. Troscianko are at the Perceptual Systems Research Centre Department of Psychology, University of Bristol. Requests for reprints should be addressed to Dr. Blackmore at the Department of Psychology, University of Bristol, 8-10 Berkeley Square, Bristol BS8 1HH, England.
Suddenly amidst all this pain (I was still in the dark) I saw a light very faint and in the distance. It got nearer to me, and everything was so quiet; it was warm, I was warm, and all the pain began to go. When I finally stood out of the dark, and into this light, it was the most beautiful thing I have ever seen: soft, warm, translucent. I was finally there, and I felt as if someone had put their arms around me. I was safe, no more pain, nothing, just this lovely, caring sensation.

Next thing I remembered was a doctor or somebody twisting my cheek and several people doing things to me.

This happened again (I think once). Then my husband was again visiting me with my children. I was only vaguely aware of them. I drifted off. I could again see this light. I couldn’t wait to go back down that tunnel.

**Tunnel Hallucinations**

As early as 1905 Ernest Dunbar collected cases of tunnel experienced under anesthetics and with other drugs (Dunbar, 1905). The tunnel is also one of the form constants noted by Heinrich Kluver in the 1930s (Kluver, 1967). He claimed that almost all hallucinations, regardless of their cause, took on similar basic forms. The four he listed were (1) grating, lattice, fretwork, filigree, honeycomb, or chessboard design; (2) tunnel, funnel, alley, cone, or vessel; (3) spiral; and (4) cobweb. He also noted that these simple hallucinations were extremely bright and the colors highly saturated.

These hallucinations can occur in widely different conditions from hypnagogic imagery when falling asleep (Schachter, 1976); the auras of epilepsy, migraine, or insulin hypoglycemia (Cowan, 1982); and with hallucinogenic drugs, such as LSD or mescaline (Siegel, 1977). Needless to say, the tunnel also occurs as an important part of the NDE (Moody, 1975; Ring, 1980). Interestingly, the other forms do not. The NDE seems to include tunnels, funnels, alleys, cones, and possibly vessels. It also includes great voids of blackness and space, but no gratings and cobwebs. The spiral, of course, may form a kind of tunnel, but we have not come across any examples of a dying person passing through a cobweb or dancing on a chessboard.

This provides an interesting question. Why is it the tunnel alone that seems to be so important in NDEs? Should we ignore this difference and seek one explanation for all the kinds of hallucination; should we assume that all the forms arise from similar causes and then seek to explain why NDEs do not include gratings and cobwebs; or should we seek entirely separate explanations for NDEs and other hallucinations, such that NDEs provide a glimpse into another world? We shall return to this question having considered some of the available evidence.
Kevin Drab (1981) studied 71 tunnel experiences obtained from 1,112 reports of unusual experiences. He excluded descriptions of voids and black spaces and defined the tunnel as "the perception of a realistic enclosed area of space much longer than its diameter" and found examples occurring in cardiopulmonary arrest; severe stress (from disease or trauma); mild stress (including minor injuries and pain, fatigue, fear, mild fever or toxic conditions, and migraines); and normal conditions (including relaxation, sleep, meditation and hypnosis). Many of the latter category were associated with out-of-body experiences (OBEs).

He found, among other things, that the tunnel was more frequent in serious medical conditions than in nonserious conditions. Also, as one might expect, many of the serious cases involved heart attacks or mechanical accidents. However, there were no cases with cancer or stroke. Since those two conditions rank second and third among the leading causes of death in Americans, this is surprising. It is also known that patients with cancer do report mood elevations and visions of other worlds (Osis & Haraldsson, 1977). Drab concluded that tunnel experiences are more often triggered by a sudden change in physiological state such as an abrupt drop in blood pressure or shock.

The tunnels were usually dark or dimly lit (only 10% were brightly lit), and none of the experiencers reported touching the sides, although these varied widely and included scintillating darkness, luminous vapor with fine lines, and bricks with a cobblestone floor. Before my (SB) own first OBE I went down a tunnel made of leaves (Blackmore, 1982a) and I have often experienced tunnels made of varying textures, bright lights, or bands of darker and lighter gray.

Nearly half of Drab's cases reported a light at the end of the tunnel. And 73% of those described it as becoming larger in their field of vision and described themselves as moving towards it. Many described the light as extremely bright and some even commented that it did not seem to hurt their eyes. Almost all of Drab's experiencers described moving through their tunnels; most went through, some up, and some down, but only eight cases described coming back through the tunnel. It is not clear from Drab's description whether they came backwards through the tunnel or turned around and moved forwards in the opposite direction.

**Explaining the Tunnel Experience**

What kind of explanation are we looking for? We think we need to answer this before considering any offered explanations. Our own priorities are that first the theory should account well for the phenomen-
nology. This means explaining why there is a tunnel and not something else, why it is like it is, why there is a light at the end, and so on; and above all, why it seems so real. Second, the theory should not multiply other worlds or bodies or vibrations ad hoc. Third, it should provide testable predictions and the means for changing and improving the theory by experiment. Applying these criteria means that untestable occult theories that can “explain” everything but can never be refuted are not helpful. No more helpful are dismissive theories of the kind “It’s all imagination” or “It’s all in the mind.” Of course, it may all be in the mind, if that phrase means anything, but this is certainly no explanation. So a successful theory must account for the phenomena in ways that are economical and testable.

There are generally four types of explanation offered for the tunnel experience.

A "Real" Tunnel

In some occult systems there is said to be an actual tunnel that leads from one world to the next.

The problems with such theories are many. If the other worlds are somehow part of this world, then we should be able to measure them or in some way detect their presence. Attempts to do this have notably failed (Blackmore, 1982a). On the other hand, most exponents argue that the higher worlds are in some other dimension or different plane. If these planes and dimensions are not commensurate with the physical world then all the problems of any brain–mind dualism are raised. How can anything be said to pass from one world to another? Positing a tunnel between them certainly does not help. Such theories can neither explain the phenomena, except in a purely ad hoc way, nor provide any predictions by which they might be tested or improved.

Representation of Transition

An alternative is to say that the tunnel is symbolic of the transition from one state of consciousness to another. Robert Crookall (1964) wrote that there are at least three “deaths” as first the physical, then the soul, and finally the spiritual body are shed to unveil the Eternal Self. The tunnel is a blacking out of consciousness as it passes from one state to another. Celia Green (1968) proposed the tunnel as a representation of a long journey and Kenneth Ring (1980) considered the tunnel
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a psychological phenomenon through which the mind shifts from its normal state of consciousness to a holographic or four-dimensional consciousness of pure frequencies.

This idea escapes the obvious problems of positing "real" tunnels and allows for more flexibility. But in the process we suggest that it loses all power as an explanation. It simply begs the question "Why the tunnel?" Why shouldn't something else be used as a symbol of transition? There could be gates, doorways, arches, chasms, or the great river Styx. In fact these other forms do occur later on in NDEs, in the stage of worlds beyond, but it is the tunnel that appears regularly, in predictable forms, and, as we have seen, in numerous different circumstances. We understand this ubiquitous tunnel no better by saying that it is symbolic of something else.

Reliving Birth Memories

One of the most popular theories is that the NDE is a reliving of one's birth and that the tunnel is really the birth canal (Honegger, 1983; Sagan, 1977). This theory has been roundly criticized already (Becker, 1982). The main problems are that it is implausible to suppose that the infant would perceive the world in a form that could later be recalled by an adult with totally different perceptual capabilities. Also the birth canal is nothing like a tunnel with a light at the end, and in any case the fetus is pushed along it with the top of its head usually emerging first, not its eyes. It takes a vast leap of the imagination to make the two comparable, and yet this theory has produced a welter of New Age ideas and techniques.

One virtue of this kind of theory is that, at least in some forms, it is testable. If the tunnel experience is reliving birth memories, then the kind of birth should make a difference. In particular, people born by Cesarean section have never been along the birth canal and so, presumably, should not be able to relive it. One of us carried out a survey of 254 people, of whom 36 had been born by cesarean section. These 36 did not report more or fewer tunnel experiences than the others; 36% of each group reported tunnel experiences (Blackmore, 1982b).

To circumvent this difficulty, Scott Rogo (1982) has argued that the tunnel is not actually reliving one's birth but is a kind of symbolic representation of birth in general. Indeed Carl Sagan's theory can be interpreted in this way. If so, this theory is equivalent to the previous kind of theory and suffers from the same weakness.

Rogo did, however, suggest that people who had a difficult birth
would have more negative associations with later OBEs than people who had an easy birth. As far as we know this has not yet been tested.

**Imagination**

A lot of commentators seem to like the idea that the tunnel, the OBE, and many other experiences are "just imagination." We refer to this approach as a dismissive nonexplanation (Blackmore, 1988). The experiences almost certainly are, or include, the imagination, but this alone is no explanation. If specific similarities between imagination and the tunnel experience can be found, then this is helpful, but we must remember the criteria for a useful theory. The "just imagination" theory neither accounts for the phenomenology (why the dark tunnel with a light at the end, and not a green gate with a ditch in front of it, and so on), nor is it really testable. It can, we suppose, be refuted by the demonstration of something else being involved, but it cannot be improved on by progressive tests or positive predictions. It is, by its very nature, a contentless explanation. For that reason we want a theory that, even if it says the tunnel is imaginary, explains why one should imagine tunnels rather than anything else.

**Physiological Explanations**

If we suppose that the hallucinatory form constants are generated by some physiological process, where should we look for it? There is good reason to think they are generated in the cortex. First, according to Cowan (1982) they do not move with the eyes and are therefore not afterimages or other retinal effects. Second, they can be produced by pressure on the eyes. In this case they do move with the eyes but can only be produced by binocular pressure, which again points to the cortex as the site of origin. There are now a number of theories that relate the tunnel form to the structure of the visual cortex.

John Cowan (1982) argued that because we know the appearance of the hallucinations and also the way images on the retina are mapped onto the cortex (Daniel & Whitteridge, 1961), we should be able to calculate the cortical form that corresponds to any hallucination. Using this mapping he showed that concentric rings on the retina or in the visual world correspond to straight lines parallel to one axis in the visual cortex. Straight lines at right angles to those are mapped in the visual cortex as radiating lines; straight lines at other angles are
mapped as spirals. If the lines move, the spirals or rings expand and contract. Expanding concentric rings could produce the impression of moving through a tunnel.

But why should there be moving stripes across the visual cortex? Cowan offered an analogy with thermodynamics. In its normal stable state, cortical activity is inhibited by many inhibitory neurons. When these neurons are disrupted, as they are known to be by drugs such as LSD and by anoxia, the disinhibition destabilizes the uniform state, and stripes of activity pass across the cortex. The analogy is with a fluid heated from below, in which either hexagonal patterns or stripes of rising and falling fluid are produced. Cowan concluded that a similar process takes place in the cortex and gives rise to the four form constants.

This theory seems to have some problems. First, it does not account for the fact that NDEs include tunnels but not cobwebs and lattices. It does not explain why people seem to move forwards through tunnels but rarely backwards. Nor does it explain just what those stripes are and why and how they move as they do.

One of us (SB) therefore suggested a far simpler theory. Perhaps no stripes are needed at all. When the brain is starved of oxygen, inhibition is first suppressed, which creates a state of hyperactivity. The cells in the visual cortex will be firing randomly, or noisily. Using the same retinocortical mapping, we can see that there will be far more cells firing that represent the center of the visual field and far fewer at the edges. The effect will appear like a flickering speckled world that gets brighter and brighter towards the center. It is known that the visual system is biased towards movements in an outward direction (George son and Harris, 1978). In addition, visually perceived movement, especially in the absence of any reference, is easily interpreted as self movement; the classic example of this is the feeling that your train is moving backwards when another train pulls out of the station. In other words, this scintillating speckled world of electrical noise could appear to expand outwards from a brighter center. Could this be the tunnel?

Tom Troscianko then made a further suggestion (Blackmore & Troscianko, 1988). Perhaps this process would not be enough to produce the tunnel effect. However, if you started with very little noise and it gradually increased, the effect would be of a light at the center getting bigger and bigger and hence closer and closer. The tunnel would occur as the noise levels increased and would stop either when they decreased again or when the whole cortex was so noisy that the light enveloped it all. In other words, one would have entered the light. It could get no brighter.
All these theories have some advantages in common. They explain why there is a tunnel rather than any other symbol of passage to another world. They explain how the light can be extremely bright but does not hurt the eyes: the eyes are not involved at all. The stimulation in the cortex may be as bright, or even brighter, than any real stimulation could actually produce. They all explain Drab's findings that the tunnel occurs with more serious medical conditions, and that it does not occur with slow progressive disease.

Predictions from the Theories

All the physiological theories provide testable predictions. For example, they imply that an intact visual cortex is required, and if this were damaged, as in some kinds of blindness or stroke, then the tunnel could not be produced.

In other ways they differ. Primarily, Cowan's theory requires that there be stripes of activity passing across the cortex. This might be related to cortical spreading depression, which is thought to be implicated in migraine. This spreads at a rate of 2 to 3 mm per min (Leao, 1944). By contrast, Cowan claimed that tunnel hallucinations fill up the visual field in about 2.5 msec, corresponding to a propagation velocity of 1 or 2 cm per sec. However, he gave no data or reference for his claim, and that is clearly something to be investigated further. Whether or not the mechanism is similar to cortical spreading depression, it would be expected to have a rate dependent on the neural mechanisms underlying it. In this case, we should expect, according to Cowan's theory, that the tunnel would always be travelled at roughly the same speed. This appears not to be the case. Some people claim to float gently down tunnels, while others rush at a tremendous rate. Drab (1981) reported 67 cases describing movement, of which 12 said they were moving at a slow to moderate speed and 24 were moving very fast.

By comparison, Blackmore's theory makes no stipulation about speed. If the movement is induced merely by the speckly noise, then it depends on the amount of noise: the more noise, the greater the speed. But this in turn implies that faster movement is associated with a larger central white area. As far as we know, this has not been tested.

The final theory makes a clear prediction. If the movement is created by the expansion of the central white area, then speed is not restricted, but the overall change in the tunnel is. In other words, you can only move from a tiny white light to a completely enveloping one. The faster
you move through the tunnel, the quicker the experience will end. This also has not been tested. So these differences provide a way of testing the various theories, which could be done by collecting appropriate descriptions from people who have experienced the tunnel.

There are other predictions made by these theories. If the key to the tunnel is cortical disinhibition, then the drugs that produce tunnels should all be those that reduce inhibition. This certainly appears to be the case, the major hallucinogens being the best example. On the other hand, some drugs increase inhibition, such as the minor tranquilizers like Valium, which act by potentiating the neurotransmitter gamma-aminobutyric acid. We should therefore not expect to find tunnel experiences in people taking these drugs. In particular, if they approach death by an overdose of such drugs they should not have the traditional near-death tunnel. Again, this prediction has not been tested.

We would like now to return to the question of why tunnels occur when they do. With the major hallucinogenic drugs tunnels are common, but so are lattices, spirals, cobwebs, and other simple forms. The tunnel seems to have a special place in the NDE. Why is this?

As far as we can tell, Cowan's theory provides no answer. If the disinhibition is the same regardless of its immediate cause, then the patterns produced should be the same. On the other hand, both the other theories can only produce tunnel forms, and not the other form constants. In particular, Troscianko's theory suggests that the tunnel can only occur when there is a fairly rapid increase in cortical noise, as would be expected in cardiopulmonary failure or an accident or sudden severe stress.

In addition, all these theories can account for Drab's apparently odd finding that there were no tunnels reported by stroke victims. They all require an intact visual cortex, and if that were damaged by a stroke the tunnel could not be seen. A further prediction is related to this. If the tunnel is of cortical origin, then anyone with a damaged visual cortex should not experience it. So, for example, people blind through retinal disease or other damage in the eye should have tunnel experiences just like anyone else, but those suffering from cortical blindness should not. This too awaits testing.

The first way to test these theories should be to find out just what kind of visual stimulation is necessary to induce the impression of moving through a tunnel. Obviously, we cannot open up someone's cortex and apply the hypothesized stimulation that way. We can, however, mimic that stimulation by presenting visual forms to people. Using retinocortical mapping we can construct the visual equivalent of the different kinds of cortical stimulation. In Cowan's case this would
be concentric rings or spirals. In Blackmore's case it would be randomly flickering specks of light distributed like the cells in the visual system, with many in the center and fewer towards the periphery. In Troscianko's case it would mean having brightness at any spot scaled according to the same mapping, with the brightest in the center fading out to the edges, and the brightness of the whole picture gradually increasing.

So far we have only tried the latter. Troscianko and his colleagues wrote a program to display this on a monitor and it does indeed appear like a tunnel with a bright light at the end that gets gradually brighter (and apparently nearer) (Blackmore & Troscianko, 1988). This research is still underway, and the next stage is to produce the other forms and to get people who have had tunnel experiences to compare them with their experienced tunnels. This might give some further clue as to the precise origin of the tunnel.

It can be seen that these physiological approaches to the tunnel experience already account for many of the previous findings, and they provide numerous ways of testing them for the future. In this respect they are quite different from all the previous theories I have considered.

**Why Is the Tunnel So Real?**

This is a question most physiological theories leave untouched. Nevertheless, the experience cannot be fully understood without considering it.

When tunnels appear in drug-induced states, they are usually considered to be hallucinatory or illusory (Siegel, 1977); but near death, and in some other OBEs, they seem to be as real as anything in normal perception. Why? To answer this we have to step back to the question of why anything ever seems real. It seems implausible to suppose that the perceptual system can easily discriminate input from recalled information when the two are mixed almost from the very periphery. Therefore the system must, at some level, make a decision about which of its representations, or mental models, are "real" and which imaginary. We suggest that it does this at a high level, comparing representations of the world and choosing the most stable as the outside world; i.e. attributing reality to it (Blackmore, 1984, 1988).

Normally, of course, the model chosen is that which is constructed on the basis of input. This is the only one that is stable and predicts future
input as it goes along. Other models, by comparison, are fleeting and unstable. However, the conditions that give rise to tunnel experiences, as well as OBEs, are precisely those in which input is disrupted, either because of damage to the nervous system or because of deep relaxation, meditation, or sensory isolation. In these conditions the input model is no longer the most stable, and therefore, according to my hypothesis, whichever model is most stable will take over as “reality.”

If there is noise in the visual cortex producing a tunnel form, and if the input-driven model is also unstable, then the tunnel form will be the most stable model in the system and hence will be chosen as “real.” This is why tunnels near death, but not in the milder drug-induced experiences, seem real. Indeed they are “real” in just the same sense as anything ever is real; because they are the most stable model the system has at the time.

We would take one further step from this, although it is not necessary to understanding the tunnel experience. That is to say that these mental models are not something we construct. Rather “we” are the mental models constructed by the brain. One of us has argued elsewhere (Blackmore, 1989) that consciousness is simply what it is like being a mental model, and the sense of a separate self arises from the construction of a model of a separate self. In other words, the whole system produces a mass of models, and we are just one of them. The normal state of consciousness is dominated by a stable model of self in the world. In the tunnel experience, the tunnel replaces the model of the outside world. It does not necessarily obliterate the model of self.

However, when the tunnel occurs as part of the NDE, it may also involve the dissolution of the self model.

Why the Sense of Mystery?

More than 80 years ago Dunbar gave a marvelous account of the effects of anesthetics, which were then primarily ether and chloroform. He wrote first:

I have made a point of asking patients in the surgical wards how they felt when they were being anaesthetised. The common experience (eighty per cent of cases) is that of rushing into a dark tunnel. There is singing in the ears and a flashing of lights in the eyes. (Dunbar, 1905, p. 75)
He also described experiments with ether:

Next comes the sensation that the body is just as much a part of the environment as anything else, and it is perhaps this sensation which, together with the wide-awake intelligence, compels the individual to adopt the standpoint of subjective idealism; which, in its turn, drives him to think that at last the solution of the mystery is dawning upon him. (p. 73)

Isn't this how it is in some drug experiences, in OBEs, and near death? In these states it seems as though the mystery is less impene-trable than before.

This may not be mere delusion. Rather, given what we have said about mental models and consciousness, we think something quite important has happened. Our usual assumption, that the input-based model is a true picture of a "real" world "out there" and that we are a separate individual inhabiting that world and our bodies, is challenged. It becomes obvious that there are other ways of being aware. Any model can seem real. Our assumptions about the real world are shaken. It is this, we suggest, that gives rise both to the impression that "the light is dawning" and to the aftereffects of the experiences on people's lives.

It is misleading that this metaphorical light is often equated with the physiologically induced light. The light at the end of the tunnel is induced by randomly firing neurons. It is not just imagination. It has a very definite physiological origin. This is no reason, however, to dismiss the often claimed insights as worthless. The physiologically induced tunnel can be one way of realizing something important about ourselves, a realization that can change our lives: that is, that we are mental models and nothing more. Frightening as this is to our sober everyday selves, it is not the least frightening when directly experienced. The extent to which this insight can be maintained when the experience is over may be the extent to which fear of death is reduced.

Finally, we have hinted that the dissolution of the self model is possible. All this means is that a biological system that is designed to build a model of self ceases to do so. It isn't an easy state to achieve. Strong biological pressures are against it, but it can happen either through long years of training or in extremis. Afterwards the self model appears again. It is hard for "you" (the self model) to remember what it was like not being; so these states are not easily recalled. Nevertheless there can be a lasting effect on the system. The self never seems quite so solid again and the idea of its death is not so frightening.
Conclusion

We have presented several theories of the tunnel experience. The various physiological theories seem by far the best able to explain the phenomenology of the experience, to provide testable predictions, and to contribute to our understanding of altered states of consciousness. A great deal of work now needs to be done to determine which, if any, of these is correct.

These theories entail no other worlds and hold out no hope for survival of death. Nevertheless, far from denigrating the tunnel experience, we think they provide a stepping stone to understanding its numinous and life-changing qualities.

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References

Clinical Approaches to the Out-of-Body Experience

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ABSTRACT: The author reviews aspects of the out-of-body experience (OBE) related to psychic experiences and personality traits, and describes a continuum of experiences of altered mind/body perception, from the prototypical OBE on the healthy end to schizophrenia and organic brain syndromes on the other end. The impact of the OBE on the individual's life is described, with suggestions for a psychoeducational approach to the clinical management of the patient with an OBE to allow maximum growth from the consciousness-expanding effects of the experience.

The out-of-body experience (OBE) has had a remarkably ambivalent relationship with parapsychology. Strictly speaking, the OBE, in its most common form, shows none of the esoterica usually subsumed under the rubric extrasensory perception or psychic phenomena but merely describes an unusual perception of the relationship between the subject's mind and his or her body. In the widely publicized researches of famous spiritualists and psychics such as Sylvan Muldoon and Hereward Carrington (1969), Robert Monroe (1977), and many others, out-of-body "travel" is a term than has been used to describe very esoteric planes of reality. For theosophists, it is a psychic state fundamental to the mapping and charting of the astral plane and other

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realities. In this paper, I will consider the management of the experience as it presents to clinicians for treatment. As will be seen from the previous research of Glen Gabbard and myself (Gabbard & Twemlow, 1984), we do not consider the OBE to be a disease state, but a normal experience usually requiring no specific clinical intervention beyond reassurance and education. The typical OBE is a pleasurable experience unlikely to present specifically to a clinician for treatment. However, experience over the years with frequent consultations with psychiatrists, psychologists, and other clinicians indicates that sometimes OBEs appearing in the context of psychoanalysis or psychotherapy, or appearing spontaneously in patients undergoing treatment for other conditions, arouse the clinician's curiosity and strong urge to intervene. Unfortunately, the more medically oriented clinicians tend to wish to "treat" the out-of-body state, rather than allowing the individual to experience and profit from it. Because of this, there is value in considering differentiation of the OBE from pathological states.

Even clinicians sympathetic to mystical and esoteric states can pathologize the OBE. Raymond Kennedy (1976) called the OBE a "self-induced depersonalization experience"; although in his case report he indicates that he was personally studying Hindu mystical disciplines, he used a pathologizing depersonalization model to describe the OBE. Harvey Irwin (1985), in his book *Flight of Mind*, gave several other instances of the classification of an OBE as examples of autoscopy or depersonalization. D.H. Rawcliffe (1959) connected the experience with psychosis and hysteria, although our studies (Gabbard & Twemlow, 1984) contradicted that finding. Herbert Greenhouse (1975) related a case in which a psychiatrist aggressively ordered an out-of-body experiencer into involuntary psychiatric examination on the basis of that experience alone!

**What Is an Out-of-Body Experience?**

In our previously reported questionnaire research of 339 out-of-body subjects (Twemlow, Gabbard, and Jones, 1982), we found the following profile description of an OBE: the experience occurs in a state of physical relaxation and mental calmness without emotional stress. The experience is pleasant and the subject typically feels calm, peaceful, and quiet. Occasionally, ecstatic experiences of joy may occur. Very unpleasant feelings are much less common, with the feeling of going crazy being rare. The subject is likely to find himself or herself in the same environment as the physical body, which he or she sees in an
inert state below the point of perception, which is spatially separate from the physical body. The subject usually notes that he or she has a "new body" in a form similar to the physical body. The experience is vivid in quality, is more real than a dream, and has a profound influence on the individual's subsequent life according to self-report. Frequently, the subject may view the experience as spiritual in nature, and may be more likely to believe in life after death as a result of the experience. The individual has a fascination with the experience and would like to try it again, often describing it as one of the greatest events of his or her life. A prototypical OBE in composite form, of course, only describes a majority of experiences and not those extensive numbers of variations from this prototype.

From a more theoretical and philosophical point of view then, our research enabled us to define the OBE as "an altered state of consciousness in which the subject feels that his mind or self-awareness is separated from his physical body and that sense of self-awareness is more vivid and more real than a dream" (Gabbard & Twemlow, 1984). This definition is quite similar to others reported in the field including those of Irwin (1985) and John Palmer (1978).

**OBE and Other Psychic Experiences**

Palmer (1978) stated that there is an association between the OBE and various psychic phenomena. He particularly referred to apparitional phenomena. In our study of 339 subjects, we found that 76% of the subjects felt they had experienced mental telepathy; 21% felt they had been healed by a psychic; 30% felt they had healed others by psychic means; 32% had seen a UFO; 67% had a precognitive dream; 59% felt they had communicated with an animal; and 51% felt they had had contact with a person after he or she had died. Additionally, 67% of the population claimed they had had blood relatives who experienced ESP and 29% had had blood relatives who had an OBE. These findings indicate an association of OBE and other psychic experiences, although the incidence of psychic experiences in the U.S. population is as yet undetermined but is likely to be significant. In a random sample of the population of Iceland, Erlendur Haraldsson, Asa Gudmundsdottir, Asthor Ragnarsson, Johann Loftsson, and Sigtryggur Jonsson (1977) found about 66% of the sample had had some form of ESP experience. That study is unique with regard to the representativeness of the sample.
OBE and Personality

According to our literature review, between 10 and 25% of the population have experienced an OBE (Gabbard & Twemlow, 1984). The clinical management of the OBE may well be improved by a knowledge of personality and psychopathological traits of OBE, if any were to exist. However, most of the studies of OBEs are not contributory in this regard. Cognitive dimensions, for example, attention/perceptual dimensions, such as absorption (Irwin, 1985), may distinguish out-of-body experiencers. In our study of OBE subjects, we did not find that measures of absorption, hysteroid tendencies, psychoticism, or death anxiety enabled us to distinguish the subjects from our control subjects who had not had the experience but who had a high interest in the OBE (Twemlow, Gabbard, and Jones, 1982). One exception was that OBE subjects were significantly less danger-seeking than the comparison group, although Irwin's study (1985, p. 198) did not support that finding. In a subsequent study, out-of-body experiencers were compared to 678 subjects used in a study of emotional well-being of nonpatient populations (Gabbard & Twemlow, 1984); 121 of those subjects were studying transcendental meditation, 96 were college students, 366 were people enrolled in an altered state of consciousness training program that has as one of its goals induction of an OBE, and 42 were participants in a conference on altered states of consciousness, most of whom were mental health professionals. Our OBE subjects had significantly greater emotional health than the patient group and the transcendental meditation trainees, and better emotional adjustment than the control group of randomly selected college students. In fact, their psychological health was comparable to the workshop attendees and mental health professionals. Thus, we concluded from this and other demographic and psychological data that the typical OBE subject is an average, healthy American, and may be of any age, sex, or marital status, with a variable religious background, but with a history of changing from traditional religions to rather nontraditional religious pursuits after the experience. In general, most studies suggest that the out-of-body experiencer is not any more neurotic than the nonexperiencer, and data from personality inventories does not delineate a clear profile of the subject. A recent study by Jerome Tobacyk and Thomas Mitchell (1987) showed that reporters and nonreporters of OBEs were virtually indistinguishable on the criteria they used. They studied 445 college students, including 65 who had had OBEs. Extensive testing on the subjects included studies of death orientation, defensive style, narcissism, self-concept, and social desirability. They concluded, as most studies do, that the OBE is "a normative, non-

Before I discuss the differentiation of the OBE from psychopathological states, I would like to emphasize, as we have previously (Gabbard & Twemlow, 1986, p. 354), “while the OBE respondents in our study were characterized by psychological health, that fact in no way excludes the possibility that psychiatrically disturbed individuals can also report OBEs. An OBE is a nonsymptomatic altered state of consciousness that is not necessarily confined to normal subjects. In contrast to an OBE, schizophrenia is a constellation of symptoms that form a psychiatric syndrome. The important point is that an OBE is not prima facie evidence of significant psychiatric illness.”

States of Altered Mind/Body Perception

The clinical approach to the management of OBE is best considered by using the concept of altered mind/body perception. This phrase (Gabbard & Twemlow, 1986) refers to a group of phenomena that all have in common an altered state of consciousness in which there is a subjectively perceived distortion of the normal spatial relationship between the mind and the body. Clinically, this assortment of “out-of-body” states must be differentiated before problem management can be instituted. The altered mind/body perception concept allows these phenomena to be considered on a continuum with the prototypical, non-pathological OBE on the healthy end and the disintegrated highly ego dystonic state of schizophrenia on the other end of the continuum. In between, there are an assortment of out-of-body states that are variants on normality or indicators of frank psychopathology.

OBE and Psychopathological States

Depersonalization

Depersonalization disorder is a dissociative phenomenon, defined as an alteration in the perception of the self so that the feeling of one’s own reality is temporarily lost. This feeling of unreality may refer to an estrangement from the self, from the body, or from one’s own surroundings. Derealization refers specifically to the estrangement from one’s environment, although derealization is ordinarily part of the depersonalization disorder. Depersonalization may take many
forms: one may feel that one's body is dead or numb; one may feel that a certain body part or parts, such as the hands or feet, are not connected with the rest of one's body; one may feel detached from one's self image so that one does not know who one is; or, one may have the sense that one is observing oneself at some distance. The latter variant of depersonalization is most commonly confused with OBE. It should be obvious then that the depersonalizer does not necessarily feel out of the body. Russell Noyes, Paul Hoenk, Samuel Kuperman, and Donald Slymen (1977) found that feelings of frank detachment from the body are quite infrequent, characterizing only 19% of psychiatric patients who suffer from depersonalization. So in depersonalization, there is in fact a split between the observing and functioning self even if one does not feel truly separated from one's body. A victim of an automobile accident might report that he or she experienced the entire accident as though it were happening to someone else, or that he or she saw the functioning self go through the motions of turning the wheel and stomping on the brakes. Studies of depersonalization have consistently linked it to dream-like states and have noted that it occurs as a symptom in a number of illnesses, including depression, schizophrenia, and anxiety (Fisher & Seidner, 1963).

The clinician can differentiate depersonalization from OBEs based on several key features. Depersonalizers do not feel physically detached, but instead feel unreal or numb. The out-of-body experiencer does not experience a split between the observing and functioning selves, but typically feels integrated in a point of perception outside the physical body, which is usually viewed as non-functional. The depersonalization state is extremely unpleasant, whereas the OBE is usually a calm and pleasant, even a joyous state not accompanied by feelings of disintegration. The depersonalizer is usually in a dream-like state; whereas the opposite is true of the out-of-body subject, who is quite definite that the experience is not a dream. Out-of-body experiencers are frequently in a relaxed state and depersonalizers hyperaroused. Although other features may be present, these main features should enable the clinician to distinguish these two states with the treatment obviously being focused on the underlying condition.

Autoscopy

Technically, autoscopy is not a true form of altered mind/body perception (Gabbard & Twemlow, 1986) because the mind remains identified with the body; however, the literature often confuses autosopic
phenomena with OBEs because the OBE subject might well believe that he or she is seeing his or her own body from an altered perceptual vantage point. A key differential point is that the person in the midst of an OBE feels that the mind and perceptual point have shifted to a location spatially distinct from the physical body, which is looked upon as real rather than imaginary. In contrast, the mind and body in autoscopy remain identified with one another, and the subject does not think he or she is perceiving the actual body below. Rather, the double is experienced as an illusory phantom of him- or herself. Autoscopic doubles are also transparent and colorless in contrast to the OBE subject, and only the face and torso are usually seen in autoscopy, often mimicking the subject’s movements, particularly the facial expressions. The out-of-body subject often is likely to see an entire body, usually motionless. Positive states of mind are associated with the OBE, while sadness is most commonly associated with autoscopy. Autoscopic phenomena are almost always associated with underlying illness, such as pyrexia, or brain pathology, in contrast with the healthy OBE.

Schizophrenic Body Boundary Disturbances

Although 5% of our original reference sample felt that the out-of-body experience is one of insanity or going crazy, when examined more closely, feeling crazy and being schizophrenic or severely psychotic are two very different states. In a recent survey of OBEs in schizophrenic subjects, Susan Blackmore (1986) interviewed 71 schizophrenic subjects in comparison with 40 control subjects who were randomly selected from a hospital accident ward. The incidence of OBEs in schizophrenics was 14%, which is rather similar to the control group and the general population at large (Gabbard & Twemlow, 1984). The other symptoms of schizophrenia, including perceptual distortions, were no more common in the OBE schizophrenic group than the non-OBE schizophrenic group, which is in line with our findings that body image distortions are not in any way related to the typical OBE.

We have distinguished (Gabbard & Twemlow, 1984) seven general categories of body boundary disturbance in schizophrenic individuals: (1) fusion phenomena; (2) the experience of one’s body boundaries as constantly changing; (3) underestimation of one’s own body size; (4) omission of hands or feet as part of the body image; (5) overestimation and underestimation of the size of body parts; (6) the feeling that one’s body is not one’s own; and (7) the feeling that one’s body is unreal or a
machine. None of these disturbances includes an alteration of the spatial relationship between the mind and the body. The schizophrenic individual's subjective reports may nevertheless be confused with the OBE of psychologically healthy persons; thus it is necessary to distinguish these disturbances of normal body boundaries clearly from those that stem from developmental failure to establish these boundaries as in schizophrenia. In addition, some clinicians may dismiss the OBE as merely delusional or hallucinatory and prescribe medications and other treatments that are potentially dangerous to the individual, as well as not helpful in ameliorating the symptom. The sort of confusion an uninformed clinician may make between the out-of-body and schizophrenic identity disturbance is well illustrated by a case reported in our study, from which I quote: "Miss G. was a 22-year-old severely schizophrenic woman who was seen . . . in intensive psychotherapy for a 4 year period. She had experienced a number of 'fusion' phenomena during that time, manifested by repeatedly misidentifying in others attributes of herself and attributes of those around her in herself. During one psychotic episode of this type, she misidentifies her experience as an out-of-body experience. In the patient's own words, 'It was like an out-of-body experience. An identity problem. I was not in my body. I was in Jane's (another patient). No, she was in me. She was sitting in me. I don't know where I was. I couldn't locate myself. One thing for certain—I wasn't in my body' " (Gabbard & Twemlow, 1984, p. 86). In this case, Miss G. had a particular problem differentiating herself from Jane. Jane, a self mutilator, would sometimes induce Miss G. also to mutilate herself. And, in fact, the therapist was asked never to bring up Jane again in case Miss G. felt she would have to duplicate her experiences, which had included an attempted enucleation of her eye.

The first main point of differentiation between the OBE and the schizophrenic body boundary disturbance is that of reality testing. Many of the signs of reality distortion are present in schizophrenic patients, including hallucinations, delusions, and self referential thinking. Reality testing is, however, intact in the out-of-body subject, who is free generally of other signs of major mental illness (Gabbard & Twemlow, 1984; Jones, Gabbard & Twemlow, 1984). The OBE is usually short-lived, in comparison with schizophrenic perceptual distortions, which are often chronic, and there is much more variation in these perceptual distortions in schizophrenic patients. These very varied possibilities should be contrasted with the highly specific and unvaried alteration of the mind/body relationship in the OBE subject. The location of the physical body is usually very clear to the OBE
subject, often being seen below and slightly in front; whereas the schizophrenic often has great difficulty in identifying the location of the body, since the patient may often imagine that he or she has been engulfed and is now contained in the body of another individual. A major difference between the two includes the sense of identity, the out-of-body subject being stable and the schizophrenic being very fragile. The out-of-body subject often experiences the OBE as integrating and transforming in a positive rather than disorganizing sense; whereas the schizophrenic subject is likely to feel he or she is going crazy and to be in a state of great panic and psychotic anxiety.

OBE and Organic Brain Syndrome

OBEs have been associated in the literature with psychedelic drugs, certain drugs used to treat other illnesses, and with migraine headaches and temporal lobe epilepsy. N. Lukianowicz (1967) reported experiences in two patients treated with haloperidol and in one patient treated with alphamethyldopa. As early as 1859, Paolo Mantegazza described OBEs during cocaine intoxication. In his own cocaine intoxication he felt he was floating through the air out of his body amid colorful visions. Hallucinogens, such as LSD and mescaline, also produce bodily distortions and OBEs. The subjects in our study (Gabbard & Twemlow, 1984) had a general low rate of drug usage: 75% of the population had never used marijuana, 89% had never used psychedelic drugs, and 51% reported never using any other category of non-prescription drugs. This particular population was quite old (average age of 48 years) and conservative. Other investigators have reported an association between marijuana use and OBEs, for example Charles Tart (1971). However, that association does not prove a causal link. In Tart's sample, about three quarters of the OBEs occurred in conjunction with marijuana or LSD, but the evidence that drug usage will make a person more open to the experience is lacking. Other cases of OBEs associated with temporal lobe epilepsy were described by Celia Green (1968) and Wilder Penfield and Herbert Jasper (1954), who reported that out-of-body impressions were evoked by electrical stimulation of the right temporal cortex. Migraine, and its link with the OBE, has been investigated by a variety of people, including Robert Crookall (1972) and Caro Lippman (1953), whose results, over a series of student samples, suggested that a history of migraine was more common in the out-of-body group than in the non-out-of-body group. Irwin's (1983) study, however, suggests that that association is spu-
rious. From a clinical point of view, the important issue here is that a variety of organic brain states can produce out-of-body-like experiences and also classical OBEs. Thus, in each of these instances, the treatment of the underlying condition is required and the OBE itself is an incidental epiphenomenon of the fundamental clinical problem.

The Impact of the OBE on the Individual

By now it should be clear that the idea of "treatment" of the OBE is a misnomer. The OBE is a normal phenomenon of everyday psychology, requiring no treatment as such. I have taken great pains to distinguish the OBE from pathological states that require specific treatments in and of themselves, primarily to avoid two major pitfalls. One is the potential danger of certain treatments if used erroneously in normal individuals. These would include the undesirable side effects of anti-psychotic drugs and the personally distressing and even disorganizing effect on the individual of the clinician treating this normal experience as abnormal. Subsequent to the publication of our book (Gabbard & Twemlow, 1984), we have received numerous reports from individuals who are relieved that these experiences have been brought within the purview of normal everyday psychology. Case after case tells how these experiences, when reported to others and to physicians, were treated as signs of impending psychiatric illness. I have had numerous consultations with physicians who have considerable expertise in altered states of consciousness, who even now are not fully aware of the place of the OBE as a part of normal psychology.

The second feature of the management of the OBE has to do with its potentially transformative impact. The role of the modern clinician, in our view, is not only to treat existing disease, but to encourage the individual in healthy pursuits. Elsewhere (Twemlow & Chamberlin, 1981) we have noted the increasingly important role of the clinician in involving him- or herself in activities that promote healthy living before disease afflicts the individual. This holistic approach can be applied equally to the management of the OBE. Merely to reassure the patient that he or she is not crazy would be, in some instances, to undermine a potentially very therapeutic and uplifting experience for the subject. In our original survey, 55% of the subjects experienced joy and 60% felt that their life was changed by the OBE, with 78% seeing a long-lasting benefit, with a change toward the belief in life after death in 66% of cases. Also, 43% of the subjects called the OBE "the greatest thing that ever happened to me" and 86% felt that they developed a
greater awareness of reality, with a lasting benefit in 78% (Twemlow, Gabbard, & Jones 1982). Although there was not a significant shift to any particular religious discipline, there was a significant shift toward the less traditional religious disciplines following the experience. Time after time, subjects described a striking shift in some of their existential concerns with an intensely focused introspective post-OBE phase. How am I doing? Who am I? Why am I here? Where am I going? and What is the meaning of my life? were significantly more frequently discussed by these subjects. That was, to me, even more astounding since the phenomenology of the typical OBE is quite mundane.

Although statistical data demonstrating the life-transformative effect of the OBE are lacking, in the case of the much more dramatic near-death experiences (NDEs), some research has reported an effect on personal values (Greyson, 1983). An out-of-body phase is often reported as a preliminary to the more dramatic NDE. Anecdotal accounts report life-transforming experiences, particularly the idea that an "off track" life gets "on track" after the experience. Bruce Greyson's study did not show that near-death subjects shared more spiritual or transformative values, although the control group sample, who had a high interest in NDEs, was quite biased against showing any differences between the groups. Greyson showed that the survivors of NDEs reported less interest in material and social success than control subjects. In another study by Greyson (1981), there was a negative attitude toward suicide after a NDE. Although these and other studies need to be broadened, there is at least the indication that some of these experiences may have clinically valuable psychotherapeutic effects. It is as if the experience is a form of rapid self-therapy. Thus, the clinician has an outstanding opportunity to help the patient grow and possibly prevent later illness by encouraging discussion and exploration of its impact. The informed clinician should encourage the patient to read literature and to continue an open discussion on the subject.

In previous work (Gabbard & Twemlow, 1984) we have demonstrated how the ego psychological framework of Paul Federn (1952) is very useful conceptually for understanding these experiences. Federn demonstrated that the bodily and mental ego cathexis, although ordinarily fused and firmly integrated, can under certain conditions dissociate from one another. For example, he mentioned dissociation of the mental and bodily ego in the dream states, gradual loss of consciousness as in fainting, and various sleep transitions. Using this, we have elaborated a metapsychological understanding we call the ego uncoupling model. It is this healthy dissociation between mental and bodily ego that may encourage the sort of transformative self reflection that is
reported in subjects. In 91 subjects who were asked why they wanted to have an OBE, 25.3% were involved in existential explorations associated with major developmental stages in their lives, indicating a group who could well have been helped by an approach based on this ego uncoupling model.

A Psychoeducational Approach to the OBE and Related Phenomena

There is a large market in the lay press for techniques to induce the OBE. These techniques are being exploited by a variety of New Age entrepreneurs and also a number of serious research workers. Interest in these states, although in part perhaps motivated pathologically, may also reflect an interest people have in experiences that may help them deal with exigencies of everyday life, giving them a new perspective and reintroducing excitement and a sense of anticipation into their lives. While these phenomena do not necessarily come under the rubric "clinical," they are phenomena that the informed clinician is asked for advice about, especially as his or her role is expanding to include health-related as well as disease-related activities.

Over the past 20 years, I have evolved a series of clinical techniques to assist the individual in maximizing the understanding that he or she might achieve by these and other psychic experiences. I have called the approach *psychoeducational*. It is best conceptualized as a teacher/pupil relationship rather than as a therapist/patient one, although there are qualities that frequently imbue it with features also similar to that of mentor/mentee. If the transformative experience is very intense or the follow-up to it causes radical change in the individual’s lifestyle, there is then likely an attribution of some of this change to the teacher/mentor. The therapist must be very careful to recognize and address this idealizing relationship. Psychoanalytically informed clinicians will have no particular trouble in handling these transference phenomena; for the sake of those less familiar with psychoanalytic jargon, a word or two on transference seems in order. Many clinicians see transference as universal and as the basis of all human communication. In its simplest form, it involves attributing to others the traits of people from an earlier time in our life. These transfers from the past essentially bring ghosts of the past into the present and can often distort our way of relating to others. It is proposed, for example, that major transformative experiences may revive memories in the individual of the powerful thoughts and feelings that individual
had towards his or her parents. Tranferences are unconscious phenomena and can catch the unaware therapist off guard. Some therapists treated thus begin to see themselves as god-like, to their own and the client's detriment. The New Age literature is replete with stories of the fallen guru and the abused disciples, leaving a quagmire of devastating human suffering and human feelings in its wake. With these ideas in mind, it is then possible to embark on a psychoeducational approach with appropriate awareness of the possibilities for transference distortions of the relationship.

Once opened up to these realities by an OBE, the individual then can begin the search with the assistance of a clinician. I have found it useful to expose the individual in an unbiased way to a variety of techniques that can help expand consciousness or insight.

These may be grouped as follows:

1. **Meditative approaches**: Formal training in meditation is available from reputable teachers. Especially widespread are transcendental meditation and others including the increasingly popular insight style of Vipassanna. Meditative states of consciousness are often very helpful in assisting the integration of the experience and in giving the individual an impetus to continue self-exploration. Those who find it difficult to sit may be eased into the meditative approaches through more active pursuits that encourage internal self-reflection, such as the martial arts and a variety of creative movement techniques, including dance. These techniques should not become ends in themselves, but merely ways in which the individual can integrate the experience.

2. **Biofeedback therapies**: For those more oriented to machinery and scientific measurement, biofeedback may well be the path of choice. Starting with simple techniques like fingertip temperature regulation and frontalis muscle tension reduction, the subject can then progress to more elaborate techniques like brainwave EEG training. Frequently, a relaxed body will stabilize more alterations in consciousness, which can allow the individual a deeper and more extensive exploration of him or herself.

3. **Self-suggestion and other structured techniques**: Techniques that rely on the suggestion of deep relaxation, including self-hypnotic techniques, are sometimes of value to individuals who require a more directed or structured technique less culturally different than the unusual conceptual frameworks be-
hind the meditative disciplines. Thus, being given specific ways to relax by suggestion is of value. Besides self-hypnosis, techniques using binaural acoustical stimulation of the brain with accompanying suggestions about how to deploy internal attention are provided by a variety of techniques.

A further word is appropriate on the progression of the relationship in this process. Whereas it is of value during the selection of the technique suitable for the individual to have formal sessions at structured intervals, later the relationship should become more informal and on an as-needed basis. The mentor/mentee aspect of that relationship may continue over a number of years and a degree of informal supervision is often very helpful.

Needless to say, the use of these techniques is predicated on the personal experience and expertise the clinician has with these techniques before he or she attempts to use them with patients.

References


Near-Death Experiences: A Neurophysiologic Explanatory Model

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ABSTRACT: Prior hypotheses as to the etiology of near-death experiences (NDEs) have been limited to psychiatric explanations or brief discussions of endorphins as causative agents. We present a neurophysiological explanation for NDEs based on their similarities with lysergic acid-, ketamine-, and hypercapnia-induced hallucinations. We believe the core NDE is genetically imprinted and triggered by serotonergic mechanisms.

Near-death experiences (NDEs) are profound transcendental events experienced on the threshold of death. They have been reported by people who have been seriously injured or ill but recovered (Greyson & Stevenson, 1980), and by people who have had anticipated imminent death in a potentially fatal situation but escaped unharmed (Comer, Madow, & Dixon, 1967). They have been documented as occurring primarily in survivors of cardiac arrests and profound comas, as opposed to seriously ill patients who are treated with mechanical ventilation, narcotics, and anesthetic agents, but who are not critically ill and at risk of dying (Morse, Castillo, Venecia, Milstein, & Tyler, 1986).

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Such NDEs commonly include a positive affect, a conviction that one did indeed die, an impression of being outside the physical body, an impression of passing through a dark enclosed space, apparent extrasensory phenomena, apparent encounters with persons not physically present, an impression of entering some unearthly realm, and a review of past life events (Moody, 1976; Sabom, 1982; Green & Friedman, 1983).

For example, a 6-year-old male was admitted to Children’s Orthopedic Hospital for a tonsillectomy. There was no significant past medical history. After induction with halothane, there was a cardiac arrest requiring 3 min of chest compressions. While in the recovery room, he had a second and third cardiopulmonary arrest necessitating cardioversion and cardiac medications. Later the same day, he was described as being alert, eating, and with no apparent complications.

When interviewed 2 years later, he had very clear memories of his experience while comatose. He had never confided them to his mother, but had told a grandparent about his experience 1 year earlier. He stated that he had left his body and hovered above the operating table. He said he had only hazy images of the doctors, but noted, “I had a tube in my mouth.”

His next memory was that of traveling in a long tunnel that was lined with brightly colored lights of every hue, similar to “airplane landing lights.” He felt very peaceful. He specifically stated that he did not know where the tunnel went, why he was in it, how he came to return to his body, or any other details. His experience embodies the core NDE, as described by Kenneth Ring (1980).

The medical literature includes many psychological analyses of NDEs (Greyson, 1983; Noyes, 1979; Enhrewald, 1974), but to our knowledge few neurophysiological models.

It has been proposed (Carr, 1982) that NDEs are the result of stimulation of the hippocampus by endogenous endorphins. The stresses of dying certainly generate “natural opiates,” such as enkephalins and endorphins, and enkephalins have been documented to inhibit neuronal discharge within the hippocampus. This theory proposes that increased endorphin levels disinhibit the hippocampus, as well as lowering the seizure threshold within the temporal lobe, and that NDEs are the result of limbic lobe and temporal lobe seizures.

One problem with this hypothesis is that patients with narcotic overdoses or narcotic-induced hallucinations do not report the characteristic features of NDEs; in particular, they do not report vivid out-of-body experiences (OBEs). Our study of NDEs used a control group treated with narcotics, as well as being hypoxic and hypercapnic, and
none of those patients had NDEs (Morse, Castillo, Venecia, Milstein, & Tyler, 1986).

We are proposing a similar model, but based on serotonin rather than opioid peptides. The NDE may be the result of activation of neuronal connections in the temporal lobes that code for NDE-like memories. Activation of these neuronal connections is mediated via serotonergic pathways. Alteration of central serotonergic activity through extreme emotional or physiological stress, or via certain psychoactive drugs, could lead to activation of these neuronal connections resulting in an NDE. Imbalances in monoamine transmitter systems at the level of the hippocampus would lead to disinhibition of "hard wired" neurons with axons to the temporal lobe, leading to activation of areas of the temporal lobe that have been documented to cause mystical visions, out-of-body sensations, panoramic memories, and vivid hallucinations.

Support for this model begins with the work of Wilder Penfield, who identified areas of the temporal lobe associated with psychical hallucinations, memories, heavenly music, and religious visions through direct electrical cortical stimulation during neurosurgical procedures. For example, a 33-year-old man suffered from temporal lobe seizures that included vertigo and autoscopic hallucinations. On stimulation at a depth of 2 cm along the superior surface of the temporal lobe within the fissure of Sylvius, the patient exclaimed, "Oh God, I am leaving my body" (Penfield, 1955; see Figure 1).

Another patient whose seizures were never psychical reported that when points 0, 1, and 3 were stimulated, she "had a queer sensation as if I am not here. As though I were half and half here." Many of the elements of NDEs described by Raymond Moody (1975) are localized to the temporal lobe by electrical stimulation experiments. Penfield concluded that when complex hallucinations are induced by stimulation of the temporal cortex, they are perceived as memories by the patients (Penfield & Rasmussen, 1950).

The sensation of floating or otherwise being out of the physical body is the most commonly reported element of NDEs (Greyson & Stevenson, 1980; Moody, 1975; Sabom, 1982; Green & Friedman, 1983; Ring, 1980; Morse, Castillo, Venecia, Milstein, & Tyler, 1986). Ring (1980) wrote that there is a sequence of events in the NDE, and he listed leaving the body as stage 2 of 5, following feelings of peace. Although no precise definition of NDEs is commonly agreed upon, most researchers describe the experience as beginning with an OBE.

Furthermore, while Glen Gabbard and Stuart Twemlow (1984) were able to identify differences between OBEs and other diverse ex-
Figure 1. Numbers and letters indicate areas that produced the sensation of leaving the physical body, by direct electrical stimulation. "+" indicates areas that, when stimulated, created related phychical events, such as hearing heavenly music and other hallucinations. Reprinted from Penfield and Rasmussen (1950), with permission.

Experiences, such as schizophrenia, hypnagogic states, depersonalization, vivid dreams, daydreams, flying dreams, and autoscopic hallucinations, they could not conclude "that NDEs are characterized by exclusive features that are not present in other forms of OBE" (1984, p. 138).

OBEs and NDEs do not occur only in near-fatal situations. Ring (1980) developed a Weighted Core Experience Index to analyze the subjective accounts of persons reporting psychological experiences. When we applied this scale retrospectively to five case histories of patients treated with LSD-25 (Grof & Halifax, 1977), three scored as having moderate NDEs, and two as having deep NDEs.

Similarly, the anesthetic agent ketamine also produces perceptions that typically accompany NDEs, such as leaving the physical body and meeting beings with higher powers (Collier, 1972; Rogo, 1984). Finally, early work by Laszlo von Meduna (1950), using inhaled carbon dioxide as a psychotherapeutic agent, demonstrated that all the reported elements of NDEs can be reproduced in the office setting.
It is well established that the hippocampus, amygdala, and related limbic structures play a central role in processing and distributing neocortical information. This area of the brain is responsible for coordinating and processing perceptions, memories, emotions, early development, dreams, and the massive waking activities of the neocortex (Winson, 1986). This is the area described by Penfield (1975) as “the man in the machine.” It is directly linked to the temporal lobe, which explains why temporal lobe seizures can result in activation of complex activities, such as walking, eating, or riding a bus to distant cities, whereas other brain seizures result in disorganized motor movements or complete loss of function. Temporal lobe seizures are transmitted to the hippocampus and related structures, which then trigger purposeful motor movements in the neocortex.

Monoamine transmitter systems, especially serotonin, have now been documented to have neurons in the brainstem with axons throughout the brain. The hippocampus is an important gateway for these neurotransmitters, and these monoamines play an important part in the limbic system's role as the central processing unit in the brain (Winson & Abzug, 1977, 1978). As we will show, the documented agents that cause OBEs and NDEs act to create imbalances in serotonin and other monoamines.

The effects of LSD-25 have been directly attributed to alterations in the functioning of central monoamine neurotransmitters, especially serotonin (White & Appel, 1982). Serotonergic cell bodies have been detected in the midbrain dorsal raphe nucleus, axons of which innervate forebrain and temporal lobe areas (Strahlendorf, Goldstein, Rossi, & Malseed, 1982). Reduction of raphe-mediated forebrain and temporal lobe inhibition, via LSD-induced depression of raphe activity, could result in the disinhibition of raphe target neurons in the temporal lobes, resulting in an OBE or other related psychical phenomena that have been electrocortically mapped in the same area.

The mechanisms of action of ketamine have not been as clearly defined. It is known that ketamine affects central nervous system neurotransmitter systems, and brain acetylcholine turnover has also been found to be reduced in the rat caudate nucleus and hippocampus during ketamine anesthesia (Domino, Chodoff, & Corssen, 1965). It could be speculated that ketamine may also act like LSD on serotonin turnover, resulting in a similar disinhibition of raphe target neurons.

Serotonin has been implicated in a wide variety of mammalian physiologic behaviors, including sleeping-waking cycles, pain perception, and cardiovascular control. An example of its modulatory action was demonstrated in studies of stress-induced antinociception (SIA).
SIA is an intriguing phenomenon in which exposure to stressful events decreases an animal's response to painful stimuli. In this study, norepinephrine, dopamine, and serotonin were altered in the brain, and SIA measured. Only changes in serotonin affected responses to pain perception (Snow, Tucker, & Dewey, 1982), supporting our hypothesis that responses to stress involve serotonergic systems. It is by this mechanism that stress-related NDEs, such as those experienced by mountain climbers who have survived falls or coal miners trapped in mines, may be explained.

The only other agent we know of that has been clinically documented to create NDE-like experiences is carbon dioxide (Meduna, 1950). Hypercapnia could result in secondary changes in central serotonin activity, or could produce epileptiform activity in the temporal lobe, resulting in the direct discharge of neuronal connections coding for NDE-like memories. The only clinical study comparing carbon dioxide levels in patients with or without NDEs documented that both groups had similar carbon dioxide levels in the bloodstream (Morse, Connor, & Tyler, 1985).

We searched the medical literature without success for other agents or psychological processes that could cause NDEs or OBEs. For example, studies of hypoxia, other hallucinogens, psychotic conditions, or intensive care unit stress syndromes do not produce NDEs. One study described a complex hallucination in a patient on narcotics, reversed by naloxone (Judson & Wiltshaw, 1983). Careful review of that patient's experience revealed that it lacked most of the descriptive elements of NDEs, including an OBE, and that the patient was semi-conscious during the experience. Although that case has been cited as clinical evidence that perhaps endorphin systems are involved with NDEs, it is unlikely that that patient had an NDE. Naloxone, which the patient was treated with, has been well documented to cause very similar hallucinations, including a sense of soullessness and paranoid ideation. These elements, which are seen in drug-induced hallucinations, are not seen in NDEs (Cahal, 1957).

Our neurophysiological model for near-death experiences is presented in Figure 2. There is clear evidence that within the temporal lobe are neuronal connections that, when electrically stimulated, produce OBEs. This is the most common element in NDEs, and is the first element cited by most researchers. The temporal lobe is connected by serotonergic neurons to the midbrain dorsal raphe, and especially the hippocampus. The hippocampus is the central processing area of the brain, and is the area of the brain most associated with a sense of consciousness or soul. Psychological stresses and psychoactive agents
have a neurochemical effect in this region of the brain, mediated by serotonin.

Our model hypothesizes that near-fatal events, psychoactive agents, or stress could trigger OBEs and psychical hallucinations by disinhibiting target axons in the temporal lobe, from the level of the hippocampus. Hypercapnia, which would be present in any near-fatal event, even if only on the cellular level, could act either through the hippocampus or by directly stimulating the temporal lobe.

Although much of our work is speculative, it is well documented that neuronal connections specific for creating out-of-body states exist. Such genetically determined areas in our brains may well serve as a natural defense mechanism against stressful situations, such as childbirth or trauma, both of which have been reported to cause OBEs. However, it is just as likely that such an area represents the seat of the soul, the area of our brain that serves as a trigger point for the release of the soul at death. Such an area could serve equally well for stresses during life. This would also explain how certain religions use control of the autonomic nervous system, which is integrally enmeshed with the

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**Figure 2.** A cohesive model linking all known causative agents of NDEs and OBEs.
hippocampus and limbic structures, to produce out-of-body states and religious ecstasy. This area of our brain is the first genetically imprinted correlate to a Jungian archetype that we have seen described, and we hope it will serve as a bridge between psychological and neurochemical descriptions of brain activity.

References


BOOK REVIEW

John M. McDonagh, Ph.D.
Huntington, NY


At the outset, I would like to say that I am very grateful to Chuck Flynn for having written this book. He left us a veritable treasure trove of gems to admire, enjoy, and ponder. Those gems are the people he allowed to speak through his book, and their words of wisdom that flow gently through these pages. Flynn's manner of drawing together a wealth of near-death accounts resembled more that of an editor and facilitator than that of an author.

I believe this approach enhanced his work significantly because we read the eyewitness accounts with all the nuances and idiosyncrasies of the principals involved. On one level, the varied near-death experience (NDE) accounts and their aftereffects might appear somewhat disorganized, but that is only at first glance. On a deeper level, there is a unifying theme, which is that of agape or altruistic love. One of the great virtues of this book is that it makes it possible for us to listen directly to the people he summoned to share their experiences and even their very souls.

Flynn introduced us to a cast of characters who could be ourselves or the people next door, struggling with questions about the meaning of life and trying to express these profound questions in plain language. In nontechnical, ordinary American idiom, the people in this book

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grappled with the gut issues: What do our lives mean? What are our priorities, and why? What is the afterlife like? Does my behavior in this life matter? Does any of this make sense?

I must confess that my enthusiasm in reading Flynn's book stems in part from the fact that I identify with many of the people he allowed us to listen to. This is especially true of those people who have not undergone an NDE, but whose lives were deeply changed by learning about the NDEs of others. When I first heard about NDEs, I dropped everything and voraciously read all I could on the subject of the afterlife. For many years prior to that, I had completely rejected the notion of an afterlife.

Psychologists are trained in skepticism, and many of us were skeptics before we decided to enter the profession. So talking with a skeptical, agnostic psychologist about that afterlife is difficult. It is possible that the professional identities of many psychologists are fused to a philosophical materialism. However, the more I read of the NDE, the more I became persuaded that it was a phenomenon of metascientific proportions. It was therefore important to my profession and to myself as a human being. It became necessary to reexamine the way I practiced psychology, while reexamining myself.

Flynn grasped the metascientific significance of the NDE as well as its potential for inducing individual and social change. He witnessed this change in his and others' research, and as a professor of sociology, fostered change himself. His ingenious invention, which he called "The Love Project," engaged people in caring about others and in keeping a journal about this process of caring and loving. What emerged was not just a chronicle of events, but a diary of personal transformation. The results are gratifying. People reported becoming more alive, and reported helping others to become more alive. As I read it, I felt invited to join in these happy goings-on and to become more alive myself. Is this where the NDE is leading, to help us become more alive? I think so.

Besides this enthusiastic rejoicing in life and the value of altruistic love, there is a sober side to the book. Perhaps we could call it "the NDE and reality." Flynn was mindful that the NDE can be a heady experience, and cautioned against misusing psychic gifts that may accompany or follow one.

Flynn also grappled with the question of the negative NDE, its frequency and meaning. He presented the findings of Kimberly Clark as most enlightening in this regard. According to those findings, one can attempt to understand the negative NDE by first considering that everything present in the full positive NDE (overwhelming, ineffable love, warmth, peace, beauty) is just ripped away from you. Once you
experience what I call the Awesome Presence, its absence becomes even more deadly. When I read Clark’s account, I thought immediately of a traditional Christian teaching about hell: that it is the total absence of God and of God’s love. What could burn one up more than that, to get a glimpse of the Ultimate Goodness and Love of the Universe, and then, to know that you would be utterly separated from Him?

Some readers who tend to a literal interpretation of Scripture may object that this account is not in the Bible, or at least not exactly in those terms. My credentials are not those of a Biblical scholar, but Scriptural references are made to separation from God as the ultimate punishment (“Depart from Me!”), and the description of Hades experienced by the rich man in Luke 16:19–24 is at least consistent with the idea of separation. It should also be added that Clark referred to accounts of negative NDEs that sound hellish, fiery, and ghastly, in the writings of Maurice Rawlings. So the literature on the negative NDE is not necessarily at variance with Scripture.

This book introduced us to the “Divine milieu,” just as much as Teilhard de Chardin’s book of that title did. That we are touching on something that is beyond the human is evidenced by Nancy Clark’s description of love in Flynn’s book (p. 111):

It is this love, that is not human, that I carry with me. It is this love that needs to find an outlet that can be channeled to other human beings, not because of my desire. . . . We must simply yield and let go and allow His energy to flow through us, and thereby emerge as the total human beings we were created to be.

To that, I can only add, “Amen.”
BOOK REVIEW

Carl B. Becker, Ph.D.
Tsukuba University


The 1970s were a period of serious interest in Tibetan *tantra* and the *Book of the Dead*, and Jeffrey Hopkins is one of the leading translators and expositors of these interests to America. The renewed interest in Tibetan problems in 1988, along with the fact that this book has been republished (the original having been printed in 1979), warrant taking another look at this slim but compressed volume. In *Death, Intermediate State, and Rebirth*, Hopkins has made available to the lay reader a rare text of potential importance for the understanding of the Tibetan traditions about death and afterlife.

The origins of the book first need to be placed in context. Like so much of Sino-Tibetan Buddhism, which claims ancient heritage and ancestry, this book traces its roots back to Indian patriarchs of Mahayana Buddhism: Nagarjuna and Vasubandhu. Also common to the Buddhist tradition is the fact that it is a commentary upon a commentary upon a commentary. Specifically, it is a commentary by 20th-century scholars Lati Rinbochay and Jeffrey Hopkins (although it is never made clear which one is writing what) upon an 18th-century text on the *Three Basic Bodies*, by the Yellow-hat (dGe-lugs-pa) monk Yang-jen-ga-way-lo-dro. Yang-jen-ga-way-lo-dro, in turn, wrote the text as a commentary and exposition to illuminate texts by Tsong-ka-pa, the...
15th-century founder of the dGe-lugs-pa order. Tsong-ka-pa’s texts, in turn, were based on the 11th-century Indian monk Atisa’s renderings of Vasubandhu’s (4th-century) and Nagarjuna’s (2nd-century) commentaries on the Abhidharma.

This long lineage is intended neither as praise nor criticism, but simply to set in context the background of the text. Nor is it necessarily a criticism that the Hopkin-Rinbochay commentary bears but distant resemblance to original Abhidharma doctrine, for it is a widely accepted principle in Buddhist tradition that the commentators enrich and advance the teachings over time, and that later texts often explicate what the Buddha and his followers had not discussed publicly. The author and his method of commentary presuppose substantial familiarity with works on Tibetan Buddhism for a full understanding of the text. Through dual prefaces, and by his own frequent interpolations and footnotes, Hopkins attempts to make clear some of the background and underlying assumptions the text presupposes.

In a format that is also typical of Tibetan and Sanskrit texts, the text itself is a highly structured, almost epigrammatic outline of rigorous parallelism and dense description. This density of description may frustrate a reader who is seeking a quick overview of Tibetan teachings, for the thin spine of the book belies the very broad scope of its material.

Where *Death, Intermediate State, and Rebirth* makes its greatest contribution is not to an understanding of the *Bardo*, or state between incarnations, which has already been much discussed in other books like those by Lauf (1976, 1977) and Evans-Wentz (1927, 1935). Rather, it is in the fact that this text covers in substantial detail the process of dying itself, and the physiological-psychological symptoms or experiences indicative of each stage of that transition. *Death, Intermediate State, and Rebirth* recognizes from the outset that death is not an instantaneous occurrence, such as when the breath stops or the brain no longer registers. Rather, death is seen as a long process taking hours or even days, during which a variety of sensations and experiences accompany each successive stage of the “dissolution” of the human personality from its bodily habitation (pp. 18ff). In particular, the eight stages of death are accompanied by the following experiences respectively:

1. Shrinking of the limbs, the impression of sinking, and seeing a cloud or mirage.
2. Cessation of hearing, drying of the mouth, and an appearance of blue billowing smoke.
3. Cessation of smell, cooling of the body, and an appearance “like fireflies.”
4. Cessation of taste, end of breath and movement, and vision as of a sputtering butter-lamp.
5. Cessation of all conceptions, and vision of vacuous empty whiteness like moonlight.
6. Energy moving from the sexual organ to the heart, and a red-orange appearance arising.
7. Heart energy lost, cessation of dualism, and vision of radiant black vacuity like autumn night.
8. Blood or phlegm leaving the nose or sexual organ and an appearance of clear light.

Now it is not completely explicit whether this is a descriptive or prescriptive account; in other words, whether this is taken to be a true description of what everyone necessarily experiences during the death process, or whether we are to understand that most people should pass through some such stages. There seems room for broad interpretation and exception in the commentary, and of course the account presupposes people who are dying “natural” deaths, not in accidents, seizures, or sudden explosions. The interesting point of this account, however, is that it yields a “chronology” of death at least potentially capable of empirical verification or falsification. Insofar as certain of the descriptors are visible by third-party observers, we may certainly ask, for example, whether it is in fact the case that drying of the mouth precedes cooling of the body, which in turn precedes stopping of breath. Secondly, we might use the techniques already begun by so many NDE research groups—interviewing those who have “returned” from death or its brink—to ask whether in fact there were a sequence of lights, or colors, and sensations that in any way parallel the list of subjective sensations that Death, Intermediate State, and Rebirth would predict. This challenge alone seems to be one valuable derivative from this book. The description also leaves ample room for possible reconciliation with the sorts of OBE and NDE accounts common from near-death experiencers today.

However, there are three respects in which the accounts of this book are somewhat hard to understand: mythical, linguistic, and categorical. Of course, these are not the faults of the translators, but they may pose obstacles to the unprepared reader. The first problem is that these Buddhist tests, like the Judaeo-Christian Bible, contain mythological accounts of events that seem in principle incapable of proving true. Take the following cosmology:
During the first aeon [after formation of this world system], the humans of this world had seven features—spontaneous birth, an immeasurable life-span, all sense faculties, a body pervaded by its own light, adornment with similitudes of the major and minor marks [of a Buddha], sustenance by the food of joy without eating coarse food, and magically flying in the sky. However, due to activation of predispositions established by attachment to food, they ate coarse sustenance. Then, when the unrefined part of the food turned into faeces and urine, the male and female organs protruded as openings for excretion. Two who possessed predispositions established by copulation in former [lives] became attached to each other and, in dependence on their lying together, a sentient being formed in the womb. Through these steps, birth from a womb came to be. (p. 29)

Some people may find the above account more interesting than the one in Genesis, and others find it less imaginative. Just as the fundamentalists’ insistence on the literal truth of Genesis detracts from the credibility of their entire view of the Bible, so a too-doctrinaire interpretation of this old Buddhist folk-cosmology tends to cheapen the germs of truth in the rest of the accounts of death and the intermediate state. Such mythological/cosmological interludes are not philosophically important to the truth of the discussion of death and dying, and if anything, tend to detract from it. As scholars do not let criticisms of Genesis infect their appreciation of Acts, so we should not let our natural incredulity at such Tibetan mythologies obscure the importance of the testable hypotheses found in other sections of the text.

A second difficulty in understanding the text lies in the linguistic problems of metaphors in translation. The descriptions of consciousness in post-mortem states are replete in metaphor, but they are not all the sorts of metaphors that are intuitively acceptable to a modern Western mind. The mind is continually analogized to a rider, and the "winds" that permeate the body are said to be akin to its "mount." Yet in what sense there even exist "winds" within the body, and what possible meaning could be attached to a "mind" "mounting" them escapes common English intuition. While the light or sparks from a butter-lamp may be imaginable, however distant from the everyday life of a modern English-speaking reader, the four empties ("empty, very empty, great empty, and all empty") again transcend common daily experience and English usage, and therefore seem unclear if not meaningless. There are a number of cases where the analogies or metaphors of consciousness and life in the body simply run counter-intuitive to a modern English world-view. I would not go so far as to thereupon pronounce them all false or meaningless, nor would I fault Hopkins in his literal translation, but one might with that more intuitively understandable English explanations had been included.
A third difficulty with ancient Sanskrit and Tibetan texts again raises its head in this one: the problems of disanalogous categories and unnecessary categories.

The problem of disanalogous categories can be seen in the example of the 80 conceptions, which are divided in turn into 33 of white appearance, 40 of red increase, and 7 of radiant black near-attainment. If we look at some of the 40 conceptions, we see that they include: Great Joy, Middling Joy, and Small Joy; Embracing, Kissing, Sucking; Stability, Effort, Pride; Virtue and Untruth, etc. Now in English usage, these do not refer to the same sorts of things at all. Some are abstract and some are concrete; some apply to personal action, others to propositions, and others to character; some that seem gradable are ungraded, and some that seem not very intuitively gradable, are graded here. It is not clear whether this is primarily a problem of translation—that these things are really all on the same level of abstraction in Tibetan, and we simply lack suitable English to make their analogous nature clear—or primarily a problem of category confusion even in the original. In either case, their parallel inclusion does not make things any easier for the English reader.

The problem of unnecessary categories is clearly one of the original text(s) and not of the translators. Even more than the ancient Pythagoreans, Sanskrit and Tibetan authors love to make long and parallel lists of categories. These sometimes served as mnemonic devices; perhaps they also gave a sense of fullness or completeness to a system of thought, as when a mathematician establishes a particularly elegant proof. From an Anglo-American point of view, however, such categorization leads to the filling in of tables of parallel attributes with words and ideas that are based less on empirical observation than upon some classical scholar’s notion of what would constitute a complete and elegant system. The charts on pages 16–18 and 33–34 make this particularly clear—and particularly suspect. It is rare in nature that the same categories can be filled out analogously to describe any two different organisms or stages of experience. When the Tibetan categories of post-mortem experience fall into neat graph-like precision, therefore, rather than increasing our confidence in the absolute symmetry of universal experience, they rather raise our suspicions that perhaps the experiential accounts have been forced into too neat a mold—just as some modern near-death researchers would like to find the same pattern in everyone’s NDE, even though there is in fact a tremendous range of disanalogous experiences reported.

Nonetheless, this is a text very much worth having available in English. At the very least, it sheds further psychological and anthropologic light on the Tibetan cosmology and world-view. It may in fact
provide important insights about the nature of the dying and post-mortem process—or at least stimulate future researchers to dedicate much-needed attention to this area of investigation. In any case, we may applaud Hopkins' continuing dedication to familiarizing the English-speaking public with the vast and inadequately understood traditions of Tibetan Buddhist death and afterlife.

References

Letter To The Editor

Hypnotic Induction of Experiences

To the Editor:

Is it possible to experience some of the characteristics of the near-death experience (NDE) without the trauma?

During the January 1989 Interim Period at Tarkio College, I designed and taught a course entitled "The Psychology of Personal Growth," part of which concentrated on near-death studies. Earlier in that course I had hypnotized the class, on a voluntary basis, for weight control, assistance in stopping smoking, and general relaxation. As the class progressed, the possibility of experiencing the good and the positive parts of the NDE, while in a hypnotic state, was discussed.

After no small amount of discussion and exploration, we decided to attempt it. One immediate fear was the possibility of a student "shutting down," or dying, during the process. However, after assessing the limitations of hypnosis and the existence of "voodoo death," we decided to attempt to get students as close to the light as possible without any negative consequences.

On the day that we set aside for this adventure, I invited and encouraged the students to bring guests. Throughout the entire course students frequently brought friends, but on this particular day part of the reason to have someone with them was an insurance factor. Their guests holding their hands and following the directions added additional support. At the appropriate time the friends were asked to squeeze their partners' hands gently at the point at which I began to call them back. In retrospect, I think all participants should have had a contact person who remained, while the participant went on ahead.

Before we started, we had joked about having the students make out their wills. This jesting not only helped them confront death directly but also helped relieve their anxiety.

This episode, like the first hypnosis session, was voluntary, and the students were welcomed to discontinue the process at any time. At one
particular point in the session they were again given the opportunity to stay and enjoy a particular scene, while the rest of the students went on.

Considerable thought was given to how to get the students to a point at which they could go on by themselves, and in particular how to induce this state of mind with a minimum of fear. I thought I needed to take them to the void, to the barrier, to the dark, and at that time they must individually accept, go into the absence, and make the journey by themselves, at least until they might possibly meet others on the "other side." My trust and wish was that they could continue with their "guides" or "spirits" perhaps all the way to the light. The problem was how to get them from the "here and now" to the void with a minimum of distress and how to call them back once they had journeyed on, all the while keeping everything as positive as possible.

I induced a hypnotic state in the students, and at the specified time invited them to go on. I always tell my hypnotic subjects in advance, as exactly as I can, what will or might happen, so there is a minimum of surprise and anxiety. Therefore, I did talk with the students prior to the hypnosis about what might happen during the session. Thus, they were aware of some of the characteristics typically reported in the NDE, and of course that prior awareness might have influenced what they actually experienced. I saw no way to be honest and direct about what might happen without that discussion possibly influencing the experience.

I proceeded with the hypnotic session and called them back after approximately 4 minutes; I had chosen a relatively short period of time in order to provide resuscitation if needed and to cancel negative experiences that might occur, realizing that time "on the other side" is not comparable to time here.

Immediately following this experience we took a break and, as it was the end of the time allocated for the class period, those students and guests that elected to leave were permitted to do so, while those who wished to remain could talk about the experience. Unfortunately, I did not record the interaction that followed the general session; there was sharing and tears of joy, love, and caring. In order to have a permanent record, I asked the students the following day to write exact descriptions of what happened, using whatever words came to them regardless of sentence structure or flow of meaning. That following day was a Friday, which for various reasons is always a smaller class; none of the guests or visitors from the previous day were present. I collected written descriptions from 26 students, about half the number of people present the day before. Below are a few of the more interesting responses, unaltered except minimal correction of spelling or syntax.
1. What happened is hard to explain or put into words. At the point that we were to go toward the star I felt motion; it seemed very rapid yet controlled. At the end of the movement I was in front of a barrier that looked solid and the blackest, darkest thing I could imagine. This barrier looked like it was impassable, yet I was able to go into it.

At this point, in what I would say happened in the blink of an eye, the darkness changed into a light gray fog. The change was so dramatic I thought I had lost touch; all of a sudden I felt a warmth come over me, almost a womb-like feeling of total warmth or love. This happened twice. The first time I heard a man's voice, not with my ears but telepathically; so much was said, but it all seemed to be beyond my understanding. However, one word came to mind: understanding. When the first contact was done, a second began with the voice of a woman, and her message was of faith in all, everything. At that time we were told to come back by you. I felt better that I ever remember feeling in my life.

2. After the star had disappeared I had this sensation of being pulled up into/toward the darkness. I was still on my back and it was as if there was a rope tied around my waist. The speed at which it seemed I was traveling increased an enormous amount. The closer I got, the faster I traveled. I thought I was just going to go right through the darkness and never stop. But the second I reached the darkness I stopped instantly. I was now in the darkness and I knew it. Everything was black, yet it seemed as though there was a dim gray light or mist in the air, allowing me to see a long, extremely large tunnel. I started moving in the direction I was facing and walked for what seemed to be an extremely long time. By now I could feel a tight feeling in my stomach and I guess it could be described as "butterflies."

I came upon a figure in the tunnel of a young boy. When you told us that someone we knew would meet us and take us to the light, I immediately thought this was my little brother. But I didn't know; he looked like he was 13 or 14, which is how old he would have been, but he died when he was less than a year old. I didn't know whether the spirits continued to grow as bodies would have. Anyway, I took this figure as my little brother. He didn't talk, but we communicated through thought. He told me to stop and go back. He told me it wasn't my time, and that my time would come, but it wasn't now and that we would be together in time. I wanted to stay and go on
but I knew I couldn't. I wanted to know the little brother I used to have, but I couldn't yet.

By this time my heart was pounding and I could hear my breathing getting heavy and harder to get enough oxygen. I turned back, not wanting to leave this place, and when you were bringing us back I was always one or two steps behind you, prolonging this as much as possible. When I came out I was scared. I didn't know what to think, what to say. My legs were extremely warm, and even though I hadn't seen the light, I was able to accept my own death. I've never been afraid of dying, but of how it would happen.

3. I am going to try to explain what I felt and what I saw as best I can. While lying on the towel, looking at the star, I felt as though there were walls around me, four walls with no roof. As the star faded, the walls felt very protective; I guess I didn't feel so vulnerable to the openness of a beach in the dark. A door opened to the side of me, and my grandmother, who has passed away, was there motioning to me to come along. I stood up and she said, "Come with me; it's okay."

I followed her into the closet-type room, and on the right of me was her casket, empty. She opened another door and we walked out, her in front of me, me following. As she walked, there was some sort of light. It was very intense, but did not hurt you. It was sort of a spotlight, but it had no beginning. It ended in front of me, but shone on, almost through, my grandma. I continued to walk, and as I got into the light I could not move. I wanted to, but I couldn't, almost as if someone was holding me, but they weren't. My grandma turned and said, "It's okay; everything is okay."

As she was saying this, I heard this beep, beep, beep, like a monitor in a hospital when someone's heart has stopped. Then I heard two voices very familiar to me yelling, "My baby, don't go; please stay with me." It was my mom's voice. Next I heard my dad saying, while sobbing, "I'm so sorry, I am so sorry; it was an accident." I tried to turn around to tell them it was okay, but I couldn't! I tried but my body wouldn't move. Then my grandma said, "Everything will be fine; just be happy." It was almost as if she knew it wasn't my time, but she wanted to make everything okay. She turned to leave, and I was yelling, not through my mouth but out of my mind, "Please don't go!"

I had the warmest feeling, not from outside, but from the
inside out. I heard someone telling me to go back—you—and I was able to turn around and I saw my mom and dad in a hospital room, my mom in a chair by a bed and my dad sobbing with his hand on her shoulder. Then everything faded and I was on my back again, in the room, content, but very scared. I wanted to go back and talk to my grandma. My heart at first felt like it was beating in every part of my body, very hard and loud. When I stood to follow my grandma, it stopped; then afterwards, it was beating normally.

4. I have tried to write and tell that which I experienced, but find there are no words to adequately express the care. The star faded and there was total darkness, but yet it was like a gray blackness surrounding. At that moment there was the sensation of sulfur/ammonia or some such condition which burned my eyes. I remember thinking tears are actually running down my cheeks; this is the only connection I have to the physical [world]. I couldn’t see anything; the closest I can describe what happened next—I can’t.

There is this gray blackness, I know there is some one or thing above and a little to the right. There is also below me a special one reaching out. There is surrounding all of these lower ones and myself and others. I can’t see them all; it’s just a feel/thought kind of thing. We were all joined as one in unity, peace, and love. I cannot describe this. I have known love, what I have considered perfect love, not in the physical sense am I talking; I mean love that only your deepest heart of heart one experiences at peak times. I have experienced being loved; I mean I know the feeling that being loved totally brings.

I have experienced the whole realm of love’s emotions. But if you would take each of these and multiply them by one hundred thousand thousand, and then put them all together and multiply them again by one hundred thousand thousand, you wouldn’t even come close to the feeling I felt. I had to leave when I was called back. There are a lot more words I could attempt to put into this, but they would all be futile.

I invite readers to judge for themselves the extent and significance of these experiences. A few of the questions I have are: How much was “programmed” and how much was spontaneous? If one can “make contact” in this fashion, can one do it in some other way? Is this easily duplicated, and if so, what might be the gains and what might be the
risks? How does one minimize the risk and maximize the gains? Are we experimenting with something that should be left alone? Or is this a dimension of the human being that should be explored and developed?

I am anxious to hear from fellow interested colleagues to discuss this process.

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INSTRUCTIONS TO AUTHORS

THE JOURNAL OF NEAR-DEATH STUDIES encourages submission of articles in the following categories: research reports; theoretical or conceptual statements; papers expressing a particular scientific, philosophic, religious, or historical perspective on the study of near-death experiences; cross cultural studies; individual case histories with instructive unusual features; and personal accounts of near-death experiences or related phenomena.

GENERAL REQUIREMENTS: Logical organization is essential. While headings help to structure the content, titles and headings within the manuscript should be as short as possible. Do not use the generic masculine pronoun or other sexist terminology.

MANUSCRIPTS should be submitted in triplicate, typed on one side of the page only, and double spaced throughout. A margin of at least one inch should be left on all four edges. Except under unusual circumstances, manuscripts should not exceed 20, 8 ½ x 11" white pages. Send manuscripts to: Bruce Greyson, M.D., Department of Psychiatry, University of Connecticut Health Center, Farmington, CT 06032.

TITLE PAGE should contain the names of the authors, as well as their academic degrees, affiliations, and phone number of senior author. A name and address for reprint requests should be included. A footnote may contain simple statements of affiliation, credit, and research support. Except for an introductory footnote, footnotes are discouraged.

REFERENCES should be listed on a separate page and referred to in the text by author(s) and year of publication in accordance with the style described in the Publication Manual of the American Psychological Association, 3rd Edition, 1983. Only items cited in manuscripts should be listed as references. Page numbers must be provided for direct quotations.

ILLUSTRATIONS should be self-explanatory and used sparingly. Tables and figures must be in camera-ready condition and include captions.