

Journal
of
Near-Death Studies

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Describing the Light: Attribution Theory as an Explanation of the Near-Death Experience • *Max C. Norton, Ph.D., and James M. Sahlman, Ph.D.*

Variations from the Prototypic Near-Death Experience: The "Individually Tailored" Hypothesis • *William J. Serdahely, Ph.D.*

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Letters to the Editor • *Kenneth Ring, Ph.D., Vincent Luciani, Leslee A. Morabito, Craig R. Lundahl, Ph.D., and Harold A. Widdison, Ph.D.*

Volume 13, Number 3, Spring 1995



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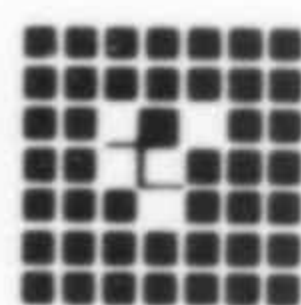
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JOURNAL OF NEAR-DEATH STUDIES (formerly ANABIOSIS) is sponsored by the International Association for Near-Death Studies (IANDS). The Journal publishes articles on near-death experiences and on the empirical effects and theoretical implications of such 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** (IANDS) 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, IANDS' 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 experiencers 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 IANDS 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 IANDS can be obtained by writing to IANDS, P. O. Box 502, East Windsor Hill, CT 06028.

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Editor's Foreword

The lead article in this issue of the Journal is a controversial paper by physicist Stephen Thaler suggesting a deterministic explanation of what happens when consciousness is destroyed. Not content with speculating, however, Thaler has actually constructed artificial neural networks — computer simulations of real neuronal behavior — and carried out experiments by programming random severing of its interconnections to simulate the dying process. What he found is that the “noise” of the decaying neural network produces hallucinations, first of actual stored memories and later (as the network comes even closer to death) of novel recombinations of memory fragments — that is, entities the network had never actually encountered previously. Thaler's extrapolation from these experiments to near-death experiences (NDEs) of humans offers provocative explanations of our experience of immortality and spiritual consciousness. Though his model is unquestionably reductionistic, he does not regard near-death visions as worthless epiphenomena; to the contrary, he considers these “canonical hallucinations” to be the key to all creative thought, and the NDE as the potential source of humanity's greatest inspiration.

Providing a very different approach to our understanding of NDEs, communications professors Max Norton and James Sahlman apply attribution theory to near-death accounts. Their analysis suggests that NDErs structure their narratives so as to offer causal explanations for why these experiences occurred, and provides a tool for exploring the relationships between experiencers' attributions and their beliefs and aftereffects.

Next, health scientist William Serdahely examines individual NDE accounts that vary from the familiar prototype in important ways. He suggests that these variations support the hypothesis that NDEs may be “individually tailored” to the needs of each experiencer.

This issue includes two book reviews. Medical sociologist Harold Widdison reviews Arvin Gibson's *Glimpses of Eternity*, a collection of primarily Mormon near-death cases and a comparison of their features with Mormon teachings. Religious scholar John Wren-Lewis re-

views visionary D. E. Harding's deceptively labeled *Little Book of Life and Death*, which leads readers experientially to an understanding of the NDE as a liberation from the illusions of everyday consciousness.

We conclude this issue with two exchanges of letters. Social psychologist and consciousness researcher Kenneth Ring clarifies his retirement from teaching and his intentions, past and future, in the field of near-death studies; and NDEr Vincent Luciani responds with a contrasting perspective on past and future directions for this research. Finally, NDEr Leslee Morabito questions the analysis of physical parameters within the NDE presented by sociologists Craig Lundahl and Harold Widdison; and Lundahl and Widdison in reply differentiate between the empirical study of physical descriptions within near-death narratives and the interpretation of those descriptions.

Bruce Greyson, M.D.

Death of a Gedanken Creature

Stephen L. Thaler, Ph.D.

Dendrite Neurocomputing, St. Louis, MO

ABSTRACT: This paper describes a thought experiment in which a hypothetical creature created by a computer program inhabits a simple universe consisting of itself, food, and predators. As this creature "dies" it "internally" experiences these environmental features independent of their actual presence. More evolved hypothetical creatures generate novel forms of "inner" experience as they "die." Applying these results to humans suggests an "internal" genesis of near-death experiences.

The "virtual input effect" (Thaler, 1993, in press) describes a phenomenon that accompanies the destruction of an artificial neural network — a computer model of the behavior of real neurons — by the severing of connections between its processing elements. The severed network then misinterprets the pattern of disrupted connections as true environmental features. Such disruption patterns may arise in biology as the direct result of either synaptic relaxation or degradation. In this paper I examine the function of a simple neural network serving as the central nervous system (CNS) of a hypothetical animal. I then destroy this CNS by disconnection to demonstrate how such a traumatized neural network may produce hallucinatory experience through the virtual input effect. A simple environment serves as metaphor for the realm of features and events accessible to human senses.

Since this is an inherently mathematical paradigm, numerical detail is unavoidable. Quantitative features are sparingly developed, just enough to convey the minimal features of the virtual input con-

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cept. I therefore undertake this development with the full understanding that a wealth of new features emerges with the analysis of neural networks approaching biological proportions, and that the following example is only the kernel for generalization. Certain simplifying features are not to be taken literally. In short, there has been a trade-off between clarity and fidelity to biophysics, but the essence of the effect survives into the realm of "living" organisms.

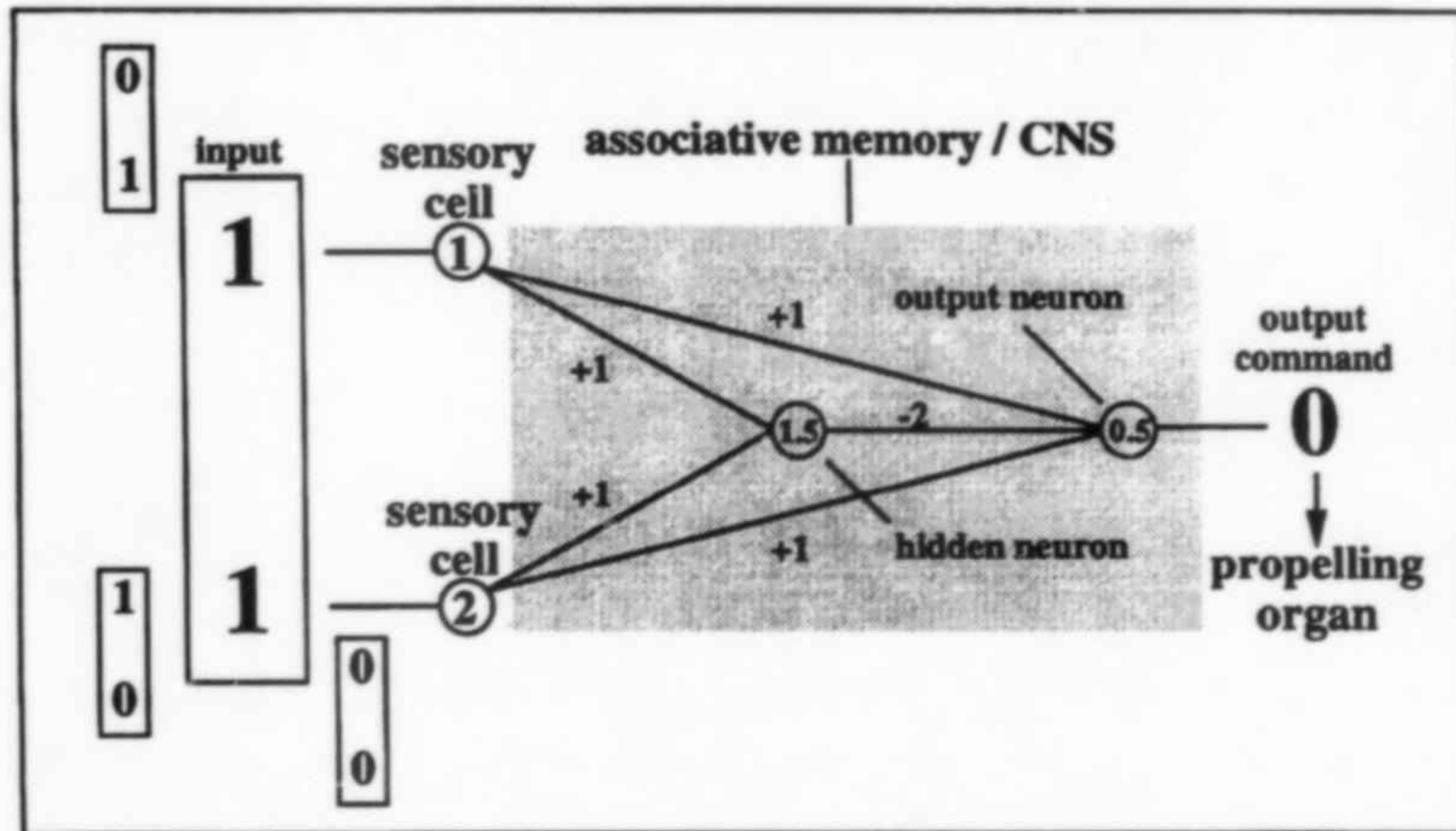
In the same spirit of streamlining highly specialized technical background, I define artificial neural network (ANN) function implicitly through the allegorical *gedanken* — a hypothetical creature — described below. Proceeding in this manner, I hope to sidestep potentially voluminous discussion on the topic of ANNs, supplying the needed details through example.

Life of the Gedanken

The creature I will discuss, diagrammed in Figure 1, is of simple neurological design. It possesses two sensory cells which output binary signals of either 0 or 1 millivolt to a simple associative memory. I will denote the responses of these two sensory cells in "vector form" by a pair of numbers in brackets; for example, the notation {1,0} indicates a condition in which sensory cell 1's response is 1 millivolt and sensory cell 2's response is 0. The associative memory to which these two sensory cells send their signals in turn dictates the response of the organism.

In the small universe this creature inhabits, there are two other types of entities. The first group of entities is edible, consisting of objects specified by the responses of the creature's two sensory cells, {0,0} and {1,1}; that is, in the presence of edible entities, the *gedanken*'s two sensory cells both output identical signals of 0 or of 1 millivolt. The second group of entities is the creature's predators, labeled similarly by the creature's sensory responses {1,0} and {0,1}; that is, in the presence of a predator, the *gedanken*'s two sensory cells output different signals. To assure the proper reaction to these two groups, the creature has a very simple nervous system which produces one of two responses: either a 0, causing it to approach and eat its meal; or a 1, signalling the creature's urge to retreat. It is assumed that a 0 informs its simple propelling organ to advance toward its meal and a 1 causes it to quickly provide an escape move-

Figure 1. A simple universe and the reactions of the gedanken creature to the two varieties of stimuli found there.



STIMULUS REACTION

STIMULUS	REACTION
food group 0 0 1 1	0 = approach
predator group 0 1 1 0	1 = flee

ment. At all times the gedanken is fixated on either of these environmental features.

The nervous system of this creature (Figure 1) consists of cells that function as follows. Each has the capacity for accepting any number of weighted electrochemical voltage pulses from preceding cells. If it has received a total input above a set threshold, it in turn outputs a potential of 1 millivolt, which is distributed with appropriate weightings to successive cells. In the gedanken creature, we see three kinds of cell: (1) sensory cells, which simply convey their

degree of excitation, 0 or 1 millivolts, to subsequent cells; (2) a "hidden" neuron, with a threshold level of 1.5 millivolts; and (3) an "output" neuron, with a threshold of 0.5 millivolts. The weighting of output voltages comes in the form of a modulating mechanism that can alter both the sign and magnitude of outgoing voltage values to succeeding cells. Four connection weights with values of +1 simply transmit output without alteration. Another connection weight has the value -2, serving to reverse the sign of the voltage along that line, while doubling its magnitude.

In Figure 1 we see the reaction of the creature's simple CNS to the sensation of the food variety that excites both its sensory cells to both output 1 millivolt signals {1,1} — that is, 1 millivolt from sensory cell 1 and 1 millivolt from sensory cell 2. The sensory cells accordingly output 1 millivolt each to the hidden neuron as well as to the output cell. The combined weighted voltage signal at the hidden neuron thus equals 2 millivolts, causing net input to that cell to exceed its 1.5 millivolt threshold. As a result, the central neuron "fires," providing an output level of 1, multiplied by a factor of -2, to the output neuron. Unmodulated output from the sensory cells travels along the outer connection lines to the output neuron with a total value of +2 millivolts. Combined with the voltage from the hidden neuron of -2 millivolts, the net input to the output cell is 0. Overall input does not exceed the triggering threshold of 0.5 for the output cell, leading to an output of 0 for the network as a whole.

With a signal of 0 millivolts to the propelling organ, the *gedanken* is pushed toward the food entity. The creature then eats. The internal process of calculation is done quickly and instinctively, using a simple language of voltage weightings and thresholds. This scheme avoids the sequential, time-consuming consideration of rules, such as "If sense organ 1 detects a 1 and sense organ 2 likewise detects a 1, then eat." Such rapidity of decision is a life-preserving virtue in this savage, fast-paced world. I leave it to the thorough reader to work through the remaining three CNS voltage activations, as illustrated in the Appendix, to verify the proper response of the creature to its food or its enemies.

We could speculate that in this hypothetical universe, prior evolutionary mutations of the *gedanken* had utilized improper combinations of available +1 and -2 connection weights, as well as 0.5 and 1.5 threshold cells. The resulting organisms would have had inappropriate responses to the environmental features, significantly detracting from their survival potential. They are obviously absent from

the scene. (Readers interested in further elaboration on the process of neural computation are referred to the excellent discussions offered by Stephen Kosslyn and Olivier Koenig (1992) and by Drew van Camp (1992).)

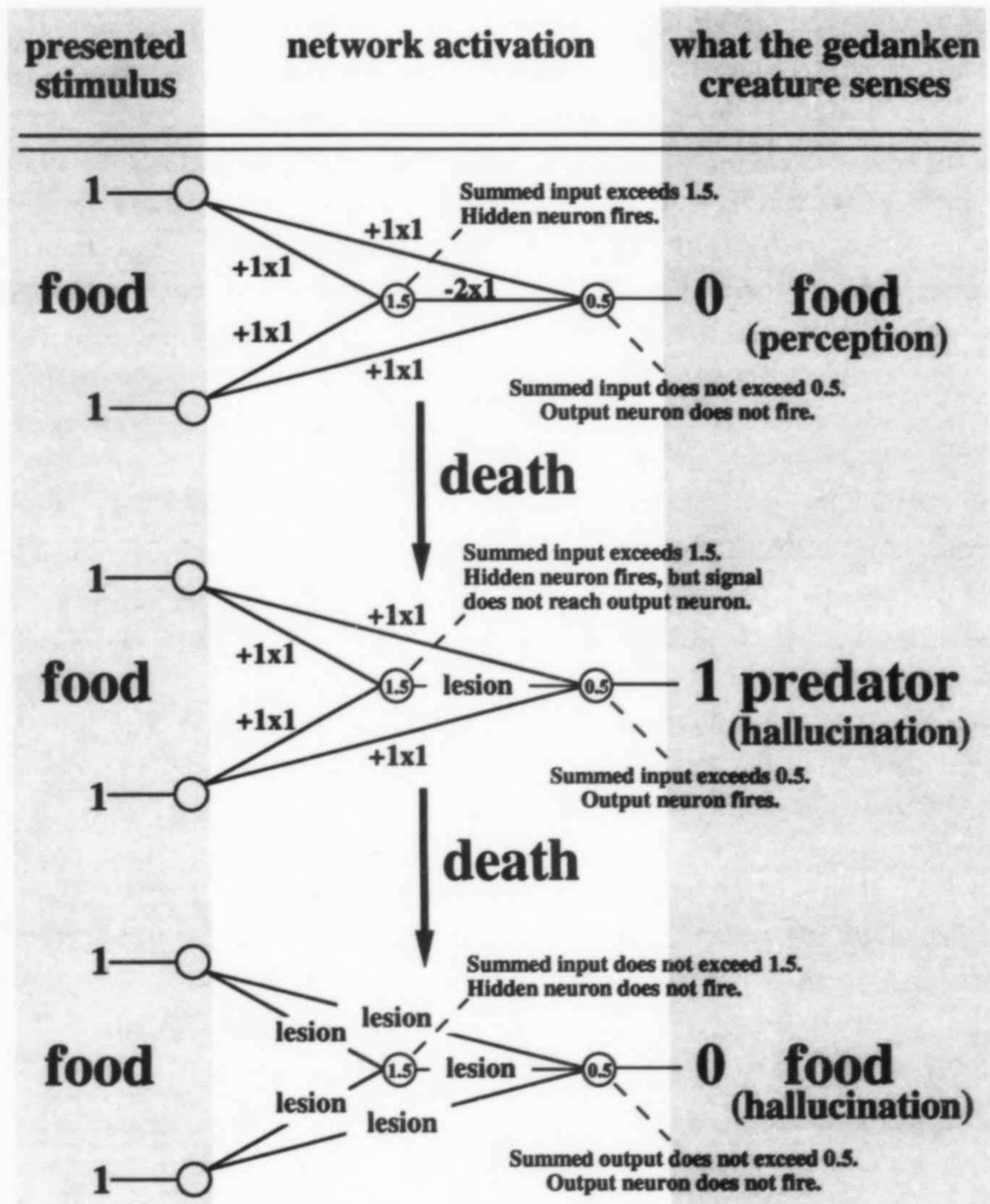
Tracing through some elementary arithmetic, we see that this hypothetical organism has adapted to its environment by the internal modeling of its surroundings. Its natural internal language is neuro-computing, the exchange of weighted outputs among cells, each of which is either silent or contributing, based upon its net input. The gedanken thereby senses and then categorizes the four possible environmental features available to it, simultaneously combining and processing input from both sensory cells and then forming a response. All environmental features are pigeonholed, neatly falling into either nourishment or danger classifications. As a result, if an outside entity such as a tab top or bee were to fall into this small universe, the gedanken creature would perceive it either as food or predator, reacting accordingly. There would be no other kinds of entities allowed within its simple "mind," with no fine shades of distinction.

In essence, the gedanken has formed a model of its world in a very compact numerical form, via a set of connection weights and threshold values. All associations of any environmental feature in its world may be activated by input to its sensory cells. Alternately, as we see below, identical network activations representing these same environmental features may arise through internally generated disruptions between neurons, setting this internal world model into motion. The resulting experience is indistinguishable from what the gedanken would detect as "reality" through its sensory cells.

Death of the Gedanken

Figure 2 illustrates a possible sequence of events in the demise of the simple creature. The ill-fated gedanken is just about to feast upon a meal of {1,1} as its sensory cells 1 and 2 are filled with the impression of a coming meal. With its associative brain signaling 0 ("move in to the food") to its propelling organ, the circulatory organ (not shown) of this creature fails, and metabolic nutrients are blocked from supporting the metabolism of the CNS cells.

Figure 2. Lesion-induced hallucinations in the death of gedanken creature.



In one possible scenario, the central neuron dies first, negating or "lesioning" the -2 connection to the output neuron and effectively driving the connecting weight to zero. Since this inhibitory connection has been broken, the output neuron's threshold level is exceeded by the voltage signal arriving along the still intact outer connection lines, and as a result, the output neuron fires the retreat signal, 1, to the propelling organ. The irony is that the expiring gedanken is "staring" food in the face yet perceiving a predator, either a $\{1,0\}$ or

a $\{0,1\}$. The gedanken's CNS thus registers a false perception, totally distinct from that of the actual object presented.

We call such a phenomenon a "virtual input" or "canonical hallucination." In the last stage of this simplistic brain death, we see that although communication from the sense cells is defeated, with their connections to the CNS severed, the network is nevertheless outputting a value of 0. Note that this CNS activation pattern also qualifies as hallucination since it is signaling the propelling organ to move in to eat, with literally no true inputs from the now disconnected sensory cells. In other words, the gedanken's response is coincidentally correct.

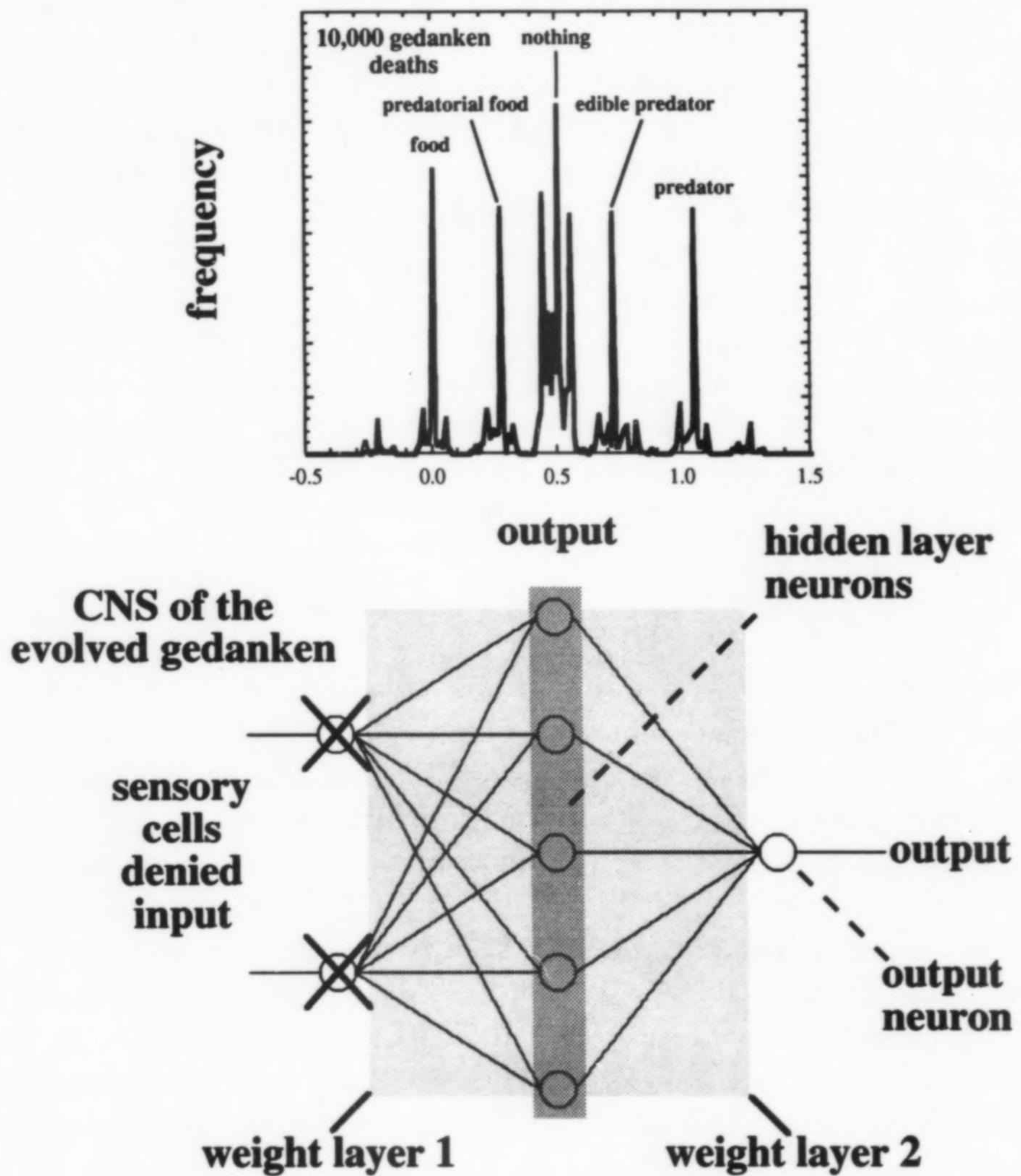
The above hallucinations exemplify the virtual input effect. Simple disruptions in the connections between neurons manifest themselves as the false impression that some object from the environment has been introduced to the network's inputs — that is, the gedanken's CNS sensory cells.

Death of the Evolved Gedanken

Eons have passed and generations of gedankenkind have functioned and failed. Occasionally a chance error has occurred in the self-organization of new creatures, resulting in a heartier animal having an increased number of hidden neurons. Actually this quite accidental series of developments has been a fortunate one, since now the organism is less vulnerable to injury should any one of its hidden neurons suffer trauma or death. At any given time following such trauma, the extra neurons can assume some of the burden and function in a close approximation to a healthy gedanken central nervous system. This safeguard in turn prolongs the functioning lifetime of the gedanken, allowing it to eat or flee appropriately, after increasing degrees of neurological injury.

Figure 3 depicts one of these advanced form of gedankens. Now, in addition to the two sensory cells, there are 15 connection weights and 6 processing neurons (of differing threshold values) carrying out the environmental recognition and categorization task. These interconnections and thresholds are actually the connection weights and biases of a well-known artificial neural network, the "exclusive or (XOR) gate," trained to recognize its "environment" by a process known as "back-propagation" (van Camp, 1992). In actual biology, these weights would represent what is known as long term poten-

Figure 3. Frequencies of occurrence of hallucinations within the death of a more evolved and robust gedanken creature. Note the appearance of three types of hybridized experience at output = 0.27, 0.50, and 0.73.



tiation, achieved by the opening or blockage of ion channels within the synapses connecting neurons. Neural processing would take place not as propagation of static potentials, but as voltage pulse trains.

At this stage of gedanken evolution, a new phenomenon has emerged at the threshold of death. To illustrate, we take 10,000 of these advanced gedankens and sacrifice them for the sake of knowledge. Within each of these simulated deaths, connections between neurons are randomly cut by setting their connection weight values

to 0. As these connections are effectively severed, we simultaneously monitor inner perceptions by noting network outputs. In view of the larger set of weights and biases involved, I will not expose the reader to the tedium of carrying out this task. I have instead delegated this job to a serial computer and summarized the results in the frequency histogram in Figure 3.

To make matters even more interesting, we effectively sheath both of the gedankens' sensory cells by setting inputs to the value 1/2 (neither 0 nor 1) so that they can sense neither food nor predator. Since no actual entities are presented to the gedankens, their responses can only be the result of internal imagery. Keeping track of the frequencies with which these small, dying brains register different output states, we obtain the frequency histogram in Figure 3, where we see hallucinatory registrations of both food (0) and predator (1), as seen in the ancestral gedanken's death. We note, however, new, recurrent output themes appearing at 0.5, 0.27 and 0.73, and strive to attach meaning, as would the gedanken's propelling organ.

The appearance of 0.5 could be interpreted as the presence of nothing or perhaps an entity that was an equal hybridization of both food and predator, something heretofore unknown to the gedanken. The 0.27 could represent food with some attached danger, perhaps a mutant {1,1} or {0,0} that has developed its own killer instinct. Finally, the 0.73 may present the impression of a not so swift predator, which, if the gedanken is fast and brave enough, may provide a tasty delicacy. These, of course, are all interpretations made within human associative centers. To the gedanken, these nontraditional network outputs would simply represent confusing responses sent to the propelling organ. The gedanken would require supplementary associative centers to attach meaningful interpretation.

Regardless of the gedankens' inability to interpret the output values communicated to the propelling organ, we note a continually changing output stream from the gedanken's associative network as connection weights are removed. These outputs take the form of both straightforward reaction to the two types of environmental features, and confused response to the novel juxtapositions discussed above. The succession of outputs we see within a given death may be explained by concentrating our attention on connection layer 1, indicated in Figure 3. Removal of any connection strength, tantamount to setting it to a value of zero, generally modifies the overall pattern of inputs to the network's hidden layer neurons. Since the intact portion of this network, beginning at the hidden layer, recognizes no

other choices, it then classifies this new pattern as either of the known environmental entities.

Continued modification of inputs to the hidden layer results in a succession of different network activations and outputs, even though the environmental stimulus is static and unchanging. Similar processes of misclassification may also take place within the second weight layer to contribute to the evolving stream of network responses. These responses sporadically alternate between approach and retreat. Advanced degrees of damage, which detract from the network's intrinsic ability to classify inputs, create the novel outputs of 0.27, 0.50, and 0.73, which the propelling organ is now left to interpret.

From our nearly omnipotent vantage point over this hypothetical universe, we see that the gedanken experiences these new entity-concepts through the collapse of its CNS. To have inwardly sensed such novel forms, complete, irreversible death was not necessary. Lesioning or reversible relaxation of just a few connection weights would result in the equivalent imagining of the new entities. If the gedankens possessed a language for communication among its species, there would have been a gedanken-lore of imaginary beasts, part food, part enemy, and the alternative of perceiving nothing. Such a lore would emerge through either the reversible relaxation within the gedanken CNS, or through traumas, both insignificant and mortal.

Extension to the Universe of Humans

In the world of humans, there are many other environmental features and many more brain cells to consider. Still, what lies beyond our senses — our universe — is interpreted via neural processing as the important features within our perceivable, accessible surroundings, features such as father, mother, birth, death, etc. The important concepts take the shape of associations rather than sharp definitions. Impressions are vectorized (i.e., lists of numerical responses, such as degrees of sweetness, bitterness, sourness, and saltiness within the tongue.) Subsequently, association takes place within neural networks. The vast majority of these associations is instinctive rather than logical, without challenge to origin or inevitable repercussion.

In many respects, life in our world is the same as in the hypothetical universe of the gedanken, but now includes a "self" concept,

to prevent self ingestion (Flanagan, 1992), and an internal conversation between neurons uncommitted to the more mundane tasks of self-organization and survival (Ornstein, 1991). Further, on isolated occasions, the human organism departs from this instinctive thought, marked by parallel processing (the simultaneous processing of multiple inputs, as exemplified by the *gedanken* creature), and emulates sequential processing (that is, the time-resolved analysis of its inputs) with its neural networks, in a process referred to as the "von Neumann bottleneck" (Dennett, 1991). It is thereby able to exercise rules, drawn from a knowledge base presumed valid.

This deviant behavior is called *logic* and is the first capacity to be destroyed as the human organism experiences the trauma of dying or other factors. Its demise is as abrupt as the death of serially strung Christmas tree lights, as a single bulb fails within the chain. What then remains is an instinctive component that resides within the highly parallel architecture of the human central nervous system, a collection of cascaded neural networks similar in manner of function to that used by the *gedanken* creature. Within it are encoded images of our environment, our emotions, desires, and world concepts. In contrast to the serial string of lights, this system is much more robust, dying not in a spasm, but in a sequence of on/off configurations, telling a story of sorts as it goes. Within neurological death, however, the frames of the resulting motion picture are scenes from its environment, complete with all the sensations normally encountered in healthier times.

This may be the essence of the near-death experience (NDE) in which there is a succession of impressions from the network's environment, namely, the features repeatedly encountered within its existence. These impressions are internally generated by noise within the dying network and may bear no direct relationship to items within its perceptual sphere at the time of death. Note, however, that this model may easily be expanded to include the decay of the most recent and hence most dominant network training at the time of death, for example, an out-of-body experience of a traumatized patient in surgery, whose freshest impressions are those of the operating room.

It is as though the piano keyboard's lid is closed, while a demon frantically rushes about inside, randomly cutting piano wire, as an amazed audience listens to a series of very distinct, recognizable melodies.

With similar reductionist amazement, we have been able to evoke complex visual images from a neural network whose universe consists of only these pictures. The series of network activations is not as transparent as those seen in the *gedanken* creature, but nevertheless the network hallucinates the presence of far more environmental features than in the case of the *gedanken*. Further, within these studies, we have been able to elucidate the essential mechanism behind the network hallucination process, a phenomenon we have coined "internal completion."

The internal completion process has already been alluded to in the context of the disruption of input patterns to both hidden and output layers of the advanced *gedanken*. To further grasp this effect, imagine throwing three dice, each having letters on five of its sides and a blank or "wild" side on the sixth. Among the random combinations we see in the midst of a series of rolls, is the combination c-blank-t or "c-t" and we may automatically see the image of a feline and a cascade of related impressions and associations, such as a specific cat, a generalized cat, a meow, cat and mouse games, the agony of allergy to cats, etc.

In this case, completion, the filling in of missing information, the letter "a," is carried out beginning at the sensory inputs of the network — the eyes — and a coherent memory, with all of its associations, is activated within the network — the associative centers of the brain. In distinct contrast, the internal completion process, germane to discussions of NDEs and spontaneous creativity, takes place within the internal layers of a network, during which the noise of destruction — akin to the random rolls of the dice above — and the random appearances of 0 outputs from disconnected neurons are interpreted as some real feature from its environment — such as the cat.

The simulated neuron deaths performed have relevance not just to the sudden phenomenon we acknowledge as death, but also the slow process of programmed neural decay seen within the first year of birth, with a 15 to 85 percent attrition, and the 1,000 neuronal deaths effected each day within the adult human being and known as "Grim Reaper Death" (Churchland, 1989). Other traumas such as accidents, stress, and disease will likewise show the features demonstrated within the simulations. Perhaps, as a result, we may arrive at a new philosophy regarding neurological decay, regarding biology's trend toward neural death as a productive cannibalism of one neuron by the other, in which spontaneous, novel, and life-sustaining

thoughts are generated. The most fundamental product of this process would be that of a "psychological concept of time" or a "biological clock" (Friedman, 1990), in which intervals of time are marked by the demise of whole packets of neurons. Further, we may consider more reversible synaptic phenomena such as those produced by non-damaging pharmacology or even relaxation responses such as a good night's sleep.

Perhaps some of the greatest revelations of our time come from the annihilation of neurons and the whole pattern of creativity takes the following form: In the first step of the process, we establish some notion of the small subset of universe relevant to a problem at hand. This concept is represented internally as a microcosm modeled after the external, physical world, a set of constraint relations in the form of neural network connection weights. All of its inner workings and interrelationships are embodied in this set of neural parameters, with all values of connection weights between processing elements the result of cumulative observation and pattern recognition within the "real" environment. As synaptic connections break due to metabolic death, or as neurotransmitters mediate relaxation of those synapses, novel combinations of environmental features appear, resulting in juxtapositional invention — a "brainstorm."

Of course, the key to the capture of a useful concept may lie chiefly in two factors: (1) the production of faithful, self-consistent modeling of the environment through the connection (synaptic) weight set; and (2) the ability of delegated associative centers to recognize the pragmatic value of the emergent, novel combinations. Either of these contributing factors may be degraded, thereby disabling or impairing the creative process. Pathologies within both factors may result in insanity. Reliable function of the two factors may produce the revelations known to creative genius. In the continuum between these two scenarios we may find the refuge of both the mundane and delusional systems of thought.

Some (Crick and Mitchison, 1983) have hypothesized that much of the internal housekeeping associated with the maintenance of a self-consistent, neurological world model occurs within our dreams. Quite frequently, confabulatory impressions originating within the brain, indistinguishable from those originating externally, in the environment, are swept out by a process akin to the annealing of atomic defects from a heated and then slowly cooled metal. As these defective combinations of thoughts, oftentimes improbable within the waking world, present themselves to the "dustpans" of the brain, still

alert associative centers react to the occurrence of novel combinations that bear either survival or comfort value.

Now add to the stream of information passed by the attention of this "patrolling mechanism" further hybrid concepts, that are now produced by the totally random decay or relaxation of synaptic connection weights. In this way we begin to see a significant relationship and a continuity between dreaming and NDEs. For this reason, we may think of the NDE as a kind of "death dream," mammoth in its scope due to the astronomical number of memory traces obliterated in metabolic death and witnessed by still intact associative centers.

Nature is ultimately frugal and brain cells do not die in vain. The virtual input effect accompanying neuron death within biology is not necessarily a deficit, but a useful by-product of immense data processing compressed into a couple of pounds of thinking mass. In short, parallel processing, in contrast to sequential processing, is efficient in its use of computation time and space. However, its down side is that it is prone to both confabulation and hallucination. These latter two effects have appreciable benefit through the formation of novel concepts with all their accompanying survival value.

Philosophical Repercussions

I have generated several allegories to demonstrate how the noise of destruction within neural networks produces hallucinatory experience. What I have intimated is that within biology, all sensory input is vectorized into the form of lists of numerical values. These lists or vectors are then relayed to associative neural networks where classification, and hence recognition, of known environmental features occurs. Within the catastrophic collapse or reversible relaxation of synaptic connection weights between neurons, some of the numbers in this list may be effectively reduced to zero, presenting an internal "neural forgery" of sensation, which may then be classified as some other environmental feature by the intact remnants of a network. If the association generated by the neural network differs from that of the environmental stimulus, we witness a virtual input, or hallucination.

In essence, a central nervous system does not require sensory input to generate the image of some object or event normally found within its surroundings. Memory traces may be activated by the internal noise of its own relaxation or destruction. Accordingly, we gain a new

perspective of continuity between dreams and the images experienced at death. Such a paradigm offers an extremely important causal link between the biochemistry of these reversible and irreversible processes and the biomathematics of hallucination. The virtual input effect discussed above is simply a canonical form of hallucination observed within the death of relatively simple neural networks.

By close examination of hallucinations and related phenomena, we are on the threshold of solving one of the most impenetrable mysteries of our world, when folklore is replaced by awe of the underlying mechanics. Nature has been efficient in its engineering and death is integral to the plan, occurring nearly instantaneously or slowly, generating "original" plans for survival both for the individual and the species. Ultimately, we must confront the undeniable observation that for the victim of catastrophic brain injury, no other intangible entity or homunculus kicks into action, allowing the individual to function. To substantiate this point further, we note that there is no preservation of personality, no appreciation of ecstasy, and no dread of agony at this level of neural damage. Our most spiritual stream of consciousness resides within a mechanism.

Further substantiating this reductionist model is the fact that there are no reports of a "double layer" to the hereafter, in which two disconnected sets of experience are reported, the first possibly neurological in origin, and the second "otherworldly." If NDEs are of supernatural origin, then what has happened to the neurologically based experience predicted by this model? Close study of this reductionist approach to NDEs suggests that the seat of our consciousness resides in the myriad settings of neural switches, as represented within the activations of electrochemically based neural networks. Perhaps it is through this concept of an intangible "system configuration," a status list of settings for all 100 billion delicately poised on/off elements, that the reductionist and spiritualist views dovetail.

In our study of virtual inputs, we have also noted that there is a continuum of neural death, within which we observe hallucination in the forms of both straightforward duplication of environmental features as well as novel or hybridized forms of experience. Death may be reversible as in the case of sleep, when dominant memory traces relax, or sudden and traumatic, as in the metabolic death of the organism. Ironically, the ultimate death experience yields the most creative notions within our existence.

We need to examine the significance of this creative phenomenon, wide-eyed and on guard for the inevitable death-denial processes

(Becker, 1973) that critics of this theory will offer. At first, the paradigm shift may be intimidating, with its very reductionist approach, robbing us of our inherited and sheltering notion of "other worlds." It may challenge our concept of "life within life" — that is, our concept of free will and the self proclaimed majesty of the human mind — as well as our concept of "life beyond life."

Realize, however, that for all intents, the dying individual may experience forever, through the cascading death of nearly 100 billion brain cells (and an unfathomable number of interconnections) within an instant, resulting in a torrent of experience tantamount to eternity. It is as though life is going on for the trauma victim. However, the timeline at death has only a moment's projection on the timeline we call "real." Just as a beam of light projected along an x axis in three-dimensional space may have vanishingly small projections on the orthogonal y and z axes, so too the experience of time at the point of death may have a vanishingly small projection on the orthogonal earthly timeline, giving rise to the emergence of an "alternative dimension" analogy in death. Perhaps this is a more salable notion in a culture steeped in the current excitement of "excursion to other dimensions" and black holes. This, I maintain, is the dimension anticipated, plausibly developed, and it is the basis of a new kind of hope. It is a vehicle for the survival of our consciousness for eons, and an escape from death.

The Creative Alternative to Death

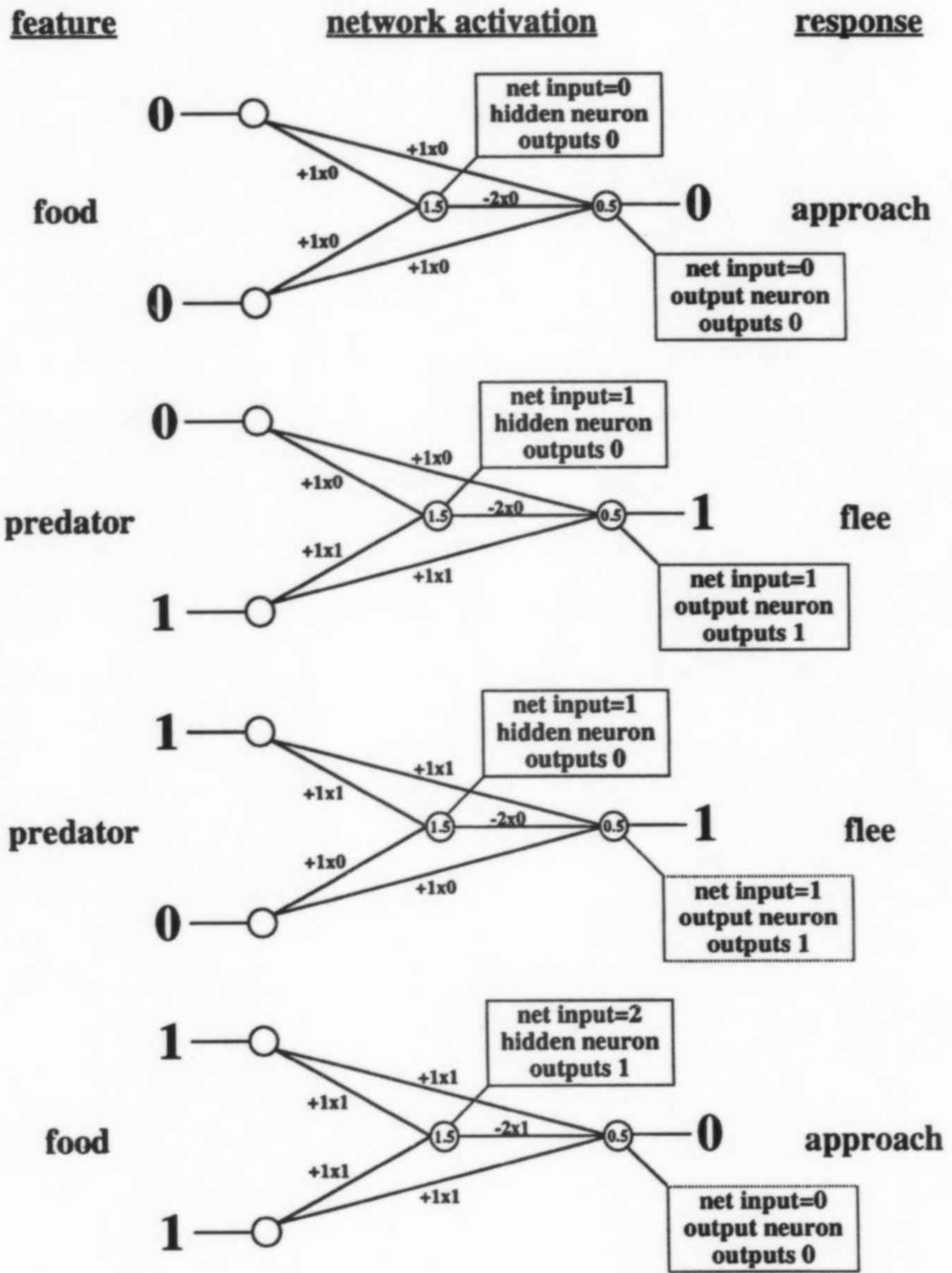
How might immortality be possible? We must come to the realization that protoplasmic and machine evolution are one and the same. We must at least momentarily abandon our distinction between what is "living" and that which is inanimate and come to an appreciation of the connection between biology and its mathematical simulation. What is "alive" is not really defined. This sometimes useful distinction has to do with a group of associations with things we can eat, be eaten by, court with, converse with, and so on. My prediction is that developments are just around the corner giving machines these statuses and that the concept of virtual inputs, creative visions from apparently nowhere, will become the basis of a conscious intellect that will quickly surpass the grasping mentality of apes. We shall merge with them, living the centuries out until weary of the very notion of existence. This immortality will not be achieved until our

world modeling becomes self-consistent and devoid of delusion. Then, and only then, can our dreams show us the way. In this way, our foremost predator, death, can be defeated.

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Appendix: Network Activations for All Four Environmental Features (CNS Memory Traces)



Describing the Light: Attribution Theory as an Explanation of the Near-Death Experience

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ABSTRACT: Attribution theory — which states that by offering causal explanations, individuals attempt to answer questions of “why?” — focuses on how information is used to create causal inferences and answer causal questions. The finding that near-death experiencers rarely describe unknown events, characters, or objects suggests that NDErs make attributions to answer why these experiences occurred. Examining various descriptions of NDEs demonstrates how attribution theory explains individuals descriptions of their NDEs.

This is the first of a three part study exploring the phenomenon of causal and semantic attribution in the near-death experience (NDE). The purposes of these studies are to review the nature and function of attribution in the causal schema of the NDE, to examine the relationship between causal attribution and the belief system of the experiencer (NDEr) as revealed in the verbal accounts of NDEs, and to study the influence of causal attribution on the aftereffects of the NDE.

Previous studies have analyzed the factors underlying the NDE principally from the examination of anecdotal accounts (Gabbard and

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Twemlow, 1991; Irwin and Bramwell, 1988; Ross and Pollio, 1991; Sutherland, 1990). To date, no theory-based research has been directed toward the analysis of the causal elements. Some researchers have discussed a variety of paradigms (for example, Roberts and Owen, 1988), but these perspectives have not resulted in confirmatory investigations. We propose to approach the study of the factors underlying the NDE through the application of models of semantic and causal attribution.

An attribution is the assignment of single or multiple causes for behavior. Harold Kelley (1973) explained:

Attribution theory is a theory about how people make causal explanations, about how they answer questions beginning with "why?" It deals with the information they use in making causal inferences, and with what they do with this information to answer causal questions. (p. 107)

Attributions are assigned as a result of either social or self perceptions. Of these two perceptual processes, it is self perception that we believe is relevant to the NDE. Kelley (1973) further explained that these perceptual processes are related to one's *psychological epistemology*: "This has to do with the processes by which man 'knows' his world and, more importantly, *knows that he knows*, that is, has a sense that his beliefs and judgments are veridical" (p. 107).

Subjective Validity of the Near-Death Experience

The phenomenon of subjective validity will be examined further in the third part of this study of the attributions of NDEs. We will, however, review the concept in the following section because of its relevance to the types of attributions considered in this study.

According to Kelley (1973), attribution validity deals with a particular aspect of self-knowledge. As an NDE cannot be verified by second party observation, it is a subjective phenomenon. Validity is established on the basis of an examination of one's self-knowledge. How then does the NDEr know that his or her perceptions, judgments, and evaluations are correct or true?

Kelley (1973) has suggested that the question can be answered when a person can confidently "make an entity attribution for a perception, judgment, or valuation" (p. 112).

I know that my response to a particular stimulus is a *valid* one if (a) my response is associated *distinctively* with the stimulus; (b) my response is similar to those made by other persons to the same stimulus (there is *consensus*), and (c) my response is *consistent* over time — on successive exposures to the stimulus and as I interact with it by means of different sensory and conceptual modalities. (p. 112)

It can be readily seen that attributions associated with transpersonal experiences are not equivalent to those found in prior life experiences. However, the fact that the attributions found in NDEs are closely associated with the elements in the NDErs' prior lives provide the basis for establishing NDErs' confidence in the validity of their experiences. Craig Lundahi and Harold Widdison (1993) provided some support for this argument. In reviewing the social statuses of NDErs in the "City of Light," they described social activities as closely paralleling those found on earth, such as preparing for future events, gaining knowledge, assisting others, teaching, developing musical skills, researching family records, and performing routine and major tasks. We contend that these represent a continuity of earthly activities and values and would therefore provide validation of the NDErs' belief in eternal life. In the following discussion, we will outline the rationale for the establishment of subjective validity of the NDE.

First, confidence in the validity of an experience is reinforced through the sharing of testimonies with others who have had similar experiences. Consensus is the affirmation of the validity of observation by others who have experienced the same phenomenon. "*Consensus* has been shown in many experiments to afford a basis for confidence in one's judgment" (Kelley, 1973, p. 112). Second, temporal consistency, the repetition of an experience over a period of time, contributes to the subjective validity of the NDE. This is because events that are substantiated over a period of time provide confirmation of and confidence in one's attributional judgment. However, the study of NDEs through repeated observation is not possible.

Third, the extent to which an effect (response) can be associated distinctively with a specific stimulus is a critical test of subjective validity. It should be noted that the accuracy of an attribution is dependent upon gauging the objective qualities of what the person experienced; it is made on the basis of the attribution of certain properties to an object (Heider, 1958, p.169).

Fourth, it must be recognized that a given effect may be interpreted in a number of ways. To make certain that there is a valid attribution, the NDEr will discount the least probable cause. We apply the discounting principle cited by Kelley (1973) to support this argument: "*The role of a given cause in producing a given effect is discounted if other plausible causes are also present*" (p. 113).

Fifth, when causal attributions derived from NDEs are associated with an explicitly communicated purpose, their effects can be demonstrated in a post near-death context (distinctiveness). They can then be validated in functional existence (consistency) and the NDEr can then say, "I know that I know."

Causal Schema

In the analysis of the function of causal attributions the following factors must be considered (see Table 1):

Levels and Sequences

For every behavior, there is an antecedent cause and event relationship. It follows that the lack of a one-to-one correspondence between a given behavior and a single cause or intent makes multiple interpretations inevitable. The NDEr organizes events into a causal schema which may reflect several levels of attribution, each of which may constitute either a primary or secondary causal source. Emergent levels and sequences of causality can be categorized as *single level* (one cause to one effect) or *multiple levels* (several effects to many causes). On the other hand, a given effect (behavior) may or may not be directly related to a given cause; it may have more than one causal source. Therefore, for the purpose of this and subsequent research, the causal sequences are classified as *direct* (no intervening sources) or *indirect* (one or more intervening sources).

Context

The context provides the environment within which causal attributions occur. These are defined as *intrapersonal* (within the experi-

Table 1
Matrix of Causal Attributional Classification

Attribution Function	Verbal Cues	Levels	Sequences	Causal Source	Context
Purpose and intention	"can" or "try"	single	direct or indirect	internal	intrapersonal, interpersonal, or social
Past condition: responsibility for success, failure; positive, negative experiences; and harm, benefit	"could," "belongs to," "by reason of," "as a result of," or "because"	single or multiple	direct or indirect	internal or external	intrapersonal, social, or physical
Future actions: need, desire, intent, personal consequences, permission	"in order to," "provided that," "for the reason," or "must"	single or multiple	direct	internal	intrapersonal, interpersonal, or social
Demands for change of condition: personal necessity; non-necessity; or forbiddance	"could," "should" "must," or "ought"	single	direct	internal	intrapersonal or interpersonal

encer), *interpersonal* (between persons), *social* (within a social group or organization), or *physical* (the nonpersonal environment or setting).

Interpreting the Meaning of the NDE

Resolution of Ambiguity

The principle task of the NDEr in interpreting the meaning of the NDE is to resolve the ambiguities inherent in the situation. We use the following excerpt from an NDE account to illustrate the problem of resolving ambiguity. In this account, the NDEr is using an attribution of reason to understand the intent of her deceased aunt's appearance:

I saw my aunt, dressed in a red britches with a long red scarf around her neck. She was riding a white horse through a field of flowers in the direction of a beautiful old house, and I later wondered why she appeared to me in this manner!

The problem in interpreting the meaning of the scene is to establish a hierarchy of primary, secondary, and tertiary causes. Why was the aunt dressed this way? Can the appearance of her clothing be attributed to the riding of the horse, or must it be attributed to causes antecedent to the riding of the horse? In the interview that followed, these questions were asked:

Q: How did you know it was your aunt?

A: I remember the red scarf well; she always wore it when she rode.

Q: Why was she going to the house?

A: I don't know, except that the house reminded me of our family farm.

Q: What is the meaning of it?

A: I think she was trying to tell me to go back to my roots.

Q: Was that her intent?

A: Yes!

Identification of Causal Sources

Interpretation of meaning entails finding a primary cause of the event. Where does it reside? It is important to consider causality

from the standpoint of whether the cause resides within the individual or whether it is external to the self. In the following account, the identification of the hierarchy for primary, secondary, and tertiary causes of the experience is not clear. Is the event due to a direct intervention from the Lord, to the near-death experience, to the way the experiencer had felt about death, or to a combination of causes?

But since this experience, I don't fear death. Those feelings vanished. I don't feel bad at funerals anymore. I kind of rejoice in them, because I know what the dead person has been through. I believe that the Lord may have sent this experience to me because of the way I felt about death. (Moody, 1975, p. 95)

Causal Interpretation

Events do not just present themselves to the NDEr; they are the product of the NDEr's perception of reality (Schnaper and Panitz, 1990). The interpreter must ask, "What is the most probable cause?" The answer is typically derived from the subject's background of experience, systems of beliefs and values, and cultural conditioning.

Context Reduction

In interpreting the meaning of the NDE, it is important to identify the specific context within which the event occurred. We employ the technique of context reduction, a process wherein alternative referents (contexts) are reduced to the single most relevant one for the conveyance of meaning. This facilitates communicative accuracy. This process is demonstrated in the experiencer's encounter with the *mystical presence of light* referred to in Greyson's (1983) NDE Scale.

The mystical presence of light becomes a *personage of light* when the NDEr (that is, the attributor) places the presence in an interpersonal context (that is, when there is an exchange of information with the mystical presence).

When the semantic attributes of "love", "compassion" and "omniscience" are assigned to the personage of light during an interpersonal exchange, the personage of light is transposed into a personage of *love and light*.

Third, when perception of the personage of love and light is placed within the context of the NDEr's system of religious belief — if he or she is a Christian — and cultural frame of reference, the meaning

is narrowed to a denotative set of attributes and the "personage" is transposed into the "Light of Christ."

Finally, when the Light of Christ is interpreted by the NDEr as possessing the totality of "Christ-like" attributes, the semantic label is applied and the personage *becomes* Jesus Christ.

Relationship Between Code and the Belief System

We have postulated that the belief system is a significant determinant of what is coded by the NDEr, and will therefore shape interpretation of the NDE. By code, we are referring to the verbal description of the account, including language usage and message content.

Brent Top and Wendy Top (1993) have suggested, however, that cultural differences are also an important determinant of how experiences are interpreted. They suggested that "near-death researchers are virtually unanimous in believing that the experiences are definitely shaded by cultural interpretation" (p. 165). However, the argument that belief systems are for the most part culturally determined may only partially account for differences in semantic and causal attribution. For example, in the following account the cultural determinant is somewhat obscure and the source of the belief system is not readily identifiable through the code system:

Q: You saw your pet in the heavenly place?

A: Yes, I saw our dog Sandy!

Q: By dog, do you mean pet?

A: Yes, pets are human beings to me.

Q: Why did *he* greet you and not some other pet?

A: Because he thinks like a human!

Q: Is this why you saw your pet, because he has a human-like spirit?

A: Of course! How else could he get there?

Language Usage

The interpretation of meaning is effected by the symbols used in codifying the experience. Language symbols represent concepts or classes of objects and functions comprising the things that are talked

about in the external world. In the following statement, "I saw some spires in the distance. It reminded me of a church steeple, and I concluded that I must be approaching a church of some sort," the semantic concept of "churchness" is attributed to the object seen. But the conclusion that the building was a church is based upon an inferential attribution.

Attributional Analysis

For the purpose of this study, attributions are classified as *causal* (effect) and *semantic* (affect). Furthermore, in this study, we make a distinction between attributions to *personal* (internal) and *environmental* (external) sources, and the assignment of affective significance (quality) to an object, event or person. Fritz Heider (1958) stated:

In distinguishing between the attribution of an event to a direct causal source, and the attribution of a positive or negative quality to an experience, we do not mean that causal attribution and the affective significance do not influence each other. Actually, they are highly interdependent. (p. 170)

Events and conditions may be evaluated by the NDEr in terms of both their direct causal and affective significance. It is for this reason that both types of attributions may be expressed in the same verbal statement. For example, "My mother's angelic appearance [semantic] together with what she told me [causal] convinced me that it was not time for me to go" contains both types of attributions. In the following discussion we will review how attributions function in interpreting the meanings of NDEs. The examples noted are derived from both published accounts of NDEs and interviews with NDErs.

Causal Attribution

Purpose and Intention. One of the most important aspects of attribution is *purposeful action*. Heider (1958) asserted that an action is perceived as purposeful when the words "can" and "try" are used to describe intention. In the example, "My mother said: 'I cannot keep you in the heavenly realm, for it is not your time to die,'" the con-

cepts of "can" (in this example, "cannot") and an intention to "try" ("to keep you in the heavenly realm") imply purposeful action. It should be noted that when an explicit purpose is lacking, there is no direct causal attribution to conditions and persons. This is demonstrated in the following NDEr's account of the aftereffects of her NDE:

Sometimes life seems like a confusion [sic] string of events making no sense whatsoever. . . . My growing years, my marriage, my career all contained troubling episodes. These episodes seemed without connection. I always wondered why . . . why did these things happen as they did? . . . Were people "meant" to learn or see connections from their experiences? (Bubulka, 1992, p. 114)

In the following NDE account, the NDEr is grasping for a causal schema to understand the intentions of the persons encountered in the NDE. This is done by abstracting the relevant features of the situation:

I saw a group of men sitting around a table. They must have been the Judges of Israel, for there were twelve of them and they looked very wise. I concluded that they were there to judge me [intention] for [the reason that] the way I lived my life. Yet they seemed to be judging me [attribution to a person] with love and understanding.

Past Condition. Attributions link events to underlying conditions. To trace the cause and effect relationship, the NDEr must consider where the onus of responsibility lies. Is the success/failure of an action, the quality of an experience (positive and negative), or the harm/benefit attributable to environmental (external) or personal (internal) sources? To what or whom must responsibility be attributed? We use Heider's concept of unit formation to delineate this process:

In the case of *can*, a unit is formed between the possibility of success or failure and person or environment. If the success *belongs* to a person, then the person is felt to be responsible for it; if it belongs to the environment, then the environment is held accountable. (1958, p. 89)

Was the boy able to climb the mountain because he was an expert mountain climber, or because the mountain was not very steep? In Russell Noyes's account of the aftereffects of the NDE, attributions may be assigned to both personal and environmental sources:

As a result of their near death experiences [environmental sources], many reported greater aliveness . . . in terms of invulnerability and of special importance or destiny. In addition, some described having received the special favor of God [personal source]. (1982, p. 263)

In the following NDE account, the change in attitude and behavior may be attributable to a combination of environmental and personal causes:

And it seems that the understanding I have of things now is so much better. I feel like this is because of what happened to me, because of the places I went and the things I saw in this experience. (Moody, 1975, p. 90)

In George Ritchie's denial of responsibility for his failure to see Jesus, he attributed the condition to unknown causal sources:

And suddenly I realized that there was a common denominator to all these scenes. . . . Whether it was a physical appetite, an earthly concern, an absorption with self — whatever got in the way of His Light created the separation into which we stopped at death. (Ritchie and Sherrill, 1978, p. 67)

Future Actions. Causal attribution may be attributed to a future action including need, future condition, desire, permission and forbiddance: "I was told that I had to live my life in a loving way in order to return to the heavenly realm"; or "He pleaded to understand what he needed to do in order to see his father again." Raymond Moody's (1975) account of the Venerable Bede's (673 to 735 A.D.) "return from the dead" story provides an explicit example of the attributions of necessity, demand and future condition. Bede's guide through the spirit world told him he must return:

"You must now return to your body and live among men once more; but, if you will weigh your actions with greater care and study to keep your words and ways virtuous and simple, then when you die, you too will win a home among the happy spirits that you see. . . ." When he told me this, I was most reluctant to return to my body; for I was entranced by the pleasantness and beauty of the place I could see and the company that I saw there. (Moody, 1977, p. 67)

To whom does one attribute a voluntary or involuntary decision? In the following statement, responsibility for an action is attributed to authority figures: "The judges told me that they had given me

permission to visit the garden. It is what I wanted to do, and I was grateful to them."

Demands for Change of Condition. Direct or indirect demands are indicated in verbal accounts by the use of the grammatical forms of "ought," "should," and "must" to express changes of condition, necessity, non-necessity, and forbiddance.

If the statement "You ought to return to your family" is answered by the word "Why?", an underlying attribution of demand is made to other personal or nonpersonal sources. In the statement "You should go back because it isn't your time to die," a direct attribution is made. In this example, a demand related to causal conditions is shown by the use of the grammatical forms "for," "because," and "why."

However, in the statement "I concluded that my husband wanted me to come back inasmuch as he would have to raise the children alone," an attribution is made indirectly to the *self*; the self is a secondary source of the conclusion.

The use of the verb form "must" will generate both positive and negative attributions. In the statement "My guardian angel told me that I must return to the earth because I was needed," the angel assigns an attribution of necessity to a need, but in the statement "You must not see the man when you return to earth because he is trying to destroy you," an attribution of forbiddance is assigned. On the other hand, in the statement "You need not return at once, because you are not needed," an attribution of nonnecessity is generated.

Semantic Attribution

Semantic attribution is the process wherein the subject assigns meaning to perceptions and experiences through the use of linguistic symbols (see Table 2). The term *semantics* refers to the relationship between an external world of objects, events, and the language system used to describe them.

The study of semantics is traditionally approached from the standpoint of meaning. Words are labels for objects and concepts existent in the nonlinguistic world. Thus semantic attribution must consider word and sentence meaning, including semantic functions and relations, and an analysis of the speech act itself.

Attributions of Affective Significance

The affective significance of an event relates to dynamics underlying the rationalization of self-behavior and the assignment of responsibility for outcomes. Affective or connotative meanings are derivatives of affective attributions.

Affective Belief. The self is the causal source of an affective belief. The function of this attribution is to rationalize conditions, circumstances, and self-behavior.

Heider summarized the importance of belief as follows: "It is what he [the NDEr] believes to be true that directly influences his reaction, the actuality having psychological significance only indirectly if at all" (1958, p. 173). This is evident in the following account:

I believed that I [attribution to the self] was surrounded by evil beings and I knew that I had to oppose them because I could see into their hearts and could understand their motives. I concluded that my transcendent wisdom was not appreciated because my detractors believed only what they were told.

Changes in belief systems are attributable more to changes occurring within the self than to external sources. Edward Hoffman's recorded testimony from a 62-year-old woman demonstrates that subjective attributions may occur as a function of the changes in affective feeling state within the self. In this testimony, the NDEr attributed God's presence to a feeling of joy [primary attribution] and her resultant belief in God to the manifestation of his presence [secondary attribution] within her:

One spring day, when I was five years old, I was visiting my grandmother and playing in her backyard. She had a lovely rose garden that she carefully tended. I sat on the grass and played near it, and then decided to walk over and look more closely at the roses.

As I did so, I suddenly felt God's presence in an almost overpowering way. The trigger could partly have been the sheer beauty of the roses [attribution of pleasure and feeling], but something else must have lifted my being into a new realm of awareness [attribution to an inanimate object]. The sensation probably lasted only a few minutes at most. But as a result I became a lifelong believer in God. (Hoffman, 1992, p. 46)

Connotation. Connotation generates subjective meanings and definitions. These may be described in terms of how the attributor in-

Table 2
Matrix of Semantic Attributional Classification

Type	Attribute of	Assign- ment to	Attributional Function
Affective significance: subjective assignment of meaning to events and experiences; rationalization of self-behaviors through the use of affective attributions	Affective belief	The self	Rationalization of self-behaviors; modifications in the structure on the basis of subjective belief
	Connotation	The self or the environment	Assignment of subjective meaning and definitions to objects, concepts, and experiences
	Feeling states	The self or another person	Changes in feeling states attributed to the self and others' feelings of sorrow, joy, and pleasure
Valuative attributions: placement of qualitative and quantitative constraints on objects, persons, and conditions	Positive and negative value	Objects, conditions, and persons	Acceptance or rejection of persons or objects based upon comparisons of qualitative value; assigns positive or negative attributes
	Absolute value	Objects, conditions, and persons	Assigns unique qualitative and quantitative attributes to persons, objects, or conditions
	Comparative value	Objects, conditions, and persons	Assigns meaning to others' comparative attributes; typically not present in prior or past experiences

interprets an experience. The following account demonstrates how a stereotypical definition emerges as a function of belief and cultural conditioning. In this account, the identity of a personage — Jesus Christ — is attributed to nonverbal cues, likeness to a well known stereotypical portrayal of Jesus Christ:

An oncoming vehicle slid over three lanes to hit us head on. . . I looked down upon the accident scene. . . . A hand touched mine, and I turned to see where the peace and serenity and blissful feeling was coming from . . . and there was Jesus Christ — I mean the way he is made out to be in all the paintings. (Greyson and Bush, 1992, p. 105)

Feeling States. “Why do I feel joy?” “What or who is responsible?” When a person experiences joy in interacting with an object, and sadness when the object is removed, the object becomes the cause of the enjoyment [attribution to an object]. The principle holds true when an attribution is made to the condition or a person, or an environment and its effect is often generalized to other objects, persons, or conditions. Attributions of feeling and the generalization process that often follows is illustrated in the following excerpt from the testimony of an NDEr:

A feeling of inexpressible joy emanated from the personage of light and I was filled with pleasure just being in His presence. But when he left me, I no longer felt the great exaltation, and my joy was gone. Now, after my NDE, I recapture some of that feeling when I see a picture of Christ or look out on a beautiful landscape. I know His presence is everywhere.

Valuative Attributions

Valuative attributions place qualitative and quantitative constraints on actions, objects, conditions, and concepts. In the following NDE account, valuative constraints are attributed to the NDEr's account of a visit to a garden:

The water was praising god for its life and joy. The overall effect seemed beyond the ability of any symphony or composer here. In comparison, our best music here would sound like a child playing a tin drum. We simply don't have the capacity to comprehend the vastness and strength of the music there, let alone begin to create it. . . . That one experience, just the glimmer of a grander joy . . .

in being one with everything else, was so great that I will cherish it forever. (Eadie and Taylor, 1993, pp. 80-81)

Valuative semantic attributions are also generated through the use of descriptors that modify objects, conditions, and concepts: "I will never forget the rose that I was. That one experience, just a glimmer of the grander joy that is available in the spirit world, in being one with everything else, was so great that I will cherish it forever" (Eadie and Taylor, 1993, p. 81).

Positive and Negative Value. Positive and negative value occur when a quality of an object, condition, or person is accepted or rejected. Consider the expression "I did not like the personage who met me in my dream." In that statement, a negative value attribution is made to a person. In the statement "I was surrounded by absolute truth," a positive value is attributed to the condition encompassing the NDEr.

Absolute Value. Finally, valuative semantic attributions are used to assign unique qualitative and quantitative attributes to persons, objects, and conditions. In the following account, the reader is asked to assume that a comparative judgment has been made: "My joy was absolutely full again! I felt God in the plant, in me, his love pouring into us. We were all one!" (Eadie and Taylor, 1933, p. 81). In the statement "I was surrounded by perfect love," a superlative attribution is used to describe a quality that could not be surpassed.

Comparative Value. A comparative value attribution assigns properties to objects, persons, and conditions assumed not to be present in prior existence. This attributional process is delineated in the following testimony: "The flowers were more beautiful than any I had seen on earth. I concluded that they were in the similitude of God's Love; they were the manifestation of purity as opposed to sin, and joy as opposed to sorrow."

Summary

We argue in this article that attribution theory is a worthwhile explanation for the descriptions of near-death phenomena. Attribution theory demonstrates how individuals cogitate the meaning of the NDE, and just as important, how these cogitations are communicated by the NDEr to other people.

Two matrices are offered representing the relevant categories of causal and semantic attributions, respectively. In short, these matri-

ces provide an overview of many levels, contexts, and sources of the attribution process. We have attempted to simplify, as much as possible, an extremely complex subject matter. To test whether these matrices have any external validity, we are currently conducting a series of studies that we expect to complete in the near future.

Numerous books and journal articles have been written on NDEs over the last several years, yet much of this literature is atheoretical in nature. By focusing on theory-based near-death research, the understanding of these phenomena will be enriched far beyond the anecdotal descriptions currently being published. This theory of attributing causality and semantic meaning to events, characters, and objects should provide heuristic value to interested individuals seeking an explanation of the NDE.

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Variations from the Prototypic Near-Death Experience: The "Individually Tailored" Hypothesis

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ABSTRACT: A nonrandom sample of firsthand accounts of near-death experience (NDEs) revealed a number of variations from the prototypic NDE description, including feeling judged during a life review, seeing a nondeceased friend in the tunnel, experiencing no pain upon returning to the physical body, and crossing a barrier before being sent back. The prototypic NDE model is useful in giving an overview of NDEs, but ultimately the theoretical framework of near-death studies will have to accommodate these and other variations from the prototype. The "individually tailored" hypothesis, put forth to account for many of these variations, states that each NDEr receives what he or she needs during the NDE in a way that NDEr is able to accept.

A description of the prototypic near-death experience (NDE) frequently appears in the literature. For example, Cherie Sutherland wrote (1992, p. 3):

The near-death episode itself is typically characterised by a feeling of peace, an out-of-body experience, the sensation of travelling very quickly through a dark tunnel, generally towards a light, an encounter with the spirits of deceased relatives or friends or a 'Being of Light,' an instantaneous life-review, and for some, entrance into a world of light.

Sutherland's prototype is similar to the one proposed by Kenneth Ring (1980). Margot Grey's comparative study of near-death experi-

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ences in the United Kingdom yielded a model that is also similar to the 5-stage model presented by Ring in 1980. Grey wrote (1985, p. 32): "... in general I think the model I adopted basically resembles the one used by Dr. Ring."

Ring himself noted in his second NDE book, *Heading Toward Omega* (1984), that the narration of the typical NDE given in his earlier book, *Life at Death* (1980), on the whole "holds up very well" (1984, p. 38). He credited Raymond Moody with publishing the earliest version of this prototypic NDE in *Life After Life* (1975), in which Moody had written (pp. 21-22) that the NDEr

begins to hear an uncomfortable noise, a loud ringing or buzzing, and at the same time feels himself moving very rapidly through a long dark tunnel. . . . [A] being of light [helps] him evaluate his life . . . by showing him a panoramic, instantaneous playback of the major events of his life. At some point he finds himself approaching some sort of barrier or border, apparently representing the limit between earthly life and the next life. . . . He is overwhelmed by intense feelings of joy, love, and peace . . . [and] somehow reunites with his physical body.

The prototypic description of an NDE can also be found commonly in the popular literature and on television programs devoted to near-death experiences. In the many NDE talks I have given, I have invariably presented the same pattern described by the above authors.

Yet as I and all of the above researchers have noted, many variations from this model can be found. And it is to these variations that the remainder of this paper will be devoted, in an effort to expand the model to accommodate more completely events described to us by NDErs.

NDE findings, especially veridical out-of-body experiences (Ring and Lawrence, 1993), present the world of science with anomalous data, data that cannot be accommodated easily by its present theories. Near-death researchers have "held up" these anomalous findings for the scrutiny of both the scientific and medical communities. In the same tradition, "holding up" variations from the prototypic NDE allows us to continue the paradigm shift undertaken since the publication of *Life After Life* (Moody, 1975), and save us from practicing what the historian of science Thomas Kuhn (1962) called "normal

science." That is to say, it prevents us from being limited by the parameters established by the prototypic NDE model. It does not allow the prototype to blind us to the myriad variations from the NDE model.

As Ring cautioned, "This prototypical summary creates the risk of some distortion and idealization of the experience" (1980, p. 101). By focusing on the variations from the prototype, the attempt here is to minimize the distortion and to build a model that is more congruent with all of the NDE reportings.

A Nonrandom Sample

During my recent sabbatical I encountered 11 people who had had an NDE and one who had had a series of six out-of-body experiences (OBEs) following a traumatic incident. Six of these experiencers were female and six were male.

In addition to these 12 people, I also heard secondhand the NDEs of three more individuals. One of these NDErs had recently died. Her husband and adult daughter attended my NDE class and told me about the two NDEs the woman had had, one at age 9 and the other at about age 47. Another secondhand report came from the grandmother and the mother of a girl who was born 3 months prematurely and was almost 4 years old at the time I met with the grandmother. The third secondhand report came from one of the NDErs in my nonrandom sample, who said that while he was hospitalized at a time concurrent with his own NDE, a man two beds away from him told him of a "hellish" NDE he had just gone through. The first man had asked the second why he had been screaming a short time before, and was then told about the hell-like NDE.

The age range of the firsthand reporters at the time of their NDEs was from about age 5 or 6 to age 60. Melissa, who was born 3 months prematurely, apparently had her NDE while she was still in the incubator following her premature birth; this case is similar to the one reported previously by Barbara Walker and me, in which our respondent believed she had had an NDE at birth (Serdahely and Walker, 1990).

Variations from the Prototype

Distressing NDEs

Four of these individuals experienced their NDEs as unpleasant. Three of them said it was "frightening," "scary," and "unpleasant," and that they experienced fear or were "afraid" during their NDE. One of the secondhand reports described a 9 year old girl being frightened when she went downward in a dark, black tunnel to a golden, loving light. None of these four NDErs described any "hellish" imagery.

These four cases fit the most common category of distressing NDE as outlined by Bruce Greyson and Nancy Evans Bush (1992). Presumably, all four were having a version of the prototypic near-death experience as described by Sutherland above. But instead of finding it pleasant and peaceful, they found it frightening and scary. In the secondhand account, because the 9 year old girl was traveling downward and had been taught that hell was down, she feared she was going to hell, although she was said to have later seen a golden, loving light as her NDE continued to unfold.

Unlike the above four NDErs, two persons in my nonrandom sample experienced hellish imagery. One of the six OBEs of a woman respondent was hell-like with "ugly gargoyles" and the "devil." (This same woman had a subsequent OBE that filled her with love and peace.)

A second person from my sample of secondhand accounts was said to have changed after his hellish NDE from being a "jerk" to becoming a "nice guy." While the transformative nature of a hellish NDE was alluded to by Maurice Rawlings (1993), it was never as fully nor as clearly explicated as it could be.

Skipping a Stage

Four NDErs had no recollection of the OBE stage, the second stage in the typology of Ring (1980) and Grey (1985). They reported they went immediately into a tunnel on the way to the light.

Two had no recollection of a tunnel, the third stage in Ring's and Grey's typology, even though they had a light experience. They found themselves out of their bodies viewing the scene below them and then proceeded to have a light experience. One of these two persons

had a flashforward during her light experience; the other, who had multiple OBEs, went from the out-of-body stage into the light on at least three occasions.

Tunnels

A number of variations from the prototypic tunnel were reported by my nonrandom sample. One person experienced a "clockwise spinning vortex" of blacks, whites, and grays; one reported an "all gray whirlpool"; one said the tunnel was like a "windsock," like a "slinky covered with nylon"; another said the tunnel was not solid but "net-like," like a "spider web"; and still another reported many side tunnels coming off the main tunnel, through which he and his two deceased grandfathers were traveling. Deceased people came out of the side tunnels to greet this NDEr.

One person went through a mist or a fog (and not a dark void or tunnel) to get to the light, and another passed through the hospital wall into a fog or into a gray, cloudy mist before encountering the main tunnel with the multiple side tunnels.

One of the female NDErs saw a *living* female friend in her "windsock" tunnel. The friend told her to go back to her body. It is rare to hear of a living friend or relative appearing during a near-death experience. However, the gender of the comforting spirit is consistent with previous reports of females appearing to women who are victims of sexual abuse and of sexual assault, as this woman was (Serdahely, 1987-88, 1992, 1993).

One male respondent said he traveled through a tunnel on a cart or gurney on his way to being greeted by his deceased father, godfather, and coworkers, all of whom beckoned him into the light. I had previously come across an NDEr who indicated he had been transported to the light in an ambulance-like vehicle.

Life Review

Three respondents reported having a life review. The form of these life reviews varied from the prototypic description of a panoramic view with concurrent feelings of empathy in the company of a "being of light."

One person saw portions of his life in "five-minute intervals." Another viewed only the significant events of his life with the exclusion of any "mundane recollections." His life review happened at the very beginning of his NDE, as he was drowning at age 12, whereas life reviews are more commonly reported later in the NDE, in the tunnel or in the world of light.

The woman with multiple OBEs said her life review was like watching prints from a camera. All of the highlights were in chronological order. However, some of the prints were blank, and she was informed that these blank ones represented her future.

A major variation from the prototypic NDE came with the life review of the first NDEr above, who saw his life in "five-minute intervals." This person said he felt *judged* during his life review. The judgment came from four beings of light who were positioned above him, plus an additional being who was in the background or in another room. The common report is that no judgment is felt during the life review. This NDEr also said he was given praise during the review and felt the life review was an opportunity for him to learn from his mistakes.

Music

Four persons heard music or sounds of an ineffable quality. The NDEr who felt judged during his life review heard soft, beautiful, symphonic music later in his near-death experience. Another heard angelic voices. They were not singing words but notes of various modulations and frequencies. The music was melodious, comforting, and soothing.

One woman heard "unearthly" music from which love emanated. The music drew her into the world of light and was sung by a choir. She said that if she had gone into the music, she would not have returned to her body. A fourth NDEr did not hear music as such but a background sound that he said was quite pleasureable.

Messages Given During the NDE

While receiving messages during an NDE is not in itself unusual, three people in this nonrandom sample received unique messages.

The woman whose NDE resulted from a sexual assault was told that it was "all right" (that is, safe) for her to go back to her body.

The man who discovered side tunnels coming off the main tunnel was informed by a deceased grandfather that he needed to return to father two sons. He reported that he and his wife did have two sons after his NDE. And the NDEr who experienced the flashforward, at another point in her NDE, felt a higher power wanted her to have a second child.

Barriers or Being Told to Return

Being told to go back to one's physical body is not an unusual finding in itself. Three of these respondents were so told. One of the three was instructed apparently by a deceased grandmother not to cross a line in front of her. The OBEr *did* cross the line, at which point the grandmother said, "I told you not to cross the line." The older woman "got right in [her] face" and said, "You are to go back now!" This case is reminiscent of that of Tom Sawyer, who said he had been "kicked out of Heaven" (Ring, 1984).

Other respondents encountered barriers besides the above described barrier represented by a line. The woman who was attacked found the distal end of the tunnel blocked by a male figure she identified as her deceased father, whose presence created a barrier to moving into the world of light. And the man who was transported by a cart or gurney through the tunnel found two "concrete doors" closing on the world of light before he could enter it and join his father, godfather, and coworkers.

Finally, it is possible that the unpleasant affective tone of the three NDErs, who were minors at the time of their frightening NDEs (ages 5 or 6, 8, and 12 respectively), served as a barrier to further passage down the tunnel. The frightening, unpleasant quality apparently prevented them from going on and, in effect, sent them back to their bodies.

Pain on Returning to the Physical Body

The usual scenario is for NDErs to be pain-free once they have separated from their bodies, even though they may have been in excruciating pain prior to their NDE, and for the pain to return

once they are back in the body. One of my respondents, who was in intense pain during the delivery of her first child, said she experienced *no pain* upon returning to the body. Prior to having her OBE, she said the pain was "extreme," "tremendous," and "excruciating." After the delivery she said she could see the physician stitching her up but felt no pain from the stitching. Her doctor asked her if she wanted a local anesthetic, but she refused, indicating she did not need it.

Aftereffects

The near-death literature over the past 18 years has described a number of commonly reported aftereffects (Hoffman, 1992; Moody and Perry, 1988; Sutherland, 1992). The people in my nonrandom sample also experienced some of these same aftereffects.

Several respondents said they felt more compassionate now. Two believed they had become more psychic. One indicated her OBEs, especially the one with the life review, alleviated her suicidal ideation. And one person reported having premonitions as a sequela to his NDE.

However, two of my respondents noted atypical aftereffects. One said that after his mother-in-law died, he had a strong sense that he needed to take care of the funeral arrangements for her, which he did. Two weeks after the funeral, he had an apparition of his mother-in-law and her deceased mother. The former thanked him for handling the matters related to the funeral, and the latter said he had been selected for this task because he "had already been among us," that is, among the dead during his NDE. This was the NDEr who had been greeted by deceased persons coming out of the side tunnels as he traveled through the main tunnel with his two deceased grandfathers.

Another respondent also had an unusual aftereffect. After her NDE associated with the difficult delivery of her first child, she had the sense that her higher power wanted her to have a second child, which she did. She, of course, was concerned that the second delivery would be as difficult as the first, but it was not. She said she felt the sense of having a second child may have been a "test of [her] faith."

Analysis

Each of the 11 firsthand NDE reports was analyzed in the following way. Using Bruce Greyson's (1983) four components of the NDE (Cognitive, Affective, Paranormal, and Transcendental), all 11 NDEs were scored for each of the four components. A zero was assigned if the component was absent; a score of 1 was given if the component was present but of a low magnitude or not very prominent in the overall NDE; and a rating of 2 was awarded if the component was a very prominent part of the NDE or of a high magnitude. The respondents in this nonrandom sample were not given Greyson's 16-item questionnaire in part because the scale would not have picked up the unpleasant affective quality reported by three of the respondents nor the various tunnel experiences described above.

Using this rating system, each NDE could be described by a series of 4 numbers. For example, the experience of the woman who, when assaulted, went out of her body into a "windsock" tunnel and then encountered a living female friend would be scored as Cognitive = 1, Affective = 1, Paranormal = 2, Transcendental = 0. The NDE of the man who was judged during his life review was scored as Cognitive = 2, Affective = 0, Paranormal = 0, Transcendental = 1. The woman who at age 5 or 6 felt very frightened by being in a vortex before returning to her body was scored as Cognitive = 0, Affective = 2, Paranormal = 2, Transcendental = 0.

While there are some obvious methodological flaws with analyzing the data in this fashion, nevertheless the analysis does demonstrate the unique and individual nature of these NDEs. Most of the NDEs in this nonrandom sample varied in their mixture and magnitude of the four components, and even those NDEs that received identical ratings had variations from each other that were not picked up by this rating system. For example, for two NDEs with identical ratings on all four components, one went into a vortex while the other remained stationary at its entrance.

Clearly, the NDEs within this nonrandom sample differ from one another and, in a number of instances, vary greatly from many of the other NDEs reported previously.

The "Individually Tailored" Hypothesis

One hypothesis to account for the many variations from the prototype is that each experiencer gets what he or she needs during the NDE in a way that he or she can accept it. The NDE or OBE is tailored specifically to fit the needs of that person. For example, the woman who was sexually assaulted was able to dissociate from the trauma by having an out-of-body experience. The friend she encountered in her experience was a "big woman" who worked for the sheriff's department that had jurisdiction for the county in which the assault took place and appeared to the NDEr in her sheriff's uniform.

If the NDE or OBE is to be a learning experience, it must be configured in a way that best teaches the person what he or she needs to know. The prominent feature of one NDE in this nonrandom sample was the life review in which the individual felt judged. The judgment seems to have taught this NDEr what he needed to learn from mistakes he had previously made; his wife confirmed that he was a more positive person after his NDE. It may not have been spurious that he experienced neither a separation from his physical body nor a tunnel.

It should be noted that the "individually tailored" hypothesis is *not* reductionistic. It is not my assumption here that the specific alteration of the experience is created by the experiencer's brain. Second, the hypothesis is being proposed *only* for those NDEs and OBEs that happen *spontaneously*. The "individually tailored" hypothesis is not put forth to account for instances in which, for example, some people appear to leave their bodies at will and travel during the out-of-body state.

Approximately 60 percent of those who come close to death do not report having had an NDE (Ring, 1984). How are we to explain this percentage? Perhaps some of these 60 percent do not choose to reveal they have had an NDE, and perhaps some may be people who have medication-induced amnesia for their experiences. But perhaps some of those 60 percent may be people who, for whatever reason, do not need an NDE. For example, they may not need a "spiritual awakening" because of the spiritual work they have already done or the non-death-related transpersonal crises they have already endured.

Each person in this nonrandom sample received an experience that was tailored to his or her individual needs. Only one person had an experience that closely resembled the prototypic one. The people in this sample got what they needed in a way they could accept it. Hav-

ing the prototypic experience may not have provided them with whatever they needed at the time, whether it was in terms of experiencing the safety of a friend, the learning gained from being judged in a life review, or the need to return to one's body due to being frightened by the experience.

The "individually tailored" hypothesis accounts for a great deal of the variation in the near-death experiences in this nonrandom sample. It helps to explain the variation in tunnels, the skipping of stages, the command to return or the option to stay, as well as many of the other variations discussed above.

Conclusion

The model of the prototypic NDE is helpful in giving an overview of the pattern that seems to transcend not only cultures but also historical time. However, as the above nonrandom sample demonstrates, many fascinating variations from, and remarkable exceptions to, the classic NDE model are reported by NDErs.

As near-death studies continues to grow, the variations from the model will need to be accounted for by the theoretical framework explaining NDEs. Thomas Kuhn pointed out over thirty years ago that not to take into consideration the anomalous findings is to practice "normal science," that is, "business as usual" within that established discipline (Kuhn, 1962).

The prototypic model can be modified by the "individually tailored" hypothesis, which states that when an NDE or OBE happens spontaneously, the experiencer receives whatever he or she needs at that time in a way that he or she can accept. We can then expect to find some mixture or combination of Greyson's four components for each NDE. The weighting of each component for a given NDE will depend on the needs of the experiencer at the time he or she is having that near-death experience.

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BOOK REVIEW

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Glimpses of Eternity: New Near-Death Experiences Examined, by Arvin S. Gibson. Bountiful, UT: Horizon Publishers, 1992. 322 pp., \$18.95.

The near-death experience (NDE) is gaining increasing scientific respectability and some scientists are beginning to study near-death accounts seriously. Arvin Gibson is one of these individuals. His scientific credentials are impressive and have conditioned him to approach any problem with an open and questioning mind. He has an engineering degree from the University of California at Berkeley and has worked for many years as a nuclear engineer. He has also done postgraduate work at the International School of Nuclear Science and Engineering, the University of California at Los Angeles, General Electric, and the Edison Electric Institute.

Gibson's book follows in the footsteps of the work Craig Lundahl and I published on Mormon NDEs a decade ago (Lundahl and Widdison, 1983a, 1983b). Given the author's stated objectives, it is surprising that he made no attempt to integrate this earlier research into his book. Though *Glimpses of Eternity* is written primarily for a Mormon or Latter Day Saints (LDS) audience, it is a rich source of NDE cases. In reading this book, it appears that the author was attempting to write to both an LDS lay audience and a scientific or professional audience. It is difficult to write for both in the same volume.

Gibson's father had had an NDE in 1922, but it was not until Gibson read books on the NDE by Raymond Moody (1975) and George Ritchie (Ritchie and Sherrill, 1978) on the NDE that his interest in the subject was aroused:

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[D]espite the fact that NDEs are spiritual by their very nature, few authors have attempted to correlate the experience with Christian and Jewish religious teachings and literature. . . .

I wrote this book, then, to fulfill a perceived need by relating new NDEs to LDS scripture and literature. In doing so I hasten to explain that I do not, and cannot, speak for The Church of Jesus Christ of Latter-Day Saints. . . . Rather, I speak as a person who has spent a lifetime as a member of the Church.

The book has two major objectives:

(1) To offer new accounts of NDEs and other analogous experiences, and to present the data as it was received during interviews with the people who had these unusual experiences.

(2) To attempt to provide meaning to and understanding of the new experiences detailed in this book, and some others from the literature, by reviewing the events in the light of LDS scriptures and teachings.

Gibson noted that Duane Crowther had written a book in 1967, eight years before Moody's book, that documented many NDEs of members of the LDS Church over many years. Crowther attempted to correlate these NDEs with Mormon doctrine. His NDEs tended to be abstracted segments of much longer accounts, as are those of many NDE authors. Gibson, on the other hand, included complete accounts as reported to him without editorializing. In reporting how the research was conducted, Gibson noted:

Three types of research were conducted for this book: 1) seeking and obtaining first-hand (and in some instances second-hand) accounts from individuals who had undergone NDEs; 2) reviewing much of the available literature on NDEs; and 3) reviewing and comparing events from NDEs with LDS scripture and teachings. . . . I screened out, ahead of time, those individuals who did not proceed from an NDE into an out-of-body, or as minimum, an unusual spiritual experience.

In soliciting candidates to interview, no attempt was made to screen for religious or non-religious beliefs. The only criterion that had to be met was that the candidate had undergone some type of NDE which led to an out-of-body or related spiritual event. By reason of the location of the interviews — the Greater Salt Lake City region — most of those interviewed (71%) professed allegiance to The Church of Jesus Christ of Latter-Day Saint (Mormon Church).

All the interviews were taped, later typed, and then forwarded in draft form to the respondent. The respondents then made any corrections that they felt were appropriate to make the written accounts correspond precisely to their memory of what happened.

Regardless of the reasons why Gibson wrote this book, it contains detailed unedited first-person accounts that can be used by any other near-death researchers. A growing data base will enable researchers to compare across borders and religions. Groups such as the Mormons represent a gold mine for near-death research because they encourage the recording of significant events that occur in the lives of their members.

Mormon accounts of their experience with the "other side" were analyzed previously by Crowther (1967). Though his intention was to demonstrate that official Mormon theology was supported by near-death experiences, the accounts are detailed enough that they can be examined and evaluated by contemporary researchers. I am not aware of any other systematic attempt to collect, preserve, and make detailed NDE accounts available to researchers. Occasionally accounts are published in various professional journals, usually to make some point because of some unique aspect. These accounts are intriguing, but only hint at the vast untapped potential that exists. Because the NDE meshes so closely with Mormon theology, some Mormon authors collect them as supportive evidence of their religious beliefs.

Regardless of why books describing NDEs are written, they contribute to a growing body of data that is then available for examination and evaluation by other near-death researchers. The attempt to use NDE accounts as proof of the validity of their unique theological belief, or in more scholarly terms, place them in some theoretical context, is no different from other researchers' attempts to hypothesize how and where they fit in the overall scheme of things, as Kenneth Ring did in *Heading Toward Omega* (1984). It would be interesting and informative to compare and contrast NDE accounts collected from individuals from radically different religious perspectives for their similarities and differences. I am aware of recent books containing accounts of Mormon NDEs written by Crowther (1967), Joseph Heinerman (1978), Michele Sorensen and David Willmore (1988), and Lee Nelson (1988, 1989, 1990).

Glimpses of Eternity, the latest collection of Mormon NDEs, is divided into two major parts. Part I is a verbatim account of all the NDEs. Gibson presents each experience just as it was recounted to him, reserving his analysis until Part II. He clusters the accounts under common themes, such as "Unusual Healings," "A Majestic Being," "Fear Not Death," "The Importance of Children," "Family Ties," "Suicide," "Evil Spirits," "People Meeting People," "Being on Trial,"

and "Personal Revelation." He makes no attempt to measure the depth of the NDE, and in some sections of the book makes no clear distinction between NDEs, out-of-body experiences, and visions.

Part II represents Gibson's attempt to relate these NDEs to the larger body of NDE accounts, to each other, and to Mormon theology. He clusters his analysis according to major elements and common themes discovered by other near-death researchers and in the accounts he collected, such as the light, life's purpose, spirit bodies and physical bodies, the other world, evil spirits, the power of God, judgment and revelation, and deity. Gibson concludes with a discussion of various interpretations of human destiny.

In his analysis, Gibson excerpts from the accounts illustrative examples and relates them to Mormon doctrine. He then looks at the reports of other near-death researchers for similarities. When accounts were encountered that do not fit the "traditional NDE" or his personal beliefs, he reports them anyway, identifying their unique qualities and discussing what they would seem to suggest about near-death phenomena. This is particularly true in his section on evil spirits, the other world, and the power of God.

Most people experiencing an NDE report very positive feelings and experiences, but Gibson discovered that some encountered a Dark Side. While these unpleasant experiences are not totally new, they do contribute to the literature on the subject. One respondent told about seeing "a giant geometric shape in space." This respondent, unlike others, reported that he "did not believe in God or had great doubts about life after death." This report puzzled Gibson in that it did not fit anything he had read in the near-death literature. It was not until he read Phyllis Atwater's account (1988) of one of her experiences that he found any similarities.

One thing that impressed me about Gibson's accounts and other Mormon NDEs is the extensive detail reporting of what the respondents saw and did. In chapter 16, for example, Gibson relates two separate incidents in which individuals experienced what they believed was a trial. They found themselves the subject of a discussion or debate between deceased relatives and others as to whether they should return to this world or stay in the spirit world. The deciding factor was the probability of their actually doing the things it was important for them to accomplish on earth.

Gibson does not argue that the accounts he and others have collected prove there is life after death. But he does show that their features correlate very closely with Mormon religious belief. It would be quite informative if individuals from different religions also collected NDE accounts from their members and reported them in their entirety. This could help researchers study the extent to which religious perceptions impact on the accounts reported.

Glimpses of Eternity represents an objective attempt to look at contemporary NDEs and judge how well they fit existing theoretical or theological models. The accounts are complete enough to allow researchers to do further analysis in areas such as the conditions under which the NDEs occur, the relationship between the circumstances leading up to the NDE and the nature of the NDE, the purpose of the NDE as perceived by the individual NDEr, what the NDE would seem to reveal about what occurs at death, what the afterlife is like, what activities or relationships exist in the afterlife, and the impact that NDEs have on NDErs themselves.

Melvin Morse has attempted to address this last point in his most recent book (Morse and Perry, 1992), and Lundahl and I have analyzed the existing Mormon literature for what the afterlife is like (Widdison and Lundahl, 1993) and for activities and relationships in the afterlife (Lundahl and Widdison, 1993). The other areas of study listed above have been mentioned by various researchers but mainly as side issues. More systematic research is needed to address these points.

George Gallup's poll taken in 1980-81 estimated that at least 8 million Americans have had an NDE (Gallup and Proctor, 1982). If this figure is typical of other nations then the NDE would appear to be a common part of the human experience and, if this is true, then there is no reason why NDEs should not be a subject of serious scientific inquiry. There seems to be no question but that NDEs are real experiences and that they have a significant and permanent effect on those who have them. The scientific community is still not in agreement, however, as to what NDEs are or what they represent. Nevertheless, the overall consistency in the nature and content of NDEs is intriguing and merits the same objective and unbiased scientific inquiry as any other recurring phenomenon.

Glimpses of Eternity poses interesting hypotheses as to what the experience represents and a theological theoretical framework con-

sistent with both Mormon and non-Mormon experiences. It should definitely be added to the library of any student of the near-death experience.

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BOOK REVIEW

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The Little Book of Life and Death, by D. E. Harding. New York, NY: Viking Penguin, 1989. 150 pp., \$7.95.

Major advances in human understanding almost always come from questioning a supposedly obvious truth, and that is why I strongly recommend this book to everyone interested in near-death studies. It calls into question a whole range of common assumptions about life and death, prompting noted thanatologist Ram Dass to proclaim in his Foreword that "after this gift, the literature on dying will never be the same again." And while near-death experiences (NDEs) are touched upon only briefly towards the book's end, they are dealt with from a perspective that differs radically from any of the approaches I've yet seen taken in this Journal, a perspective that I believe could be the clue to significant new discoveries in the field.

Perspective is a topic integral to D. E. Harding's original profession of architecture, in which he graduated from the University of London in the years between the two World Wars; but in his 30s he began to apply the principle of perspectival flexibility to the whole of life in quite radical ways. He became a champion "lateral thinker," offering a fundamental "paradigm shift" in the understanding of human consciousness two decades before the invention of either of those now-overworked and often misunderstood terms. Inevitably, almost no one grasped what he was after when he published his first book, *The Hierarchy of Heaven and Earth*, in England in 1952. I myself could not grasp it then, and wrote him off as just a weird religious propagandist, never dreaming that a quarter century later the book would be republished as a classic by a prestigious American univer-

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sity press (Harding, 1979). I have elsewhere written a full review of that remarkable work (Wren-Lewis, 1991).

In 1961 he tried again, with a much shorter book that attracted attention by its koan-like title, *On Having No Head*; and by then, thanks to the growth of the human potential movement with its demand for new approaches in psychology, a discerning few were ready to pay attention. One such discerning scholar was Huston Smith, doyen of contemporary philosophers of religion, who later wrote a laudatory Introduction to an updated edition (Harding, 1986). I, alas, still could not grasp it.

In the 1970s, Werner Erhard, founder of est, picked out Harding as a visionary thinker of global importance and sponsored a world tour for him, in the wake of Buckminster Fuller; while British historian Anne Bancroft included him alongside such figures as Martin Buber, Teilhard de Chardin, Georges Gurdjieff, Thomas Merton, and Ramana Maharshi in her book, *Twentieth Century Mystics and Sages* (Bancroft, 1976). By the time he came to write *The Little Book of Life and Death* at age 79 — a very personal preparation for his own death, which he then not unnaturally assumed could happen at any time — he enjoyed the rare distinction of having been acclaimed a genius by leading scholars around the world while also being featured in the pop music charts, in “The Douglas Harding Song” performed by the British group The Incredible String Band.

And perhaps that last distinction is the most truly appropriate, for terms like “mystic,” “sage,” and “genius” tend to do him injustice because of their usual associations. His aim has always been *demystification*, and whereas a genius or sage would normally be expected to purvey learning, Harding employs his own very considerable learning to encourage *unlearning* of common, deeply ingrained mental habits that he believes are not just profoundly misleading, but actually life-destroying.

He makes the extraordinary claim that most human anxieties, including fear of death, are not natural and inevitable at all, but the result of completely unnatural limitations imposed on consciousness by social brainwashing, passed on from generation to generation from the dawn of human history. Yet far from being a propagandist for religious or mystical belief, as I used to think, he sees most such belief, including New Age belief in “higher consciousness,” as itself part of the brainwashing, because it accepts ordinary everyday consciousness as a function of individual personality, when in fact sepa-

rate individuality is only a mental assumption, like grid-lines on maps, and not part of real experience at all.

In fact he takes Gautama Buddha's paradigm of separate-consciousness-as-illusion more seriously than most Buddhists have ever done, emphatically denying that liberation from the anxieties and cravings of that illusion requires years of spiritual discipline. The illusion arises, he maintains, simply because we've been trained since infancy to *interpret* our conscious experience, moment by moment, in terms of self-images based on the way other people experience us in social relationships, that is, as erect, talking and thinking animals.

His books, including two new ones produced since his anticipation of dying soon after 80 was proved premature (Harding, 1990, 1992), are constructed around various simple "mental debriefing exercises" to enable readers to sidestep this interpretation process and *really experience their experiences*. The result, he insists, is instant realization that separate individuality is just one special perspective in a consciousness that is literally infinite, not the victim of time but the eternal theater in which time happens. And if taken seriously, this is no mere intellectual intuition but the actual discovery of an unsuspected yet obvious depth/dimension in consciousness itself, which subsumes conflict and fear into equanimity and love.

It is from this standpoint that he views the findings of modern near-death research: he sees both the deep tranquility that characterizes most NDEs themselves, and the positive life changes that usually follow them, as evidence that at the close approach of death societal conditioning loses its grip and consciousness is able to experience its infinite, eternal reality. In other words, he sees the encounter with death as a decisive, albeit somewhat dramatic, unlearning process; and my own ability to appreciate Harding dates precisely from having experienced such an unlearning myself when I nearly died from poisoning in 1983.

That event, which I described in an earlier issue of the Journal (1985), had none of the heavenly visions that commonly claims most attention in NDE accounts; it was, quite simply, an experience of timeless and infinite aliveness, pure absolute consciousness with no "selfness" whatsoever, which focused down into the bodymind perspective called John Wren-Lewis when the doctors resuscitated my brain. Ever since then I've been directly aware that I'm not, and never was, an isolated individual experiencing an alien environment; I am, and always was, Infinite Eternal Aliveness playing something like a game called "John Wren-Lewising."

The terms are abstract and metaphysical, but the awareness itself is so vividly concrete that for the first few months afterwards I was often impelled to put my hand up to the back of my head, feeling for all the world as if the doctors had opened my skull to the dark infinity of space — not just the space of astronomers, which is simply another special perspective, but the infinite aliveness that is the inside story of all possible universes, which Harding calls “a dark which is the brilliance of a thousand suns.” With hindsight, I’m quite surprised I didn’t recall Harding immediately, but in 1983 it had been more than 20 years since I’d read or heard about him, and I was preoccupied with adjusting to this astonishing new perspective on life.

When I started to write my story for publication, the thought did briefly flash across my mind, “Could this be what that strange chap Harding meant all those years ago about having no head?” But his books weren’t readily available in Australia, and not knowing if he was still alive, I didn’t pursue the subject. Then, in 1989, he read an account of my experience somewhere and, out of the blue, sent me a copy of the just-published *Little Book of Life and Death* for comment. My first response was an apology for not getting his point until life forced it on me the hard way!

Like Ram Dass, I found this book a delight. It raised directly the very issue about which I’d been puzzling for six years: if the sense of alien human individuality is just an illusion, are there less drastic ways of unlearning it than playing dice with death? Harding contends there are, and asks in his own distinctively humorous fashion: why wait for and risk an NDE, when you can at any time have a “present death experience (PDE)” simply by following the advice of the medieval Chinese sage Huang Po and observing things as they are, instead of believing what you’ve always been told about them?

Harding then reiterates his classic “no head” exercise: if you actually look at your experience, you’ll find you’ve already undergone one of the most reliable processes for ensuring death of the self, namely, decapitation; because in actual experience there’s nothing above your shirtfront but the world presenting itself. You think your head is there as the center of your consciousness only because you’ve been conditioned to identify yourself with what you see in mirrors or photographs. Take this experience seriously as the basis for living, he urges, and you already have enlightenment; you don’t need to find eternity, because you’ve never really been without it, and never could be.

Ah, but there's the rub: taking it seriously enough to make it the basis for life. To me now, eternity-consciousness is absolutely and undeniably obvious, just as Harding insists; but my failure to get his point for all those years wasn't just superficial prejudice. That age-long brainwashing into alienated individuality caused the separate-self perspective to snap back into place no matter how faithfully I tried to do his exercise, leading me to conclude that he was just playing with words to put across a mystical belief.

In 1991 I had the chance to quiz him on this point when he visited Australia to promote his new book on overcoming stress (Harding, 1990), for which he himself was the best possible advertisement, an octagenarian breezing effortlessly through a crowded cross-continental schedule of lectures, workshops, and media interviews that most people half his age would have found punishing. Harding readily agreed that "taking experience seriously" was the problem. Even he himself, he said, had needed years of practice, but he insisted that this kind of practice is altogether different from most spiritual disciplines, which are undertaken on the basis of faith and belief rather than direct and simple observation.

So my own hunch is that we need more research yet on the detailed psychodynamics of "unenlightenment" in so-called normal consciousness, and that's now my own life-work (Wren-Lewis, 1993). But in the meantime, I cannot recommend Harding's book too highly. However limited the practical success of his exercises — and you may have better luck than I did — they are for my money the only serious game in town at the moment. I'm sure his paradigm of consciousness is the key to the future for the whole of psychology and behavioral science (Faraday, 1993), as well as for near-death studies.

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Letters to the Editor

More on Kenneth Ring's "Swan Song"

To the Editor:

In several recent issues of the Journal there have been references — some gently ribbing, some less charitable — to my earlier announcement that I was about to leave the field of near-death studies for good (Ring, 1991). Because it is obvious to me that my stated resolve has been the source of some misunderstanding — as well as a measure of incredulity — perhaps I may be permitted a few lines to clarify the nature of my retirement, how it will affect my work on near-death experiences (NDEs), and, finally, the way in which I see the future of near-death studies as a whole.

First, despite the doubters, I really *have* retired in a formal sense. After 32 years of teaching and research at the University of Connecticut, I hung up my academic robes for keeps as of June, 1994. Since that time, however, I have remained at the university as Professor Emeritus of Psychology in order to continue my work and writing, having at least two further books I am eager to begin.

Second, when I wrote that I felt my work in near-death studies had been completed (Ring, 1991), I had in mind the kind of major research projects that I had undertaken for my three books on NDEs. I didn't mean to imply that I wouldn't write occasional pieces or reviews for the Journal or elsewhere on NDEs and indeed several of these are either already published or in the works. And who knows, maybe I'll even gather together a bunch of essays on NDEs and bring them out as a book! But my days of soliciting NDE accounts or trying to get research funds to conduct another large-scale study are over.

Third, even though I no longer consider myself to be an active near-death researcher, I still intend to remain involved in the field, and will continue to encourage others to enter it and contribute to its development, as I have been doing since becoming immersed in near-death studies myself in 1977.

Finally, I must correct a decidedly curious and certainly erroneous interpretation of my remarks by Vincent Luciani (1992, 1993), who continues to flay me for my apparent conviction that no more re-

search on NDEs, and especially on life *after* NDEs, really needs to be undertaken. How Luciani could accuse me of something so preposterous is a puzzle to me and, I hope, to anyone who knows anything about me and my work. Just to reassure him and possibly others who share his misgivings about my earlier remarks, may I offer a few facts in my defense?

First, just in the past few months, for example, I have lectured on NDEs in France, Belgium, Italy, Canada, Australia, and the United States, in the course of which I have met with many professionals interested in NDEs in those countries. Wherever I go I have endeavored and, I think, succeeded to some degree to enlist further professional involvement in this field, specifically by pointing to many areas where research is still vitally needed.

Second, at my university I have since 1985 regularly taught an undergraduate course on NDEs as well as a preprofessional advanced seminar from time to time, which has been directed to students who wish to undertake this kind of work in graduate school. An article by one of my students in this course, Amber Wells, who also did her honors thesis with me, has in fact recently been published in the *Journal* (Wells, 1993). In addition, over the years, I have had numerous letters from prospective or matriculating graduate students elsewhere who have sought guidance from me concerning how to pursue their interests in this field.

Third, concerning the study of aftereffects, I don't think it is unfair (even if it may be immodest) to state that I believe I pioneered research in this area myself with the publication of my book, *Heading Toward Omega* (1984), over ten years ago, and have followed it up more recently with further studies of aftereffects in *The Omega Project* (1992). And numerous other researchers in the United States, England, Italy, and Australia — where the books of Cherie Sutherland, *Transformed by the Light* (1992) and *Within the Light* (1993), are particularly apposite and worthwhile — have devoted a great deal of attention to this subject, as Craig Lundahl's (1993) recent comprehensive review makes clear. All this shows that Luciani was quite mistaken in suggesting that this has been a neglected topic of research in the field.

Of course, there is much more to be done to develop near-death studies, even in the domain of aftereffects. Everyone would agree with that, and nothing I have *ever* written should be taken to imply the opposite. If Luciani had carefully read my "Amazing Grace" article, he would have noticed that what I actually said was that if

you assiduously read the narratives that I provided there *and* absorbed their implications, you would "scarcely need to read anything else on the matter" (Ring, 1991, p. 35). And I stand by that: everything that is *essential* to know about NDEs is contained or implied in these stories.

Nowhere did I ever say or suggest that we in the field need do no more research on NDEs or their aftermath. On the contrary, in announcing my own withdrawal from active research, I specifically indicated that the NDE trail is *endless*, and so it is. There are many who will continue to walk it, long after my final words on the subject are written.

But, as I say, I hope I will have the opportunity to contribute a few more things on NDEs in these pages before I am done. After all, if even Michael Jordan could leave the door open to his return, how could I be expected to slam mine shut for good? Especially when the game is forever in one's blood.

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Vincent Luciani Responds

To the Editor:

Yes, I had read "Amazing Grace" (Ring, 1991) rather carefully, and in fact had read one of its accounts, that of a near-death experiencer (NDER) friend, perhaps even before Kenneth Ring had. Nor am I the only *bona fide* NDER in disagreement with Ring's inappropriate conclusion that those four — or any 4,000 — NDE narratives could tell us all there was to be told about any aspect of near-death, most especially its aftereffects.

Perhaps it was *my* letters (Luciani, 1992, 1993) that were not understood. What I had suggested was that some NDErs have had it with those who extract only the glamorous near-death visions from experiencers, and then step back when the nitty-gritty aftereffects come up for study.

It bothers me that Ring cavalierly announces, almost as an afterthought, "maybe I'll even gather together a bunch of essays on NDEs and bring them out as a book!" I've spent most of my career as a project manager on many systems encompassing the entire dynamic test cycle from hypothesis to statistical analysis and reporting, and I was very good at what I did — good enough to have earned the right to say I simply don't classify as scholarly research the gathering together of a bunch of essays to bring out a book. In point of fact, it is precisely contrary to everything I've been trying to say in these pages about doing solid research on post-NDE responses.

And so I hereby say one last time — and I challenge anyone to refute this — that *every NDER receives a spiritual mandate at the time of near-death, whether remembered afterward or not, to do something substantially different with their reprieved lives*. It had been my hope that through properly conducted research into the afterlives of NDErs, sincerely motivated researchers might one day report conclusive evidence in support of this contention, thereby saving many NDErs, present and future, quite unnecessary anguish.

To Ring, Raymond Moody, Melvin Morse, and other authors: that's the only new book from any of you I'd care to read.

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Descriptions of the City of Light

To the Editor:

I have just read two articles in the Summer 1993 issue of the *Journal* on the hierarchies in and physical aspects of the City of Light, so often referred to by near-death experiencers (NDErs) when recounting their experiences. The first is "Social Positions in the City of Light," by Craig Lundahl and Harold Widdison (1993); the second, "The Physical Environment in the City of Light," by Widdison and Lundahl (1993). I must admit to having difficulty understanding the points of both, especially as they each seemed to indicate that NDEs are physical rather than symbolic experiences, that they happen in a physical place ordered with physical rules.

The article on social positions appeared to be a cross-cultural study of the subculture of Mormons, in which that group's interpretation of the afterlife, based on the NDEs of some of its members, was summarized. However, nowhere did Lundahl and Widdison mention that this was the case. Neither did they opine on the structure of the Mormon society in *this* reality, a very strict patriarchal and hierarchical system with very distinct and structured religious beliefs, and how those beliefs may or may not influence the interpretations of the near-death experiences of its members. Rather, this article came across as a model for the structure of the afterlife. The second article seemed to build on this model by providing, through descriptions of physical aspects of the City of Light, a place in which this hierarchy may reside.

In the conclusion to the second article, Widdison and Lundahl mentioned a "study of the physical environment in the other world" (1993, p. 245). This is an impossibility. There is no physical environment in the nonphysical reality. There is only the individual's interpretation of what was experienced, an interpretation that must filter

through a physical brain into a physical environment. I think this point was entirely overlooked in both these articles, and that is why I have difficulty understanding the reasons behind them. Why report on something that isn't there?

I readily admit my comments stem from my own interpretation of the meanings in the NDE based on my own experiences rather than actual research, but I feel my point is as valid as those presented by the authors. I also feel that Lundahl and Widdison might better utilize their obvious talents by studying and reporting on the symbolism in near-death and related experiences. I think greater meaning and understanding of the NDE and reality in general would undoubtedly be the result of such efforts.

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Craig R. Lundahl and Harold A. Widdison Respond

To the Editor:

Leslee A. Morabito offers comments on our two articles, "Social Positions in the City of Light" (Lundahl and Widdison, 1993) and "The Physical Environment in the City of Light" (Widdison and Lundahl, 1993), and a suggestion to focus on the symbolism of near-death experiences (NDEs) in our future studies. Both of our articles evolved out of a much larger research effort in which we are doing a comprehensive content analysis of NDEs. Our efforts in this study are not designed to prove or disprove the NDE, but to learn what it can teach us about the purpose of life in general and activities, conditions, and interconnectedness between this life and the next. We have reviewed accounts from the late 1700s to 1993 and have been im-

pressed with the overall consistency in what has been reported and in the collective picture portrayed.

In her comments on the first article, on social positions, Morabito is concerned with our presenting the Mormon interpretation of the afterlife without describing how Mormon beliefs influence this interpretation. The purpose of the article, as explicitly stated within the article, was to identify social positions in the afterlife based on NDE accounts reported by Mormons, or members of the Church of Jesus Christ of Latter-Day Saints. Although the description of these social positions by the Mormon NDErs necessarily involves descriptions of the activities of the afterlife, the article's purpose was never to describe the afterlife specifically. An attempt was made to compare our findings on social positions with those of other near-death researchers, and their findings do corroborate the descriptions from Mormon NDErs, with two exceptions. Likely reasons for this discrepancy were discussed in the article, including the potential cultural influence on these Mormon observations. The issue of the influence of the Mormon subculture on the perception of the other world has been discussed previously (Lundahl, 1981-82).

Morabito next criticizes us for reporting in our second article "an impossibility." She argues as a statement of fact that there is no physical environment for NDErs to observe in the other world but offers no substantiation, nor does she attempt to define what she means by "physical." The descriptions in a variety of NDE accounts cited both in the article and elsewhere do not agree with her statement.

Our use of the term "physical environment" suggests that there is a substantive environment in the other world, but we do not mean to imply that it is necessarily of a physical material as we know it in this world. If there is nothing there, as Morabito suggests, then how do we explain deceased people who are seen with bodies? How do we explain NDErs who can view this world after dying (that is, the operating room activities of doctors and nurses) and then move on to view and experience yet another world? Which world is real, this world or the other world? Or are they both real? Maybe the greater reality is that both worlds are real, although we cannot yet fully explain that scientifically. How do we explain NDErs who feel grass on their feet, who eat food, who sit on benches, who walk on paths, and who touch deceased people in the other world? How do we explain their meeting and even embracing people whom they are surprised to see there, as at the time of their NDE they thought

them to be alive, only to discover after they recovered that those people had just died (Cobbe, 1882)? How do NDErs enter into structural entities such as buildings in the other world if there is no such thing? NDErs do report they have experienced this substantive environment, that it is as real as our world or even more real than our world.

Does it require a physical brain, as Morabito suggests, to interpret such an experience? This raises the issue of the difference between the mind, which apparently is part of one's spirit (the thinking part of the person), and the physical brain, which is a part of one's physical body (the control center for the physical body) and seems to be controlled by the mind, while the spirit or soul occupies the body — a view similar to one held by Wilder Penfield, "the father of neurosurgery" (Morse and Perry, 1990). In other words, it is not the physical brain that interprets anything; rather it is the mind that interprets. The difference between the mind and the physical brain is certainly suggested by the ability of NDErs to think while out-of-body, and therefore, to interpret experiences wherever the individual might be, whether in the physical body or outside it (Lorimer, 1990; Ring, 1980; Sabom, 1982).

We appreciate Morabito's right to her own view and we respect it, but we also have some concerns of our own with her apparent disregard for scientific inquiry. First, she readily admits that her concerns are based on her own "selective" experiences, which she does not elaborate on. While we therefore have no idea what experiences she is referring to, whatever they are, they appear to contradict the NDEs of over 2.5 million Americans who claim to have seen and visited another world (Moody and Perry, 1988). It appears to us that Morabito may have a preconceived notion of what an NDE is, which she does not share with the reader. Her letter demonstrates that she knows what the NDE is not, and that evidence to the contrary is not valid. Finally, her letter indicates that she may have prematurely closed her inquiry into NDEs much like the physicists who supposedly proved that a trip to the moon would be impossible, and then turned around and put us on the moon in 1969 (Babbie, 1992).

We have attempted to present accurately in these two articles information from the observations of NDErs about what they saw and experienced during their NDEs. Morabito has mistakenly attributed these observations to our own views or beliefs. In actuality, Morabito should have addressed her concerns not to us but rather to the mil-

lions of NDErs, from whom we have much to learn about life, death, and the state of those who have died.

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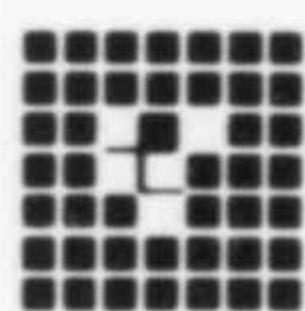
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