

Journal
of
Near-Death Studies

Editor's Foreword • *Bruce Greyson, M.D.*

Hyperdimensional Perspectives in Out-of-Body and Near-Death Experiences •
Robert J. Brumblay, M.D., F.A.C.E.P.

**At the Edge of Eternity's Shadows: Scaling the Fractal Continuum from Lower
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**DMT: The Spirit Molecule. A Doctor's Revolutionary Research into the Biology
of Near-Death and Mystical Experiences**, by **Rick Strassman** • *Reviewed by
James Fadiman, Ph.D., and Jordan Gruber, J.D.*

Ketamine: Dreams and Realities, by **Karl L. R. Jansen** • *Reviewed by
Rick J. Strassman, M.D.*

Letters to the Editor • *Philip B. Reinhart, Ph.D., and David Lester, Ph.D.*

Volume 21, Number 4, Summer 2003



Journal of Near-Death Studies

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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 worldwide organization of scientists, scholars, healthcare providers, 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 healthcare 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 healthcare and counseling professionals to network locally. Information about membership in IANDS can be obtained by contacting IANDS, P.O. Box 502, East Windsor Hill, CT 06028-0502, USA; telephone (860) 644-5216; fax (860) 644-5759; e-mail office@iands.org; Internet website: www.iands.org.

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SUBSCRIPTION inquiries and subscription orders should be addressed to the publisher as follows: For all countries (including subscription agents in North and Latin America): Kluwer Academic Publishers, Journals Department—Distribution Centre, PO Box 322, 3300 AH Dordrecht, The Netherlands; tel: 31 78 657 6000; fax: 31 78 657 6474; e-mail: orderdept@wkap.nl. For "non-trade" customers only in North, South, and Central America: Kluwer Academic Publishers, Journals Department, 101 Philip Drive, Assinippi Park, Norwell, MA 02061, USA; tel: 1 781 871 6600; fax: 1 781 681 9045; e-mail: kluwer@wkap.com. Subscription rates:

Volume 21, 2002–2003 (4 issues): Print or electronic, EUR 397.00/USD 398.00. Print and electronic, EUR 476.40/USD 477.60. Individual subscribers certifying that the journal is for their personal use (print only): EUR 62.00/USD 62.00.

ADVERTISING inquiries should be addressed to the Advertising/Sales Manager, Kluwer Academic Publishers, 101 Philip Drive, Assinippi Park, Norwell, Massachusetts 02061, USA—telephone (781) 871-6600 and fax (781) 871-6528.

INDEXED IN Family & Society Studies Worldwide, Health Instrument File, International Bibliography of Periodical Literature, Parapsychology Abstracts International, Psychological Abstracts, PsycINFO Database, Sage Family Abstracts, Social Work Research and Abstracts, and Sociological Abstracts.

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JOURNAL OF NEAR-DEATH STUDIES (ISSN: 0891-4494) is published quarterly in the Fall, Winter, Spring, and Summer by Kluwer Academic/Human Sciences Press, P.O. Box 322, 3300 AH Dordrecht, The Netherlands. Annual subscription price U.S. \$398.00. Air freight and mailing by Publications Expediting, Inc., 200 Meacham Avenue, Elmont, N.Y. 11003. Periodicals postage paid at Jamaica, N.Y. 11431.

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U.S. POSTMASTER: Send address changes to *Journal of Near-Death Studies*, Kluwer Academic/Human Sciences Press, 233 Spring Street, New York, N.Y. 10013-1578.

Editor's Foreword

As I noted in our last issue's Foreword, the *Journal of Near-Death Studies* has served as the official scholarly publication of the International Association for Near-Death Studies (IANDS) for the past 22 years. During that time, it has survived changes in title, frequency, and publishers, each change reflecting growth in the field and offering opportunities for reassessing our priorities. This issue of the Journal will be the last one published by Kluwer Academic/Human Sciences Press for IANDS. Our 15-year association with Human Sciences Press has been a fruitful one, witnessing the expansion of our readership base and increasing acceptance by the broader academic community as an authoritative resource in the field of near-death studies. We anticipate continued growth and sophistication in our new publication arrangements, as well as greater fiscal efficiency.

Those readers who obtained the Journal as a benefit of membership in IANDS will see no interruption in their service. However, those readers who obtained the Journal through a subscription from Kluwer Academic/Human Sciences Press should contact IANDS directly in order to continue receiving future issues. IANDS can be reached by mail at P.O. Box 502, East Windsor Hill, CT 06058-0502; by e-mail at office@iands.org; through its Internet website at www.iands.org; or by telephone at (860) 644-5216.

This issue begins with two theoretical articles exploring hyperdimensional models of near-death experiences (NDEs). First, emergency physician Robert Brumblay shows how contemporary physical models of a hyperdimensional universe support NDErs' perceptions of extra dimensions beyond our familiar space and time. Next, independent scholar Gordon Greene elaborates on his previous analysis of a hyperspatial model, using a fractal-scaling scheme, to explain anomalous features of perception during NDEs.

We also include in this issue two reviews of recent books exploring the connection between psychoactive drugs and near-death experiences. First, transpersonal psychologist James Fadiman and attorney and editor Jordan Gruber review psychiatrist Rick Strassman's *DMT: The Spirit Molecule*, a wide-ranging account of Strassman's pioneering work with the psychedelic drug dimethyltryptamine and its relation to NDEs

and other mystical experiences. Then Strassman reviews New Zealand neuropsychiatrist Karl Jansen's *Ketamine: Dreams and Realities*, an exhaustive summary of the dissociative anesthetic ketamine and its ability to induce NDE-like experiences.

We end this issue with two letters. Physicist Philip Reinhart explores the relevance to NDEs of William James' writings a century ago; and psychologist David Lester offers a methodological critique of arguments on both sides of the question of whether NDEs provide evidence of survival.

Bruce Greyson, M.D.

Hyperdimensional Perspectives in Out-of-Body and Near-Death Experiences

Robert J. Brumblay, M.D., F.A.C.E.P.
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ABSTRACT: Recent theories of modern physics predict that the universe has more dimensions than are apparent to us. Many near-death experiencers report the perception that there are more dimensions than we are commonly aware of. These two statements might be related. This article examines the possibility of additional dimensions (hyperdimensions), what they would seem like, and whether they seem to be described by the unusual visual perspectives found in out-of-body and near-death experience accounts. I examine some implications of a hyperdimensional model of the universe.

KEY WORDS: near-death experience; out-of-body experience; dimension; time; hyperdimensional; hyperspatial; perspective.

A "miracle" is commonly considered to be an effect or event without law, or beyond law. But all events in our precisely adjusted universe are lawfully wrought and lawfully explicable.

Paramahansa Yogananda (1946, p. 321, footnote)

Published accounts of near-death experiences can include descriptions of the ability to see through walls. This is one of the most striking examples of how these experiences seem to violate the laws of nature. Recent theories of physics such as superstring theory predict the existence of more dimensions than we commonly perceive. A specific example is M-theory, which builds on the concept of superstring theory and includes ten spatial dimensions, with time as an eleventh (Greene,

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1999). The commonly accepted scientific view over the last 20 years is that these dimensions do in fact exist, but are not experienced by us, and are therefore somehow made inapparent by being tightly convoluted into the fabric of space. More recently (Arkani-Hamed, Dimopoulos, and Dvali, 2000) there has been consideration of the possibility that the dimensions could be much larger than previously thought. This would solve some problems in physical theory. Through an analysis of hyperdimensional geometry (Abbott, 1884; Kaku, 1994; Rucker, 1977), it can be demonstrated that if these dimensions do in fact exist, and are large, they would allow the novel visual perspectives described in these near-death experience accounts without violation of any natural laws.

The Experience of Transformation from Lower to Higher Dimensions

The easiest way to understand the kind of visual perspectives that would be expected with a transition to a higher dimensional environment is to start with simpler models and from them develop models of greater complexity. I will consider first what it would be like to be accustomed to living in a universe of only one dimension, and develop an understanding of what it would be like to be moved to a two-dimensional universe. I will then repeat the process for a being accustomed to living in a two-dimensional universe who is then moved into a space of three dimensions. Finally, I will extend the process to the case of a three-dimensional being who is moved into a space with at least one additional spatial dimension. What is learned from the simpler models can be extrapolated to the more complex case in an understandable manner.

Following the progression of this line of thought may be easier if Table I is referred to as a guide. Certain assumptions must be made during this process in order to make the analysis consistent with the near-death and out-of-body experiences described. These assumptions can be considered corollaries or predictions of this model and will be listed later.

Once we have derived our model defining what kinds of experiences we are looking for, we will review some of the available published accounts of out-of-body and near-death experiences to see how these accounts are consistent with the model, and how they could be interpreted as perceptions of higher dimensional phenomena.

Table I
Hyperdimensional Perspectives in Out-of-Body and Near-Death Experiences Explanatory Table

	Dimensional shift		
Perspective characteristic	Going from	Going from	Going from
	one-dimensional line to two-dimensional plane	two-dimensional plane to three-dimensional space	three-dimensional space to space of four or more dimensions
Limitation of direction of vision	<i>One or two linear directions only (along a line), shifting to included angle view of a portion of the entire line at once</i>	<i>From two-dimensional included angle (a flat, wedge-shaped view), shifting to 360-degree circular view of portion of entire plane at once</i>	<i>From a three-dimensional conical or hemispherical view, shifting to 360-degree spherical view of entire volume of a scene</i>
Limit of vision of shapes	<i>View of near end only of neighboring line segment, shifting to overview of entire linear forms at once</i>	<i>View only of near edges of two-dimensional shapes, shifting to view of entire perimeter of planar shapes at once</i>	<i>View of facing surfaces of three-dimensional shapes, shifting to view of entire surfaces of three-dimensional shapes at once</i>
Interior feature vision	<i>None at all, shifting to interior of one-dimensional line segment</i>	<i>None, shifting to interior of two-dimensional planar shape</i>	<i>None, shifting to interior of three-dimensional volume-occupying shape</i>

Table I
Continued

	Dimensional shift	
Loss of impediment by barriers	All one-dimensional barriers (walls are points) lost in transition	All two-dimensional barriers (walls are lines) lost in transition
Mirror image reversal	Line segment looks like reversed through itself, end for end	Planar shape looks like reversed through itself, either front to back or top to bottom
Most understandable view	Near to and along the line, with features of interest lined up to one side, not on both sides	Near to and along surface of plane, with features of interest gathered to one side and not surrounding viewer, that is from edge of two-dimensional planar room
		All three-dimensional barriers (walls are planar) lost in transition
		Three dimensional shape looks like reversed through itself, either right to left, top to bottom, or front to back
		Near to and looking into three-dimensional volume, with features of interest gathered together and not surrounding viewer, that is from side or ceiling of three-dimensional room

Experiencing a Two-Dimensional Universe as a One-Dimensional Being

What would it be like to be a one-dimensional being living in a one-dimensional universe? The being could be any size from a point to a line segment, or even up to the size of the line itself, the limits of the universe. If the being's size were to be finite and limited, there would be room in the linear universe for other beings (Figure 1). Each being would have a clear "line of sight" only as far as the near end of the next being on the line. A wall could be as small as a single point, and still completely obstruct vision and movement. No being could see or move past any other being on the line. None of the beings in this universe would be able to imagine any directions other than the two directions that we will refer to here as right or left on the line, and no such being could imagine or visualize a universe of more than one dimension.

Now let us move a line segment being out of this limited linear universe, into a two-dimensional universe, in this case moving the fellow out into a planar universe (Figure 2). We will leave his physical body behind and instead pull out what we will refer to here as his "astral" body, which for purposes of this discussion we will assume has a structure that generally corresponds to the structure of his physical body. Once a short distance out of his usual position on the line, his astral body would be able to look up and down the line, seeing not only his usual limited view of the near ends of his two nearest neighbors, but also the farther ends and all the interior features in between (Figure 3).



Figure 1. This is a representation of a linear universe populated by entities varying in size from points to line segments. In order to be visible, the universe and entities pictured here are shown with thickness that they would not actually have if they were truly one-dimensional. If we consider what it would be like to be the being indicated by the large arrow, our perception of the adjacent being (small arrow) would be limited to the near end of that line segment. We would not be able to tell if this being was a point or a line segment. We would not be able to "see" the far end of that adjacent being or the light gray internal feature shown in this picture. We would only be aware of our two immediate neighbors and would have no ability to perceive any part of the linear universe beyond them.



Figure 2. Here we separate what we will call the "astral body" from the "physical body" of the line segment entity we are considering. The physical body remains on the line, in the original one-dimensional space. The astral body is shown with a structure that somehow corresponds to that of the physical body, but is now in the larger, planar space of the paper on which this image is printed.

Because he can only mentally visualize movement in two directions, and it is clear to him that he has not moved right or left on the line, he still mentally visualizes himself in the same position on the line. To him, the neighbors on the line have become transparent, and he feels that he is looking through them, not around them. If he moves right or left closely parallel to the line, it seems to him as if he has moved through his neighbors or any nearby walls. If he moves away from the line in a perpendicular direction, the neighbors appear more faint, or as if they are dissolving, but they do not seem to grow more distant because he is neither moving right nor left relative to them.

Without moving too far off the line he can turn and look back at the line, seeing both to the right and the left at the same time (Figure 3). In order for this to occur, his astral vision must be capable of sensory input in at least one more dimension than his normal physical vision. The visual information gathered in this way exceeds the complexity of mental processing to which he is accustomed. He may find himself more comfortable at this point moving back closer to the line, to one side of what he is looking at, so that he can once again look along the line at

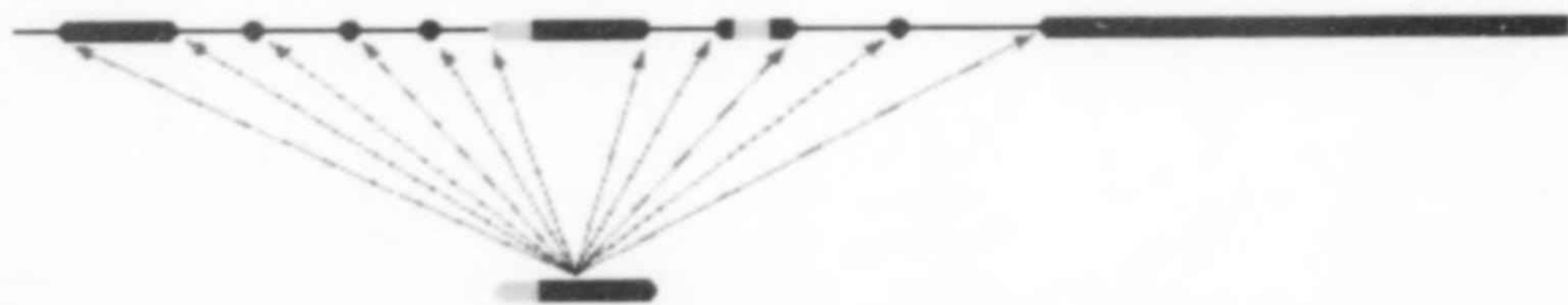


Figure 3. From its new vantage point in a higher dimensional space of two dimensions, the line segment now has "line of sight" accessibility to all points and structures of the linear universe. Now it can see all its neighbors, whether they are points or line segments, and can see their internal structures, including those of its own physical body.



Figure 4. The displaced astral body of the line segment can now rotate in the higher dimensional space of two dimensions, a type of movement that would have been impossible to do or even to imagine for a being remaining in the original one-dimensional universe. If moved back toward its physical body it would seem impossibly reversed relative to it.

it. This will provide him with the most understandable visual input of any position off of the line, because the objects he is looking at will be in alignment with him and with each other. Neighbors or walls will be closest to their normal positions relative to what he is familiar with, and they will seem the least transparent.

Once off the line, he can now rotate around in the planar universe 180 degrees and move back toward his physical body remaining on the line (Figure 4). He will now find himself reversed relative to his body in a way that is unimaginable to him based on his usual concepts of geometry.

Experiencing a Three-Dimensional Universe as a Two-Dimensional Being

Next imagine a planar, two dimensional universe populated by flat, two dimensional beings (Figure 5). Their line of sight only extends to the near, exterior surface of their neighbors (Figure 6). They cannot see the far perimeter of any neighbor, and cannot see interior structures.

They cannot imagine or visualize moving in any direction other than the four we will refer to here as right, left, up, and down. They cannot imagine or visualize any space or universe of more than two dimensions. They can see the far perimeter of a neighbor only by rotating around each other in the plane, and a line segment becomes a wall that completely obstructs vision and movement (Figure 7).

This time let us move the astral body of one of these planar beings out of their planar universe, into a three-dimensional space (Figure 8). Once he is barely out of his usual position on the plane, the being will have a direct line of sight past walls (Figure 9). He will now be able to see the far perimeter of neighbors, and also any interior features. He correctly knows that he has not moved right, left, up, or down from his original position on the plane. He cannot imagine having moved

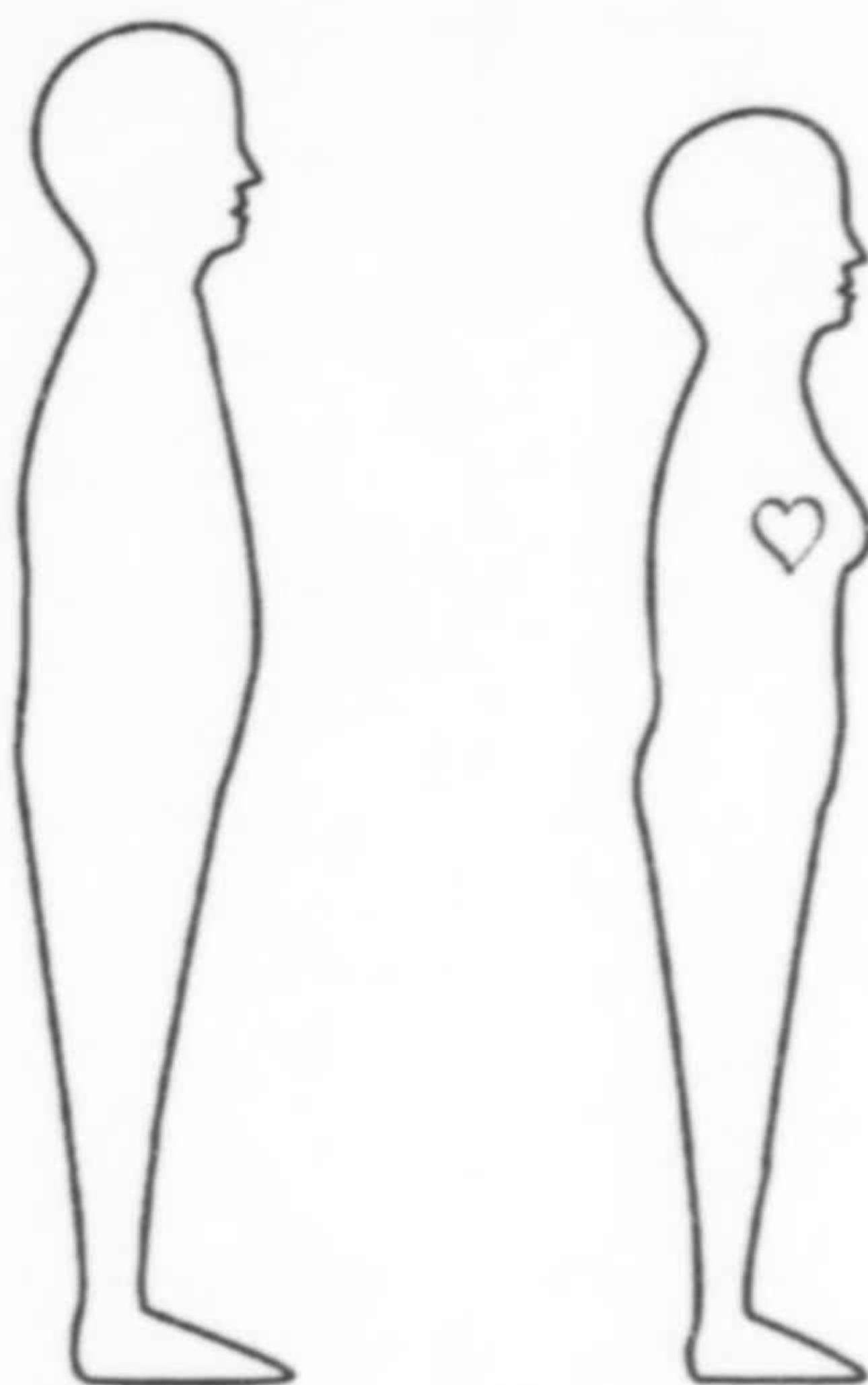


Figure 5. These are representations of two-dimensional beings in a two-dimensional universe. They look like outlines of three-dimensional humans, but this appearance was chosen for understandability. Their external surface is the perimeter of each figure.

spatially in any direction other than those listed, so he feels at this point that he is looking through objects and that they are now transparent. If he moves farther from his position on the plane, the objects there will become more transparent or will dissolve out of sight, and he will still be correct in his sense that he has not moved right, left, up, or down.

Without moving too far from the plane he can now rotate in three dimensional space and look back at his planar world (Figure 9). As long as his astral vision perception is of at least one more dimension than he is accustomed to, he will have a 360-degree circular visual field, but this will exceed his normal capability for mental visualization of geometric relationships. If he remains in the center of the room, he can see everything around him in the same view, which will be a perspective difficult for him to interpret. He may feel more comfortable moving back toward the plane, and looking at any features of interest from a position barely off the plane and to the side of those features, as if from the side

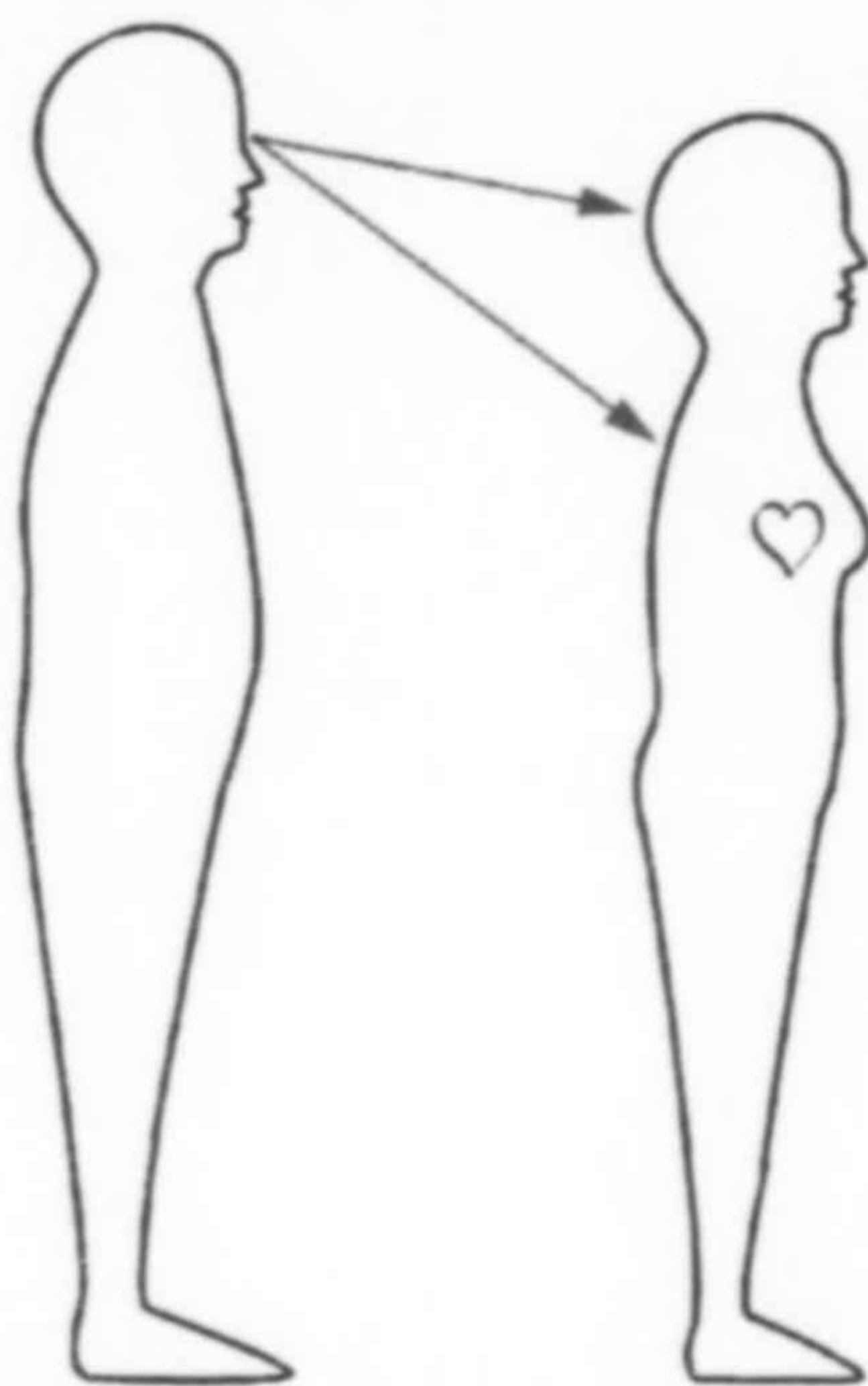


Figure 6. The male figure only has line of sight access to the near surface of the female figure. He can not view her face unless he rotates around her in the plane of the paper, turning so that he is upside down. He can not see any internal structures she may have, here represented by a heart.

of a room, near its wall. From this position, neighbors and walls will seem to be positioned closest to their normal visual relationships and they will be least transparent. Once off the plane, he can now rotate in three dimensional space and flip like a pancake (Figures 10 and 11). If he only flips once and returns to his physical body, he will be reversed relative to it in a manner unimaginable to him or others from his planar world.

Experiencing a Four- or Higher-Dimensional Universe as a Three-Dimensional Being

By extrapolating from the above discussions about lower dimensional transitions, it is possible to understand what visual perspectives would be expected when moving from a three-dimensional universe to a

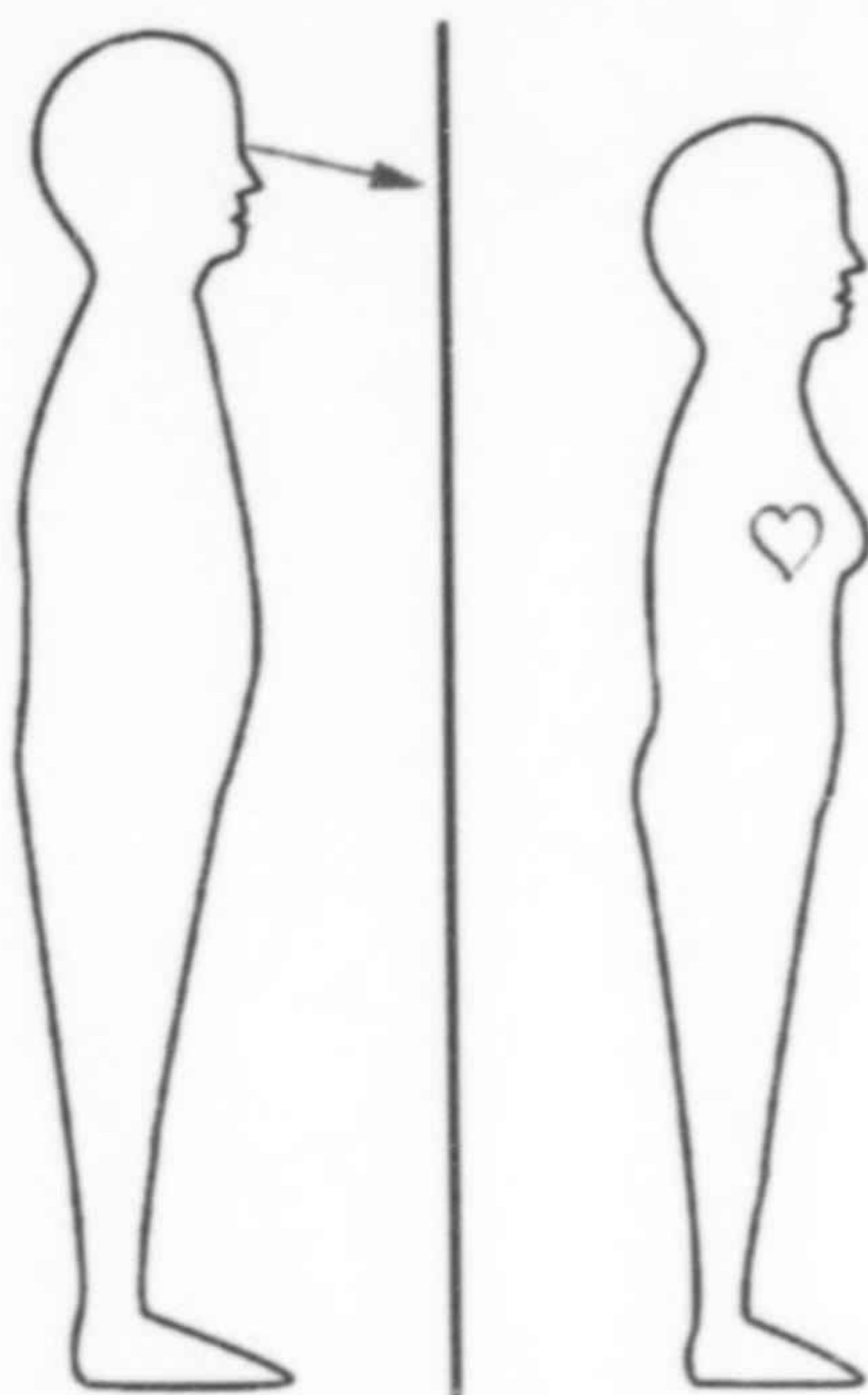


Figure 7. In this planar universe, a line segment forms a wall. The simple line segment blocks both movement and sight.

universe of higher dimensions that we normally cannot imagine or visualize. Please follow the line of thought by referring to Table I.

We start with our three-dimensional being in a world where a wall minimally consists of a plane. He can only see the near surface of a neighbor and not far surfaces or interior features. He can visualize moving only up, down, right, left, forward, or backward. He can imagine a space only of three dimensions. If asked to point in the direction of a fourth spatial dimension, he cannot.

Now we move the astral body of our three-dimensional being away from his physical body, and out into a universe of at least one additional spatial dimension. As soon as he moves out of the volume of his three-dimensional world, he gains a direct line of sight past walls. He can now see far surfaces of objects, for total surface vision. He can now see the interior features of closed objects. Yet he has not moved in any direction he is familiar with. To his perspective, he is still in the same place. He has not moved up, down, right, left, forward, or backward. The visual appearance of his world has changed around him, so the walls

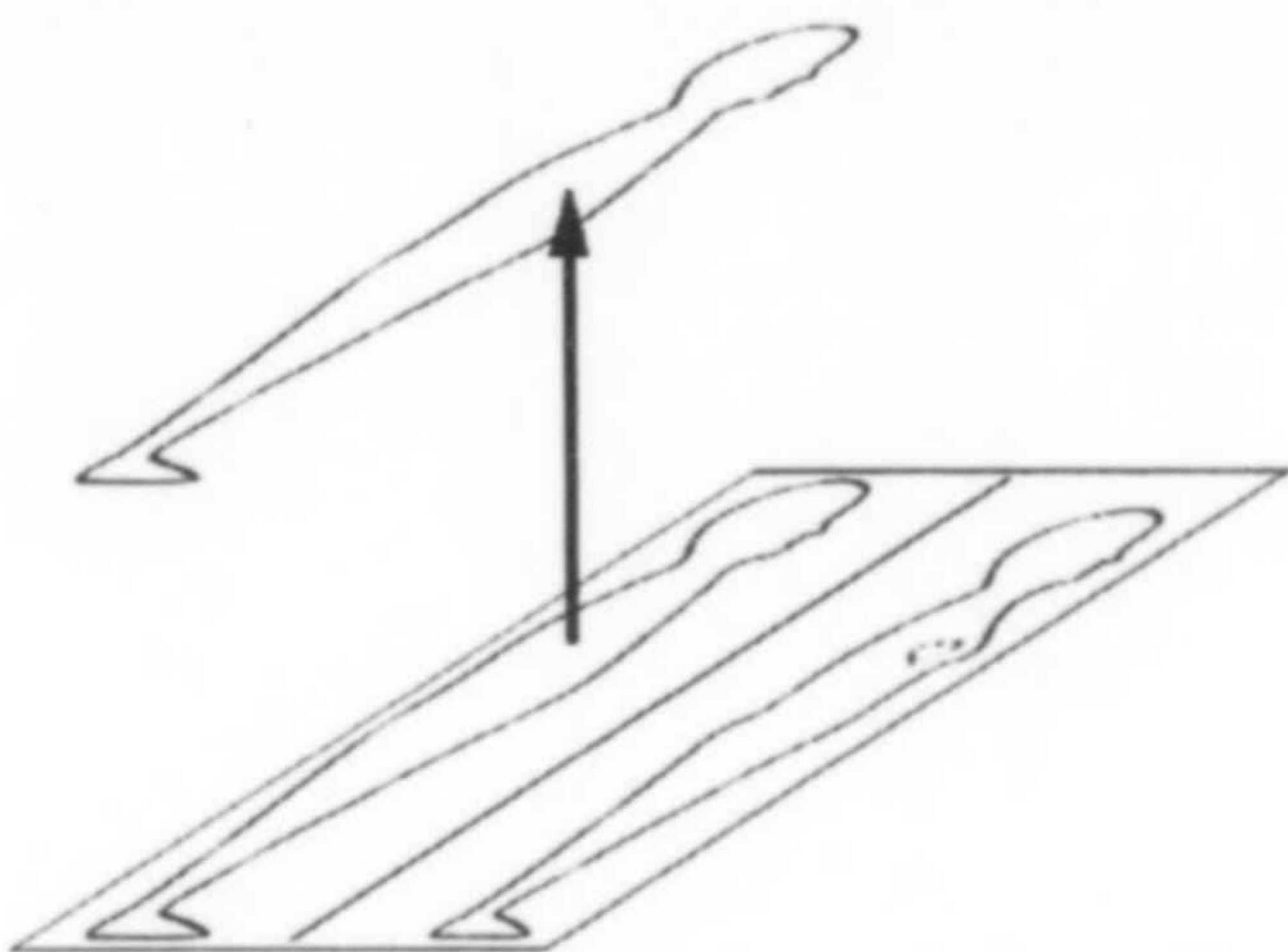


Figure 8. Here we separate the astral body of the male figure from its physical body remaining behind in the planar universe. We are assuming for the sake of this discussion that the astral body has a structure that has general correspondence to the structure of the physical body.

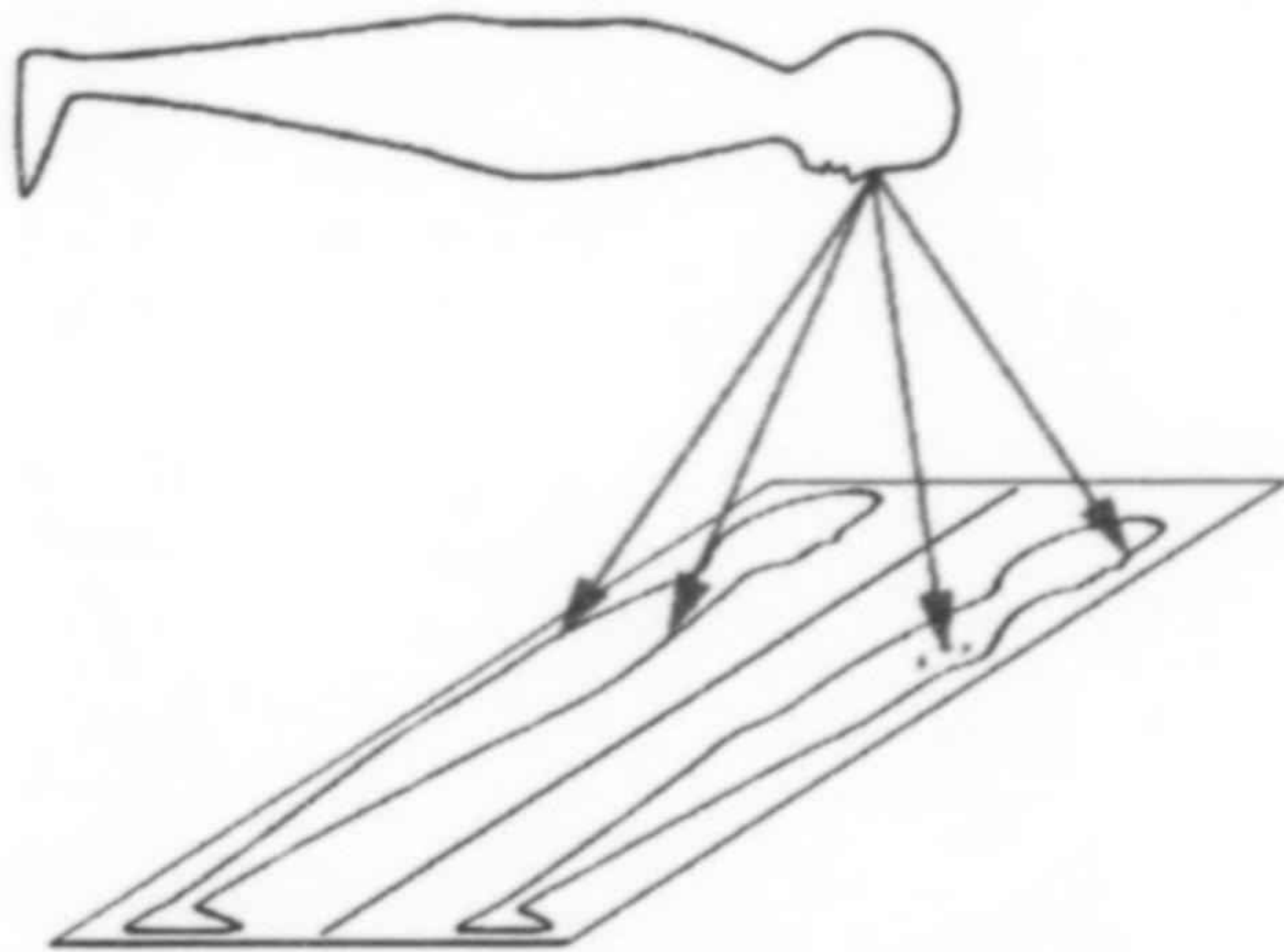


Figure 9. Once removed from the limitations of the planar space, the astral body is now free in three-dimensional space to turn and look back at the features of the planar space from a vantage point outside of it. Now it becomes possible to see both the front and back of the male's own physical body simultaneously. The female's physical body can be seen similarly, including internal structures such as the heart depicted here, even though it is located on the other side of the line segment wall.

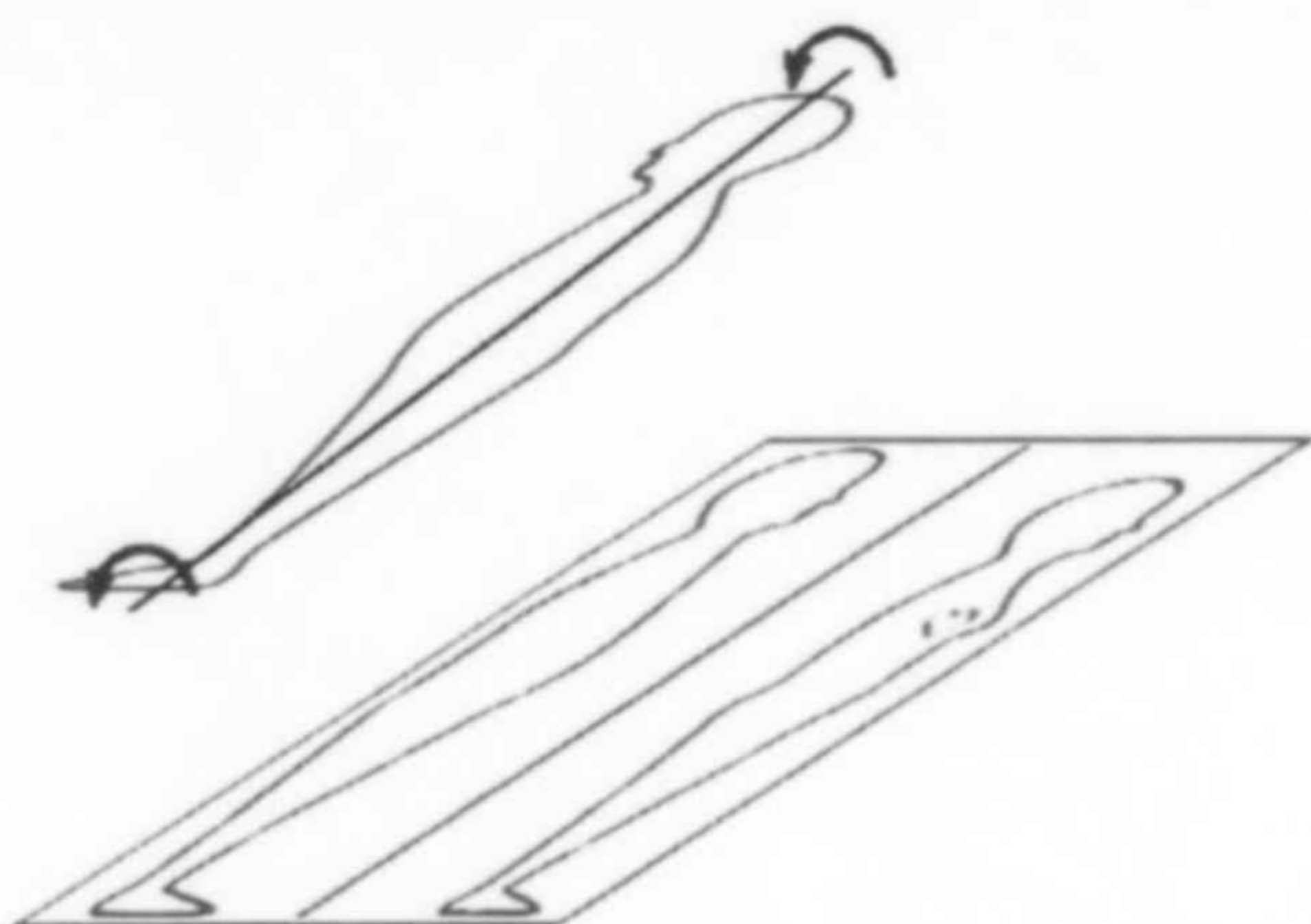


Figure 10. By rotating the astral body of the male being around a longitudinal axis, the astral body can be turned so that it is reversed front to back.

appear in the same place as before, but now appear transparent. If he moves farther away in the direction of the additional spatial dimension, the walls will fade without necessarily seeming to have moved farther away.

If he turns and looks back at his world before he moves very far away, he will see the features of the world with 360-degree spherical vision. This will exceed his normal visual interpretation of spatial relationships, and he will be more comfortable moving back as close to his three-dimensional space as he can. This will minimize transparency

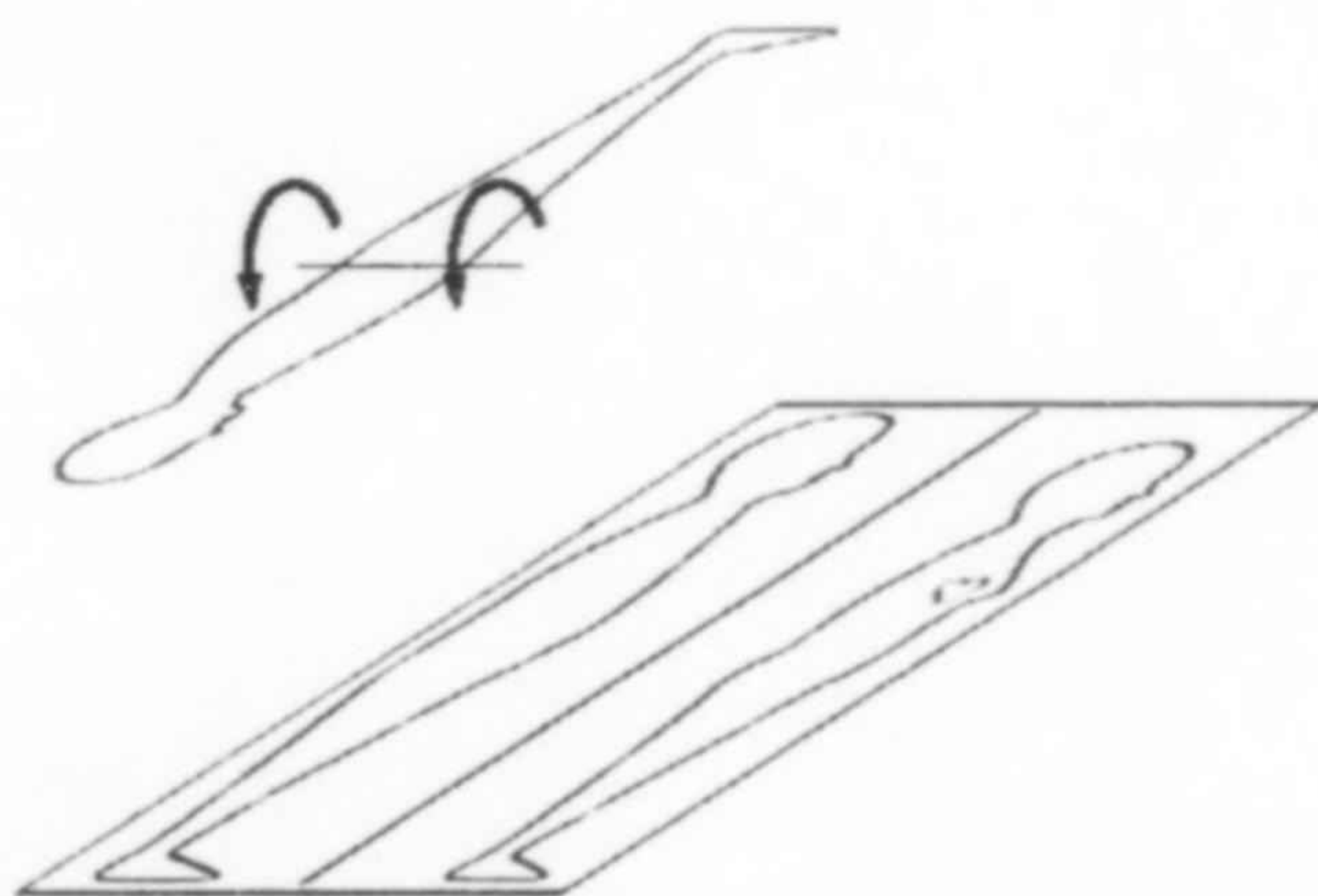


Figure 11. By rotating the astral body of the male being around a transverse axis, the astral body can be turned so that it is reversed top to bottom.

of objects. He will also want to view any scene of interest from outside of that scene, in order to maintain a visual perspective as close to normal as he can. Placing himself anywhere else in the interior of the scene returns him to a 360-degree spherical view, in which he is surrounded by the objects he is trying to observe, and this is likely to be confusing visual input. Further, placing himself against a wall reduces the field of his 360-degree spherical vision to 180-degree hemispherical vision, which is closer to his normal view of things in his three-dimensional world. He still has spherical vision, but the objects of attention are gathered together into a more restricted visual field and are easier to observe. A wall-ceiling corner reduces the field of view still further, which may help more. If an observer could pick any outside perspective to view a scene, a wall-floor corner perspective would in most cases make the least sense, and a wall-ceiling perspective the most. This can be understood by imagining yourself as a movie director: A scene you are filming would be much more understandable if it is shot with the camera overhead rather than pointed upward from the floor.

Example Accounts of Hyperdimensional Imagery

360-Degree Spherical Vision

Kenneth Ring and Evelyn Elsaesser Valarino (1998) related an example of 360-degree spherical vision during a near death experience. Please note that in their book, the experiencer quoted erroneously said "three hundred degree" rather than "three hundred sixty degree." This error was confirmed by personal communication with Ring and the quote below is in corrected form:

I was hovering over the stretcher in one of the emergency rooms at the hospital. I glanced down at the stretcher, knew the body wrapped in blankets was mine, and really didn't care. The room was much more interesting than my body. And what a neat perspective. I could see *everything*. And I do mean everything! I could see the top of the light on the ceiling, and the underside of the stretcher. I could see the tiles on the ceiling and the tiles on the floor, simultaneously: three hundred sixty degree spherical vision. And not just spherical. Detailed! I could see every single hair and the follicle out of which it grew on the head of the nurse standing beside the stretcher. At the time, I knew exactly how many hairs there were to look at. (pp. 62-63)

Total Surface Vision

Betty Eadie described her total surface vision during her near-death experience as follows:

It was almost as if I felt a pop or release inside me, and my spirit was suddenly drawn out through my chest and pulled upward, as if by a giant magnet. . . . I was above the bed, hovering near the ceiling. . . . I turned and saw a body lying on the bed. I was curious about who it was, and immediately I began descending toward it. . . . And then I recognized that it was my own. That was *my* body on the bed. I wasn't taken aback, and I wasn't frightened; I simply felt a kind of sympathy for it. . . . I realized that I had never seen myself three-dimensionally before; I had only seen myself in the mirror, which is only a flat surface. But the eyes of the spirit see in more dimensions than the eyes of the mortal body. I saw my body from all directions at once—from in front, behind, and from the sides. I saw aspects to my features I had never known before, adding a wholeness, a completeness to my view. (Eadie and Taylor, 1992, pp. 62–63)

Interior Feature Vision

An account of interior feature vision during a near-death experience was provided to me by an elderly lady whom I will call Ruth. She had her experience while in an intensive care unit with septic shock. Ruth stated that she found herself drifting out of her room in the intensive care unit, while her physical body remained on the bed. She saw her daughter in the waiting area, and could immediately see that her daughter was pregnant with a little boy. Later, after her daughter delivered the baby and Ruth held him for the first time, she had the feeling they had already met before, during her near-death experience.

Seeing Through Walls

This description of seeing through walls during a near-death experience was provided to me by a woman who at age 14 suffered a respiratory arrest during an anaphylactoid reaction to intravenous x-ray contrast medium. Especially notable is that this experience occurred in an x-ray room with lead-lined walls:

When I woke up I was above my body. I was aware of all the people who had been called into the room to help and what they were thinking. I also found myself able to see my mother on the other side of the wall in the waiting room. She was sitting with her hands in her lap and was crying because she was being told about what had happened to me. At

the same time I could also see other people in other nearby rooms, all separated from the x-ray area by walls. Someone in another room was getting some kind of physical therapy treatment. But my attention was drawn to my mother. I still could tell that the walls were there, but I could see the other people in the other rooms.

Another example came from an adult female attendee of the programs at the Monroe Institute, who is able to initiate out-of-body experiences essentially at will. She was asked what the visual differences are when moving into the out-of-body state, and whether it makes any difference if her physical eyes are open or closed. She responded that even if she was lying in the dark and her eyes were closed, the room becomes visible as she shifts out of her body. There is a kind of light diffusely present that does not cast shadows. The walls at the same time become transparent and she can see or move beyond them.

Mirror-Image Reversal

Robert Monroe, the founder of the Monroe Institute, described reversed perception of his own physical body:

After "lifting" out easily, and holding control in the same room, I finally got up the courage to go back and carefully examine the physical body remaining on the bed. I started down slowly, reaching out in the semidarkness. . . . I reached down carefully to touch my physical head, and my hands touched feet! At first, I thought I had drifted somewhere else, and I felt my toes. My left big toe has a thick nail due to a long-ago mashing by a dropped log. This big toe (left) did not! I felt with my hands to the right foot. The big toe on the right foot *did* have the thick nail. Everything was reversed, like a mirror image. . . . Strange, the reversal. Floating in the half-darkness, I could have swung around and become disoriented. But the thick nail was on the right foot instead of the left. (1971, pp. 172-173)

Multiple Hyperdimensional Characteristics

The following example has been included because it includes several hyperdimensional characteristics. The quote is from Paramahansa Yogananda's description of his first experience with *samadhi*, which is a kind of direct experience of God. *Samadhi* can be attained through certain meditational and yogic techniques. In this case, this state was initiated for the student by an action of his guru, and started out with a sense of expansion of self-identity out of the body. The quote describing

an initial part of the experience includes interior feature vision, 360-degree spherical vision, and seeing through a wall:

The roots of plants and trees appeared through a dim transparency of the soil, I discerned the inward flow of their sap.

The whole vicinity lay bare before me. My ordinary frontal vision was now changed to a vast spherical sight, simultaneously all-perceptive. Through the back of my head I saw men strolling far down Rai Ghat Lane, and noticed also a white cow that was leisurely approaching. When she reached the open ashram gate, I observed her as though with my two physical eyes. After she had passed behind the brick wall of the courtyard, I saw her clearly still. (1946, p. 142)

Adding Time to the System

Space and time have been considered to be closely related since the theory of relativity was generally accepted. If spatial dimensions are perceived differently during near-death and out-of-body experiences, there is reason to expect that time also will be perceived differently. The simplest example of this is that near-death experiencers frequently make the claim that they felt as if they were "outside of time" during the course of their experience. If you could actually move outside of time, and then turn around and "look back" at it, what could be seen? If time is considered a dimension closely related to the dimensions of space, it can be reasoned that someone who has moved to a hyperdimensional region will have the same kind of expanded overview of time that he has of spatial objects. You might be able to perceive events from different times, either in the past or future. You might even be able to perceive an event that occurred over time all at once, as a single complex object. If you were able to look at your life as a single very complex object, it would certainly be an object that is extremely lumpy or irregular in form.

While events in the past might appear to be fixed, the future must exist as an incompletely fixed form. The future might include a number of different possible courses of events, and these may shift in probability, or in how fixed they are, with changes in vantage point of the observer.

To comprehend viewing the past, present, and future, consider the analogy of watching a leaf going down a stream from above. Imagine that upstream the streambed is fixed, but downstream the stream spreads out over a flat, sandy delta. As the leaf travels downstream it cannot tell where it is going to go, but from your vantage point, you can see the stream shifting back and forth as it meanders on the sandy

delta. You can see the various probable courses for the leaf. You could intervene by changing the course of the leaf, either by reaching into the stream with a paddle and deflecting the water ahead of the leaf, or by reaching into the water slightly behind the leaf and stroking with the paddle to change the course of the leaf. The first case is analogous to changing the future of the leaf by altering the future directly. The second case is like changing the future course of the leaf by altering a past event.

In the same way that certain aspects of near-death experiences are perceived by metaphorical means, we should accept that there may be metaphorical means of perception of different times. For example, the decision whether or not to return to life during a near-death experience is sometimes associated with a physical representation of a limit beyond which there can be no return. In his first book on near-death experiences, Raymond Moody noted that this limit may appear as "a body of water, a gray mist, a door, a fence across a field, or simply a line" (1975, p. 73). All of these appear to be metaphorical representations of a decision point, beyond which there is no return to life. A metaphor allowing perception of the past or future, such as a television screen or cinematic projection, would be consistent with what we have learned from near-death experiences.

Perception of Events from the Past

George Ritchie described perceiving past events during his near-death experience as follows:

Here stood a being that knew everything I had ever done in my life, for the panorama of my life surrounded us, and yet He totally accepted and loved me. . . . I could see my birth and the death of my own mother a month later. . . . A short time later, I could see my sister, Mary Jane, who was almost three years older than I, along with Miss Williams, and my grandparents and father, looking at me in the crib. (1998, pp. 34–35)

Perception of Events from the Future

Ned Dougherty described perceiving future events during his near-death experience as follows:

The Lady of Light waved her right arm, and I watched as scenes, as if in a movie, developed before me. I became aware that I was watching future events of my life, scenes that were incongruent with the life that I had been living so far. (2001, p. 74)

Perception of Events Over Time as a Single Complex Object

Ring and Valarino presented an example of perception during a near-death experience of events occurring over time as a single complex object:

With regard to the question of time, everything happened instantaneously. The whole thing happened all at once but we are bound by the restraints of language. . . . It is like an explosion, it is all there. When my life went before my eyes, it was from my earliest memory at thirteen months. There was an enormous TV screen in front of me. . . . Way over on the left was my memory at thirteen months, and way over on the right was July, 1972, age thirty-eight. Everything in between was right there and I could see the whole thing, all at the same instant. (1998, p. 150)

The Hyperdimensional Model of Divine Intervention

According to this model, any being in higher-dimensional space would be able to observe beings in any lower-dimensional region, without generally being perceived by them. Those beings and their surroundings would be seen from a visual perspective less limited than that available to the lower-dimensional beings themselves. For example, interior objects, such as the internal organs of the lower-dimensional beings, would be clearly visible. There would be no spatial restriction preventing the higher-dimensional being from reaching into the lower-dimensional region and directly affecting objects there, even internal objects or organs (Figure 12). In addition, the higher-dimensional being would be able to see, from his or her perspective, the way future events would be altered, even as the intervention is performed.

Discussion

Available accounts of near-death and out-of-body experiences occasionally include remarkable visual perspectives that are consistent with a hyperdimensional model of perception. Although most published near-death experiences do not describe this kind of perspective, the existence of such visual perspectives in at least some accounts may be important. Why should hyperdimensional perspectives be produced by the mind without an external objective hyperdimensional experience? On the other hand, the existence of this imagery does not prove that additional dimensions exist.

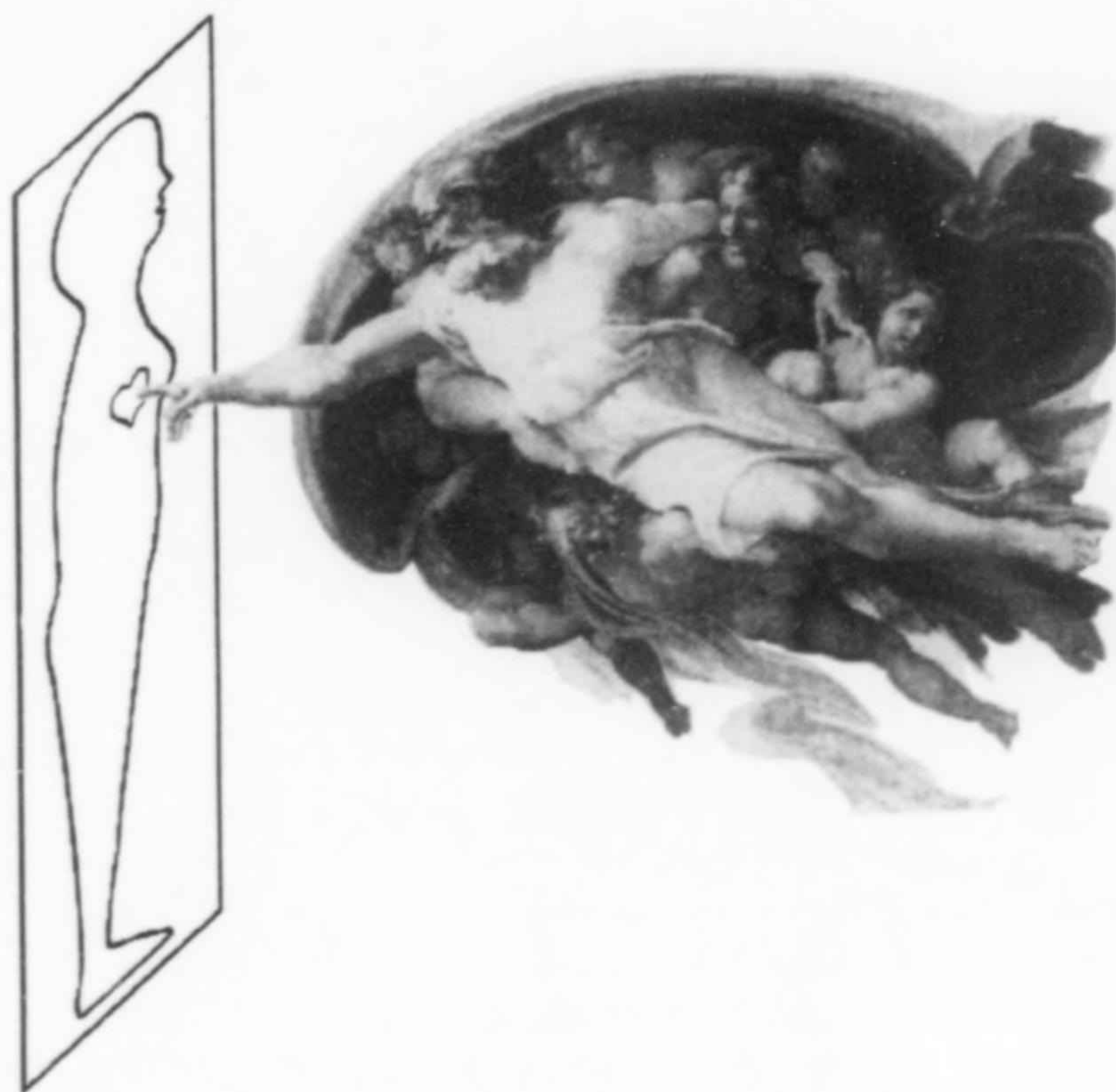


Figure 12. A depiction of divine intervention by a three-dimensional being (the image of God, from *The Creation of Man*, by Michelangelo, painted 1511–1512, the Sistine Chapel, Vatican City) who is able to view and interact directly with a lower dimensional being including with its internal structures. At the same time, the higher-dimensional being is not within the planar universe, and so can not be seen by the female being or others in that limited universe.

The hyperdimensional model was elaborated with certain assumptions that were found to be necessary. If these corollaries can be tested and proven false, the model as outlined here can be proven false. These corollaries include the following:

1. When a person has an out-of-body experience, there is an aspect of the person that is able to retain a kind of physical form that we are referring to for purposes of this discussion as an "astral body."
2. The astral body has the capability of perception at a distance, and the concept of "line of sight" has a functional meaning when applied to this kind of perception.
3. The astral body perception at a distance has a higher dimensional capability of imaging objects than the visual system of the original being.

4. The astral form, while able to move in an additional spatial dimension, retains at least initially the limited mental processing of spatial relationships of the original lower-dimensional being.

If the "astral body" described in this paper is the same as the consciousness of the person, then the kinds of vision-like perception described in this paper are a direct perception by consciousness. If the astral body includes a structure that interfaces between consciousness and the perceived universe, then there is a more indirect mechanism of perception. Some religious traditions hold that consciousness can separate not only from the physical body, but also from the astral body, and possibly undergo additional separations. In any case, whether what I am here calling the astral body represents consciousness alone or is associated with some other structure, the perceptions described here tend to have occurred early in the separation stage of near-death and out-of-body experiences. Because of this, these perceptions may represent an interaction of the hyperdimensional astral body with the more limited dimensional structure of our world, a special case of perception that would not continue after the experiencer moves farther away from our three-dimensional physical world.

At this point, it is appropriate to comment on an analysis of visual perception during the near-death experiences of the blind, done by Ring and Sharon Cooper (1999). Their report of a series of near-death experiences of blind people showed that most had some kind of vision-like perception during their experience. Because the perception was clearly not associated with any function by the physical eyes, they suggested that the perception was by a mechanism that they call "transcendental awareness." The possible mechanisms of perception suggested in the preceding paragraph could be considered additional characterization of the same mechanism proposed by Ring and Cooper.

The hyperdimensional model provides us with a theoretical means to advance our definition and understanding of near-death experiences. Once this model is understood, some of those aspects of these experiences that heretofore have been regarded as ineffable may become describable and understandable. If the additional dimensions predicted by modern physical theories are accepted without limitation of their size, then this model allows an explanation of the events described in these experiences that does not violate the laws of nature.

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At the Edge of Eternity's Shadows: Scaling the Fractal Continuum from Lower into Higher Space

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ABSTRACT: In this paper, I elaborate the hyperspatial implications of the fractal-scaling scheme that I introduced previously. Four case examples where out-of-body experiencers reported heightened and amplified visual capacities are correlated with this explanatory model. Three of these cases are identified as including an additional hyperspace signifier, the reported capacity to see through solid and opaque physical obstructions. One of these cases included yet another hyperspace signifier, the reported capacity to pass through such obstructions. Additional evidence supportive of this thesis is drawn from the literature on ecstatic experience, including out-of-body, near-death, and other varieties of mystical or visionary experience, and from that on psychedelic experience. Yet other hyperspace signifiers reported by ecstatic voyagers are also considered, including sensations of seeing outward spherically in 360 degrees and of seeing on all sides of three-dimensional solids simultaneously.

KEY WORDS: near-death experience; out-of-body experience; dimension; time; hyperdimensional; hyperspatial; perspective; fractal scaling; the higher self.

In a previous paper (Greene, 1999), I advanced a wide-ranging explanation for out-of-body experiences (OBEs) grounded inside a more general hyperspace theory of the paranormal. I introduced the notion that a fractal continuum exists between our three-dimensional realm of sensory awareness and a four-dimensional realm of hypersensory awareness, connecting but at the same time separating these two whole integer reality domains. I demonstrated how this particular rendering of hyperspace theory could be utilized to illuminate the various forms

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of embodiment (and states of disembodiment) associated with OBEs, near-death experiences (NDEs) and other varieties of mystical or visionary experience. I also pointed out how this theoretical approach could make sense of reported paranormal accompaniments to such ecstatic experiences. In the present paper, I expand upon a number of themes implicitly included in that earlier work, to further underscore hyperspace theory's enormous explanatory power.

As a prelude to this expansion, let us first review how I previously used the *fractal-scaling* scheme, as part of my effort to lay a foundation to understand ecstasy's experiential structures. In that earlier paper, I observed that the coastline of England, viewed by human eyes from several thousand miles above, possesses the geometrical properties of a simple curve or one-dimensional line. I then wondered what would happen if this coastline were examined from this height with a camera capable of clarifying this view. With each increase in the camera's resolution, that coastline's curves would become more complex, detailed, and irregular in shape. Using fractal geometry, I noted, it is logically feasible and mathematically correct to assign sufficiently complex curves a fractal value of more than one dimension. For instance, a coastline examined under sufficient resolution could take on a fractal value of 1.26 dimensions or 1.38 dimensions. Benoit Mandelbrot (1977), the discoverer of fractals, listed the precise rules whereby a complex line's fractal value can be ascertained.

But what happens when we continue this fractal-scaling scheme with a line to its logical conclusion? Eventually, that line will spread out completely into the plane and lose all pretenses to being linear. In other words, at a very minute scale, this line will assume the whole integer value of the plane, that is, the higher space that had been embedding it. Fractal scaling works not only when expanding up from one into two dimensions, but also when expanding up from two into three. And the same rules that determine the fractal value of a complex line determine the corresponding value of a complex surface. James Gleick (1987) offered one illustration of how fractal scaling bridges two and three dimensions. He invited readers to think

about a classic geological formation, a talus [boulder filled] slope on a mountainside. From a distance it is a Euclidean shape, dimension two. As a geologist approaches though, he finds himself walking not so much on it as in it—the talus has resolved itself into boulders the size of cars. Its effective dimension has become about 2.7, because the rock surfaces hook over and wrap around and nearly fill three-dimensional space like the surface of a sponge. (p. 106)

We might add that if we continued to examine these boulders as parts of a complex surface even more closely, in its total shape this fractal surface would continue to become even more three-dimensional.

But does the usefulness of fractal scaling cease when we reach three dimensions? Or might this scheme be found to be useful when conceptualizing an expansion up from three into four dimensions? Mandelbrot did not seriously entertain such a prospect in his book. However, aspects of fractal or fractional geometry have been incorporated into the theoretical musings of a number of researchers interested in a hyperspatial analysis of human nature and the cosmos. Parapsychologists, consciousness researchers, and scholars studying UFOs and alien abductions have all proposed or intimated the possible existence of a fractal continuum existing between our three-dimensional world and a higher four-dimensional world (Greene, 1999; McLaughlin, 1977, 1986; Rosen, 1994; Valle, 1991). Yet other researchers have advanced alternative or more general hyperspatial (and conceptually related multispatial) models of human nature (Audain, 1999; Comfort, 1984; McKenna, 1992; Millay, 1999; Murphy, 1992; Poynton, 1994, 2001; Rauscher and Targ, 2001; Ring and Valarino, 1998; Smythies, 1994, 2000; White and Krippner, 1977; Whiteman, 1961, 1967, 1986). In the present paper, I identify an additional range of evidence that is compatible with the fractal-scaling scheme and with the related notion that human beings possess not only a three- but also a four-dimensional capacity to perceive space. In this regard, it will become evident that the postulated form of transcendental awareness recently proposed by Kenneth Ring and Sharon Cooper (1999) is a subset to a more general capacity to perceive space in more than three dimensions.

Although he did not speak specifically of fractal scaling, Paul Davies (1992) has speculated on how our three-dimensional space may expand into a four-dimensional space. And the continuity linking his views and to those found in fractal geometry is startling. Davies wrote:

The ability of quantum fluctuations to "fuzz out" the physical world on an ultramicroscopic scale leads to a fascinating prediction concerning the nature of space-time. Physicists can observe quantum fluctuations in the laboratory down to distances of about $10^{-16\text{th}}$ cm and over times of about $10^{-26\text{th}}$ sec. These fluctuations affect such things as the positions and momenta of particles, and they take place within an apparently fixed space-time background. On the much smaller Planck scale [$10^{-33\text{rd}}$ cm and $10^{-43\text{rd}}$ sec], however, the fluctuations would also affect space-time itself. (1992, p. 62)

Davies went on to note that:

The theory of relativity requires that we view three-dimensional space and one-dimensional time as parts of a unified four-dimensional space-time. In spite of the unification, space remains physically distinct from time. We have no difficulty in distinguishing them in daily life. This distinction can become blurred, however, by quantum fluctuations. At the Planck scale the separate identities of space and time can be smeared out. (1992, pp. 62-63)

Davies then observed that "the most probable structure of space-time under some circumstances is actually four-dimensional space" (1992, p. 63). When we reach the Planck scale, he speculated: "Time begins to 'turn into' space" (1992, p. 63).

According to Davies, when the physical universe is examined at a sufficiently minute scale, that is, at the Plank length, its texture is revealed to be too complex to fit inside three-dimensional space. Rather, four spatial dimensions are required to make sense of all that happens at this cosmic level. In other words, aspects of the cosmos that we register in temporal terms manifest spatial qualities in this expanded reality domain. What, however, did Davies write about possible corresponding expansions in human consciousness moving up from three into four dimensions? Actually, he wrote nothing. As a scientist turned popular science writer, he concentrated on examining the physical implications of the ideas he was exploring. But the views he espoused, I would wager, are eminently compatible with, even corollaries of, the following conjectures.

Fractal Amplifications in Awareness and the Awakening of the Higher Self

Human awareness, in this view, is not confined exclusively to the three-dimensional world. And human beings possess more than just three-dimensional bodies. Each one also possesses a spatiotemporalized four-dimensional body existing in a four-dimensional space, the fourth dimension being outside of and at right angles to our three-dimensional space. I have discussed the rationale for positing the existence of this higher body elsewhere (Greene, 1981, Greene and Krippner, 1990, Greene, 1999). We might say that, during ordinary waking consciousness, the higher self occupying this hyperphysical organism is asleep and dreaming. Using a different metaphor, we could say that the higher self resides in a pre-birth condition waiting to be born into hyperspace.

But what is the content of this dream experience or, alternately, this fetal life? It is *the life of which we are conscious* in physical reality!

When a person's higher self begins to awaken or to be born into hyperspace, however, his or her view of reality begins to change dramatically. That person's three-dimensionally conditioned consciousness begins to *amplify*, as the reality slice he or she occupies begins to expand up into (and perhaps passes entirely through) this fractional continuum. Markedly greater powers of internal and external awareness are activated during this process of spatiotemporalization. The inhabited organism and the surrounding environment come under increasingly greater scrutiny from the awakening higher self. The four-dimensional self begins to feel, and otherwise sense, the operation of energies within this dream body. Awareness stretches down to encompass energetic activities occurring at the cellular, the molecular, the atomic, and then the subatomic level. This increased awareness of internal bodily energies, we can speculate, is to be associated with the activation of what has come to be called *kundalini* energy.

Any number of OBE reports, and other evidence gathered by parapsychologists and consciousness researchers, dovetail neatly into this fractal-scaling scheme. The following descriptions of the OBE environment clearly illustrate this relationship, as does the related material that follows. The first case comes from Ernesto Bozzano (1938). The account is that of his friend Giuseppe Costa, who remembered the experience from boyhood. One night after studying for an examination, Costa forgot to put out his lamp before falling asleep. While slumbering, he accidentally knocked over this lamp and woke up to the smell of heavy smoke in his room. As recounted by Herbert Greenhouse (1975):

Suddenly he found himself in the middle of the room, yet his physical body still lay on the bed, still asleep. He now saw the room with much keener sight than with his physical eyes, "as though a physical radiation penetrated the molecules of the objects." He could see into the interior of his own body with "its cluster of veins and nerves vibrating like a swarm of luminous living atoms."

He felt "free, light, and ethereal." When he tried to open the window of the smoke-filled room, however, he was unable to do so. He could see through the wall into the next room where his mother lay sleeping. Her body gave off "a luminosity, a radiant phosphorescence." He watched her hurriedly get out of bed, run out of her room into the hall, and rush into his room and over to his bed, where she shook his physical body. At that moment he woke up with "parched throat, throbbing temples, and difficult breathing." (p. 42)

But how was Costa apparently able to *see* into the interiors of his own body and also through his bedroom wall into the adjoining room? And why was he unable to open the window while existing within this astral state? I offer higher space explanations to clear up each of these mysteries in the following section.

The next case is from Joseph McMoneagle (1993), who described the visual acuity he experiences during OBEs:

Both animate as well as inanimate elements are seen with such pristine clarity that you can actually discriminate molecular moment within them. For example, looking at a table is like looking at an energy field in the shape of a table, with billions of component parts or elements contained within the energy field moving or interacting with each other. (p. 127)

A third example comes from Dianne Morrissey (1996). In 1978 she was accidentally electrocuted in her own home and hovered between life and death for the next 35 minutes. Upon recovering, she found that the experience had transformed her life. As a result, she went back to school and obtained a doctorate in psychology and is now an active researcher in the field of near-death studies. During the period of her electrocution, she apparently floated up out of her body and then seemed to pass through a dark tunnel that opened up into a heavenly realm. For our purposes, let us focus on the initial portion of her journey, as she appeared to look down from ceiling height onto the scene she was leaving behind. She wrote:

Everything still looked the same—the furnishings, the walls—but there was a new dimension to the scene—it had become transparent. I could see everything more clearly than before, and like a scientist, I found myself looking at life through a microscope, discovering minuscule particles of matter normally invisible. (p. 23)

A similarly fascinating case was recounted by Kimberly Clark Sharp (1995). Joan Berryman reported that during an apparent NDE-related excursion out of her body she experienced the vivid sense of passing through a wall. During the experience, she found herself focusing her attention upon a hand. Later, she could not remember if it was her own hand. However, she reported that “she saw the skin and muscles and bones simultaneously—saw all of it, even though an X-ray machine could not” (Sharp, 1995, p. 139). She went on to say:

Surfaces did not block my ability to “see.” I was aware of the blood moving through the veins and also aware of the cells that made up the blood as well as the molecules that made up the cells. The limitation

of my senses was lifted. I could perceive reality as we know it exists, but cannot normally see it. (Sharp, 1995, p. 139)

Interestingly, while comparing elements in an NDE she had personally experienced with those in the above account, Sharp came to the following realization:

Joan had hit upon something . . . that I knew was true, but found difficult to explain. When I experienced the gray, foggy place during my near-death experience, I knew I was in a place that existed in the real world, though I couldn't recognize it at the time. I think that's because the fog consisted of subatomic particles—a soup of matter that forms the basis of the physical world—which cannot be seen without an electron microscope. The fog was light and dark, energy radiated and absorbed, the yin and yang of quantum physics. (1995, p. 139)

Thus, Sharp adopted a view of NDEs that is strikingly similar to that provided by my theory's fractal scaling scheme.

All four of the above experiencers described what appears to be a heightening in, or amplification of, their perceptual faculties during OBEs. And Sharp's speculation about her own experience provides us with additional material to ponder in this same vein. Yet another NDE survivor reported what seems to be a similar heightened visual-perceptual capacity. P. M. H. Atwater (1989) wrote that, several days after surviving an NDE, she found herself "able to see with seemingly X-ray vision each individual cell and groups of cells deep inside myself" (p. 40). We may suppose that the fractionally dimensioned senses of each of these subjects provided them with a hyperacute awareness of their physical world surroundings. Also compatible with this understanding are reports of enhanced visual acuity during OBEs from Ingo Swann. He reportedly sees "the forms of certain light rays, ionization of the air around changing light sources and reflections off shiny surfaces" during his OBEs (Mitchell, 1978, p. 158). Discussing this same perceptual effect, Celia Green (1968) noted that OBE subjects "sometimes report that their sensory acuity is increased in the ecsomatic [out-of-body] state, saying that their senses were 'heightened or enhanced'" (p. 72). Similarly, Russell Noyes, (1979), reporting on his study of NDEs, noted that "Many claimed heightened perception together with increased acuity of vision and hearing" (p. 75). Ring's findings were also comparable. He observed that many of his NDE subjects reported "very acute hearing and sharp but detached mental processes" (1984, p. 32). Ring went on to note that "visually, the environment was often described as very brightly illuminated" (p. 32).

Yet other researchers working in other areas of consciousness research have reported related findings. The world's leading authority on the phenomenology of lysergic acid diethylamide (LSD), Stanislov Grof, has come to believe that psychedelics have the capacity to amplify human consciousness. He considered a particular class of experience in which:

LSD subjects have stated that they experienced themselves as neurons in their own brains, white and red corpuscles, uterine epithelium, or germinal cells. The commonly reported experience of identification with the ovum and sperm at the time of conception belongs to this category. Another interesting phenomenon is the conscious exploration of the cellular nucleus and the genes in the chromosomes; this can be combined with the feeling of "reading one's DNA code." . . . [E]pisodes of organ, tissue and cellular consciousness can be associated with many concrete insights; various details concerning anatomy, histology, physiology and chemistry of the body found in the accounts of such experiencers often reveal a level of information the subjects did not have before the sessions. Some of the phenomena in this category bare a close resemblance to scenes in the movie *Fantastic Voyage*; references to this film are frequently found in the descriptions of such LSD experiences. (1975, p. 191)

More recently, Grof (2000) has charted such amplifications in awareness under the heading of "Experiential Explorations of the Microworld." In Grof's cartography of consciousness states, he listed this particular class of transpersonal experiences in the following order: (1) "Organ and Tissue Consciousness," (2) "Cellular Consciousness," (3) "Experiences of the DNA," and (4) "Experiences of the World of Atoms and Subatomic Particles" (2000, p. 58).

In Grof's taxonomy, the category of transpersonal experiences that directly follows the above listing is entitled "Experiential Extensions Beyond Space-Time and Consensus Reality." Judged from within the context of the present fractal-scaling scheme, Grof's arrangement of transpersonal experience categories is neither coincidental nor arbitrary. Rather, this arrangement is compatible with the notion of a fractal continuum allowing human awareness to expand both downward into the infinitesimal reaches of the physical universe and upward out of a three- and into a four-dimensional view of the cosmos.

In his seminal investigation on the effects of dimethyltryptamine (DMT) on human consciousness, Rick Strassman (2001) reported findings similar to those of Grof. In particular, he observed: "At the most basic biological level was the perception of DNA and other biological components" (p. 177). One of Strassman's subjects reported:

The visuals were dropping back into tubes, like protozoa, like the inside of a cell, seeing the DNA twirling and spiraling. They looked gelatin-like, like tubes, inside which were cellular activities. It was like a microscopic view of them. (p. 177)

Here we should observe that seeming amplifications in consciousness experienced by those undergoing OBEs and NDEs are not necessarily identical to the psychedelic or *mind-expanding* experiences recounted by Grof's and Strassman's subjects.

Those who imbibed powerful hallucinogens sometimes reported not only that their consciousness was amplified to the point where they could actually see and explore themselves at the cellular level; during psychedelic intoxication, subjects typically experienced the vivid sense of actually *living* at the cellular level. The OBE subjects whose accounts I have quoted above did not report such sensations. To make sense of these distinctions, we can use an *interstate highway* metaphor popularized by Robert Monroe (1985). It is almost as if both sets of subjects, that is, the OBEs quoted above and Grof's subjects (and perhaps Strassman's), were traveling down the same interstate to consciousness expansion, and then their itineraries diverged. Hallucinogenic subjects reached a particular destination and got off this highway to mix with the locals. These OBEs, on the other hand, may be said to have passed along to a farther destination, or returned to their home locales without getting off this highway.

In any event, apparent amplifications in visual acuity are not the sole commonalities linking OBEs to LSD experiences. Under the influence of LSD, or other powerful hallucinogens like DMT, subjects occasionally report undergoing the entire spectrum of altered consciousness states associated with ecstatic and mystical experiences (Masters and Houston, 1966; Tart, 1969; Grof and Bennett, 1990).

Also relevant to this line of speculation is Dean Radin's (1997) provocative suggestion that "clairvoyance is normally thought of as the ability to perceive across vast distances. . . . But it is equally possible that clairvoyance can allow us to see across infinitesimally *tiny* distances" (p. 292). In support of this view, Stephan Phillips (1995) provided evidence that a century ago two Theosophists used clairvoyance to perceive subatomic particles. As Radin noted:

Their descriptions didn't make sense at the time, or for many decades afterward. But now, their descriptions bear a remarkable resemblance to the quark model of particle physics and to superstring theory. (1997, p. 292)

Superstrings, we should note, are conceived to exist in a space of at least 10 dimensions that is thought to be located somewhere beneath the Plank length.

Expanded Spatial Perspectives

In this paper, I have offered four examples (and much supporting background evidence) in which the experiential structure of OBEs may be seen to be compatible with this theory's fractal scaling scheme. In each of these cases, we see what may be construed to be evidence of consciousness amplifying, and of experiencers passing through, a fractal continuum on their way out of three and into four dimensions. And in three of these cases, we find what I would argue to be additional hyperspace signifiers. In other words, the forms of perception (and in one case movement) that are reported make no sense inside the context of our three-dimensional view of reality. They do, however, make eminent sense if the experiencers were beginning to operate with an at least partially awakened four-dimensional space sense. And when all of this evidence is examined in light of additional experientially related cases also considered in this paper, and with yet other characteristic features of ecstatic experiences not yet entertained, the hyperspace implications become all the more profound.

In the first case quoted, Costa described an apparent ability to see through solid physical obstructions during his life threatening OBE. Similarly, Morrissey reported that her physical world surroundings became transparent, when viewed from an out-of-body perspective. And Berryman reported not only that she could see into the interiors of a human hand but also that she seemed to pass through a wall during her NDE. And other experiencers we have quoted, such as Sharp and Atwater, reported very similar perceptual effects. The forms of perception and penetration reportedly experienced by these subjects defy rational explanation when examined within the context of our contemporary materialistic worldview. However, a hyperspatial conception of human nature does begin to illuminate these reports and makes sense of numerous other descriptions of anomalous perceptual capacities reportedly experienced by ecstatic voyagers.

To begin to appreciate why, let us imagine what life would be like for a sentient being confined to a two-dimensional universe who is then elevated up into a three-dimensional view of reality. Guided by the *laws of geometrical progression*, we will then extrapolate our findings

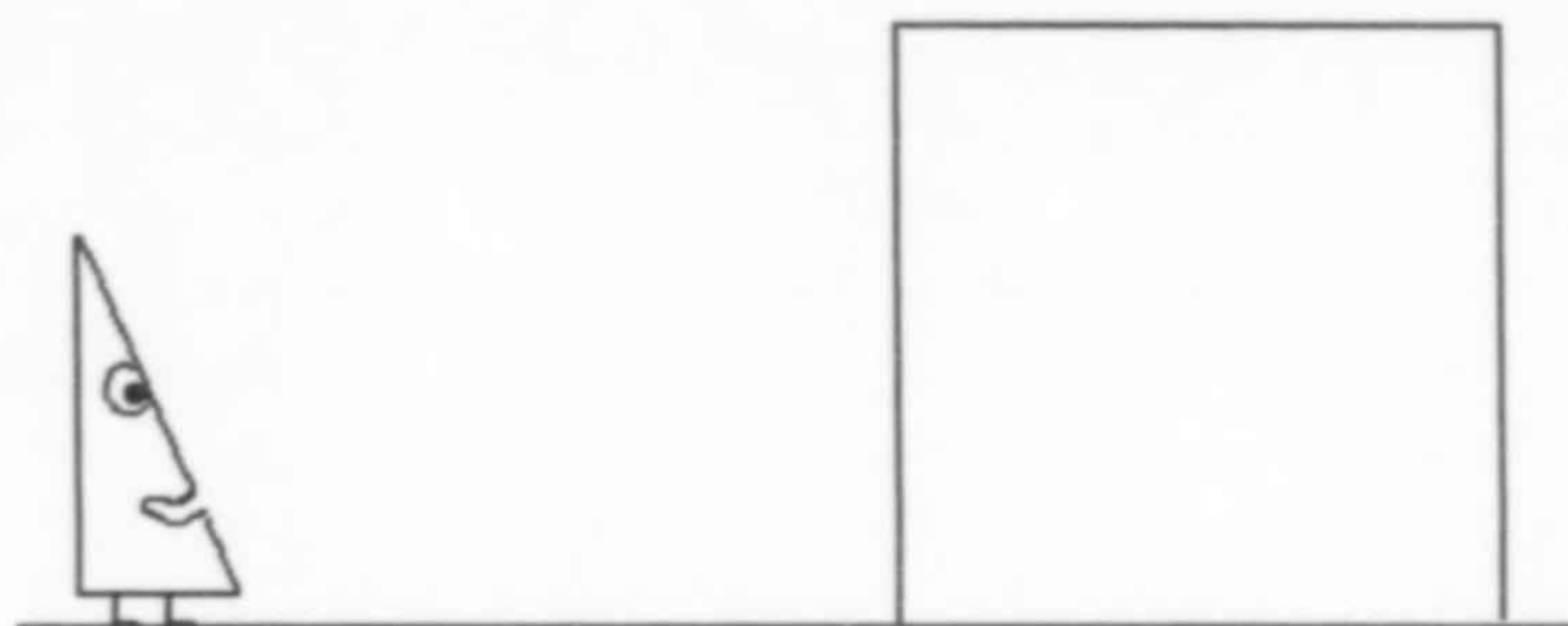


Figure 1.

up from three into four dimensions. In the above scene, we see the representation of a sentient two-dimensional being confined to a realm we will call Flatland, in honor of Edwin Abbott's (1884) hyperspace classic.

In Flatland, spatial relationships holding true in three dimensions are reduced to equivalent relationships holding true in two dimensions. For example, a closed figure in Flatland corresponds to a solid body in three dimensions. And a linear subsection of such a closed figure corresponds to the surface subsection of a three-dimensional body. Similarly, two-dimensional beings perceive line segments in a way that corresponds to how we perceive surfaces. And just as the surface of a brick wall in our world blocks our view of what is on the other side, so in this lower realm a line segment would do the same thing. In the above scene, then, this Flatland being cannot see through the linear obstruction to his front into the interiors of this two-dimensional building.

Now, what would happen if this Flatland inhabitant were somehow lifted up out of the plane while being able to look back on this two-dimensional scene from without? From this extradimensional vantage point, this being would be able to see *over* what had previously been an obstruction into the interiors of this building. And if this being were then to pass over this obstruction and drop down into these interiors, he would have accomplished a form of transport that would be impossible if movement were limited exclusively to this two-dimensional realm. For a Flatland being totally lacking in any awareness of the possibility of movement in a higher direction of space, passage into the interior of this closed structure would be a miraculous event. One piece of solid two-dimensional matter, the body of our higher space traveler, would apparently have passed right through that of another, the wall of this two-dimensional structure.

We also notice that, from this extradimensional location, our higher space voyager has access to a view of the lower-dimensional figures before him on *all sides at once*. For example, he can now see the top, the bottom, and both sides of the building in this scene simultaneously. However, before his ascent he could only see the one side of this building directly facing him. And while looking back on Flatland from without, if this being were to lock the focus of his attention on any particular point or location in this scene, his peripheral awareness would extend outward along a circular path arcing in 360 degrees. However, before his ascent he could only look in one direction at a time, with his visual field limited to no more than a 180 degree view of any scene before him. Now what do these last two observations have to do with ecstatic experiences? To begin to understand, we need to shift our focus up from the hypothetical case of looking down from three into two dimensions to its higher dimensional analog. In other words, we have to imagine the hypothetical case of looking back from four into three dimensions, guided by the laws of geometrical progression.

The capacity to see over lines becomes a capacity to see over three-dimensional solids. The capacity to see on all sides of two-dimensional figures at once becomes a capacity to see on all sides of solid objects at once. And finally, the capacity to see outward along a circular arc extending in 360 degrees becomes a capacity to see outward along a *spherical* arc extending in 360 degrees. But what, then, does all of this have to do with ecstatic experiences? Not infrequently, ecstatic voyagers report sensations of seeing and passing through solid physical obstructions during their ecstatic sojourns, as has been illustrated by certain of the cases quoted above. However, also somewhat common are reports of spherical vision, that is, of being able to see outward spherically in all directions at once along a 360 degree arc. And a few ecstatic voyagers have reported the sense of seeing three-dimensional solids on all sides at once. Ecstatic voyager reports of each of these experiential effects are offered in Robert Brumblay's (2003) paper, also included in this issue of the journal. Such reports also figured into Ring and Cooper's (1999) conceptualization of "mindsight" evidently experienced by the blind during NDEs and OBEs. As noted on the back cover of their book, this postulated form of perception involves "the strange experience of being able to perceive from all angles at once, from every focal depth at once."

However, there is at least one major conceptual problem that must be resolved in order to reconcile all of the above evidence and conjecture into a hyperspatial framework. Our hyperspace analogy only holds true when

we assume that those reporting these experiential effects are actually looking back at our world from an extradimensional perspective. Unfortunately, this does not seem to be reported in the majority of cases. Most ecstatic voyagers have reported the vivid sense that they were *outside* of their physical body but still *inside* three-dimensional space when they sensed themselves to be seeing and passing through walls and ceilings, or sensed themselves to be seeing outward spherically in 360 degrees. Where an ecstatic voyager might have been located while reportedly seeing three-dimensional solids on all sides at once is another question. There may be too few cases on record for us to establish a general *reported location* rule for this experiential effect. How do we resolve these curious discrepancies?

As originally posited elsewhere (Greene, 1999), we simply assume that these voyagers are mistaken about their whereabouts. This assumption also makes sense of parapsychologists' failure to capture physical evidence of astral bodies in the laboratory during OBE experiments conducted throughout the 1970s (Alvarado, 1982; Blackmore, 1982; Irwin, 1985). Although ecstatic voyagers think they are still inside three-dimensional space separate from their physical bodies, they really are not. They are looking back at our world from a four-dimensional location, but cannot see the *depth* in this higher dimension. This leads them unconsciously to subtract the distance they have traveled in this *invisible direction* and mistakenly believe themselves to be located in the scene they are actually viewing from without. I worked out the details of this interpretation elsewhere (Greene, 1999).

Just as Plato's underground slaves confused their actual identities and locations with that of their shadowy cave wall reflections, so these voyagers are making what is essentially the same mistake—one dimension removed upward! Just as babies in our world must develop depth perception through experience, a similar four-dimensional challenge occupies ecstatic voyagers during the initial stages of their ecstatic journeys. This interpretation also allows us to make sense of Costa's inability to open the window to his bedroom during his OBE. While in this condition, he was actually further away from this window than he realized, separated from it by a *depth dimension* of space he had yet to learn how to perceive.

Adopting this assumption allows us to make sense of other similar reports found predominantly in the near-death literature. Somewhat frequently, during the scene of their accident, or while undergoing an emergency room operation, NDErs have reported a curious sensation. They have stated that they experienced the vivid sense that a rescue

worker or a doctor or a nurse had passed right through their astral body to attend to their life-threatened physical body. Although these voyagers appeared to themselves to be in the scene where their physical body was being resuscitated, they were somehow inexplicably intangible, even though some of them sensed that they occupied some sort of spiritual body or astral form.

How, then, do we explain these effects, that is, that ecstatic voyagers are typically invisible and intangible to living human beings and cannot typically make contact with three-dimensional solids? Once again, these voyagers think that they are down in the scene they are viewing. But they are actually spectators some small distance away from this scene, separated from it by a dimension of space they have yet to learn how to perceive. When they reach out to touch an object or body in the scene before them, they oftentimes end up grasping at air because this scene is actually more distant from them than they realize. When a living human being seems to walk right through them, what is being penetrated is not their actual spiritual body. Rather, what this attendant is walking through is that voyager's *illusory projection* down into a reality level that the voyager's subtle or astral body does not actually occupy. And when ecstatic voyagers seem to see and pass through brick walls and other solid obstructions, they are actually seeing and passing *over* these barriers. They simply misconstrue what is happening due to an inability to perceive depth in the four-dimensional environment they have (partially or incompletely) entered.

The astute critic could challenge this interpretation by noting that such voyagers sometimes do report some form of contact as they try to touch a physical body. One of Raymond Moody's patients attempted to place her "spirit" hand on his shoulder while he was resuscitating her physical body; later she reported that her hand passed right through his arm and that she felt "something that was the consistency of 'very rarefied gelatin' that seemed to have an electric current running through it" (Moody and Perry, 1988, p. 7). If ecstatic voyagers like this woman are not actually out of their bodies, and immediately adjacent to the physical body or object they sense they are contacting, then where are they and what is it that they are contacting? They are contacting an *extradimensional extension* to the physical body they think they are contacting. And this extradimensional extension actually is directly adjacent to them, but in hyperspace, not in the three-dimensional reality slice they are actually viewing from without!

The situation confronting such a voyager may be clarified by returning to Plato's cave allegory. Here we are to imagine once again

a situation in which a group of underground slaves chained next to one another confuse their true identities and locations with that of their cave wall reflections. In the same way that such a slave might actually touch his neighbor, but believe that the action was taking place among the shadowy cave wall reflections before the two of them, so ecstatic voyagers like Moody's subject are making a similar perceptual mistake. This patient, in other words, actually contacted an extradimensional extension to Moody's physical body, while mistakenly thinking that her spirit hand was passing through his physical body. Interestingly, one of the properties of hyperphysical touch between two four-dimensional bodies involves a kind of three-dimensional-like immersion of each of these bodies into that of the other. In a future paper, I will examine a variety of ecstatic voyager reports of astral sex and mystical immersion, as occasions where the hypersurfaces of two four-dimensional bodies have come into hyperphysical contact with one another.

Conclusion

In the present paper, I have offered a fractally dimensioned and hyperspatial analysis of many characteristic features of ecstatic experiences. But why have I complicated this interpretation by positing the existence of a fractal continuum, and the accompanying notion that ecstatic voyagers initially inhabit fractal bodies before they spatiotemporalize more completely, to occupy fully extended four-dimensional space/time bodies? Would the problems confronting us not be easier to understand if we could frame them exclusively in terms of purely three- and four-dimensional spaces and bodies? As I noted elsewhere (Greene, 1999), many of the forms of embodiment recounted by ecstatic voyagers make no sense when we think exclusively in terms of purely three- and four-dimensional bodies. Rather, judged from within the context of this theory, the vast majority of these embodiment forms are clearly identified to be *fractally dimensioned projections from hyperspace*.

We should also observe that many of the seemingly amplified perceptual capacities documented and analyzed in this paper also do not make sense inside the context of such a whole integer theory. They do, however, make eminent sense when viewed as examples where ecstatic voyagers accessed fractally dimensioned sensory/perceptual capacities. Ecstatic voyagers existing within this fractal condition occupy an *in-between* realm that is more than three- but less than four-dimensional. This is the *imaginal realm* of Ring (1990) and other researchers and the

middle realm of Moody (Moody and Perry, 1993). Such voyagers are like amphibians capable of traveling between land and sea. They may, then, transit through the fourth dimension, in fractally dimensioned increments, to visit the past or future. Such voyagers may even bend back some (perhaps fractally dimensioned) portion of their higher dimensional world-line body, and travel along this appendage to penetrate into our three-dimensional world to a lesser or a greater extent. This type of maneuver allows voyagers to engage in such reputedly psychic feats as traveling clairvoyance and remote viewing. When a voyager's fractal body occupies a section of this appendage that has come into minimal contact with a portion of our three-dimensional reality slice, an apparition of the living may result. When the penetration is more substantial, a temporary materialization, or bilocation, may ensue.

But what happens when an ecstatic voyager spatiotemporalizes completely, rather than just partially? As I have argued previously (Greene, 1999), the physical world dreamer merges completely into his or her fully awakened four-dimensional self, and that higher self utterly transcends the three-dimensional world. Those who have attained such a spatiotemporalized condition might even animate this time-body and move within it through hyperphysical realms of heavenly splendor. Paradoxically, during full hyperspatial arousals, the three-dimensional reality slice left behind may evaporate away entirely, relative to the infinitely more substantial fourth dimension. Our world, considered from such a perspective, may become no more real than are the shadows of real things in physical reality. For those who have spatiotemporalized completely, then, there may be nothing left to look back at in the three-dimensional universe. Only during fractally dimensioned expansions in consciousness, when experiencers remain in between worlds, might the physical universe remain real enough to be perceived paranormally, sometimes as if from without.

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BOOK REVIEW

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DMT: The Spirit Molecule. A Doctor's Revolutionary Research into the Biology of Near-Death and Mystical Experiences, by Rick Strassman. Rochester, VT: Park Street Press, 2001, 358 pp + xviii, \$16.95 pb.

DMT: The Spirit Molecule describes the first serious scientific research done with an extraordinarily intense and fast-acting, yet short-duration, psychedelic substance that occurs naturally in the human body, *N,N*-dimethyltryptamine, or DMT. It is also the story of overcoming the difficulties of doing research that the federal government would rather nobody do, and the toll this research took on the scientist as well as on the science. In addition to giving us his account of the rigorous science involved, psychiatrist Rick Strassman freely and ingeniously speculates as to the relationship of DMT to other extreme experiences, including near-death experiences, mystical experiences, and, surprisingly, alien abductions.

Chemically the simplest of the tryptamine psychedelics, DMT is found not only throughout the plant and animal kingdoms, but is also an endogenous human psychedelic; that is, it normally occurs in the human body. One of the constituents of snuffs and brews used by South American shamans for thousands of years (it is especially prevalent in South American plants), DMT was first isolated in 1946, and then briefly tested by Hungarian chemist and psychiatrist Stephen Szara in the 1950s. DMT gained a reputation as being a rather frightening substance, and lay fallow scientifically for several decades.

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By 1990, Strassman, a professor at the University of New Mexico School of Medicine, had obtained permission from the United States Government's Drug Enforcement Agency and numerous review boards at the University of New Mexico to conduct a study to determine the range of psychological experiences that result from ingesting DMT. Strassman administered roughly 400 doses of DMT to 60 human volunteers. What he found and reported on was an extraordinary range of experiences, from moments that resembled full-fledged psychotic episodes with paranoid fantasies to reports that seemed in form and tone to resemble classical mystical experiences. A large percentage of the book consists of first person reports supplemented by laboratory notes of what individuals actually went through during their DMT experiences, including bizarre encounters with alien worlds and entities.

Of particular interest to readers of this journal were those reports that seemed very similar to classic near-death experiences, as well as a series of narratives that read like the reports of alien abductions. A major speculation, based on Strassman's research, is that during times of extreme duress, the human body may generate a sudden excess of DMT from the pineal gland. Crossing the blood-brain barrier almost instantly, this DMT triggers biochemical changes that are reported as experiences of cosmic consciousness, mystical union with the godhead, near-death experience, and enlightenment. It may be that our brains and minds undergo the same experiences whether DMT is released spontaneously upon trauma or administered under strict laboratory conditions.

Strassman also takes us behind the curtains of conventional scientific reporting and freely describes the obstacles, the failures, and the personal difficulties that he encountered during the years it took to get permission for, and to conduct, his research. An ironic parallel is that the seniors in his own religious community became equally as unhappy with his continuing research as did the established scientific hierarchy.

This is not a "woo-woo," everything-is-terrific, psychedelics-are-for-everybody book. It is a sober, even somber, tale of the difficulties met along the research path, even by one committed to playing by the rules. Moreover, as the book goes on, it becomes increasingly clear that Strassman himself had come to the "undeniable realization that DMT was not inherently therapeutic" (p. 276), and that "Risks were real, and long-term benefits vague" (p. 277), and that despite the number of near-death and mystical sessions, there was an "ineffectiveness in effecting any real change" (p. 277). For about the first third of the book, I (J. F.) wanted to do nothing more than experiment personally with DMT. By

the middle of the book, however, I was less sure, and, by the end of the book, I decided I had far less interest.

This book should be considered as explanatory literature regarding possible physiological events linked to near-death and related experiences. Taking us from the inner workings of the government/university/medical research matrix to the inner workings of the human brain and mind, *DMT: The Spirit Molecule* is an often gripping tale of how real-world science can be brought to bear on transordinary experience and accompanying brain function.



BOOK REVIEW

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Ketamine: Dreams and Realities, by **Karl L. R. Jansen**. Sarasota, FL: Multidisciplinary Association for Psychedelic Studies, 2001, 355 pp., \$14.95 pb. (Available from www.maps.org.)

Karl Jansen's new book, *Ketamine: Dreams and Realities*, summarizes a tremendous amount of basic and clinical data about ketamine, an anesthetic agent that, in subanesthetic doses, elicits a syndrome quite similar to that seen with the classical hallucinogens like lysergic acid diethylamide (LSD), dimethyltryptamine (DMT), and psilocybin (Bowdle, Radant, Cowley, Kharasch, Strassman, and Roy-Byrne, 1998). This unique and valuable book is most notable for the wealth of first-person accounts by recreational ketamine users. In including these accounts, Jansen greatly expands the only other comparable publication, by Ronald Siegel nearly 25 years ago (Siegel, 1978). Considering the recent upsurge in ketamine use and abuse, this is an important and timely contribution. It also complements the increasing use of ketamine in psychiatric research as a "psychotomimetic" agent (Krystal, Karper, Seibyl, Freeman, Delaney, Bremner, Heninger, Bowers, and Charney, 1994).

The Multidisciplinary Association for Psychedelic Studies (MAPS), a nonprofit organization promoting education about, and research into, hallucinogens and marijuana, published *Ketamine: Dreams and Realities*. In addition, the founder of DanceSafe, a group dedicated to minimizing the harm done to those who take drugs in nightclubs and other large dance venues, wrote the Introduction to this book. Thus, in the spirit of "harm reduction," Jansen does not attempt to gloss over the problems associated with ketamine abuse.

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Jansen published a paper outlining his theories relating ketamine and the near-death experience in this *Journal's* Fall, 1997 issue (Jansen, 1997), and I was one of several invited commentators. His basic hypothesis was that since ketamine administration replicates many of the features of the naturally-occurring NDE, and since endogenous ketamine-like compounds may exist in the brain, these endogenous substances could mediate NDEs. The "neuroprotective" effect of ketamine-like compounds might explain the reason for the release of these substances near death. However, as I suggested in my comments on this paper, there is no need for such chemicals to be psychedelic (Strassman, 1997), unless of course, they truly do mediate our perception of a nonmaterial reality.

While his book reviews this material in greater detail than the 1997 paper, the intervening years have produced little additional support for endogenous ketamine-like compounds in the brain. Thus, Jansen emphasizes here the descriptive similarities between ketamine intoxication and NDEs more than the causative role of ketamine or related compounds in the phenomenon.

Part I, "The Light Within," paints a broad view of the history of ketamine and the context of its current popularity in Europe and North America. Jansen presents in detail the stories of two well-known ketamine abusers, Marcia Moore and John Lilly, who, while valuing and enjoying its effects, later lost control over their use. This helps set the stage for later descriptions of its effects, reports that Jansen obtained from interviews and written correspondence, and a review of the literature.

Jansen then discusses the similarities between ketamine effects and those of the NDE, similarities that are evident and striking. This section concludes with some far-reaching speculation about how ketamine might modify brain function and consciousness to generate these effects. The works and writings of Stanislav Grof and Timothy Leary figure prominently in this section.

Part II, "The Dark Side," describes adverse effects of ketamine, including dependence and its treatment. Jansen also offers advice on how to minimize physical and psychological problems when using ketamine. Part III, "Unity," summarizes Russian psychiatrist Evgeny Krupitsky's pioneering ketamine-assisted psychotherapy research (Krupitsky and Grinenko, 1997), and suggests future areas for similar investigations.

Upon completing reading this book, I experienced a feeling that it could have been more. Maybe it was the sense of the search for meaning, health, and personal integration that Jansen's respondents relate, and their difficulty obtaining these through their ketamine use. Perhaps the

nature of these reports, all retrospective and not obtained in a clinical research setting, gave the impression of too-great "exegesis" in their reporting. Also, I was left wondering how similar the ketamine and near-death conditions really are. Jansen's figure that 15 to 50 percent of those who enjoy ketamine's effects develop ketamine abuse, does not comport with the natural history of those who have had a spontaneous NDE. That is, those with a "real" NDE rarely make repeated attempts to reproduce such experiences, and instead put into effect the lessons learned.

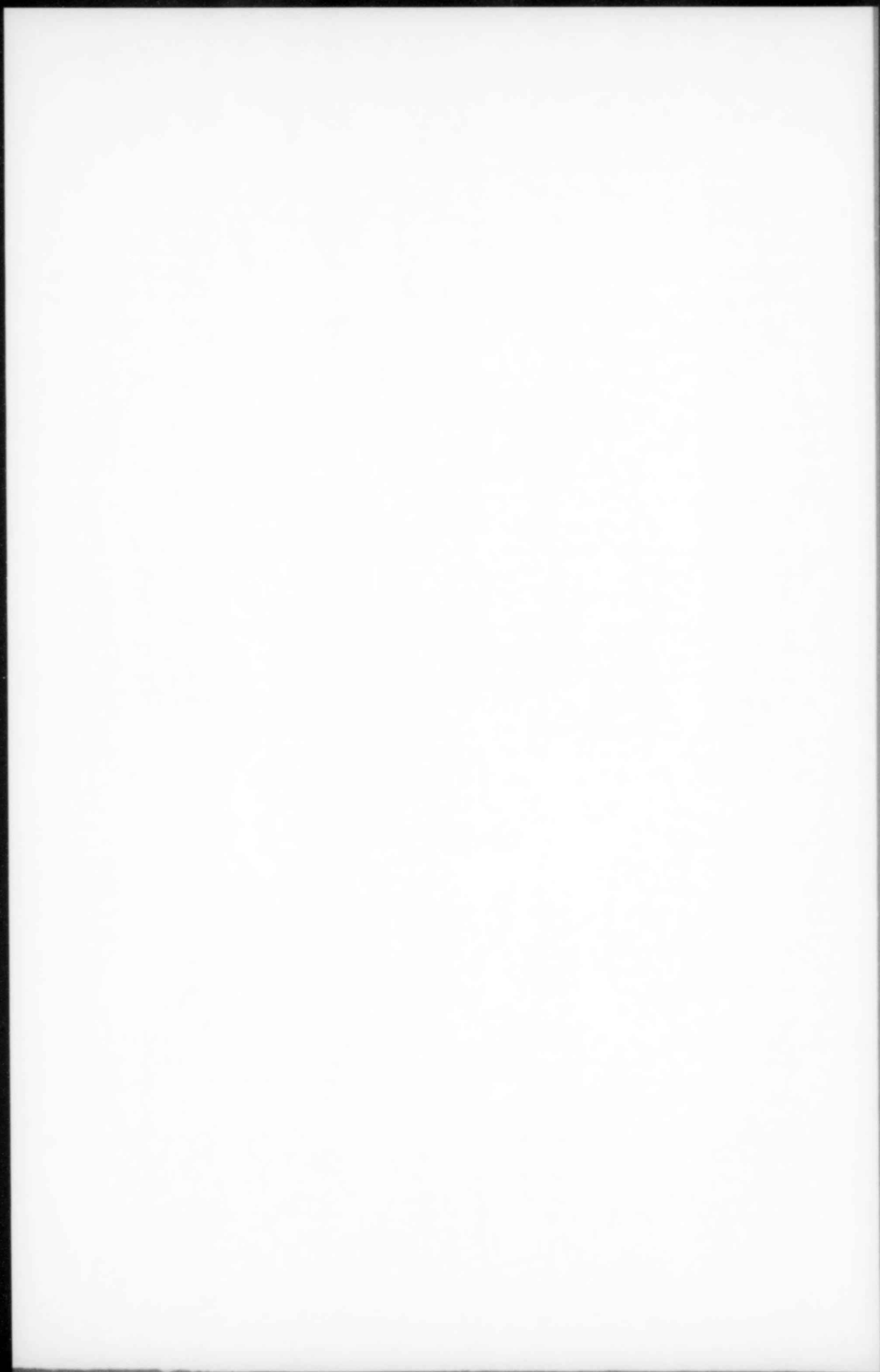
These concerns do not diminish the importance of ketamine in understanding the biological concomitants of near-death experience, nor ketamine's potential therapeutic utility. However, they may restrain enthusiasm for overinterpreting the data.

Jansen's attempt to align himself squarely within the ketamine "scene," while it may appeal to those within that milieu, seemed unnecessary for a book that purports to offer a balanced perspective. While Jansen is a fount of information and opinion regarding the social contexts of drug use, consciousness, religion, and science, a second edition would benefit from focusing his writing.

Despite these shortcomings, there is no other book on ketamine as exhaustive and thorough as this one. The reference list contains 635 citations, and it is well-indexed. The full gamut of ketamine's subjective effects appear here, and anyone with an interest in why people take mind-altering drugs will find Jansen's book indispensable.

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Letters to the Editor

William James and Near-Death Experiences

To the Editor:

Five generations ago during the 1901–1902 academic year, the great American psychologist and philosopher, William James, gave a series of lectures at Edinburgh on “The Varieties of Religious Experience,” which were subsequently published in a book of the same title (James, 1936). I believe that many of the insights discussed in those lectures are relevant today to the understanding and study of near-death experiences (NDEs), in particular his insights into mysticism, medical materialism, and religious science.

NDEs are religious mystical states of consciousness. James defined mystical states of consciousness as those states characterized by ineffability and noetic quality. Transiency and passivity are characteristics that he found were usually but not necessarily always associated with the mystical state. As to the characteristics of the mystic range of consciousness, he wrote: “*It is on the whole pantheistic and optimistic, or at least the opposite of pessimistic. It is anti-naturalistic, and harmonizes best with twice-bornness and so-called other-worldly states of mind*” (James, 1936, p. 413). Incidentally, “twice-bornness” essentially referred to one’s waking up to the realization that one is a spiritual being.

Of course, James had much more to say about the mystical state (and therefore, presumably NDEs, which are a form of mystic consciousness) than this brief summary. Rather than dwell on these matters, I will emphasize discussing what James thought NDEs (or the mystic states associated with NDEs) tell us about the nature of reality. Specifically, he addressed the question: Does the mystic range of consciousness “furnish any *warrant for the truth* of twice-bornness and supernaturalism and pantheism which it favors”? (James, 1936, p. 413). Here is a summary of his response:

- (1) Mystical states, when well developed, usually are, and have the right to be, absolutely authoritative over the individuals to whom they come.

- (2) No authority emanates from them which should make it a duty for those who stand outside of them to accept their revelations uncritically.
- (3) They break down the authority of the non-mystical or rationalistic consciousness, based upon the understanding and the senses alone. They show it to be only one kind of consciousness. They open out the possibility of other orders of truth, in which, so far as anything in us vitally responds to them, we may freely continue to have faith. (James, 1936, p. 414)

James gave a long and very interesting discussion of the above points. I think readers of this journal will, by and large, agree with much of the above, although perhaps having some doubts or questions about item 2. The essence of the arguments that James produced in support of item 2 is that the mystic range of consciousness produces many more, and indeed, in some ways, contradictory effects than just those experienced in the religious (or positive) mystical states. In particular, many of the productions of insane states of mind qualify as mystical states, but they would undoubtedly not inspire faith and belief to the rational consciousness. Thus, in essence, when one chooses mystic states (or productions of NDEs) to support various characterizations of reality or even religious belief, *one is already using reason to determine which components of mystic states to use in such support*. The mystic state, in itself, has to be weighed carefully before it is utilized in support of any description of reality. As James emphatically wrote: "Once more, then, I repeat that non-mystics are under no obligations to acknowledge in mystical states a superior authority conferred on them by their intrinsic nature" (James, 1936, p. 418).

"Medical materialism" is a term perhaps unfamiliar to the modern mind. It refers to that philosophy of science that holds that all of reality is explainable or potentially explainable on the basis of physical science. Thus, even mystic states of consciousness are just the result of patterns of interactions among particles and fields or even more modern formulations of the particle-field idea (namely, quantum fields and their quanta). Some would conclude from this philosophy that such a lowly origin of mystic states (or NDEs) greatly reduces their spiritual value. Here is a snippet of James' cogent thinking on these matters:

Medical materialism seems a good appellation for the too simple-minded system of thought which we are considering. Medical materialism finishes up Saint Paul by calling his vision on the road to Damascus a discharging lesion of the occipital cortex, he being an epileptic. It snuffs out Saint Teresa as an hysteric, Saint Francis of Assisi as an

hereditary degenerate. George Fox's discontent with the shams of his age, and his pining for spiritual veracity, it treats as a symptom of a disordered colon. Carlyle's organ-tones of misery it accounts for by a gastro-duodenal catarrh. All such mental overtensions, it says, are, when you come to the bottom of the matter, mere affairs of diathesis (auto-intoxications most probably), due to perverted actions of various glands which physiology will yet discover.

And medical materialism then thinks that the spiritual authority of all such personages is successfully undermined. (James, 1936, pp. 14-15)

The essence of James' response to the above reasoning was given succinctly as follows: "In the end it had to come to our empiricist criterion: By their fruits ye shall know them, not by their roots" (James, 1936, p. 21). He thought NDEs (mystical experiences in general) should be evaluated systematically and empirically on the basis of their "immediate luminousness" by which he means by their "philosophical reasonableness" and their "moral helpfulness." In everyday terms, the value of NDEs is their value on the thought and action of those affected by them directly and indirectly. This approach is undoubtedly not foreign to many readers of this journal.

James clearly wrote that in many cases one's personal religion requires aesthetic richness that may be "institutional and complex, majestic in the hierarchic interrelatedness of its parts, with authority descending from stage to stage, and at every stage [having] objects for adjectives of mystery and splendor, derived in the last resort from the Godhead who is the fountain and culmination of the system" (James, 1936, pp. 449-450). Nevertheless, in his discussion of religious philosophy, he made a strong and compelling case for creating a Science of Religions. His case for such a science would be applicable to the creation of a Science of NDEs. A small sample of his writing on this matter clearly shows his intent:

The spontaneous intellect of man always defines the divine which it feels in many ways that harmonize with its temporary intellectual prepossessions. Philosophy [Science of Religions] can by comparison eliminate the local and the accidental from these definitions. Both from dogma and from worship she can remove historic incrustations. By confronting the spontaneous religious constructions with the results of natural science, philosophy [again Science of Religions or of NDEs] can also eliminate doctrines that are now known to be scientifically absurd or incongruous. (James, 1936, pp. 445-446)

After further discussion of the possible nature of a Science of Religions, he wrote: "I do not see why a critical Science of Religions of this sort

might not eventually command as general a public adherence as is commanded by a physical science. Even the personally non-religious might accept its conclusions on trust, much as blind persons now accept the facts of optics—it might appear foolish to refuse them” (James, 1936, p. 446).

Clearly William James favored taking a systematic, empirical approach toward studying varieties of religious experience among which would be included NDEs. Yet, as readers of this journal know, scientific research requires funding, which means some or several sectors of society have to give such research political and ultimately financial support. Such political support is sometimes forthcoming if the scientific research appears to promise societally useful technological applications.

Developing a safe, voluntary, therapeutically supported technology for inducing NDEs seems to be desirable. Many groups of people could potentially benefit from the spiritual impacts of such NDEs, such as prisoners, wayward youth, and terminally ill persons. Chuck Colson (1979) of the Nixon administration, in his Christian prison ministry, found that if inmates underwent a Christian conversion experience, they sometimes completely changed their lives for the better and became ultimate contributors to society. Perhaps, appropriately technologically induced NDEs could achieve the same ends and perhaps at a higher success rate.

Native Americans were known to go on vision quests to seek spiritual guidance in many matters including finding one's calling while still young. Such a quest involved mental preparation and bodily mortification. Even Jesus Christ mortified his body when he went on his 40-day fast in the interest of gaining spiritual clarity and insight before starting his world-changing ministry. Perhaps technological aids for facilitating vision quests could be developed for our times. I strongly suspect that such aids would be similar to technologically induced NDEs. Indeed, the ancient rishis, illumined sages of India, developed yoga, a science of gaining spiritual insight and transformation. Yoga is arguably a rather difficult approach to inducing NDEs. Perhaps western technology could make the process easier, safer, and more democratic.

Finally, terminally ill persons who have not had a naturally induced NDE might desire a technologically induced NDE for the purpose of giving them, possibly, a peaceful spiritual realization of the context and purpose of their lives. I want to emphasize that technologically induced NDEs probably do not have to be traumatic to body or mind if appropriate techniques are evolved. Many technological aides to spiritual transformation using machines or drugs already exist or are being

experimented with, but it might be of particular interest to journal readers to consider the efforts of psychologist and hypnotist P. W. Schenk (1999), who has developed an extremely noninvasive approach to giving his patients some of the benefits of the NDE using hypnosis. In any case, consideration of the matters discussed in this paper may contribute to a rejuvenation of commitment to the ideals that were behind the creation of IANDS.

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Critics of Near-Death Experiences as Evidence for Survival: A Methodological Note

To the Editor:

There has been a great deal of popular and scholarly writing arguing that near-death experiences (NDEs) are evidence for life after death. Although there has been a great deal of research on NDEs, much of the research is methodologically unsound. Samples are neither randomly chosen nor complete samples of circumscribed populations. The NDEs reported by subjects typically occurred years before the research and are, therefore, subject to memory distortion.

The most common tactic of critics of the proposition that NDEs are evidence for life after death is to describe an alternative phenomenon and claim that NDEs are simply examples of this phenomenon. For example, one of the drugs suggested as inducing experiences similar to NDEs is ketamine. Ketamine appears to block the receptors in the brain whose functioning is controlled by the neurotransmitter glutamate. Karl Jansen (1997) claimed that ketamine experiences and NDEs are similar. Here is one account of a ketamine-induced hallucination,

reported by an anesthesiologist:

... My first memory is of colors. I saw red everywhere, then a yellow square on the left grew and crowded out the red. My vision faded, to be replaced with a black-and-white checkerboard which zoomed to and from me. More patterns appeared and faded, always in focus, with distinct edges and bright colors.

Gradually I realized my mind existed and I could think. I wondered, "What am I?" and "Where am I?" I had no consciousness of existing in a body; I was a mind suspended in space. At times I was at the center of the earth, in Ohio (my former home), on a space-ship or in a small brightly-colored room without doors or windows. I had no control over where my mind floated. Periods of thinking alternated with pure color hallucinations. (Johnstone, 1973, p. 461)

This description does not resemble the NDE. I think it highly probable that quantitative research comparing the two types of experience would find them to be quite different.

Russell Noyes and Roy Kletti (1976) claimed that NDEs are examples of depersonalization experiences. K. Davidson (1964) provided descriptions from people who had undergone episodic depersonalization experiences. One patient

complains of feeling in a trance, detached from his surroundings which appear unreal, and other people seem odd and unnatural. The most distressing symptom is a feeling that his head had entirely disappeared, leaving only his eyes protruding on stalks. He feels he is going mad, and ruminates on the possibility of having damaged his brain. During his attacks, he is restless, unable to concentrate and unable to work and appears depressed. (Davidson, 1964, p. 507)

Another patient

describes the sensation as "like being in another world", "time has no meaning", "as though I am dead". In some of the attacks he experiences an unpleasant smell for approximately five minutes which reminds him of an occasion when his car radiator boiled dry. At other times his fingers feel greatly enlarged. (Davidson, 1964, p. 507)

These are quite different from the prototypical NDE.

Let me present one final example. James Whinnery (1997) suggested that those who are put in gravity accelerators such as a centrifuge and lose consciousness have an experience similar to an NDE. Here are two reports of this experience:

I was floating on a blue ocean, on my back... kind of asleep but not asleep. I knew the sun was up... like someone was trying to wake me up. Finally, I woke up and I was on the centrifuge! I did not want to

wake up... I could see myself on the water and also look at the sun; the sky was very blue, the sun very yellow. (Whinnery, 1997, p. 246)

I was in the grocery store going down one of the aisles. I was... being propelled by something like a magic carpet, although I could not make movements. I wanted to reach out and get a carton of ice cream but could not move my arm or even my eyes to look for it. It was intensely frustrating to hear the warning horn and not be able to get my arm down to turn the darn thing off. (Whinnery, 1997, p. 246).

Again, these do not resemble the prototypical NDE.

Although the research conducted by those who argue that NDEs are evidence for life after death is often methodologically poor, the critics of this position have published *no research*. The critics have proposed alternative theories and have claimed that their theories are correct, but *none* of the critics has conducted research to show that the phenomena they propose are identical to NDEs are in fact identical. I write this with certainty, having recently completed a thorough review of the relevant literature on the topic for a forthcoming book.

Let us see what we need to resolve these issues. Consider the hypothesis that NDEs are the same as depersonalization experiences. We need, then, 100 reports of NDEs and 100 reports of depersonalization experiences. These reports need to be collected in the same way. NDEs are usually related to the investigator months or years after the experience. In this case, either the depersonalization experiences must be collected under identical conditions, that is, the same number of months and years after the experience, or, preferably, both the near-death and depersonalization experiences have to be collected immediately after the time of the experience.

Next, one team of investigators must examine 50 of the NDEs while another team examines 50 of the depersonalization experiences, in order to decide upon what are the basic elements of the experience. Each time must produce a checklist of these elements.

Next, these elements are combined into one list and randomized. Then a third team read the remaining 100 reports of experiences—50 NDEs and 50 depersonalization experiences, randomly arranged—and completes the checklist for each of the 100 reports. Finally, a statistician explores whether the two sets of 50 reports differ.

The next study would be to find new samples of those who have NDEs and depersonalization experiences and have these individuals complete the same checklist for their experiences. Our statistician can then explore whether the two sets of checklists differ.

This has never been done by any of the critics of the hypothesis that NDEs are evidence for life after death, nor indeed by those arguing in favor of the hypothesis! Until this is done, we cannot resolve these issues.

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