

Surprise—and Discovery?—in the Near-Death Experience

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ABSTRACT: Expressions of surprise and puzzlement lend a ring of authenticity to self-reports of near-death experiences (NDEs). In the autoscopic component of the NDE, experiencers have reported surprise upon identifying an observed body as their own; upon finding that they are unable to affect earthly events or people; and upon experiencing extraordinary visual and mobile abilities. In the transcendental component, experiencers are often surprised that their “eyes” do not hurt in the presence of an intense light, and that deceased loved ones come to them, particularly in those cases in which the subject reports the presence of a loved one whose recent death was not known to the subject. Surprise typically indicates the discovery of novel features of reality during the cognition-reality interplay that makes learning possible. If at least some NDE surprises are discoveries in a nonsubjective sense, then that cognition-reality interplay can continue during moments near death as subjects learn that self and reality must be understood to include a nonmaterial realm.

A surprise is a reaction to an unexpected or extraordinary occurrence. According to the *Random House Unabridged Dictionary*, to be “surprised” is to be struck “with a sudden feeling of wonder or astonishment,” or “to discover suddenly and unexpectedly” (Flexner, 1993, p. 1915). A surprise that is a discovery implies that one has

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learned something new concerning a real event or phenomenon. Expressions of surprise in recollecting the near-death experience (NDE) lend a ring of authenticity to the account, and suggest that the NDE events "really" happened. It is perhaps not coincidental that a faked NDE account reported by Kenneth Ring and Madelaine Lawrence (1993) lacked any expression of surprise.

The present article reviews and reflects upon the ontological implications of commonly reported surprises in the NDE. I have organized the review in terms of the elements and components of the NDE as presented by Michael Sabom (1982). I will then ponder the ontological issue of whether such surprises are subjective phenomena, as when one experiences an unexpected subjective event in a dream or hallucination, or whether the surprises are discoveries in some non-subjective sense. Although I will not resolve this issue definitively, I will indicate the main interpretive positions in the literature, and review findings in near-death research that are suggestive of the possibility that at least some NDE surprises are indeed discoveries. Uric Neisser's (1976) depiction of perception and cognitive development emphasizes the importance of being open to surprise and discovery if learning or growth is to take place in the interplay between cognition and reality. If NDE surprises are to some extent discoveries in a nonsubjective sense, then such phenomena suggest that learning about self and reality can take place even during moments near death.

NDE Surprises

Core features of the NDE have been described in various typologies (Greyson, 1983, 1985, 1990, 1993; Lundahl, 1993; Moody, 1975; Ring, 1980; Sabom, 1982). For example, Sabom specified ten descriptive features or elements such as a sense of bodily separation, observation of physical objects and events, dark region or void, entering a transcendental environment, a light, encountering others, life review, and return after reaching but not exceeding a border or dividing line. He then categorized these elements as either *autoscopical*, entailing visualization of the body, or *transcendental*, entailing "descriptions of objects and events that 'transcend' or surpass our earthly limits" (Sabom, 1982, p. 41). A full NDE entails elements in both the autoscopical and the transcendental components. One-third of Sabom's NDE cases entailed only the autoscopical component, 48 percent en-

tailed only transcendental elements, and 19 percent entailed elements of both, such that “the transcendental portion of the experience followed the autoscopic portion in a continuous, unbroken sequence” (p. 52). I will use Sabom’s autoscopic/transcendental dichotomy as an organizing framework for my review of recollections of surprise as commonly reported in the NDE. An addendum will note the “secondary” surprise of those who hear secondhand from the NDEr details that the NDEr could scarcely have known in ordinary ways.

Autoscopic-Component Surprises

In terms of the autoscopic component, especially in regard to Sabom’s elements of a sense of bodily separation and observation of physical objects and events, NDErs have recollected various feelings of surprise, puzzlement, or shock. Such feelings have typically pertained to experiences such as the identification of an observed body as their own; the inability to affect earthly events, objects, or people; and the “discovery” of extraordinary abilities pertaining to mobility and perception.

Identification of one’s body. Raymond Moody reported that “overwhelming surprise” often occurs as a person near death finds himself or herself “looking down upon his own body from a point outside of it, as though he were a ‘spectator’ or ‘a third person in the room’” (1975, p. 34). Recognition of one’s body is not necessarily immediate. An oncology hospice worker hospitalized for acute leukemia recollected a shock while scrutinizing in an out-of-body state a cardiac monitor hanging on the wall above the head of her hospital bed:

Oh, heart rate 200, 180, 200, blood pressure 40 over zero, and things are going off, and I’m thinking, “Wow, this person’s really in serious condition,” and then all of a sudden it dawns on me that *moi* [my body] is hooked up to this monitor! (Brown, 1994)

Similarly, another woman, in emergency surgery for a postpartum hemorrhage, reported:

I was watching this bevy of nurses and doctors rushing madly around the room, all very much intent on bringing that poor young girl back to life. . . . And then suddenly, I . . . realized with utter shock and amazement that that thin, pallid, bloody body was indeed *my* body. (Greyson, 1993, p. 393)

After mentioning that "it took me a few moments to recognize myself," another subject continued:

Boy, I sure didn't realize that I looked like that! You know, I'm only used to seeing myself in pictures or from the front in a mirror, and both of those look *flat*. But all of a sudden there I—or my body—was and I could see it. I could definitely see it, full view, from about five feet away. (Moody, 1975, p. 39)

In his NDE, psychiatrist George Ritchie described his unfamiliarity with his full three-dimensional appearance as an "alarming truth" (Ritchie and Sherrill, 1978, p. 43) that hindered his out-of-body search for his clinically dead body.

Once the body is recognized as one's own, the autoscopic NDEr may express concern or pity: "I kept thinking, 'I don't want them to use that body as a cadaver'" and, "I felt real bad when I looked at my body and saw how badly it was messed up" (Moody, 1975, p. 39). A 54-year-old construction worker who had a cardiac arrest recollected almost with disdain: "I recognized *me* laying there . . . like looking at a dead worm or something" (Sabom, 1982, p. 21).

Inability to affect others. Surprise to the point of shock may characterize the autoscopic NDEr's typical emotion upon finding that in their out-of-body state they have no impact on others, that is, that they are not audible, apparent, or corporeal to people on the scene whom they can see and hear so clearly. The sense of shock or perplexity is evident in the following experiencer's recollection:

The doctors and nurses were pounding on my body to try to get IV's started and to get me back, and I kept trying to tell them, ". . . Quit pounding on me." But they didn't hear me. So I tried to move their hands to keep them from beating on my body, but nothing would happen. I couldn't get anywhere. It was like—I don't really know what happened, but I couldn't move their hands. It looked like I was touching their hands and I tried to move them—yet when I would give it the stroke, their hands were still there. I don't know whether my hand was going through it, around it, or what. I didn't feel any pressure against their hands when I was trying to move them. (Moody, 1975, p. 44)

Similarly, a soldier critically wounded in Vietnam remembered "watching" with frustration his own operation in the field hospital:

I'm trying to stop them [the doctors]. I really did try to grab a hold of them and stop them, because I really felt happy where I was. . . . I actually remember grabbing the doctor. . . .

. . . It was almost like he wasn't there. I grabbed and he wasn't there or either I just went through him or whatever. (Sabom, 1982, p. 33)

Another critically wounded soldier, still on a Vietnam battlefield, remembered a similar frustration after identifying his body:

I could see me. . . . It was just like I was looking at a manikin laying down there. . . . I was pretty well burnt up and there was blood all over the place. . . . When the [Vietcong] guy was at my boots, I could see that and at the same time it was like waiting for him to get through so when he turned his attention I could get to my rifle, but . . . I couldn't get that *manikin* to get to the rifle. (Sabom, 1982, p. 82)

Another subject, the visual aspect of her experience all the more remarkable because she is congenitally blind, recollected during her emergency operation

trying to scream at them and I kept saying, "I'm right here, I'm fine, can't you hear me?" . . . and I was shouting with every ounce of strength I had and they couldn't hear me, but I could hear them and . . . I felt this terrible sense of desperation and frustration for a while about not being able to get through to them. (Ring, 1995b)

In another case, involving a car accident,

People were walking up from all directions to get to the wreck. I could see them, and I was in the middle of a very narrow walkway. Anyway, as they came by they wouldn't seem to notice me. They would just keep walking with their eyes straight ahead. As they came real close, I would try to turn around, to get out of their way, but they would just walk *through* me. (Moody, 1975, p. 45; see also Wilson, 1987, p. 112)

Ritchie recalled agonizing over this odd state of affairs:

I did some incredulous thinking. The strangest, most difficult thinking I had ever done. The man in a cafe [who hadn't heard me], this telephone pole [that my body had passed through] . . . suppose they were perfectly normal. Suppose I was the one who was—changed, somehow. What if in some impossible, unimaginable way, I lost my . . . my hardness. My ability to grasp things, to make contact with the world. Even to be seen! (Ritchie and Sherrill, 1978, p. 40)

Extraordinary mobility and perception. Equally surprising, however, may be the apparent discovery of certain extraordinary abilities pertaining to mobility and perception. As Moody noted, these abilities are in some respects the flip side of the *inabilities* just described (1975, p. 46):

though the doorknob seems to go through his hand when he touches it, it really doesn't matter anyway, because he soon finds that he can just *go through* the door. . . . Physical objects present no barrier, and movement from one place to another can be extremely rapid, almost instantaneous.

After experiencing "desperation and frustration" at her inability to "get through" to her doctors, the congenitally blind woman quoted above continued: "Then I went up through the roof and that freaked me out. Objects were like nothing" (Ring, 1995b). Another subject reported joy at his discovery of unimpeded flight:

I very quickly discovered . . . that not only was I floating and hence free from gravity but free also from any of the other constrictions that inhibit flight. . . . I could also fly at a terrific rate of speed . . . and it seemed to produce a feeling of great joy and sense of actually flying in this total fashion. (Ring, 1984, p. 39)

Extraordinary movement is often felt to take place as a result of a thought or wish, and is associated with expanded perception. One subject recollected that during his resuscitation: "I could just think, 'Hey, it would be nice to be [a certain other place]' and I would just be there" (Sabom, 1982, p. 33). Another subject was puzzled: "I just can't understand how I could see so far" (Moody, 1975, p. 51; see also Farr, 1993, p. 25). Another of Sabom's subjects recollected:

I could see anywhere I wanted to. I could see out in the parking lot, but I was still in the corridor. . . . It was just like I said, "O.K., what's going on out in the parking lot?" and part of my brain would go over and take a look at what's going on over there and come back and report to me. (1982, p. 34; see also Moody, 1975, p. 52)

Ritchie expressed astonishment at his extraordinary mobility:

Almost without knowing it [after wishing to get to Richmond, Virginia] I found myself outside, racing swiftly along, traveling faster in fact than I'd ever moved in my life. . . .

Looking down I was astonished to see not the ground, but the tops of mesquite bushes beneath me. . . . My mind kept telling me that what I was doing was impossible, and yet . . . it was happening. . . . I wished I could go down there [to a city below me] and find someone who could give me directions.

Almost immediately I noticed myself slowing down. . . . Even as the idea occurred to me—as though thought and motion had become the same thing—I found myself down on the sidewalk. (Ritchie and Sherrill, 1978, pp. 38-39)

Transcendental-Component Surprises

Surprise is also evident in the transcendental component of the NDE, especially in connection with elements of encountering the light and deceased loved ones.

Encountering the light. Profoundly affecting the NDEr is a not uncommon encounter with a very bright and personal being of light, described by one experiencer as "a very powerful, completely loving being" (Moody, 1975, p. 70). Another subject described the light as "sharper than the light of any star" (Ring, 1991, p. 26). Some subjects express amazement that this light does not hurt their eyes. Ritchie recounted, again with astonishment:

I wasn't sure when the light in the room began to change; suddenly I was aware that it was brighter, a lot brighter, than it had been. I whirled to look at the night-light on the bedside table. Surely a single 15-watt bulb couldn't turn out that much light?

I stared in astonishment as the brightness increased, coming from nowhere, seeming to shine everywhere at once. All the light bulbs in the ward couldn't give off that much light. All the bulbs in the world couldn't! It was impossibly bright: it was like a million welders' lamps all blazing at once. And right in the middle of my amazement came a prosaic thought probably born of some biology lecture back at the university: "I'm glad I don't have physical eyes at this moment," I thought. "This light would destroy the retina in a tenth of a second." (Ritchie and Sherrill, 1978, p. 48; see also Ring, 1980, p. 63; Sabom, 1982, p. 43)

A 54-year-old respondent attempted to explain: "This light was so total and complete that you didn't look at the light, you were *in* the light. See what I'm saying?" (Sabom, 1982, p. 44). Other subjects report the light as emanating from the end of a tunnel or from persons encountered in the experience (Owens, Cook, and Stevenson, 1993).

Encountering deceased loved ones. Those who have had NDEs may also report surprise and puzzlement upon encountering other presences that include deceased friends, family members, and other loved ones (Moody, 1975, pp. 55-56; Ring, 1980, pp. 67-68; Sabom, pp. 47-48). For example, a male subject recollected:

Several weeks before I nearly died, a good friend of mine, Bob, had been killed. Now the moment I got out of my body I had the feeling that Bob was standing there, right next to me. I could see him in my mind and felt like he was there, but it was strange. I didn't see him as his physical body. I could see things, but not in the physical

form, yet just as clearly, his looks, everything. Does that make sense? (Moody, 1975, p. 56)

The NDEr quoted above who had been blind from birth reported that caring friends “came to meet” her:

Two of them had attended the school for the blind with me and they were both retarded and I had befriended them when a lot of the other kids had made fun of them . . . and then they both had died and they came to meet me but they wouldn't touch me but they were near me. . . . There was [also] a neighbor lady who had taken care of me . . . and her husband was there also and they had been deceased for some years as well. (Ring, 1995b)

Interestingly, subjects may also report having perceived with some surprise a relative or friend who was *not* known by them to have died (Ring, 1980, pp. 207-208)—or who was not known by them at the time at all. Jenny Wade noted “accounts of meetings with pre-deceased relatives who were unknown to the subject during life (such as a grandfather or aunt), whose identifications were later confirmed by photographic or anecdotal evidence” (1996, p. 229). A child puzzled by the identity of an NDE presence subsequently asked her aunt, to whom the presence had referred; the identity was revealed with hidden photographs and involved a secret love relationship about which the child could not have known. The aunt was shocked by the child's information (Atwater, 1996). An adult whose NDE occurred in childhood reported that while in the light, he became aware that

there were some presences there. There were some ladies. . . . I didn't know them at the time. They were my great-grandmothers who had died years before I was born. I didn't see any pictures of them until I was an adult, but then I said, “Oh, yeah.” . . . They were so loving and so wonderful and I just didn't want to come back. (Wilson, 1995)

Expressions of surprise or puzzlement at encountering loved ones not known to have died have also been noted in the context of what have been called death-bed visions (Osis and Haraldsson, 1977) or “nearing death awareness” (Callanan and Kelley, 1992), in which a dying person “becomes aware of a dimension that lies beyond” and “apparently drift[s] between the two [worlds]” (Callanan and Kelley, 1992, p. 17). Maggie Callanan and Patricia Kelley recounted the case, typical of many such cases (see Serdahely, 1992), of a 93-year-old woman, Su, whose dying visions of her late husband began to include her sister:

"Why is my sister with my husband?" she asked. "They are both calling me to come."

"Is your sister dead?" I [Callanan] asked.

"No, she still lives in China," she said. "I have not seen her for many years."

When I related this conversation to the daughter, she was astonished and tearful.

"My aunt died two days ago in China," Lily said. "We decided not to tell Mother—her sister had the same kind of cancer. It was a very painful death; she lived in a remote village where good medical care wasn't available. We didn't want to upset or frighten Mother, since she is so sick herself." . . .

When Lily tearfully told her mother about her sister's illness and death, Su said, with a knowing smile, "Now I understand." Her puzzle solved, she died three weeks later, at peace and with a sense of anticipation. (1992, pp. 93-94)

"Secondary" Surprises

Surprise, puzzlement, or shock can take place not only for the NDER, but also for persons who hear from the NDER details that the NDER was unlikely to have been able to learn in any ordinary way. Relevant examples were the aunt's shock at her niece's information, and Lily's tearful astonishment at the timing of her mother's puzzled perception. In another case, the parents of a child who had been comatose were "shocked" by the accuracy of the child's recollection of "vivid details" pertaining to their exact locations, clothing, and activities at home during her hospitalization (Morse and Perry, 1990, p. 7). Also astonished was a surgeon who had operated on a young woman clinically dead from cardiac arrest. The young woman reported saying to the surgeon:

"I could see you operating on me. . . . I saw you lean over to Cliff [another doctor present] to get some instruments and I saw how you were pointing around and I could see you standing here and Cliff was standing on this side of the table. . . . Cliff was giving you this instrument and you were doing this to me and, all of a sudden, all these people rushed over to me and they started sticking needles in me and doing all these things." "That's when you died [said the doctor]. Come on, how do you know that? . . . That's really freaky." (Ring, 1980, p. 50; see also Sabom, 1982)

The developmental implications of both primary and secondary surprise are discussed in the concluding section of this article. Openness to surprise and discovery may have facilitated the attitudinal

changes, such as increases in belief in life after death, reported by students exposed to research information concerning the NDE (Ring, 1995a).

Discussion

Perhaps especially in contemporary secular culture, it is not uncommon for persons to express surprise, shock, or puzzlement in response to NDEs and related phenomena. Such reactions are found in both the autoscopic and the transcendental components. It is unlikely that such expressions can be attributed to experimenter expectations, in that they are typically spontaneous rather than in response to an interviewer question. In fact, a question such as "Did you feel surprised?" is not known to have been included in any research interview protocol (K. Ring, personal communication, December 12, 1995; M. B. Sabom, personal communication, November 7, 1995). Nor is it likely that expressions of surprise at distressing *inabilities* would be prompted by artifactual biases such as approval motivation, social desirability, or impression management.

Are these unsolicited NDE surprises purely subjective, as in a dream, hallucination, or other typically imaginary activity, or do they entail discovery of extraordinary properties of reality? It is probably accurate to state that a majority in the scientific community believe that the NDE can be explained without resorting to extracellular or nonmaterialist notions. The predominant view is that the NDE is a dreamlike delusion, hallucination, or fantasy that engenders in the subject the false impression that perception is taking place outside the body; this view has been critiqued by Moody (1975, pp. 157-175), Melvin Morse (Morse and Perry, 1990, pp. 183-193), Ring (1980, 207-217), and Sabom (1982, pp. 165-178). Elaborations of this view entail appeals to endorphin release or flooding, massive cortical disinhibition (Siegel, 1980), oxygen deprivation to the brain, elevated levels of carbon dioxide, temporal lobe seizures or activation (Gómez-Jeria and Saavedra-Aguilar, 1994; Saavedra-Aguilar and Gómez-Jeria, 1989), a semiconscious mental construction from auditory information (critiqued by Ring and Cooper, in press; and by Sabom, 1982, pp. 153-156), and depersonalization or dissociation (Irwin, 1993). A multifaceted neurophysiological account was proposed by Susan Blackmore (1993; critiqued by Ring, 1995c).

Although a comprehensive critique of this controversy is beyond the scope of this article, I suggest that NDE reports may entail genuine discoveries about the primary nature of self, others, and reality. It is interesting that the conclusions of the investigators most familiar with the research data and findings (Ring, 1980; Ring and Lawrence, 1993; Sabom, 1982) are consistent with the thesis that at least some NDE surprises do entail ontological discovery. These researchers, among others, found a number of results that pose problems of one sort or another for the predominant interpretations (Callanan and Kelley, 1992; Gibbs, 1985; Ring, 1995a; Talbot, 1991, pp. 229-274; Wade, 1996, pp. 223-247). For example, interpretations of the NDE as an hallucination or dreamlike fantasy imply that the NDE is largely a function of the expectations and preoccupations of the experiencers; but if so, then why do NDErs even years afterward express lingering surprise, puzzlement, or astonishment (Cox-Chapman, 1995 p. 134)? Interpretations assuming expectation are also contradicted by findings that the elements of the NDE generally occur with comparable frequency across subjects likely to have differing expectations because of highly diverse backgrounds, demographic characteristics, religious beliefs, and circumstances of near death—with some exceptions, for example, that children's NDEs are more likely to include the light and less likely to include a life review (Morse and Perry, 1990). Even more telling is that NDErs report the NDE to be starkly and uniquely real compared to dreams and hallucinations.

The ontological authenticity of the autoscopic component of the NDE is suggested by findings that NDE visual recollections have been substantiated by medical records and are dramatically more accurate than the simulated or role-play "recollections" of near-death survivors who do not report NDEs (Sabom, 1982). Accurate revelations engendering secondary surprise were noted earlier. Recent findings of visually accurate NDEs among persons who are congenitally blind (Ring, 1995b; Ring and Cooper, in press) pose a particular problem for arguments presuming that NDE visual recollections were somehow actually seen through the recollector's physical eyes. Ontological authenticity is also suggested by NDErs' reports of enhanced cognitive function, such as clarity of thought and perception, precisely at a time of *diminished* brain function (Owens, Cook, and Stevenson, 1993).

That the NDE may signify spiritual survival is suggested by findings pertaining to the near-death condition, the personages encoun-

tered, and the subsequent attitudinal and other changes. For example, NDEs are more likely to occur and to be extensive if the survivor was closer to physical death. Noted earlier were reports of surprise encounters with loved ones who the experiencer did not know had died. Highly suggestive are the consistency with which a specific feeling—unconditional love—is felt to emanate from a personal quality or *being* of light, as well as the consistency with which the loved ones encountered are all deceased (Serdahely, 1996; Shaver, 1986). Relative to near-death survivors who do not report NDEs, experiencers report decreased fear of death and increased belief in God (Ring, 1980; Sabom, 1982, 1994a). NDEers are also more likely to evidence antisuicidal attitudes in relation both to their pre-NDE attitudes (Sutherland, 1990) and to the attitudes of survivors who do not report NDEs (Greyson, 1992-1993). NDE survivors report their post-NDE lives to be much more caring, empathic, and intuitive in extraordinary ways (Sutherland, 1992/1995). NDE survivors' increases in loving attitudes may not exceed those of non-NDE survivors, however (Ring, 1980).

Such findings, taken together, have led the preeminent researchers in the field to consider extracellular or nonmaterialist interpretations of the NDE. Moody concluded "that death is a separation of the mind from the body, and that mind does pass into other realms of existence at this point" (1975, p. 151). Ring concluded "that there is some conscious aspect of ourselves that can . . . separate itself from the body under conditions of extremity and not in any way be limited by the handicaps of the physical body" (1995c, p. 127; see also Arnette, 1995). Sabom, initially a skeptic aiming to debunk NDEs, was to his "utter amazement" (1982, p. 4) forced by an honest consideration of his own data and findings to ponder an affirmative answer to the question: "Is out-of-body perception indeed occurring during the NDE, and if so, is some element of the human organism (the *mind*?) separating from the physical determinants of consciousness (the *brain*?) to accomplish such a feat?" (p. 181). Interestingly, Morse, David Venecia, and Jerrold Milstein (1989) hold a similar view of the NDE yet combined such a nonmaterialist view with a neurophysiological one: they posited that the "trigger" for such a separation lies in temporal lobe activation (see also Wile, 1994; critiqued by Wade, 1996, pp. 232-234). Researchers have emphasized the crucial role that prospective (Morse, 1994) and double-blind studies (Holden and Joesten, 1990; Sabom, 1994b) can play in helping to resolve the controversy concerning the ontological status of the NDE. If such studies support

the transcendent validity of the NDE, then core NDE-derived knowledge would have to be taken seriously and could provide a basis for discriminating valid from misguided teachings and actions (e.g., the Heaven's Gate suicides in March, 1997).

What if the research findings eventually provide compelling support for the inference that NDE surprises are at least to some extent discoveries? What would be implied about the nature of mind and reality? Clearly, mind or consciousness would have to be understood as more than local cellular brain activity, and more generally, reality would have to be understood as more than material; indeed, such understandings are at the core of NDErs' noted attitudinal changes. But what can be said beyond "more than"? Kenneth Arnette (1995; cf. Goswami, 1993), in a model that encompasses yet transcends materialist ontology, has suggested that mind can be seen as part of an "essence" having an electromagnetic field that partially overlaps that of the brain. Janusz Slawinski (1987a, 1987b) speculated that the increased electromagnetic radiation of stressed or dying cell populations, especially the "death flash" of cellular necrotic radiation, may signify that mind or consciousness as light is entering a more primary reality.

The metaphor of the hologram has been suggested as a helpful preliminary way to think about both mind (Pribram, 1971) and reality (Bohm, 1993; Bohm and Hiley, 1993; Hiley and Peat, 1987). In David Bohm's terms, ordinary reality is more properly understood as an "explicate order" of emergently meaningful objects and events that derives from an "implicate order," somewhat like the emergence of a hologram from a plate of intersecting interference patterns. Broadly speaking, ordinary reality is interpreted as coordinating with a deeper or more primary level of reality. Much like waves on the surface of the ocean, matter, life, and brain-based consciousness are differentiated from yet continuous with a holistic reality (i.e., with non-local consciousness, in Goswami's [1993] alternative view). Ring was one of the first to suggest that the NDE is the direct experiencing of this primary level: "Access to this holographic reality becomes *experientially* available when one's consciousness is freed from its dependence on the physical body" (1980, p. 237). Although "freed," mind or consciousness, as it perhaps for the first time directly experiences the more primary level of reality, "continues to do what it does best, [namely, to] translate those frequencies into a world of appearances" (Talbot, 1991, p. 245).

In this view, NDEs entail surprises because most people are totally unfamiliar with functioning in an extra-bodily way on the primary level of reality. Moody observed that out-of-body travel initially may not be easy for experiencers until "one gets the hang of it" (1975, p. 46). When it comes to converting the directly experienced frequency patterns of the deeper reality into ordinary, familiar objects and events, the functioning of the mind in most cases is "wobbly and not yet proficient" (Talbot, 1991, p. 236).

That the mind is "wobbly" in this unfamiliar realm could also account for other emotions besides surprise, such as ineffability and depictions of one's experience as bizarre, albeit clear or real. NDErs frequently express frustration in attempting to describe adequately their experience, complaining of the paucity or absence of suitable words, and asking, "Does that make sense?" and "See what I'm saying?" (see also Berman, 1996, pp. 98-99; Cox-Chapman, 1995, p. 31; James, 1903). Interestingly, NDErs sometimes report thinking the difficult-to-describe events they experience are "strange" or "impossible"; quoted earlier was Ritchie's recollection: "My mind kept telling me that what I was doing [flying] was impossible, and yet . . . it was happening" (Ritchie and Sherrill, 1978, p. 38).

Persons from various backgrounds use a variety of word-pictures or images as they grope for adequate description. For example, the "border or limit" element has been variously imaged as "a body of water, a gray mist, a door, a fence across a field, or simply a line" (Moody, 1975, p. 73). Similarly, although "tunnel" may be the most popular image for Sabom's "dark region or void" element, other images used have included "a cave, a well, a trough, an enclosure, . . . a funnel, a vacuum, a void, a sewer, a valley, and a cylinder" (Moody, 1975, p. 31). Movement through this dark "something" may indicate a shift from the ordinary to the primary levels of reality; Arnette (1992) speculated that the "something" may be a pathway known in theoretical physics as a wormhole.

Despite the descriptive difficulty and impression of strangeness, NDEs are typically experienced as extraordinarily clear, indeed, "realer than here" (Sabom, 1982, p. 16), an additional finding consistent with the inference that the NDE is at least to some extent ontologically authentic. The depiction of the NDE as real, as distinct from dreams or hallucinations, was noted earlier. One experiencer stated: "I had hallucinations then but they weren't the same. . . . [I]n this experience [NDE] where I lifted out of my body, it was *me!*" (Sabom, 1982, p. 169); while another wrote:

when [you take] acid, . . . you have a sense of knowing what you are seeing is caused by the acid. With my NDE no hallucinogens were taken and I knew what I saw, heard, and felt was like no trip on acid ever taken. (Ring, 1991, pp. 23-24)

Whereas the surprises recollected in dreams or hallucinations are typically dismissed as reactions to unexpected *imaginary* events, NDE surprises may linger as awe and are typically felt to be reactions to unexpected *real* events or discoveries that are strange yet startlingly clear. The combination of strangeness with clarity is evident in one subject's recollection: "Even though my mind was saying, 'But I can't be seeing Daddy and talking to him—he's dead' . . . yet I could see him perfectly" (Sabom, 1982, p. 22).

Conclusion

We cannot perceive *unless* we anticipate, but we must not see *only* what we anticipate. . . . The outcome of any single encounter between cognition and reality is unpredictable, but in the long run such encounters must move us closer to the truth. (Neisser, 1976, pp. 43 and 194)

The ineffable yet clear character of the NDE and related phenomena can be interpreted to mean, then, that subjects have encountered a deeper level of reality. The NDErs' surprise, shock, or puzzlement indicates that their ordinary anticipations or assumptions about reality have been violated; moreover, their surprise may mean the discovery of profound knowledge about the nature of self and reality, even—or especially—during the moments near death.

According to Jean Piaget (1947/1963, 1972/1973) and Neisser (1976), learning and the construction of knowledge take place through the interplay between cognition and reality. Cognitive schemata are necessary for the meaningful experience of reality. For example, another person's speech is experienced as an undifferentiated flow of sounds unless the hearer "knows" that language; that is, unless the hearer has developed and can activate schemata for meaningfully experiencing that language (Neisser, 1976). Similarly, in the NDE, that which is experienced must be processed through preexisting schemata (Ring, 1980, p. 248). Someone from a rural or non-industrialized background, for example, might use the terms "valley" or "trough," but probably not "sewer" or "cylinder," to ascribe meaning

to the dark region (see also Berman, pp. 102-105; Cox-Chapman, 1995, pp. 13-30; Sutherland, 1992/1995, pp. 25-30).

If learning and development are to take place, however, these necessary schemata must also be open to modification and even radical reorganization as novelties and contradictions are encountered. In Neisser's terms, quoted above, "We cannot perceive *unless* we anticipate, but we must not see *only* what we anticipate" (1976, p. 43). In Piagetian terms, experience is assimilated to a preexisting cognitive structure, which itself then undergoes—or should undergo—accommodation. For example, a child who encounters for the first time a camel may distortingly assimilate it as a horse but pause to reflect: "That surely is a funny-looking horse!" Eventually, accommodation to the novel features, such as the camel's hump, will induce a differentiation and the construction of a new structure or schema ("camel"); once the accommodation is accomplished, these new, more differentiated and integrated schemata are available to direct and render meaningful future encounters, so that the next camel encountered is accurately construed. This interactive cycle between cognition and reality can bring about learning or the construction of knowledge that is more adequate, valid, and veridical.

If the NDE contributes to a cognition-reality interplay, this interplay would appear to entail major contradictions or challenges to schema-based anticipations. These challenges may be so major as to trigger a temporary or even extended crisis or, in Piagetian terms, "disequilibrium"—for example, the experiencer described above who "freaked out" as she went through the ceiling. One NDEr who had always dismissed spiritual notions as "hocus-pocus bullshit" found "rather traumatically" that after his NDE he could no longer do so (Farr, 1993, p. 55; see also Atwater, 1988). In such cases, the resultant reequilibration or learning represents not a matter of differentiation as much as transformation: a funny-looking horse can be distinguished as a camel, but radically bizarre abilities and inabilities, an overwhelmingly bright and loving light that does not hurt one's eyes, dead yet alive loved ones, and so on, are difficult to assimilate adaptively without a profound reconceptualization, a transformation of worldview. Sutherland (1992/1995, pp. 205-237) discussed the social and personal aspects of typical "trajectories" in this disequilibrium-reequilibration process.

Openness to surprise for the sake of learning is important not only for individual human cognitive development but also for the collective development of science. Both the lay individual and the scientist, af-

ter all, are embarked upon the development of knowledge—although the scientist brings the advantages of controlled and systematic inquiry and explicit methodology. In cognitive developmental terms, the individual has preexisting schemata or cognitive structures that generate anticipations. Discrepancies with these anticipations can be minor or major; that is, either odd little novelties and curiosities, or massively upsetting and challenging encounters. Defensive assimilations of a distorting nature are particularly likely in the face of major challenges to established convictions. In the aftermath of major discrepancies, one's defenses may weaken and disequilibrium or crisis is experienced; emergent from the crisis may be a new, more adequate schema, that is, a transformed worldview that can accommodate and indeed resolve the discrepancies.

Correspondingly, the scientist's work is contextualized by a scientific paradigm, which generates hypotheses; disconfirmations of those hypotheses may be minor or major, that is, either secondary gaps in scientific knowledge or theoretically pervasive scientific anomalies. Interpretations of a defensive, reductionistic, or dismissive nature are particularly likely in the face of major scientific anomalies. As discrepancies accumulate, the defenses may weaken and disequilibrium or crisis is experienced in the scientific community. Emergent from the crisis may be a new, more adequate scientific paradigm, one that can account for the anomalies (Kuhn, 1962).

Confronted with challenging or anomalous encounters, then, the person in the role of either ordinary knower or scientist is vulnerable to disequilibrium or even crisis. In the NDE, the accommodatively open subject will be surprised, puzzled, or even "freaked out"; and in the careful and systematic study of NDE reports, the accommodatively open scientist (such as Sabom) will be "utterly amazed." To learn and grow, both lay person and scientist must engage in "freer" thinking to "loosen the grip of old ways of seeing" (Neisser, 1976, p. 44; see also Serdahely, 1990; Sutherland, 1992/1995, pp. 192-197). Ultimately, both may achieve a transformation of their fundamental conceptions of the nature of life, self, and reality.

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