WAKING, DREAMING, BEING

self and consciousness in neuroscience, meditation, and philosophy

EVAN THOMPSON

COLUMBIA UNIVERSITY PRESS

NEW YORK

1

SEEING

What Is Consciousness?

What exactly is consciousness? The oldest answer to this question comes from India, almost three thousand years ago.

Long before Socrates interrogated his fellow Athenians and Plato wrote his *Dialogues*, a great debate is said to have taken place in the land of Videha in what is now northeastern India. Staged before the throne of the learned and mighty King Janaka, the debate pitted the great sage Yājñavalkya against the other renowned Brahmins of the kingdom. The king set the prize at a thousand cows with ten gold pieces attached to each one's horns, and he declared that whoever was the most learned would win the animals. Apparently Yājñavalkya's sagacity did not entail modesty, for while all the other priests kept silent, not daring to step forward, Yājñavalkya called out to his student to take possession of the cows. Challenged by eight great Brahmins, one by one, Yājñavalkya demonstrated his superior knowledge. As a favor to the king, he allowed him to ask any question he wanted. In the ensuing dialogue, told in the "Great Forest Teaching" (*Bṛhadāraṇyaka Upaniṣad*)—a text dating from the seventh century B.C.E. and the oldest of the ancient Indian scriptures called the *Upanishads*—Yājñavalkya gave the first recorded account of the nature of consciousness and its main modes or states.[1]

AN ILLUMINATING QUESTION

The dialogue begins with the king, knowing exactly where he wants to lead the sage, asking a simple question: "What light does a person have?" Or, as it can also be translated: "What is the source of light for a person here?"

"The sun," replies the sage. "By the light of the sun, a person sits, goes about, does his work, and returns."

"And when the sun sets," asks the king, "then what light does he have?"

"He has the moon as his light," comes the reply.

"And when the sun has set and the moon has set, then what light does a person have?"

"Fire," answers the sage.

Persisting, the king asks what light a person has when the fire goes out, and he gets in reply the clever answer, "Speech." Yājñavalkya explains: "Even when one cannot see one's own hand, when speech is uttered, one goes toward it." In pitch-black darkness, a voice can light your way.

The king, however, still isn't satisfied and demands to know what light there is when speech has fallen silent. In the absence of sun, moon, fire, and speech, what source of light does a person have?

"The *self* (*ātman*)," Yājñavalkya answers. "It is by the light of the self that he sits, goes about, does his work, and returns."

This answer makes plain that the dialogue has been moving backward, from the distant, outer, and visible to the close, inner, and invisible. Nothing is brighter than the sun, or the moon at night, but they reside far away, at an unbridgeable distance. Fire lies closer to hand; it can be tended and cultivated. Speech, however, is produced by the mind. Darkness can't negate the peculiar luminosity of language, the power of words to light up things and to close the distance between you and another. Yet speech is still external in its being as physical sound. The sun, moon, fire, and speech—we know each one by means of outer perception. The self, however, can't be known through outer perception, because it resides at the source of perception. It isn't the perceived, but that which lies behind the perceiving.

The self dwells closest, at the maximum point of nearness. It's never *there*, but always *here*. How could we possibly find our way around without it? How could outer sources of light reveal anything to us, if they weren't themselves lit up by the self? And yet, precisely because the self is so intimate, it seems impossible to have any clear view of it and to know what it is.

Finally, the king is able to ask the question he has all along been aiming toward: "*What is the self?*"

A REVEALING ANSWER

Yājñavalkya answers that the self (*ātman*) is the inner light that is the person (*puruṣa*). This light, which consists of knowledge, resides within the heart, surrounded by the vital breath. In the waking state, the person travels this world; in sleep, the person goes beyond this world. The person is his own light and is self-luminous.

As this answer unfolds, it becomes clear that the "light" Yājñavalkya is talking about is what we would call "consciousness." Consciousness is like a light; it illuminates or reveals things so they can be known. In the waking state, consciousness illuminates the outer world; in dreams, it illuminates the dream world.

It's here, in Yājñavalkya's answer to the king's question about the self, that we find the first map of consciousness in written history.

WAKING, DREAMING, SLEEPING

Yājñavalkya explains to the king that a person has two dwellings—this world and the world beyond. Between them lies the borderland of dreams where the two worlds meet. When we rest in the intermediate state of dreams, we see both worlds. The dream state serves as an entryway to the other world, and as we move through it we see both bad things and joyful things.

In the waking state, we see the outer world lit up by the sun. Yet we also see things when we dream. Where do they come from, and what makes them visible? What is the source of the light illuminating things in the dream state?

Yājñavalkya explains that in the dream state we take materials from the entire world—this world and the other one—break them down, and put them back together again. Although the dream state lies between the two worlds, it's a state of our own making. The person creates everything for himself in dreams and illuminates it all with his own radiance:

> When he falls asleep, he takes with him the material of this all-containing world, himself breaks it up, himself re-makes it. He sleeps by his own radiance, his own light. Here the person becomes lit by his own light.
>
> There are no chariots, nor chariot-horses, nor roads there, but he creates chariots, chariot-horses and roads. There are no pleasures, no enjoyments, nor delights there, but he creates pleasures, enjoyments and delights. There are no ponds, nor lotus-pools, nor rivers there, but he creates ponds, lotus-pools and rivers. For he is a maker.[2]

Like a great fish swimming back and forth between the banks of a wide river, the person alternates between waking and dreaming. Yet the self never attaches fully to either state, as the fish never touches the riverbanks when it swims between them.

There's also a third state, the state of deep and dreamless sleep. Here the person rests quietly with no desires:

> As a hawk or eagle, tired after flying around in the sky, folds its wings and is carried to its roosting-place, even so the person runs to the state where he desires no desire and dreams no dream. . . .
>
> As a man closely embraced by a beloved wife knows nothing outside, nothing inside, so the person, closely embraced by the self of wisdom, knows nothing outside, nothing inside. That is the form of him in which his desires are fulfilled, with the self as his desire, free from desire, beyond sorrow.[3]

These images present deep and dreamless sleep as a sought-for state of peace and bliss. Conventional characteristics and burdens drop away: "Here a father is not a father, a mother is not a mother . . . a thief is not a thief, a murderer not a murderer . . . a monk not a monk, an ascetic not an ascetic."[4] Instead, we rest in the embrace and wisdom of the cosmic or universal self (*ātman*), which is free from desire and without fear.

If deep sleep is peaceful and blissful, does this mean we're somehow conscious in deep sleep? Is awareness present, or is deep sleep the oblivion of awareness? Put another way, is deep sleep a state of consciousness, like waking and dreaming, or is it a state where consciousness is absent, as most neuroscientists think today?

Yājñavalkya's description of deep and dreamless sleep—and many later Indian interpretations of what he meant—implies that consciousness pervades deep sleep. Consider the following rich but enigmatic passage: "Though then he does not see, yet seeing he does not see. There is no cutting off of the seeing of the seer, because it is imperishable. But there is no second, no other, separate from himself, that he might see."[5]

This passage seems to be saying that although there are no longer any dream images to be seen ("he does not see"), there remains a kind of awareness in dreamless sleep ("yet seeing he does not see"). As the sun cannot stop shining, so the self cannot lose all consciousness; specifically, it cannot lose the basic luminosity of awareness ("there is no cutting off of the seeing of the seer"). In deep sleep, however, this awareness doesn't witness any object separate from itself—no waking world of perceptible things and no dream world of images ("there is no second, no other, separate from himself, that he might see"). So the awareness here must be of a subtle and subliminal kind, devoid of images and desires, while peaceful and at ease.

In later texts of the *Upanishads*, as well as other Indian philosophical works, dreamless sleep is described as lacking the obvious or gross subject/object duality that's present in the waking and dreaming states. In the waking state, the subject appears as the body and the object appears as what we perceive. In dreams, the subject appears as the dream ego or self-within-the-dream and the object as

the dream world. In deep sleep, consciousness doesn't differentiate this way between subject and object, knower and known. Instead, it rests as one quiescent "mass." Consciousness withdraws into itself while its function of being directed toward external objects lies dormant. Yet this dormancy isn't a total loss or oblivion of awareness; it's a peaceful absorption that offers a foretaste of the lucid bliss belonging to the self-realized consciousness liberated from illusion.

Later philosophers belonging to the Yoga and Vedānta schools would also offer the following argument in support of the idea that consciousness continues in deep sleep: if there were no awareness at all in deep and dreamless sleep, then you couldn't have the memory, "I slept well," immediately upon waking up. Memory is the recollection of past experience; when you remember something, you recall an earlier experience and you recall it as your own. In remembering you slept peacefully, you recall something from deep sleep, so that state must have been a subtly conscious one. We'll examine this argument in light of the neuroscience of consciousness in chapter 8.

Yājñavalkya's progression from the waking state to the dreaming state to the deep-sleep state recapitulates his earlier progression from the sun, moon, fire, and speech to the self. Both narratives move increasingly away from what is outer and obvious to what is inner and subtle. Both trace the visibility of something in the waking and dreaming states back to its source in the basic luminosity of consciousness.

SUBTLE CONSCIOUSNESS

We've now uncovered an important difference between Western cognitive science and the Indian yogic philosophies. Cognitive science focuses on the contrast between the *presence* and the *absence of consciousness*—for example, between being awake and being under anesthesia, or between being able to report seeing a stimulus, such as the image of a face, and not being able to report seeing it, even though you show some other kind of behavioral or brain response to

its presence. The Indian yogic traditions, however, focus on the contrast between *coarse* or *gross consciousness* and *subtle consciousness*—for example, between waking perception of outer material objects and subliminal awareness in deep sleep.

From a meditative perspective, consciousness comprises a continuum of levels of awareness, ranging from gross to subtle. Gross consciousness is waking sense perception, which tells you about things outside you, like the words you're reading now, and gives you the feeling of your body from within. Dreaming is subtler because you withdraw from the outside world and create what you see and feel on the basis of memory and imagination. Deep sleep is subtler still because it's consciousness without mental images. Subtle aspects of consciousness are also said to manifest in certain states of deep meditation where all overt thinking and perceiving cease, as well as at the time of death. These subtler or deeper aspects of consciousness aren't apparent to the ordinary untrained mind; they take a high degree of meditative awareness to discern.

In Western philosophy of mind, it's common to distinguish between two meanings of the word "conscious." On the one hand, we can say you're conscious of something when it appears to you some way in your experience. Feeling a pain or having a visual experience of the color red are two standard examples philosophers give of a conscious experience. As they say, there is "something it's like" for you to see color or to feel pain. In this sense, a mental or bodily state is conscious when there is something it's like for the subject to be in that state. Philosophers call this concept of consciousness "phenomenal consciousness" ("phenomenal" here means how things seem or appear in experience). On the other hand, we can also say you're conscious of something when you can report or describe it, or reason about it, or use it to guide how you act or behave. Philosophers call this concept "access consciousness" ("access" here means available for use in thought and action). In short, "consciousness" can mean awareness in the sense of *subjective experience* or awareness in the sense of *cognitive access*.

One reason philosophers make this distinction is to point out that explaining consciousness in the sense of cognitive access doesn't

necessarily explain consciousness in the sense of subjective experience. As philosopher David Chalmers puts it, "even when we have explained the performance of all the cognitive and behavioral functions in the vicinity of experience—perceptual discrimination, categorization, internal access, verbal report—there may still remain a further unanswered question: *Why is the performance of these functions accompanied by experience?* A simple explanation of the functions leaves this question open."[6]

Another reason for making the distinction between phenomenal consciousness and access consciousness is to allow for the possibility that you could be subliminally or implicitly conscious of something without being able to report and describe your experience, at least not fully or explicitly. In other words, you could be phenomenally aware of something while lacking full cognitive access to that awareness. Perhaps you experienced the image on the screen, but it went by so fast you weren't able to form the kind of memory needed for a verbal report of exactly what it was. This is one way your phenomenal consciousness might outstrip the cognitive capacities or resources you have for accessing your experience.

One way to think about the Indian yogic idea of subtle consciousness is to see it as pointing to deeper levels of phenomenal consciousness to which we don't ordinarily have cognitive access, especially if our minds are restless and untrained in meditation. According to this way of thinking, as we'll see throughout this book, much of what Western science and philosophy would describe as unconscious might qualify as conscious, in the sense of involving subtle levels of phenomenal awareness that could be made accessible through meditative mental training.

There's another important difference between the Indian yogic and modern Western views. According to the standard cognitive science view, waking sense experience is the basis for all consciousness. According to many Indian (and Tibetan) views, however, gross or sensory consciousness depends on subtle consciousness. We'll look closely at these contrasting viewpoints when we examine pure awareness (chapter 3) and dreamless sleep (chapter 8).

THE FOURTH

In the dialogue between Yājñavalkya and King Janaka, we can see two ways of thinking about the self side by side—an older way, with roots in the Vedic thought of ancient India (ca. 1500 B.C.E.), and a newly emerging one, proper to the *Upanishads* (ca. 700–400 B.C.E.). For the older way of thinking, waking, dreaming, and deep sleep are *places* or *locations* to which the "inner person" (*puruṣa*) travels. When you fall asleep, you go to the place of dreams, which lies between this world and the other world beyond it. When you tire of dreaming, you go to the place where there are no dreams, the blissful realm of dreamless sleep. As Indian thought evolved, these places gradually transformed into *states* or *modes* of consciousness. This conceptual transformation culminated in the *Māṇḍūkya Upaniṣad*, a somewhat later text (ca. first century B.C.E. to the first or second century C.E.) that presents in a few short verses the famous doctrine of the four states of consciousness—waking, dreaming, deep and dreamless sleep, and "the fourth," or pure awareness.[7]

The *Māṇḍūkya Upaniṣad* describes these states as the four "feet" or "quarters" of the self (*ātman*). The first quarter is the waking state. Here consciousness turns outward and experiences the physical body as the self. Waking consciousness takes enjoyment in the "gross" objects of sense perception, yet no object holds its interest for long, because attention, motivated by desire, constantly flits from one thing to another. Consciousness in the waking state is restless, dissatisfied, and constantly on the move.

The second quarter of the self is the dream state. Here consciousness turns inward and experiences the dream ego as the self. Dreaming consciousness takes enjoyment in the dream images fabricated from "subtle" mental impressions caused by past experience and belonging to memory. Like waking, dreaming is a restless state, for desire and attention constantly jump from one thing to another.

The third quarter of the self is the state of deep and dreamless sleep. Here desire disappears, the "whirling" of the mind subsides, and consciousness becomes quiescent. The self rests in a "single mass" of absorbed and peaceful consciousness.

The fourth quarter of the self is the pure awareness beneath or behind waking, dreaming, and deep sleep, not conditioned by these changing states. The *Māṇḍūkya Upaniṣad* describes it first negatively and then positively:

> Not with consciousness turned inward [dreaming], not with consciousness turned outward [waking], not with consciousness turned both ways, not a mass of consciousness [deep sleep], not conscious, not unconscious—folk consider the fourth to be unseen, inviolable, unseizable, signless, unthinkable, unnameable, its essence resting in the one self, the stilling of proliferation, peaceful, gracious (*śiva*), without duality (*advaita*). That is the self: so it should be understood.[8]

Called simply "the fourth" (*turiya*), this mode of consciousness is pure nondual awareness.[9] Unlike waking, dreaming, and deep sleep, pure awareness isn't a state in the sense of a transient and discrete condition; hence it isn't a mere "quarter" like the other three. Instead, it's the constant, underlying source for these changing states, as well as a stage of meditative realization. As the underlying source for waking, dreaming, and deep sleep, "the fourth" is sheer awareness, defined by its quality of luminosity. As a stage of meditative realization, it's the deeper, background awareness that can witness these changing states without mistakenly identifying with them as the self. To borrow an image from Andrew Fort, an American scholar of Indian religion, pure awareness is like pervasive radio waves, which are obscured by the constant static of mental activity—thoughts, mental images, emotions, and memories.[10] We take the static to be real and to be who we really are, but it's only superimposed on the wave. When we remove or see through the superimposition, then the wave's true nature stands revealed. Or, to change analogies, removing the superimposition is like waking up from a dream, seeing through it, like knowing that you're dreaming. "The fourth" is the supreme wakefulness that reveals the true self as the witnessing awareness behind waking, dreaming, and deep sleep. This higher wakefulness is said to bring true freedom, serenity, and bliss.

We've been talking about waking, dreaming, and deep sleep as discrete states, but there's another way to think about them that will be especially important in this book. Rather than being discrete, these states are contained within one another; they interpenetrate. For example, when you have a dream and know you're dreaming, you're awake within the dream state; you're having a so-called lucid dream. And when you daydream, you're dreaming in the waking state.

The Indian philosopher Śaṅkara, who lived from 788 to 820 C.E., called attention to this crucial point in his commentary on the *Māṇḍūkya Upaniṣad*.[11] He said we experience all three states of waking, dreaming, and deep sleep within the waking state. Waking is perception, dreaming is remembering, and deep sleep is total self-absorption. In perception, we experience "gross" material objects. In memory, as in dreams, we experience "subtle" mental images and impressions. In total self-absorption, like deep sleep, active perceiving and remembering cease. In these and other ways, such as lucid dreaming, these states aren't opposed but flow into and out of one another.

I have yet to mention the most memorable feature of the *Māṇḍūkya Upaniṣad*—the way it links the four quarters of the self to the sacred Vedic syllable or mantra OM (or AUM). The text begins by identifying OM with all there is, with the past, present, and future, and with anything beyond these three times. OM is the sound of *brahman*, the nondual source and basis of the phenomenal universe that's also identical to the transcendent self, *ātman*. As one syllable, OM is the self; its constituent phonemes are the states of consciousness, from gross to subtle. "A" expresses the waking state; it's a rough sound produced by the mouth wide open. "U" expresses the dreaming state; it's a subtle sound produced with the aid of the lips. "M" expresses the deep-sleep state; still more refined, it's voiced with closed lips. Reverberating inside the throat, "Mmm" vocalizes the blissful and dreamless consciousness of deep sleep. "The fourth," however, being unique and incomparable, has no constituent phonemes. We can think of it as the silence from which all sounds emerge, or as the unity of the three phonemes in the one syllable OM, expressing the unity of the three states in the one nondual awareness.

DEATH

Let's return to the dialogue between the sage Yājñavalkya and King Janaka. Pleased with what he's heard, but knowing Yājñavalkya can impart still more, the king rewards him with a thousand cows but demands that he continue. The sage, realizing now that the king aims to extract all his secret knowledge, explains the nature of death and liberation.

As we return from dreaming to waking, so at death we pass from this life to another one. When the body becomes weak from sickness or old age, the self departs, leaving this body lifeless: "As he goes, the breath follows; as the breath goes, the senses (*prāṇa*) follow. He becomes a being of consciousness; he follows consciousness. His knowledge and action take hold of him, as does his former experience."[12]

In dying, consciousness withdraws from the senses, turns inward, and departs the body. But consciousness doesn't perish; it takes on a new body and begins another life conditioned by the knowledge and actions, or habits and dispositions, accumulated over the course of the previous life. Dying is like a caterpillar getting ready to jump; death and rebirth are like the caterpillar jumping from one blade of grass to another: "As a caterpillar, reaching the end of a blade of grass and taking the next step, draws itself together, so the self, dropping the body, letting go of ignorance and taking the next step, draws itself together."[13]

How things turn out in the new life depends on actions done in the life before. The doer of good is reborn into happy and favorable circumstances, the doer of evil into painful and difficult circumstances. Each life offers new opportunities to do good or ill, and thus to be reborn again into favorable or unfavorable conditions. No god or divine judge decrees this result; it happens because of the cause-and-effect relation between desire and its results: "They say, 'As one desires, so does one become, for the person is made of desire.' As he desires, so does his will become; as his will is, so is the action he does; as is the action he does, so is what he gets back."[14]

For a person made of desire, death offers no release, because desire binds one to the cycle of life, death, rebirth, and redeath. This cycle carries on incessantly, like the cycle of waking, dreaming, deep sleep, and waking up.

Someone free of desire, however, suffers no rebirth. Having fully recognized the true self (*ātman*), he no longer identifies with his body and ordinary mind in waking and dreaming. Desire—the fuel that powers the wheel of rebirth and redeath—is all used up. At death such a person casts off his body, like a snake shedding its skin, and becomes one with *brahman*, the infinite ground of all being.

Yājñavalkya ends his speech with the famous declaration of the *Upanishads*, "The self is 'not this, not this.'"[15] Ultimately, the self, understood now as universal pure awareness, can't be described in positive terms, only indicated by a series of negations—ungraspable, indestructible, unbound, not affected by what has been done or not done. Whoever knows this truth becomes calm, composed, patient, and at peace. He sees the self in himself and sees the self as all.

"This is the world of *brahman*," Yajñavalkya tells King Janaka, "and I have taken you to it."

"I offer you my kingdom," replies the king, "and myself to be your servant."

Yajñavalkya declines the king's offer. Choosing instead to renounce the world, he becomes a wandering ascetic, thereby showing that he has indeed let go of desire.

WHAT IS CONSCIOUSNESS?

We're now ready to go back to our guiding question. Given the fourfold framework of waking, dreaming, deep sleep, and pure awareness, can we say precisely what makes each of these a form of consciousness?

According to the yogic traditions of Indian philosophy, consciousness is that which is *luminous* and has the capacity for *knowing*. A lot is packed into these words, so let's go slowly.

"Luminous" means having the power to reveal, like a light. Without the sun, our world would be veiled in darkness, but without consciousness, nothing could appear. Consciousness is fundamentally that which reveals or makes manifest because it is the crucial precondition for appearance. Nothing, strictly speaking, *appears* unless it appears *to* some consciousness. Without consciousness, the world can't appear to perception, the past can't appear to memory, and the future can't appear to hope or anticipation. The point extends to science: without consciousness, there's no appearance of the microscopic world through electron microscopes, no appearance of distant stars through telescopes, and no appearance of the brain through magnetic resonance imaging (MRI) scanners. Simply put, without consciousness there's no observation, and without observation there are no data.

"Knowing" means having the ability to apprehend whatever appears. When you're conscious of something, you grasp or apprehend it in a certain way. A certain pattern of light and color appears to you, and you grasp or apprehend it as a sunset. Western philosophers call this capacity of the mind "intentionality." When we use this word, it is not to mean being able to do something on purpose. We use the word in a special sense to mean "aboutness," or being mentally directed toward something in perception or thought. When you see the sunset, your visual perception is about the sunset; it's the object of your seeing. When you remember the sunset, you think about that past event; it's the object of your memory. In such cases, not only does something *appear* to your consciousness, but also you *apprehend* it in a certain way, depending on your senses and cognitive capacities.

Let's now apply this way of thinking about consciousness to waking, dreaming, and deep sleep.

In the waking state, the world shows up for us in perception, in certain ways and not others, depending on our senses and cognitive capacities. For example, we see the world as having certain colors, but some animals see little in the way of color while other animals, such as birds, see colors we can't see.[16] To say the world shows up or appears to us in these ways is to say that our consciousness reveals

the world and apprehends it in these ways. The primary means or instruments by which consciousness accomplishes this are sense perception and conceptualization (we can't apprehend what we see as a sunset unless we can conceptualize it as a sunset). Thus, the waking state is that state in which consciousness apprehends the outer world through sense perception and conceptualization.

In the dream state, what show up or appear are mental images. In an ordinary dream, we don't recognize or apprehend them as dream images; we take them to be real things outside us. In this way, our apprehension is a misapprehension, our knowing a misknowing. In a lucid dream—a dream where we know we're dreaming—the images still appear, but now we apprehend them as dream images, and we can conceptualize or think about our state as a dream state. In both kinds of dream state, consciousness relies heavily on memory and other conceptual and imagery-related processes. Thus, the dream state is that state in which consciousness apprehends the inner world of mental images.

What about deep sleep? If deep sleep is a state of consciousness, then what appears and what's apprehended in this state?

Unlike contemporary Western philosophy of mind, where there is almost no discussion of deep sleep, only an occasional passing mention of it as an obvious case of the complete absence of consciousness, Indian philosophy contains many rich examinations of this state as well as debates about whether and in what sense it qualifies as a state of consciousness.[17] Some of these discussions are related to certain meditation practices, notably the yoga of sleep, known today as *yoga nidrā*. We'll look closely at this in chapter 8. For now, I'll mention only Śaṅkara's influential view, which he aligned to Yājñavalkya's view from a thousand years before: in deep sleep, consciousness enters into an unknowing but blissful state, due to the absence of images, desires, and activities—in short, due to the absence of what in Yoga is called the usual "whirling" of the mind.[18] In this way, deep sleep offers a foretaste of the lucid and knowing blissfulness of pure awareness.

To summarize, in this book I'll use the word "consciousness" to mean experience in all its forms across waking, dreaming, deep

sleep, and meditative states of awareness. In all these modes, consciousness is that which makes something manifest and apprehends it in some way. In order to describe how consciousness functions to reveal and apprehend phenomena, I'll distinguish among three aspects—awareness, the contents of awareness (what we're aware of from moment to moment), and ways of experiencing certain contents of awareness as being or belonging to the self (our sense of self or "I-Me-Mine").

SELF-ILLUMINATION VERSUS OTHER-ILLUMINATION

One more question remains. If consciousness is luminous and has the capacity for knowing, if it's what reveals and apprehends, then what reveals consciousness? To put the question another way, what reveals your conscious experiences to you?

Indian philosophy contains numerous intricate discussions of this issue.[19] Broadly speaking, there are two opposed camps. "Self-illumination" theories say that every conscious experience is revealed to itself. "Other illumination" theories say that for a conscious experience to be revealed, there needs to be a second, higher-level cognition of that experience.

Western philosophy of mind has debates parallel to the Indian ones between self-illumination versus other-illumination theories.[20] Without going into the details of the many Indian and Western versions of these theories, let me explain why I think the self-illumination viewpoint is the better one.

According to the other-illumination viewpoint, in order for your seeing the sunset to be a conscious seeing, it needs to be revealed to you as your seeing, and in order for that to happen, you need to have some kind of higher-level, inner cognition of your seeing. In other words, you need to have some kind of inner mental perception of your seeing or some kind of thought along the lines of "I'm seeing the sunset" or "this seeing is my experience," and your seeing needs to cause this higher-level, inner cognition to occur.

The question is whether that higher-level cognition is itself conscious or not. If it is conscious, then it needs to be revealed to you as your cognition, and this requires that there be a third-level cognition of the second-level cognition. And if this third-level cognition is also conscious, then there needs to be a fourth-level cognition of this third-level one, and so on, leading to a vicious infinite regress.

So let's suppose that the higher-level cognition isn't conscious and that it's not revealed to you as your cognition. Instead, it occurs nonconsciously. But how could a nonconscious cognition make your seeing into a conscious seeing? How could it reveal the seeing to you as yours? Since the higher-level cognition is nonconscious, it has no "luminosity," so how could it "light up" so that your seeing doesn't happen in the dark but feels some way to you? More generally, how could two states that are supposedly nonconscious in themselves—the second-level cognition and the first-level perception—come together and make one of them into a conscious state? Why should an interaction between two otherwise unconscious states cause one of them to become conscious?

The basic problem with the other-illumination viewpoint is that it projects the subject-object structure of ordinary perception onto consciousnesss itself. At the most basic level, however, your consciousness isn't revealed to you as an object. When you see the sunset, your seeing isn't present to you as another object of awareness like the sunset. Neither is your seeing simply absent to you. Rather, your seeing reveals itself in the sunset's appearing to you visually. To use a grammatical metaphor, your awareness of the sunset is a transitive or object-directed awareness, but your seeing experience is intransitive and reflexive. In this way, your seeing is self-aware.

This kind of self-awareness isn't a higher-level, introspective, or reflective self-awareness. It's not a second-level awareness whose object is the first-level awareness. Rather, it's contained within or belongs to the first-level awareness. Western phenomenologists call this "prereflective self-awareness," because it already belongs to the first-level awareness before any reflection or introspection happens.

According to the self-illumination viewpoint, consciousness is self-luminous or self-revealing. The traditional analogy is that of a

light, which shows itself while illuminating the other things around it. A light illuminating other things doesn't require another light to be seen. So, consciousness, in revealing other things, doesn't need another consciousness to be revealed. Put another way, in its witnessing of outer objects of perception and inner mental images and thoughts, consciousness also witnesses itself. This kind of self-witnessing, however, isn't like seeing your image in a mirror; it doesn't involve any kind of doubling or subject-object structure. What the analogy of light aims to convey is that the luminosity of consciousness is also essentially a self-luminosity: consciousness, in its nature, is self-manifesting or self-revealing. Western philosophers call this feature of consciousness "reflexivity."

Here, then, is a fuller answer to our question, what is consciousness? Consciousness is that which is luminous, knowing, and reflexive. Consciousness is that which makes manifest appearances, is able to apprehend them in one way or another, and in so doing is self-appearing and prereflectively self-aware.

A MEDITATIVE MAP OF CONSCIOUSNESS

In the ancient Indian dialogues of the *Upanishads*, whose oldest portions precede the first Greek philosophers by at least a hundred years, we see philosophy in its earliest written expression. To my mind, the *Upanishads* stands as humanity's first truly philosophical work. Its sages scorn blind adherence to the sacrificial ritual and priest craft codified in the *Rig Veda* (India's oldest text), and instead uphold direct experience through meditation as the path to knowledge and liberation. Woven into the poems, stories, and dialogues of the *Upanishads* is a distinctly philosophical form of thought: consciousness is the necessary precondition of all knowing; nothing can be known unless consciousness reveals it; it's impossible to think consciousness away or imagine its absence; consciousness most fundamentally isn't the object seen, the act of seeing, or the person who sees; consciousness most fundamentally

is the luminous witnessing awareness. In these ways, the *Upanishads* privileges consciousness above all else.

Yet the *Upanishads* offers no mere speculative philosophy but instead a philosophy steeped in meditative experience—in the exploration of consciousness from within using heightened attention, concentration, and awareness. Relying on meditation, the sages of the *Upanishads* devised humanity's oldest recorded map of consciousness. Refined over the millennia, this map guided especially the Yoga and Vedānta systems of Hindu thought, but also deeply informed Buddhism, which rejected the authority of the *Upanishads* and traveled out of India to the rest of the Asian world. To quote my father, William Irwin Thompson:

> The *Upanishads* is a watershed in the evolution of consciousness. Instead of being ethnocentric and dividing all global history between B.C. and A.D., we should really divide it between before *Upanishads* and after *Upanishads*—B.U. and A.U.—because the sophisticated psychology of consciousness in the *Upanishads* represents a quantum leap forward in human development. In the *Rig Veda* there is a complex and obscure symbolic code that elliptically refers to states of experience for those who have already had the experiences, but in the *Upanishads* there are radical yogi psychologists who insist that one can be a Brahmanical priest and throw butter on the fire until the cows come home but still never become truly enlightened.[21]

This radical yogi map of consciousness will guide us in this book. The following chapters will explore the waking state, dreaming, lucid dreaming, deep sleep, dying and death, pure awareness, and the nature of the self, drawing not only from the *Upanishads* and the philosophical systems of Yoga and Vedānta but also from Indian and Tibetan Buddhism.

This exploration, however, won't be limited to the meditative view of consciousness from within, because we also want to know how these modes of consciousness are related to the brain and the rest of the living body. Today we know that distinct electrochemical and metabolic patterns of brain activity occur during waking, dreaming,

lucid dreaming, and deep sleep. We also know that different brain systems are associated with different ways we can experience having or being a self. Given this knowledge, it's natural to ask how meditative experiences of "pure awareness" are related to the brain or living body as a whole. We also need to ask what happens to consciousness during the dying process, and whether there's any evidence for the survival of consciousness or for rebirth.

Our exploration begins in the next chapter with attention and perception in the waking state.

9

DYING

What Happens When We Die?

I've heard anthropologist and Zen teacher Joan Halifax tell the story many times, but it never seems to lose its force. Here it is, in her own words, from her book, *Being with Dying*:

> When a group of people gathers together for a meditation retreat, important shifts in one's mind and life may unfold. I often think of one retreat in particular, because what happened one day illustrates with fierce clarity the fragility of these human bodies we inhabit, and the gravity of what Buddhists call "the great matter of life and death."
>
> The retreat took place sometime in the seventies at a quiet center on Cortez Island in Canada, a place then called Cold Mountain Institute. It was the beginning morning of the program, and we had just finished the first period of silent sitting meditation. The bell rang softly to announce the end of the period, and we all stretched our legs and stood up to do walking practice—but one man remained seated.
>
> I remember feeling concern as I turned to look at him: why was he not getting up? He was sitting in the full-lotus position, his legs perfectly folded and his feet resting on his thighs. Then, as I watched in shock, his body tilted over to one side, slumped and sagging, and he fell to the floor. He

> died on the spot. There were several doctors and nurses participating in the retreat who helped perform CPR and administer oxygen, but it was too late. Later we learned that his aorta had burst while we were all sitting.
>
> This man was healthy enough—perhaps in his late thirties. He almost certainly had not imagined when he came to this retreat that he would die during it. And yet, that day, sixty people sat down to meditate—and only fifty-nine stood up.[1]

All of us will die, sooner or later. This fact is like no other. It's not just that every one of us will die; it's that I, myself, am going to die. How or when, I don't know, but that it will happen, I can be absolutely sure of. And yet, despite this certainty, that I'm going to die is the hardest fact to grasp and the easiest one to turn away from. "What is the most wondrous thing in the world?" asks Yama, the Lord of Death. His son, Yudhiṣthira, answers, "The most wondrous thing in the world is that all around us people can be dying and we don't believe it can happen to us."[2]

Modern Western society, like no other society in human history, reinforces our blindness to the inevitability of our own death. It does this in countless ways, one of which is by hiding death from our view. As I write these words, I'm in my forty-ninth year and I've never seen a dead body. I've been in the close presence of someone near death only twice. At no other time in human history could I have lived so long and seen so little of death.

You might think that we see less of death than our forebears did because biomedicine enables us to live longer. But it also hides death from us in a peculiar and powerful way. Biomedicine talks about death as if it were essentially an objective and impersonal event instead of a subjective and personal one. From a purely biomedical perspective, death consists in the breakdown of the functions of the living body along with the disappearance of all outer signs of consciousness. Missing from this perspective is the subjective experience of this breakdown and the significance of the inevitable fact of one's own death. Biomedicine hides the inner experience of dying and the existential meaning of death.

Materialist scientists and philosophers may argue that there's not much we can say about the experience of death because death is annihilation and the extinction of one's consciousness. Yet even if we set aside the issue of whether science gives us good reason to believe that death entails the complete cessation of all consciousness, this conception is totally inadequate because it says nothing about the experience of *dying*.

In contrast, the Indian and Tibetan yogic traditions claim to provide detailed accounts of the transformations of consciousness during the dying process. Tibetan Buddhism, in particular, as we've seen in earlier chapters, offers a rich contemplative perspective on death, including meditations to prepare for death and to practice as one dies. This kind of experiential view of dying and death is missing from the biomedical perspective.

Nevertheless, we might wonder exactly how these yogic traditions, rooted in foreign cultures and belief systems, can help us to recover an experiential approach to death in our modern Western context. From the other side, we might wonder whether Western science and medicine can help to advance and enrich contemplative ways of approaching death. These were some of the questions I talked about with neuroscientist and psychologist Rebecca Todd—whom I've known since we were kids in the 1970s and whose love I've treasured for over twenty years—as we traveled to the Upaya Institute and Zen Center in Santa Fe, New Mexico, to attend its Being with Dying training program in contemplative end-of-life care.

BEING WITH DYING

It's May 2011, and Rebecca and I have left behind our work lives in Toronto in order to immerse ourselves in the Being with Dying program, which Joan Halifax—or Roshi Joan, as she's known in the Buddhist world—created in 1994 in order to train health-care professionals and dying people in the psychological, spiritual, and

social aspects of dying.[3] The program lasts for eight days and goes from seven o'clock in the morning until nine o'clock at night. Out of a group of sixty-five participants, we're the only ones, along with a community leader and former mayor from a small town in Montana, who aren't health-care or other professionals who work with the dying and their families. We're looking forward to learning with and from an extraordinary group of people, many of whom have made care for the dying their life's work—palliative care nurses and doctors, psychiatrists and social workers, chaplains and hospice workers.[4] They've come from all over the world. Many say they're suffering from burnout, not so much from their clinical work, which they love, but from having to deal with the stress and administrative demands of the modern hospital and the effect it has on the dying and those who care for them.

The Being with Dying training combines lectures on science and clinical practice with experiential learning in small groups as well as meditation and yoga. At the heart of the training are reflective and meditative practices for learning to face death—whether one's own or another's—with mindful awareness and compassion.

On the morning of the first day, Roshi Joan asks us to write freely without interruption for five minutes our answer to the question, "What is your worst-case scenario of how you will die?" After the five minutes are up, we note the feelings and emotional reactions we're experiencing. Then we repeat the whole exercise for the question, "How do you really want to die?" It's striking that no one wants to die in a hospital and that many of our worst-case scenarios include dying in a hospital.

The second day begins with a meditation called the "Nine Contemplations," derived from the eleventh-century Indian Buddhist teacher Atiśa. Roshi Joan presents the meditation as a reflective practice for facing the truth of our mortality. Make sure your body is relaxed and calm, she tells us, as we settle ourselves onto the cushions and chairs in the zendo (meditation hall). Close your eyes or leave them lightly open and unfocused. Let your mind settle. Bring your attention to your breath. The nine contemplations are meant to remind you about the nature of life and death. Please consider these truths:

The First Contemplation
All of us will die, sooner or later.
Death is inevitable; no one is exempt.
Holding this thought in mind, I abide in the breath.

The Second Contemplation
My life-span is ever-decreasing.
The human life-span is ever-decreasing; each breath brings us closer to death.
Holding this thought in mind, I delve deeply into its truth.

The Third Contemplation
Death comes whether or not I am prepared.
Death will indeed come, whether or not we are prepared.
Holding this thought in mind, I enter fully into the body of life.

The Fourth Contemplation
My life-span is not fixed.
Human life expectancy is uncertain; death can come at any time.
Holding this thought in mind, I am attentive to each moment.

The Fifth Contemplation
Death has many causes.
There are many causes of death—even habits and desires are precipitants.
Holding this thought in mind, I consider the endless possibilities.

The Sixth Contemplation
My body is fragile and vulnerable.
The human body is fragile and vulnerable; my life hangs by a breath.
Holding this thought in mind, I attend as I inhale and exhale.

The Seventh Contemplation
My material resources will be of no use to me.
At the time of death, material resources are of no use.
Holding this thought in mind, I invest wholeheartedly in practice.

The Eighth Contemplation
My loved ones cannot save me.
Our loved ones cannot keep us from death; there is no delaying its advent.
Holding this thought in mind, I exercise non-grasping.

The Ninth Contemplation
My own body cannot help me when death comes.
The body cannot help us at death; it, too, will be lost at that moment.
Holding this thought in mind, I learn to let go.[5]

Before we break up into small groups to talk about these contemplations, Roshi Joan explains that they're like a weather report warning us of a storm. The storm is inevitable, though we can't say exactly when or how it will hit. Accepting the truth of death is how we can begin to prepare for the storm without fear while arousing our awareness of life. Continued practice of the nine contemplations helps to transform fear of death into acceptance of death and gratitude for life. And this kind of openness, she says, is what's really needed in order to be fully present when caring for dying people and their needs.

What turns out to be the high point of the Being with Dying training for Rebecca and me arrives early in the morning on the last full day of the program. As we enter the zendo after the three-mile walk up to Upaya from our hotel in Santa Fe, we see that all the chairs have been removed; we're supposed to lie down on the cushions. Roshi Joan is going to guide us through a meditation called "Dissolution of the Body," in which you visualize going through the dying process.[6] The meditation is her nonsectarian and modern adaptation of the classical Tibetan Buddhist meditation practice called "Dissolution of the Elements After Death," whose traditional monastic version the Dalai Lama had described at our Mind and Life dialogue in 2007 (see chapter 3).[7]

In the Tibetan Buddhist view, our living body, at a subtle level, consists of a vital energy that's inseparable from consciousness. The Tibetan term for this vital energy is *lüng*, which translates the

Sanskrit word *prāṇa* and literally means "wind." In Tibetan medicine, all forms of outer and inner motion in the body are controlled by "winds" or energies, which also serve as the support for our sensory and mental consciousnesses. A traditional image for the relationship between wind and consciousness is that of a horse and its rider.[8] Consciousness rides on the winds or energies of the body, and when these begin to transform in the dying process, consciousness undergoes radical changes. Ultimately, as the winds dissolve, consciousness falls apart and death occurs. Tibetan yogis visualize or rehearse in imagination the entire dissolution process as a way to familiarize themselves with dying and to gain control over the mental states that arise in the course of dying. Moreover, advanced yogis, it is said, can go beyond simply visualizing the dissolution process and actually bring it about during meditation.

Roshi Joan recommends that we lie in the traditional posture for the dissolution meditation—the "sleeping lion posture," which is the position the Buddha is said to have taken when he was dying. You lie on your right side with your knees drawn up slightly, and your right hand makes a pillow under your cheek while your left arm rests along your left side. Pressing the little finger against the right nostril completes the posture.

We've been told to lie with our heads toward the altar with the statue of Mañjuśrī, who, wielding a sword in his right hand, symbolizes the wisdom that cuts through ignorance and delusion. But Roshi Joan now tells us that we can imagine the top of our head being directed toward any image we choose—a religious image, a loved person, flowers, a nature scene, or any being who represents awakening and compassion. Immediately I see with my mind's eye an image of the dancing Śiva, whose rhythmic movements embody the creation and destruction of the cosmos, and I hear my dad asking me, when I was a little kid, which I liked better, Śiva dancing in a ring of flames or Gautama Buddha sitting under a tree in meditation. I never could decide.

My mind comes back to the room and I open my eyes to take in the sight of our now close-knit community lying on the zendo floor and preparing to practice dying together. As I close my eyes

and bring my attention back to my breathing, I hear Roshi Joan explaining that in this practice you imagine letting go of the elements that make up your mind and body as they dissolve when you die. Traditionally, these elements are specified as earth, water, fire, air or wind, and space, and the process is described as one where they progressively dissolve, each element into the next. The meditation practice is about awakening to the dissolution process and releasing what you take to be your identity into a vast spaciousness and radiance. You release your bodily form, your feelings, your perceptions, your inclinations or mental tendencies, and ultimately your consciousness. Through this practice you familiarize yourself with the experience of dying and train yourself to transform it into an experience of enlightenment and liberation. Even in cases of sudden death, she tells us, Tibetan teachers say that you go through the same dissolution process. So training your mind to recognize the process and to let go during it can help you, should you die suddenly.

There's one more instruction Roshi Joan gives before we start the meditation. Since the process of falling asleep, she says, closely resembles what happens when you die, the dissolution meditation may put you at the edge of sleep. But try not to fall asleep, and if you hear your neighbor snoring, gently nudge him and wake him up.

Imagine you are home in bed, she begins. You are dying and fortunate to be surrounded by loved ones. You feel somewhat agitated and irritable, but you accept this state of mind. Your body is weak; you have no energy to do anything. You feel a growing heaviness, going right to the core of your body. You're so weighed down that there's no distinction between you and the bed.

I feel heavy, too heavy for the zendo floor to support me, as if I'm going to fall through it into a void. Vertigo takes over and I open my eyes. The room looks unstable, as if it were about to spin and throw me into the air, and I want to sit up. I wonder whether I'm feeling the effects of the altitude, being at 7,200 feet above sea level, or having some kind of anxiety attack.

Wake up as this body lets go, I hear Roshi Joan saying. I try to return to my breath, notice the anxious feeling, and release it. I calm

down a little, but the feeling stays there in the background, rising and falling like a rough sea that threatens to toss a small boat.

Your sight is dim, Roshi Joan says. It's difficult to open and close your eyes. Your sensory grip on the world is loosening. As your body slips away, the outside world slips away too. You sink deeper and deeper into a blurry mental state. Whatever visions you see are like blue mirages.

I've managed to close my eyes again, and pre-sleep images are luring my attention. Using the breath, I try to energize my awareness so I don't lose track of what Roshi Joan is saying.

This is the dissolution of the body, she is telling us—these feelings of heaviness, drowsiness, being weighed down, the loss of control, and your inability to see the form world around you. In this state of mind and body, be awake; be effortlessly present. The mind can be still as you let go. Be present as this body is dying. This body is not you. This is the dissolution of the earth element as form unbinds into feelings.

After a few minutes of silence, the visualization starts up again. Your hearing is diminished, Roshi Joan says, and you've sunk into a blurred and undifferentiated state of mind. Your nose is running, saliva is leaking out of your mouth, a watery discharge is coming out of your eyes, and you can't hold your urine. Your generative fluids are all drying up, and your body is parched. You have a thirst that no amount of water can quench.

Let go fully into this dryness. Release the watery element of your body.

Your mind is hazy, and you've ceased to have experiences of pain, pleasure, or even indifference. Behind your eyes you see a vision of swirling smoke and a haziness that dissolves all differences. This is the dissolution of the water element and the unbinding of feelings. Wake up as you let go into this vision of swirling smoke.

Now the body's fire element begins to dissolve into air, Roshi Joan continues, and your body feels cool. Heat withdraws from your hands and feet into your body's core. You can't smell anything, and you can't drink or swallow. Your ability to perceive anything through the five senses is gone, and your mental discernment alternates between

clarity and confusion. Your in-breath is short and weak; your out-breath is long. You can't recognize anyone around you or remember the names of your loved ones.

By this point in the meditation I've managed to settle into my breathing and am feeling less anxious. My awareness seems to be sliding back and forth between inner withdrawal of the senses and outer following of the meditation instructions. I hear snoring nearby, followed by a grunt; someone has fallen asleep and been tapped by his neighbor.

Roshi Joan continues the meditation. You may feel as though you're being consumed in a blaze of fire that rises into space. Let go into this fire. Or you may see sparks of light like fireflies. Wake up in this vision of sparks. This is the dissolution of the body's fire element and the unbinding of your ability to perceive.

You've now given up any sense of volition, she says, and your mind is no longer aware of the outside world. Accept this aimlessness.

As the element of air is dissolved, you're having visions. These visions relate to who you are and how you've lived your life. You may be seeing your family in a peaceful setting or friends welcoming you, or you may be reliving pleasant experiences from your past. Or you may be having hellish visions. If you've hurt others, they may appear to you. Troublesome moments of your life may arise to haunt you. You may even cry out in fear.

It's very important, Roshi Joan says, not to identify with these visions, no matter whether they're beautiful or terrible. Simply let them be. They will pass; you don't have to do anything.

Your body is barely moving now, she tells us. Its last energy is receding into the core, and whatever heat is left now resides in the area of the heart. Your in-breath is barely a sip, and your out-breath is uneven and rattles. Your eyes gaze into emptiness and roll upward.

Your last out-breath is long. Imagine that you're experiencing this last breath and let it go.

Your body lifts slightly to meet the next in-breath, which does not come. Cognitive functions cease altogether. Your breathing has stopped. The perception from the outside is that you are dead. Know this empty state, experience it, and be present to it. This is

the dissolution of the air or wind element and the unbinding of mental formations.

At the moment of so-called physical death, Roshi Joan says, you see a small, flickering flame like a candle. Suddenly it's extinguished, and your awareness is gone.

My mind recoils at these words, and the meditation now seems paradoxical. How can I imagine no awareness from the inside? It doesn't make sense; there's nothing inner to visualize. I can visualize myself from the outside, as if I were looking at myself in my deathbed, but this is to visualize an out-of-body experience, where my awareness is still present. Or it's to visualize how I would look to someone else in the room who witnesses my death. Or is the loss of awareness like deep and dreamless sleep? But then there would have to be some kind of awakening from the blackout, in order for the loss to be known. I notice that my conceptual mind is racing, as I've gotten caught up in thinking about the ungraspability of my own death.

After a long silence, Roshi Joan tells us to visualize a tiny white drop descending from the crown of the head into the heart area. As it descends, imagine the energy and experience of anger transforming into fundamental clarity. You experience an immaculate autumn sky filled with brilliant sunlight.

Imagine now, she says, a red drop ascending from the base of the spine toward the heart. As it ascends, desire transforms into profound bliss. You experience a vast and clear copper-red sky, like an autumn sky at dusk.

The white and red drops, she continues, meet in the heart and surround your subtle consciousness. You are now free from the conceptual mind.

A deep, black sky, free of stars or moon, appears. Out of this nothingness, luminescence arises. You are one with a clear dawn sky free of sunlight, moonlight, and darkness. You are bliss and clarity. The clear light of presence is liberated, the mother light of your awareness. Visualize it, be with it, be awake to it; don't turn away from it.

This is your ultimate great perfection. This is the actual moment of death. It is the inner or subtle dissolution, the dissolution of consciousness into space, and the dissolution of space itself into luminosity.

The vertigo I was feeling is gone now and the room is still, its silence held by the hum of mountain life outside the zendo.

When you feel ready, Roshi Joan says, roll onto your back while keeping your eyes closed. Notice how being more physical changes your mental experience. As you move into ending the practice, the tendency is to look for some reference point, physical or mental. But what we want to do is to bring the quality of openness, of courage and presence, from this meditation practice into the whole of our life. Open your eyes, gazing but not seeking a reference point. Let your attention be wide and inclusive. Slowly roll to the side and sit up, while noticing this transition to greater embodiment. Try to sustain the heart-mind of openness. Lift your gaze above the heads of those who are in front of you, and let your breath be deep in your body. Notice again how the mind changes as the body changes. Try to maintain the quality of openness and the taste of luminosity.

When you're ready, she tells us, stand up and gently walk out of the zendo. Bring your gaze into the sky. Let your mind mix with the sky, the luminous New Mexico sky.

A procession forms, and we leave the zendo one by one. I turn around and face the mountains behind Upaya. The blue sky fills my eyes, and in my head I hear these words:

> At the round earth's imagined corners blow
> Your trumpets, angels, and arise, arise
> From death, you numberless infinities
> Of souls, and to your scattered bodies go. . . .
> —John Donne, Holy Sonnet VII

DEATH IN MIND

One of the oldest thoughts about death in the Judaeo-Christian tradition comes from the Book of Ecclesiastes: "For the living know that they shall die: but the dead know not any thing" (9:5). The Greek philosopher Epicurus (341–270 B.C.E.) expressed a similar thought:

"death . . . is nothing to us, because as long as we exist, death is not present, and when death is present we do not exist" (Letter to Menoeceus 124–125). Given this way of thinking about death, if phenomenology is restricted to what we can experience, then although there can be a phenomenology of dying, there cannot be any phenomenology of death, for experience ceases to exist at death.

The Tibetan Buddhist worldview is different.[9] Tibetan Buddhists see death as a transitional moment between two of the six "in-between states" or *bardos* that make up the cycle of existence. The "bardo of this life" begins at the moment of birth and ends once active dying begins. Within the bardo of this life are the "bardo of dream," which begins at the onset of sleep, includes dreaming and deep sleep, and ends with waking up, and the "bardo of meditation," which is the interval of time when the mind rests in meditative absorption. The "bardo of dying" begins with active dying and ends at the moment of death. Immediately following the moment of death is the "luminous bardo of *dharmatā*"; it encompasses the after-death experience of the "clear light" or "ground luminosity," which is the ultimate nature of mind as pure awareness (*dharmatā* means the "ultimate nature of phenomena"). The "bardo of becoming" is the last interval in the cycle; it encompasses the after-death experience of wandering in the form of a subtle "mental body" while seeking a new physical embodiment, and it ends when one enters the womb of one's future mother, at which point the whole cycle begins again.

The guided meditation at Upaya involved visualizing the progression of the bardo of dying from the "outer dissolution" of the senses and elements of the body to the "inner dissolution" of consciousness, culminating in the arising of the clear light or ground luminosity of pure awareness. What would ordinarily be considered the moment of death in a modern clinical setting—the cessation of breathing and other vital signs—corresponds to what Tibetan Buddhists regard as the end of the outer dissolution. What follows next is the inner dissolution, which consists in the gradual dawning of ever more subtle levels of consciousness as the coarser levels of consciousness fall apart. Death occurs only with the arising of the clear light of pure awareness at the end of the inner dissolution, for this is the moment

when the outer sensory consciousnesses and inner mental consciousnesses have completely dissolved back into the ground luminosity or ultimate nature of the mind.

To be able to recognize this moment when it happens, however, is said to require having trained oneself to recognize the ground luminosity of pure awareness in the bardo of this life, including in the bardo of meditation and the bardo of dream. Furthermore, immediately before the dawning of the clear light at death, a "blackout" period happens, as if consciousness is lost.[10] The blackout is described as being like the blackness of an empty sky with no sunlight, starlight, or moonlight. In the words of contemporary Tibetan teacher Dzogchen Ponlop:

> If we have not trained our mind through practice, then we faint and lose all awareness at this point. . . . If we have stabilized our mind and developed some insight into its nature, then we will recognize the arising in the next moment of the ultimate nature of mind. We will see its empty essence, its suchness, which is nothing other than the . . . ground luminosity.[11]

Tibetan Buddhists say that the bardo of dying corresponds closely to what happens when we fall asleep. Our thought processes progressively dissolve during the pre-sleep state. At the moment of dropping off to sleep, blackness occurs, followed immediately by the emergence of the clear light or ground luminosity of pure awareness, which we fail to recognize unless we've trained our mind in dream and sleep yoga. From this deep sleep state, dreams arise as spontaneous manifestations or appearances of the mind's own basic luminosity. Thus falling asleep is akin to the bardo of dying, the emergence of the clear light in deep sleep is akin to the dawning of the clear light at death, and dreaming is akin to the bardo of becoming, with the dream body corresponding to the after-death mental body that wanders in search of a new physical embodiment.

This comparison between death and sleep is also meant to illustrate how difficult it is to maintain awareness during these in-between states and hence the importance of training the mind, especially

through the meditation practices of dream and sleep yoga. In the words of another contemporary Tibetan teacher, Sogyal Rinpoche:

> How many of us are aware of the changes in consciousness when we fall asleep? Or of the moment of sleep before dreams begin? How many of us are aware even when we dream that we are dreaming? Imagine, then, how difficult it will be to remain aware during the turmoil of the bardos of death.
>
> How your mind is in the sleep and dream state indicates how your mind will be in the corresponding bardo states; for example, the way in which you react to dreams, nightmares, and difficulties now shows how you might react after you die.
>
> This is why the yoga of sleep and dream plays such an important part in the preparation for death. What a real practitioner seeks to do is to keep, unfailing and unbroken, his or her awareness of the nature of mind throughout day and night, and so use directly the different phases of sleep and dream to recognize and become familiar with what will happen in the bardos during and after death.[12]

The kinship between sleep and death—a kinship found also in Greek mythology, the Old and New Testaments, and the Mesopotamian *Epic of Gilgamesh* (ca. 1800–1300 B.C.E.)[13]—suggests one way we can see the Tibetan Buddhist account of death as involving phenomenology: it is trying to extrapolate from a phenomenology of sleep and dreaming to an understanding of death.

Modern Tibetan Buddhist teachers and their followers, however, often present the Tibetan Buddhist account of death as if it were phenomenological in the sense of being a literal description of what anyone will experience at the moment of death and afterward. I must admit I'm very skeptical of this way of thinking. The main reason is that phenomenology is based on first-person reports of direct experience from human beings with working cognitive abilities, but once someone is at the point of death or has died, there's no way she or he can report anything. Therefore, even if we allow for the sake of argument that consciousness might continue after death, any account of consciousness at the moment of death or afterward

can't be based on reports of direct experience but must instead be based on inference or conjecture.

The Dalai Lama seems to admit this point. At our 2007 Mind and Life dialogue, he stated that what happens after death is a mystery and not open to scientific investigation. He did suggest, however, that scientists should investigate what happens to the brain and body of great meditation practitioners who enter the clear light state through meditation when they're dying. It's believed that these practitioners remain in the clear light state for a period of time—in some cases many days—after their respiration and heartbeat cease, because during that time their bodies seem to stay fresh without decay.

The Dalai Lama gave a more philosophical statement at an earlier Mind and Life dialogue in 1992.[14] Tibetan Buddhist philosophy, he explained, distinguishes among three kinds of phenomena—"evident phenomena," which are known through direct perception; "remote or obscure phenomena," which are known through inference; and "extremely remote or extremely obscure phenomena," which are known only through the testimony of a third person. Death and after-death phenomena fall into the third category. The Tibetan Buddhist account of death, therefore, doesn't lend itself to direct experiential or inferential confirmation. Nevertheless, the Dalai Lama went on to argue, one can have a high degree of confidence in this account if there is no evidence contradicting it and if it accords with one's own investigations of what can be known through direct experience and inference. In particular, one can directly experience the dissolution of consciousness and the arising of the clear light nature of awareness in meditation and sleep, and these experiences provide a basis for inferring that a similar, though much more intense, experience happens when one dies. One can also see that the bodies of great meditation practitioners who enter the clear light state as they're dying don't decay in the usual way after physical death. Thus, the Dalai Lama concluded, even though acceptance of the traditional Tibetan Buddhist view of death requires the acceptance of third-person testimony, such acceptance can be reasonable, not a matter of blind faith.

Although this line of thought may be reassuring if one already accepts the Tibetan Buddhist view of death, it's not likely to convince anyone who is skeptical. The reason is that the appeal to third-person testimony just pushes the problem back. Now what we need to know is how there could possibly be third-person testimony about the experience of death or the after-death state. After all, we accept something as testimony when we're confident that it's based on a person reporting what she or he has witnessed, but such reporting seems impossible in the case of death.

At this point, many Buddhists (as well as Hindus, Jains, and devotees of New Age spirituality) will appeal to the cosmology of rebirth or reincarnation and the possibility of memories of past lives, including memories of dying and being reborn. In recent times, people in a variety of settings have reported apparent memories of past lives.[15] If we had good reason to believe that such memory reports were veridical, then we could say that testimony about the intermediate state between death and rebirth might be possible (unless there is no intermediate state and one is born directly into the next life, as some Theravada Buddhists maintain).

Of course, this argument isn't likely to persuade anyone who thinks that the Indian and Tibetan rebirth or reincarnation cosmology grows out of a need to provide a coherent framework for ethics (we all have been in countless different relationships with each other over eons, including being mother to and offspring of every other being), morality (what you do comes back to you, if not in this life, then in the next one), and the possibility of spiritual liberation (it takes many lives to become enlightened and attain liberation), not from being able to remember past lives.[16] Indeed, many of the apparent memory reports (though not all[17]) come from cultures permeated by this worldview.

Modern Western Buddhists and other believers in rebirth often cite the reincarnation research of psychiatrist Ian Stevenson, who over the course of his life documented thousands of reports of purported memories of past lives, particularly in young children.[18] A small number of these cases, Stevenson maintained, were strongly "suggestive" of reincarnation.

Although Stevenson's presentation of these cases often makes for compelling reading, all the evidence is anecdotal and derived from interviews where there is a large amount of room for false memory and after-the-fact reconstruction. The interviews weren't conducted directly with the children when they first reported the memory, but some time later, so there had been plenty of time for the child to assimilate information gotten from family members and to repeat it as if it were his or her experience. And sometimes the children weren't interviewed at all; only family members were. Finally, it's hard to know how to assess whether a memory report about a past life exceeds chance probability, and critics have pointed to a number of serious flaws in Stevenson's statistical reasoning.[19] For these reasons, I don't find Stevenson's evidence convincing, though it does seem possible in principle to investigate claims of past life memories using scientific methods.[20]

With regard to the issue of rebirth, I agree with Stephen Batchelor when he writes:

> It may seem that there are two options: either to believe in rebirth or not. But there is a third alternative: to acknowledge, in all honesty, *I do not know*. We neither have to adopt the literal versions of rebirth presented by religious tradition nor fall into the extreme of regarding death as annihilation. Regardless of what we believe, our actions will reverberate beyond our deaths. Irrespective of our personal survival, the legacy of our thoughts, words, and deeds will continue through the impressions we leave behind in the lives of those we have influenced or touched in any way.[21]

We'll come back to the importance of this attitude of "not knowing" at the end of this chapter.

Another reason not to interpret the Tibetan Buddhist account of death as a literal phenomenological account is that it's steeped in metaphor and symbolism. For example, at the moment of death and in the state immediately after death, the sensory and conceptual mind is said to have dissolved completely, so the experiences must be nonsensory and nonconceptual, and hence ineffable. Yet

these experiences are described in sensory and cognitive terms, and in a language that's rich with Buddhist symbolism. For example, it's said that if one fails to "recognize" the ground luminosity of pure awareness, which is also identified with "buddha nature" and the inconceivable and unmanifested "truth body" of buddhahood, then a second phase called the "spontaneously arising luminosity" ensues, in which "an array of dazzling sights and sounds surrounds one."[22] This "luminosity of appearance" is identified with the manifested and subtle "enjoyment body" or "bliss body" of buddhahood, and it appears in the form of one hundred deities, some peaceful and some wrathful, who are nothing other than the nature of one's own mind but who also express various qualities of different celestial "buddha families."[23]

Given this kind of symbolic and religious imagery and language—which permeates the whole bardo cosmology—it's difficult for those of us who stand outside the Tibetan Buddhist worldview to regard its account as a literal description of what it's supposed to be like for consciousness to continue after death. The account doesn't seem phenomenological in that sense. Instead, it seems to be what religious scholars call "soteriological" (pertaining to salvation), for it concerns the Buddhist goal of liberation or enlightenment and how that goal is understood within a religious context of collective ritual and symbolism.

It would be a mistake, however, to think that the Tibetan Buddhist account of death must be either literally true or false. Instead, we can see it as a script for enacting certain states of consciousness as one dies.[24] In this way, it is more performative and prescriptive than descriptive. Looked at from the outside, the Tibetan Buddhist account of death strikes me as a "ritualized phenomenology." The dissolution meditation doesn't so much present a phenomenological description of death as rehearse and enact a phenomenology of death as a ritual performance. Given the power of ritual, it stands to reason that someone who spends his or her whole life practicing the ritual, or even just living in a culture where there are constant reminders of the ritual, would experience its symbolism in a powerful and immediate way at the time of death.

There's another important perspective that does allow us to see the Tibetan Buddhist view as including what some philosophers would think of as a phenomenology of death. Phenomenology, in its philosophical sense, is concerned with describing the essential or necessary structures of consciousness. So if death belongs essentially or necessarily to the structure of consciousness itself, then laying bare this fact would amount to a contribution to a phenomenology of death.

To see what I mean, recall Epicurus's statement, "death . . . is nothing to us, because as long as we exist, death is not present, and when death is present we do not exist." So far I've talked about how Tibetan Buddhists would disagree with the second part of this statement. (Of course, if "we" means our ordinary conceptual mind and gross sensory consciousness, then Tibetan Buddhists would agree with Epicurus, but if "we" includes the subtler levels of our consciousness, they'd reject the statement.) Consider now the first part of what Epicurus says—that as long as we exist, death is not present. Tibetan Buddhists would also disagree with this. To see why, we need to go deeper into what "bardo" means.

"Bardo," as noted, means in-between state. So whenever we're in between two states, no matter what the scale, we're in a bardo state. These two states could be living and dying or being awake and being asleep, but they could also be the just-past moment of thought and the moment about to come. Thus "bardo" includes the gap between the cessation of one moment of thought and the arising of the next moment. To use a mathematical term, "bardo" is a "self-similar" phenomenon, one where the whole is similar to each part of itself, no matter what the scale. For example, each part of a coastline is a scaled-down version of itself, because zooming in on any part of the coastline will reveal a shape similar to the shape of the unmagnified region. Similarly, zooming in on any in-between state or bardo of the cycle of existence will reveal another in-between state or bardo with its own dissolution processes similar to the larger one.

What this self-similarity implies, however, is that, contrary to Epicurus, dying and death are always present and aren't restricted to what happens at the end of the bardo of this life. In other words,

dissolution and cessation are always taking place from one moment to the next. In Dzogchen Ponlop's words: "From this point of view, death is taking place in every moment. Every moment ceases, and that is the death of that moment. Another moment arises, and that is the birth of that moment."[25] From the Buddhist perspective, Epicurus's statement misses this way in which death is always present.

The point here isn't that the death taking place in every moment is the same as the death happening at the end of this life. Rather, it's that a proper understanding of the existential meaning of death must include the dissolution of each moment of thought and the gap before the arising of the next one. We hardly ever notice this dissolution, just as we hardly ever notice the moment when we fall asleep. Yet, from the Tibetan Buddhist perspective, noticing the dissolution of each thought and the gap before the arising of the next one—whether in waking life, when we fall asleep, or when we die—gives us the opportunity to experience directly the dissolution that is always present together with luminous pure awareness.

DYING TO MEDITATE

On June 19, 2011, New Zealand Television (TVNZ) reported that a Tibetan Buddhist monk, who had been certified dead by a doctor on May 24, 2011, showed no signs of decay nearly three weeks later at his home where his body had remained in bed.[26] The monk, Jampa Thupten Tulku Rinpoche, was a renowned teacher and the spiritual head of the Dhargyey Buddhist Centre in Dunedin, New Zealand. According to his followers, Thupten Rinpoche had entered a special meditative state in which the practitioner continues to rest in the clear light of death—the intermediate state where the basic nature of the mind or the ground luminosity shines forth after the inner dissolution of conceptual consciousness or the cognitive mind. Only when his meditation was finished would he truly be dead and his body begin to decay. Thupten Rinpoche remained in this state for eighteen days and then was cremated in a ritual fire ceremony on June 13, 2011.

In Tibetan this type of death meditation practice is called *thukdam* (*thugs dam*). *Thukdam* is an honorific term meaning "to be engaged in meditation practice," but it's usually reserved specifically for the meditation practice of abiding in the clear light of pure awareness or the ground luminosity at death. According to the Tibetan Buddhist view, everyone experiences the clear light of death when the gross levels of consciousness dissolve back into the "very subtle consciousness" or ground luminosity, but how long this lasts varies.[27] For most people it's only a few seconds or minutes, but for advanced meditation practitioners, who have learned to control the movement of the subtle consciousness within their body, the experience of abiding in the clear light of death can last for several days or even weeks. As long as the experience of the clear light of death is sustained, the very subtle consciousness remains present in the body, but its energetic aspect withdraws and remains only as a warmth in the area of the heart. As Sogyal Rinpoche writes:

> A realized practitioner continues to abide by the recognition of the nature of mind at the moment of death, and awakens into the Ground Luminosity when it manifests. He or she may even remain in that state for a number of days. Some practitioners and masters die sitting upright in meditation posture, and others in the "posture of the sleeping lion." Besides their perfect poise, there will be other signs that show they are resting in the state of the Ground Luminosity: There is still a certain color and glow in their face, the nose does not sink inward, the skin remains soft and flexible, the body does not become stiff, the eyes are said to keep a soft and compassionate glow, and there is still a warmth at the heart. Great care is taken that the master's body is not touched, and silence is maintained until he or she has arisen from this state of meditation.[28]

Once the clear light experience is over, the very subtle consciousness leaves the body and decay begins. At that point, according to the Tibetan Buddhist tradition, death has occurred.

In the case of Thupten Rinpoche, New Zealand Television interviewed a forensic pathologist, Dr. John Rutherford, who expressed

skepticism about the idea that a special death meditation practice was responsible for the lack of decay of Thupten Rinpoche's body. He noted that a dead body wouldn't be expected to show noticeable decay, even over several weeks, given certain conditions, including cool ambient temperature, low humidity, and the intestine being empty of organisms that would normally spread throughout the body and cause putrefaction. The relative lack of such organisms would result from fasting or a wasting disease. Thupten Rinpoche's death seems to fit these conditions: he died of cancer—a wasting disease—and his body was left in a relatively cool, dry room, and wasn't moved.

In recent years there have been reports of a number of cases in which physically dead Tibetan monks have been regarded as abiding in the *thukdam* state because their bodies showed no noticeable decay for periods of time ranging from several days to over two weeks after their breathing stopped and their heartbeat ceased.

Sogyal Rinpoche, in *The Tibetan Book of Living and Dying*, reports the case of the former Gyalwang Karmapa, the leader of one of the four main schools of Tibetan Buddhism, who died in a hospital in the United States in 1981, and whose body was observed by the nursing staff and the chief of surgery not to have decayed thirty-six hours after his death; the body also seemed to have remained warm around the heart area.[29]

Another case is Lama Putse, of Ka-Nying Shedrub Ling Monastery near Boudhanath on the outskirts of Kathmandu, Nepal. He died March 31, 1998, and is reported to have remained in *thukdam* for eleven days, until April 11, 1998. On April 8 and 9, senior physicians from the CIWEC clinic in Kathmandu examined him and noted the lack of decay.[30]

Chogye Trichen Rinpoche died January 22, 2007, in Kathmandu, and is reported to have remained sitting upright in *thukdam* for fifteen days, until February 6, 2007.[31]

Kyabje Tenge Rinpoche, of Benchen Monastery in Kathmandu, died March 30, 2012, and is reported to have remained in *thukdam* for three and a half days, until April 3, 2012. A picture of him sitting upright in the *thukdam* state was widely circulated on the Internet.[32]

Lobsang Nyima, of Drepung Loseling monastery in the south Indian town of Mundgod, died September 14, 2008, and is reported to have remained in *thukdam* for eighteen days, until October 1.[33] It was reported that there was no noticeable decay, odor, or slumping of the body during this period. This case is noteworthy for two reasons.

First, south India is comparatively warm and humid, so some of the conditions conducive to longer preservation of the body—cool ambient temperature and low humidity—may not have been present. The elevation in Mundgod is also considerably lower than the elevation in Dharamsala, Nepal, or Tibet, so high altitude, which is conducive to longer preservation of the body, also wasn't present.

The second reason is that physicians at the hospital in Belgaum, where Lobsang Nyima died, attempted to record his body temperature, EEG, and EKG (electrocardiogram) while he rested in the *thukdam* state. This research was conducted at the request of the Dalai Lama and was supervised by scientists from Richard Davidson's laboratory at the University of Wisconsin-Madison. The scientists had brought a thermal camera and a portable EEG/EKG/respiration monitor to India and had trained people there to use them. At the time of this writing, these data, as well as data from other Tibetan monks that Davidson's team in India has gathered on *thukdam*, haven't yet been published.

From a scientific perspective, the main question such cases raise is whether anything of measurable biological significance is taking place in association with what Tibetan Buddhists identify as *thukdam* and describe as abiding in the clear light of pure awareness at death. If bodies don't noticeably decay for up to three weeks, is this unusual or normal under the conditions of temperature, humidity, altitude, and so on?

After death, the human body decomposes through four main stages when it's left in the open air.[34] In the first stage, from days 1 to 6, cells begin to digest themselves (a process called autolysis) and soft tissue starts to decompose. *Rigor mortis* or stiffening of the muscles peaks in twenty-four hours and then subsides. The body starts to cool, and the skin separates from the muscle and becomes

stretchy—a process known as skin slippage. In the second stage, from days 7 to 23, microbes from within the body and the outer environment feed on the corpse, producing numerous gases and causing the body to bloat. The third stage of active decay lasts from days 24 to 50. At this stage, putrefaction gives way to a chemical reaction called saponification that produces so-called corpse or grave wax, also known as adipocere. In the fourth stage, from days 51 to 64, the last traces of tissue decompose, leaving the skeleton.

The Tibetan Buddhist descriptions of *thukdam* certainly seem different from the time scale of this progression. Yet such time scales are approximate and depend on a host of factors, the most important being temperature, humidity, and exposure to oxygen. So we don't really know whether or to what extent the decomposition process in any given case of *thukdam* is different from what we should expect, given the conditions present at the time.

Another issue concerns the observed lack of *rigor mortis* in *thukdam*. At exactly what time after death are these observations being made? It would be unusual and unexpected if no *rigor mortis* were observed during the thirty-six hours immediately after death, but if the observations are being made at a later stage, then the lack of *rigor mortis* would be expected.

These issues came up at a small meeting I attended at the University of Wisconsin-Madison's Center for Investigating Healthy Minds. Richard Davidson, the director of the center, convened the meeting so that scientists could begin to think about the best ways to investigate *thukdam*. The meeting included experts on the molecular biology of cellular metabolism and suspended animation, the neuroscience of coma and brain death, and the forensic anthropology and pathology of human decomposition, as well as experts on Tibetan Buddhist meditation and traditional Tibetan medicine.

The two specialists in Western scientific methods of examining dead bodies, forensic pathologist Vincent Tranchida and forensic anthropologist Daniel Wescott, thought that the apparently slower decomposition phenomena of the four *thukdam* cases that Davidson's team had investigated so far were not necessarily unusual but within the range of what one might expect, given various conditions.

One intriguing possibility that emerged from this meeting came from exchanges between the experts on Tibetan meditation and scientist Mark Roth, who works on the molecular biology of suspended animation at the Fred Hutchinson Cancer Research Center in Seattle. The Tibetan meditation specialists described certain deep meditative states in which the body seems to enter a kind of stasis with no observable breathing. Roth wondered whether these practices are able to reduce oxygen demand and slow or even stop metabolic activity. He speculated that, given lifetime practice of such techniques, meditators who practice them at death might be able to alter the usual physiological course of dying and death by affecting the body's metabolic rate.

In the discussions that followed, it became clear that the best way to test this possibility would be to study practitioners while they're still alive to see whether they can suspend metabolic activity—whether, to use Roth's analogy, they can stop the furnace from burning while keeping the pilot light on—and then see whether the dying and decomposition process is different for them compared to nonpractitioners.

What about the presence or absence of consciousness during *thukdam*? From the Tibetan Buddhist perspective, pure awareness—the very subtle consciousness that constitutes the basic nature of the mind—remains present in the *thukdam* period after physical death and prior to decomposition. Yet finding that the biology of dying and decomposition can be altered as a result of certain meditation practices wouldn't be sufficient to confirm this belief. Although long-term practice of certain types of meditation might affect how the body decays, consciousness could cease to exist at death. More generally, effects resulting from the past presence of consciousness can still occur even when consciousness is gone.

What such a finding would do, however, is dramatically reinforce the need to revise our biomedical model of death in order to include how the mind affects the dying body. Clinicians and end-of-life caregivers already know that one's state of mind strongly influences the dying process. According to the Indian and Tibetan yogic traditions, great contemplatives demonstrate this truth in exemplary ways by

being able to disengage from the sense of self or ego as they die.[35] Resting in a more spacious sense of awareness, they can watch the dissolution of their "I" or "Me" consciousness with equanimity. Modern biomedical science has lost sight of the value of such contemplative ways of approaching death. One potential benefit of the collaboration between scientists and Tibetan Buddhists in the examination of *thukdam* is that it may help science to recognize that a full understanding of the biology of death requires understanding how the mind meets death.

NEAR-DEATH EXPERIENCES

Near-death experiences (NDEs) are another case where science confronts the need to understand how the mind meets death. These experiences have been defined in general terms as "profound and sometimes life-changing experiences reported by people who have been physiologically close to death, as in cardiac arrest or other life-threatening conditions, or psychologically close to death, as in accidents or illnesses in which they feared they would die."[36] In addition to what these experiences might be able to tell us about what it's like to be near death, they provide an important case for investigating the relationship between consciousness and the body.

Physician Raymond Moody coined the term "near-death experience" in his 1975 book *Life After Life*.[37] He listed 15 common elements of these experiences, based on a sample of 150 reports. Several of the elements—out-of-body experience, seeing a dark tunnel, experiencing a review of one's life, and seeing a brilliant light—are now central to Western popular culture representations of near-death experiences. Yet no one single near-death experience in Moody's study included all the elements, and none was present in every reported near-death experience.

A few years after Moody's book, psychologist Kenneth Ring developed a scale for determining the "depth" of a near-death experience.[38] The scale is based on assigning different weights to ten features—the

awareness of being dead, positive emotions, out-of-body experience, moving through a tunnel, communication with light, observation of colors, observation of a celestial landscape, meeting with deceased persons, experiencing a life review, and the presence of a border or a "point of no return." The report of a given experience is scored according to the presence or absence of each of these weighted features, with the possible score ranging between 0 and 29. A score between 0 and 6 is thought to be too low to merit the label "near-death experience," whereas a score between 7 and 9 indicates a moderately deep near-death experience, and a score between 10 and 29 indicates a deep or very deep near-death experience. Ring also formulated a sequence of five stages that he believed marked what he called the "core near-death experience." These stages are 1) peace and well-being; 2) out-of-body experience; 3) entering a tunnel-like region of darkness; 4) seeing a brilliant light; and 5) passing through the light into another realm.

Finally, psychiatrist Bruce Greyson developed a new scale that includes sixteen items grouped into four components—1) cognitive features (time distortion, thought acceleration, life review, revelation); 2) affective features (peace, joy, cosmic unity, encounter with light); 3) paranormal features (vivid sensory events, apparent extrasensory perception, precognitive visions, out-of-body experiences), and 4) transcendental features (sense of an "otherworldly" environment, sense of a mystical entity, sense of deceased/religious spirits, sense of border/"point of no return").[39] Greyson's "Near-Death Experience Scale" has a maximum score of 32, where a score of 7 or higher indicates a near-death experience.

In 2003 I received an e-mail from Dr. Pim van Lommel, a Dutch cardiologist and prominent near-death experience researcher. He had read my article on neurophenomenology written with neuroscientist Antoine Lutz,[40] and wanted to call our attention to near-death experiences. Many cardiac arrest patients, he told us, could report memories of subjective experiences that had occurred during the period of their clinical death when their blood flow and breathing had stopped. According to the current neuroscience view of consciousness, however, such experiences shouldn't be possible. This

information intrigued me, as I hadn't yet examined the near-death experience literature. Van Lommel and his colleagues had recently published a major study of near-death experiences in an important medical journal, *The Lancet*.[41] He attached this article to his e-mail. On first reading, I was excited to think that perhaps these experiences could indeed show that aspects of consciousness transcend the brain. So I dived into a close examination of the near-death experience literature.

Cardiac arrest is a medical emergency where the heart fails to contract effectively and the normal circulation of the blood abruptly stops. Immediately following cardiac arrest, blood pressure drops sharply, resulting in either no blood flow or severely reduced blood flow to the brain. The EEG slows and progresses to a flatline where no electrical brain waves are recorded. As near-death experience researchers Sam Parnia and Peter Fenwick point out, cardiac arrest is the final step in dying, regardless of the cause, so it's the closest physiological model we have of the dying process.[42] For these reasons, the experiences people have during cardiac arrest may offer clues to the experiences that accompany dying, no matter what the cause. Although the majority of cardiac arrest survivors recall nothing from the event, current prospective studies of cardiac arrest patients indicate that approximately 10 percent report having had a near-death experience.[43]

Van Lommel and other prominent near-death experience researchers claim that near-death experiences pose a major challenge to the modern neuroscience view that consciousness is contingent upon the brain.[44] They believe that neuroscience can't account for the occurrence of these experiences during cardiac arrest for two principal reasons. First, patients recall vivid and apparently lucid experiences despite having suffered severe impairment to their cerebral functioning. Second, patients sometimes recall an out-of-body experience in which they appear to have accurately perceived their physical surroundings from an elevated vantage point in the room where efforts are under way to resuscitate them. As Bruce Greyson, Janice Miner Holden, and Pim van Lommel state in a recent exchange: "Current neurophysiological models of NDEs fail to explain lucid experiences

that occur during cardiac arrest, when conscious experience should be fragmentary or absent. This problem is exacerbated in resuscitated patients who report perceiving events they should not have been able to perceive, yet are later confirmed."[45]

These statements raise four issues that we need to go through in some detail.

1. The timing of near-death experiences.

At exactly what time do near-death experiences occur? Do they occur during a period of flatline EEG, or immediately before this period, as patients are entering the flatline state, or immediately after, as they recover from this state?

The short answer to these questions is that we still don't know the exact time at which near-death experiences occur in cardiac arrest.

What we know about near-death experiences comes from memory reports given well after the experience is supposed to have occurred. These reports tell us the time when the experience seemed to happen according to the patient, specifically in relation to the patient's memory of losing and regaining consciousness. In other words, the reports give us information about the patient's subjective sense of time, but they don't establish the objective time at which the experience took place.

In addition, there are no documented cases that clearly establish that the near-death experience happened at the precise time that the EEG was flat. Other possibilities are that the experience occurs just before the flatline state or just after this state, when patients are recovering, or that some elements of the experience happen before and others after the flatline state, but memory consolidates them into one remembered episode.

Near-death experience researchers have tried to rule out these possibilities by arguing that the patient becomes unconscious too quickly for the near-death experience to occur before the period of flatline EEG, and that after this period, as the patient is regaining consciousness, the patient's thinking is too confused to support

the lucid consciousness that's reported as belonging to the near-death experience.[46]

Excluding these possibilities in this way, however, won't work, for two reasons.[47] First, we don't know how much time it takes to have a near-death experience. Here we need to keep in mind the important difference between time as subjectively experienced and time as objectively measured. For example, you can fall asleep for twenty minutes during an afternoon nap and have a dream in which it seems that hours go by. Or you can sit in meditation for what seems like only a few minutes and be surprised to hear the bell indicating that the forty-minute period has ended. Consider also the life-review element of the near-death experience. Although the person experiences a review of his or her entire life, the review seems to last only a short time. In these and other ways, our sense of the passage of time is very different from time as measured by a clock. Hence it's possible that the near-death experience could occur in the few remaining seconds before the loss of consciousness, even though it seems from within to last much longer.

Second, the attribution of confusion to patients as they regain consciousness is made by an outside observer, but the patients themselves may not feel subjectively confused. One can subjectively feel great clarity even though from the outside one's mental capacities seem diminished. This disparity is known to happen in hypoxia or oxygen deprivation, which occurs in cardiac arrest. So appealing to the subjective sense of clarity, especially as represented in a memory report, isn't enough to rule out the possibility that the near-death experience occurs as the patient emerges from the flatline state.

2. The state of the brain during a near-death experience.

We have virtually no information about what specific brain states are associated with near-death experiences.[48] Cardiac arrest is a medical emergency, so it's not surprising that we have no human EEG data or neuroimaging data about brain activity in the critical period of time when near-death experiences are thought to occur.

In particular, no EEG or neuroimaging studies have been done to compare cardiac arrest patients who report near-death experiences to those who don't report them.

Since no EEG measures are made in most cases of cardiac arrest, the assertion that the EEG is flat is based on inference. Yet this is problematic. The average time for the EEG to start to show changes, such as slowing and attenuation, is over ten seconds after the last heartbeat.[49] How long it takes for the EEG to become flat depends on various factors; in cases where no blood is being delivered to the tissue (zero perfusion), the EEG flatlines after about twenty seconds.[50] Yet efficient external cardiac massage can sometimes restore the EEG after ten to twenty seconds.[51] Defibrillation (electrical stimulation of the heart) can also restore the EEG. Hence, in general in cases of cardiac arrest with successful resuscitation, and in particular in such cases where the patient reports a near-death experience, we can't conclude with certainty that the EEG was flat or determine how long it was flat, unless we have EEG recordings.

Although it has been assumed that brain activity, especially the kind of brain activity associated with consciousness, drops sharply during cardiac arrest, a recent experiment with rats showed that this is far from being the case.[52] During cardiac arrest the rat brain showed a huge surge in the kind of high-frequency and widely integrated activity associated with consciousness in humans. Within the first thirty seconds after cardiac arrest and before the EEG went flat, there was an enormous increase in synchronized gamma frequency oscillations, including a strong increase in the influence of frontal-region oscillations on posterior-region oscillations, as well as an increase in the coupling between the amplitude of the fast gamma oscillations and the phase of slower theta and alpha waves. As we've seen in earlier chapters, this kind of gamma-synchrony brain-wave pattern in humans occurs in moments of conscious perceptual recognition, meditative states of open awareness, and lucid dreaming. As the authors of the study state, "The neural correlates of conscious brain activity identified in this investigation strongly parallel characteristics of human conscious information processing. Predictably, these correlates decreased during general anesthesia.

The return of these neural correlates of conscious brain activity after cardiac arrest at levels exceeding the waking state provides strong evidence for the potential of heightened cognitive processing in the near-death state."[53]

It's also crucial to note that even a flatline EEG doesn't necessarily mean a total loss of brain activity.[54] EEG recordings at the scalp mainly register activity from the cortex. The EEG can fail to pick up activity from deeper subcortical structures, such as the hippocampus and amygdala. Neural discharges in these structures without the involvement of the cortex have been shown to be related to the occurrence of meaningful hallucinations in epileptic patients.[55] Moreover, even at the level of the cortex, the EEG can fail to pick up seizure activity that's visible to fMRI (functional magnetic resonance imaging, a neuroimaging method that can localize activity inside the brain).[56] In addition, a recent study showed that after the EEG went flat as a result of coma, quasi-rhythmic activity in the hippocampus occurred and was transmitted to the cortex.[57] Hence, even if the EEG is flat, we can't conclude that there's no brain activity, or no activity sufficient to support some kind of consciousness, including the near-death experience.

Near-death experience researchers have tried to show that the near-death experience can occur in the absence of brain activity by citing a famous case in the literature, the case of Pam Reynolds, which I mentioned in chapter 7 in my discussion of out-of-body experiences.[58] In 1991, Reynolds, an American singer-songwriter, was diagnosed with a giant aneurysm of the basilar artery (one of the arteries that supplies blood to the brain). In order to have the aneurysm removed, she had to undergo a surgical procedure called "hypothermic cardiac arrest," in which the body temperature is lowered to 15.5 degrees Celsius (60 degrees Fahrenheit) and the heart is stopped. The artificial respirator is turned off, so breathing ceases, and the EEG flatlines, with the brainstem showing no response to auditory stimulation. While apparently unconscious under general anesthesia, Reynolds had a remarkable out-of-body experience and near-death experience. Upon awakening from the operation, she was able to report accurately a number of events that occurred during the

surgery. Three years later she came into contact with Michael Sabom, a cardiologist and near-death experience researcher, who published her story in his 1998 book, *Light and Death*.

Upon careful examination, however, the Pam Reynolds case doesn't provide convincing evidence for the presence of consciousness during the complete cessation of brain activity. The crucial issue is whether any part of Pam Reynolds's near-death experience occurred in the approximately 35- to 40-minute period of time when no blood flowed through her brain, her EEG was flat, and her brainstem response was absent.

We know that the out-of-body experience component of her near-death experience probably happened in the period of time before the body-cooling procedure started—that is, when her body temperature and heartbeat were still normal—because the events she reported seeing and hearing took place at this time. She reported seeing the bone saw, hearing a high-pitched sound that she took to be coming from the saw, hearing the high-pitched sound change to a "*Brrrrrrrrrr!*" sound, and hearing someone, whose voice sounded female and whom she believed to be the cardiologist, say that her veins and arteries were very small. These reported observations corresponded to events that happened during the first two hours of the surgery before the body cooling procedure was begun: the neurosurgeon used a pneumatically powered bone saw to remove a large section of the skull, while the female cardiac surgeon tried to introduce the tubing for the cardiac bypass machine into the blood vessels in Pam's right groin; the vessels were too small, so the surgeon switched to the blood vessels in the left groin.

A plausible explanation for Pam Reynolds's ability to perceive these events, as anesthesiologist Gerald Woerlee has argued in his analysis of this case, is that, while Reynolds was sedated, paralyzed, and pain-free, she regained consciousness under anesthesia.[59] This phenomenon is called "anesthesia awareness." It's known to occur in a minority of operations, though anesthesiologists do their best to prevent it from happening.[60] Many cases are horrific—the patient is paralyzed but fully conscious and able to feel pain—but in some cases the patient doesn't feel pain or distress. Out-of-body experiences are also known to occur during anesthesia awareness.[61]

Reynolds's eyes were taped shut, so she wouldn't have been able to see what was going on around her. Although she was wearing fitted earplugs that delivered 40-decibel white noise to one ear and 95-decibel clicks every eleventh of a second to her other ear (in order to monitor her auditory brainstem response), she probably would have been able to hear the sound of the saw through bone conduction (as when you hear inside your head the sound of the dentist's drill). On the basis of hearing the sound, she may have generated a visual image of the saw, which she described as looking like an electric toothbrush. She would have been familiar with the surgical procedure from the surgeon's description and from having read and signed the informed consent form, and she would have seen the layout of the operating room because she was awake when she was wheeled in. So she probably had enough knowledge to create an accurate visual and cognitive map of her surroundings during her out-of-body experience. Reynolds's ability to hear what the cardiac surgeon said may seem less likely, but to my knowledge no one has tried to replicate the auditory stimulus conditions to determine whether speech is comprehensible through those sound levels or during the pauses between the clicks.

Whether Pam Reynolds's out-of-body experience of the operating room provides evidence of veridical out-of-body perception is an issue I will take up shortly. The point I want to emphasize now is that this part of her near-death experience clearly didn't occur at a time when her EEG was flat and her brain was inactive.

Reynolds's near-death experience continued with her feeling herself being pulled into a vortex. She had a sensation of going up very fast, as if in an elevator. She heard her deceased grandmother calling her as she traveled down a dark shaft toward a bright light that got bigger and bigger. She entered the light and met many deceased relatives who were covered with light or had the form of light. It was communicated to her that she couldn't go all the way into the light, because then she'd be unable to return to her body. She felt her relatives were nourishing her and strengthening her. Then her uncle took her back through the tunnel, and when she reached the end she could see her body on the operating table. She felt her body pulling her

back and the tunnel pushing her out at the same time. The return to her body hurt, like jumping into a pool of ice water. When she came back, she could hear the Eagles song, "Hotel California," playing in the operating room; the line it had reached was, "You can check out anytime you like, but you can never leave." When she woke up from the operation, she was still on the respirator.

In Sabom's original presentation of this narrative, he weaves together the subjective timeline of Reynolds's experience and the objective timeline of the medical operation, making it seem as if the experience of being pulled into the vortex occurred during the period of hypothermic cardiac arrest when no heartbeat, respiration, or brain activity was present. This representation of Reynolds' near-death experience in relation to the objective timeline of her operation has been widely and uncritically repeated in the near-death experience literature as well as the popular media, notably in a 2002 BBC documentary called "The Day I Died." The supposed correspondence can be found in the form of a chart in the *Wikipedia* article on Pam Reynolds.[62] Yet there's no direct evidence whatsoever for it. Sabom apparently inferred the correspondence by trying to connect Reynolds's story of her near-death experience to the operative report of the surgeons and the neuroanesthesiologist (and it was already three years after the fact when he first examined both accounts). But the inference is completely unwarranted. Nothing in Reynolds's account of her journey through the tunnel to the light and her return to her body can establish that this experience happened during the period of hypothermic cardiac arrest. All we can reasonably infer, based on the events that she was able accurately to report, is that her out-of-body experience of the operating room happened before the cooling of her body began, and that her experience of hearing the Eagles song (which was really playing) happened after her body had been warmed, her heart had been restarted, the artificial respiration had been turned back on, and her brain was active again (it's also possible that at this point, the white noise and clicking sounds presented to her ears had been terminated because her brainstem response no longer needed to be monitored). Although the other elements in her near-death experience narrative occurred between the out-of-body

experience of the operating room and her hearing the Eagles song, we have no grounds for supposing that they occurred while her brain was inactive. On the contrary, it's much more reasonable to suppose, based on our medical knowledge of anesthesia awareness, that her experience of the vortex or tunnel, journeying to the light, meeting deceased relatives, and so on occurred either before the cooling of her body or after her body temperature had been restored. It's also more reasonable to suppose that her experience of returning to her body and hearing the Eagles song was a second occurrence of regaining consciousness under anesthesia, after which she lost consciousness again until she awoke in the intensive care unit.[63]

In summary, we still don't have any direct information about what is happening in the human brain during a near-death experience. We also have no compelling evidence for thinking that the brain is inactive or shut down when these experiences occur. The case most widely cited as providing such evidence—the Pam Reynolds case—in fact provides no such evidence. On the contrary, upon careful examination this case actually supports the claim that near-death experiences are contingent on the brain.

3. The quality of the evidence for veridical out-of-body perception.

The Pam Reynolds case is often cited as a case of veridical out-of-body perception. As we've seen, however, her ability to report accurately some of the events in the operating room seems explainable on the basis of normal sensory perception. Moreover, her report also contained inaccuracies and left things out in ways we wouldn't expect if she really could see herself. First, her description of the bone saw didn't fit the model used in the operation. Second, she didn't report seeing that her head had been turned to one side and was being held by a mechanical head-holder, despite her out-of-body visual perspective being just above the neurosurgeon's shoulder. ("I was metaphorically sitting on Dr. Spitzer's shoulder," she says in her report.) Third, although she heard the saw "crank up," she didn't see

the surgeon use it on her head. All these details would have been in plain sight had she really been able to see herself.[64] Pam Reynolds's out-of-body experience therefore seems better explained as a case of mental simulation based on ordinary sense perception and memory than as a case of veridical out-of-body perception.

Of course, Reynolds is just one particular case, and what we want to know is whether there's any evidence for veridical out-of-body perception in general.[65] All the evidence that near-death experience researchers cite for veridical or verifiable out-of-body perception in near-death experience is anecdotal.[66] Many of these reports are based on interviews conducted well after the near-death experience occurred. Such reports are subject to memory errors and post-hoc reinterpretations of what happened. Five published studies so far have tried but failed to find evidence of veridical out-of-body perception in rigorously controlled conditions.[67]

In short, at present, there are no documented cases of veridical out-of-body perception in near-death experiences in cardiac arrest patients in rigorously controlled clinical conditions.

4. Are there known neurophysiological processes that plausibly can be said to play a role in giving rise to the constellation of elements that make up near-death experiences in cardiac arrest?

Two general neurophysiological models have been given of the near-death experience—the dying brain model and the reviving brain model.[68] The two models are complementary, not mutually exclusive. Whereas the dying brain model focuses on how brain activity becomes disordered as the brain enters into situations that can lead to death, the reviving brain model focuses on how brain activity becomes disordered as the brain starts to regain its normal functioning after it has been severely compromised. These two models are really two sides of the same coin, for they both relate near-death experiences to what happens to the brain when its activity becomes disordered and unstable in situations such as cardiac arrest.

The central idea of both models is that near-death experiences in life-threatening situations are a consequence of "neural disinhibition." Neurons communicate by exciting or inhibiting each other through electrochemical signals. Neural inhibition is essential for preventing situations in which neurons in a given area excessively excite each other all at the same time—which leads to seizures. Disinhibition happens when the inhibitory signaling between neurons becomes less effective and as a result, the cells start to fire faster and synchronize. Widespread disinhibition leads to the uncoordinated excitation of whole brain areas. Neural disinhibition can be triggered by many psychological and neural factors, including sensory deprivation, epilepsy, migraine, drug use, brain stimulation, and anoxia or the absence of oxygen, which happens in cardiac arrest.[69]

It's well known that reduced oxygen levels (hypoxia) can lead to experiences with many of the elements of near-death experiences. For example, fighter pilots who accelerate too rapidly can lose blood flow to the brain and experience so-called "G-force induced loss of consciousness" or G-LOC. Pilots who undergo G-LOC in both real-world and laboratory conditions report having experiences with many of the elements of near-death experiences, including "tunnel vision and bright lights, floating sensations, automatic movement, autoscopy, out-of-body experiences, not wanting to be disturbed, paralysis, vivid dreamlets of beautiful places, pleasurable sensations, psychological alterations of euphoria and dissociation, inclusion of friends and family, inclusion of prior memories and thoughts, the experience being very memorable (when it can be remembered), confabulation, and a strong urge to understand the experience."[70] Healthy subjects report the same kinds of experiences in medical experiments that use hyperventilation and Valsalva maneuvers (attempting to exhale forcefully with one's mouth closed and nose pinched) to induce transient cerebral hypoxia and fainting.[71]

Pim van Lommel and his colleagues have tried to exclude cerebral anoxia as accounting for near-death experiences in cardiac arrest with the following argument.[72] They reason that if cerebral anoxia were the cause of the experience, then most cardiac arrest survivors should report a near-death experience, since all cardiac arrest patients

suffer from cerebral anoxia. Yet in their study, which followed cardiac arrest patients from successful resuscitation to recovery, only 62 of 344 patients (18 percent) reported a near-death experience (and only 41 patients or 12 percent reported a "core" experience).

As other scientists have pointed out, however, this reasoning is faulty.[73] First, van Lommel and his colleagues didn't provide any direct measures of anoxia in their study, so there's no way to know whether the patients had comparable levels of anoxia. Second, the relevant consideration isn't the overall level of anoxia, but rather the rate of change in anoxia or the rate of anoxia onset. If anoxia occurs too fast, then the patient loses consciousness and blacks out. With more prolonged rates of onset, the patient seems dazed. At intermediate levels, intense altered states with near-death experience elements occur. Third, anoxia affects different people in different ways, since there are many structural and functional differences between their individual brains. Finally, individuals differ in their ability to recall events—for example, in their ability to recall their dreams—so individual differences in memory might also account for why some cardiac arrest patients report near-death experiences and other patients don't.

Neural disinhibition resulting from anoxia is only one likely physiological contributor to near-death experiences in cardiac arrest. Another likely contributor is the release of neurotransmitters (chemicals produced within the brain that transmit signals between neurons and other brain cells). For example, endorphins, whose secretion decreases feelings of pain and can lead to feelings of euphoria, may play a role in the generally positive emotional tone of many near-death experiences.

In addition, altered functioning in the brain's temporal lobe has been directly linked to patients who report having had a near-death experience. Psychologists Willoughby Britton and Richard Bootzin found that, compared to a control group, individuals who reported having a near-death experience had more epileptic-like EEG brain waves over the left temporal lobe.[74] These individuals also reported more temporal lobe epileptic symptoms, such as sleepwalking, hypersensitivity to smells, hypergraphia (the overwhelming urge to

write), feelings of intense personal significance, and unusual auditory or visual perceptions. Finally, the same individuals had altered sleep patterns; they slept about an hour less than the control group, and they took longer to enter REM sleep and had fewer REM sleep periods than the control group. These findings suggest that altered temporal lobe functioning may contribute to the occurrence of near-death experiences, and that individuals who have had such experiences are physiologically distinct from the general population.

Finally, cognitive neuroscientists Olaf Blanke (whose research on out-of-body experiences we examined in chapter 7) and Sebastian Dieguez have put forward a model of how the distinct brain areas known to be frequently damaged in cardiac arrest patients might contribute to the various elements that make up near-death experiences.[75] Blanke and Dieguez suggest that there may be two types of near-death experience. Both are due to altered functioning or disinhibition in frontal and occipital brain regions, but the first type is due especially to altered functioning in the area of the right hemisphere where the temporal and parietal lobes meet (the right temporoparietal junction, which plays a crucial role in out-of-body experiences), whereas the second type is due especially to altered functioning in the same area of the left hemisphere (the left temporoparietal junction). An out-of-body experience and an altered sense of time, as well as sensations of flying, lightness, and self-motion induced by moving visual appearances, characterize near-death experiences of the first type. The feeling of a presence, meeting and communicating with spirits, seeing glowing bodies, and experiencing voices, sounds, and music, but with no sensation of self-motion, characterize near-death experiences of the second type. Both types include positive emotions and the life review, which Blanke and Dieguez propose are due to altered functioning in the hippocampus and amygdala. And both types include the experience of light and tunnel vision, which they propose results from altered functioning in the occipital cortex.

It also seems possible that a patient could have both types of near-death experience and later link them together into one remembered and reported episode. Pam Reynolds's near-death experience, for example, might have been of this kind.

Although Blanke and Dieguez's model is speculative, as they admit, it serves to illustrate how we can begin to approach near-death experiences from a cognitive neuroscience perspective, instead of supposing, as many near-death experience researchers do, that these experiences pose an insurmountable challenge to neuroscience.[76]

THE UNGRASPABILITY OF DEATH

The true challenge that near-death experiences pose isn't that they contradict contemporary neuroscience. Rather, it's that they call to be investigated and understood in a way that doesn't lose touch with their singular existential meaning and with the ultimate ungraspability of death.[77]

One way to lose touch with the existential meaning of near-death experiences is to argue, on the basis of the kind of cognitive neuroscience perspective just sketched, that these experiences are nothing other than false hallucinations created by a disordered brain. Another way is to argue that these experiences are true presentations of a real, transcendent, spiritual realm to which one's disembodied consciousness will journey after death.

Both these viewpoints fall into the trap of thinking that near-death experiences must be either literally true or literally false. This attitude remains caught in the grip of a purely third-person view of death. In the one case, the experience of drawing near to death is projected onto the plane of a third-person representation of the disordered brain; in the other case, the experience is projected onto the plane of a third-person representation of a transcendent spiritual realm. Both viewpoints turn away from the experience itself and try to translate it into something else or evaluate it according to some outside standard of objective reality.

Ask yourself this question: If you were having a near-death experience, which would matter more—the truth or falsity of the experience according to some outside scientific or religious standard, or your ability to be calm, peaceful, and mindful in the face of what is happening?

Here's another question: As you're dying and at the moment of your death, won't it be your experience that has primacy and not any third-person viewpoint and its criterion of what is real?

From an existential standpoint, death has to be understood in the first person. In Martin Heidegger's famous words: "Insofar as it 'is,' death is always essentially my own."[78] We grieve the death of a loved one; we go to funerals and wakes; and those who devote their lives to caring for the dying witness death every day. Yet none of these ways of encountering death enables us to comprehend the singularity of our own death. In philosopher Todd May's words: "It is not that one's own death matters more in the grand scheme of things than the death of someone else. It is that one's own death cannot be understood by coming to terms with someone else's death. The silencing of one's experience, including the experience of the silencing of another's experience, remains intimately one's own in a way that cannot be understood by analogy with anyone or anything else."[79]

At the same time, my own death is ungraspable. From the relevant standpoint—the first-person standpoint—there is no object "my own death" that one can mentally grasp, precisely because there's no subject for whom this can be an object.

Leo Tolstoy, in *The Death of Ivan Ilyich*, depicts this breakdown of subject-object thinking when he describes how Ivan Ilyich, a lawyer in Czarist Russia, finally comes to the realization that the pain in his gut will not go away and that he is incurable and going to die:

> Absorption; the blind gut was curing itself. Then suddenly he could feel the same old dull gnawing pain, quiet, serious, unrelenting. The same nasty taste in his mouth. His heart sank and his head swam. "O God! O God!" he muttered. "It's here again, and it's not going away." And suddenly he saw things from a completely different angle. "The blind gut! The kidney!" he said to himself. "It's got nothing to do with the blind gut or the kidney. It's a matter of living or . . . dying. Yes, I have been alive, and now my life is steadily going away, and I can't stop it. No. There's no point in fooling myself. Can't they all see—everybody but me—that I'm dying? It's only a matter of weeks, or days—maybe any minute now. There has been daylight; now there is

> darkness. I have been *here*; now I'm going *there*. Where?" A cold shiver ran over him; he stopped breathing. He could hear nothing but the beating of his heart.
>
> "When I'm dead, what happens then? Nothing happens. So where shall I be when I'm no longer here? Is this really death? No, I won't have it!" He jumped up, tried to light the candle, fumbling with trembling hands, dropped the candle and the stick on the floor and flopped back down on to his pillow. "Why bother? It doesn't make any difference," he said to himself, staring into the darkness with his eyes wide open. "Death. Yes, it's death."[80]

Ivan Ilyich, anguished and dying, suddenly realizes that what's happening to him isn't a matter of internal organs conceived in third-person anatomical terms—the blind gut and the kidney. It's a matter of living and dying, of life and death. The blind gut and the kidney do make a difference, but only as contributors to what really matters—the life and imminent death that are Ivan Ilyich's own.[81]

We should say the same thing about the temporal lobe, the temporoparietal junction, or the disordered brain in general in any near-death experience. They make a difference, but only as contributors to what really matters—the living and dying of the person as she experiences them.

Days go by and Ivan Ilyich descends into misery:

> Ivan Ilyich could see that he was dying, and he was in constant despair.
>
> In the depths of his soul Ivan Ilyich knew he was dying but, not only could he not get used to the idea, he didn't understand it, couldn't understand it at all.
>
> All his life the syllogism he had learned from Kiesewetter's logic—Julius Caesar is a man, men are mortal, therefore Caesar is mortal—had always seemed to him to be true only when it applied to Caesar, certainly not to him. There was Caesar the man, and man in general, and it was fair enough for them, but he wasn't Caesar the man and he wasn't man in general, he had always been a special being, totally different from all others. . . .

> "I've always thought—and all my friends have too—that we're not the same as Caesar. And now look what's happened!" he said to himself. "It can't be, but it is. How can it be? What's it all about?"[82]

Ivan Ilyich cannot grasp the death that is going to be his own. He recognizes the truth of the syllogism stated in the third person but can't comprehend its truth in the first person. We are no different. None of us is Caesar or humanity in general, but each of us is Ivan Ilyich.

The ungraspability of death calls for a radical change of attitude. To borrow Buddhist scholar Robert Thurman's words, "the grasping mind cannot grasp its ultimate inability to grasp; it can only cultivate its tolerance of that inability."[83] Faced with the ungraspability of death, we need to set aside certainties and convictions—whether scientific or religious—and cultivate the qualities that Joan Halifax has put at the heart of the Being with Dying training—"not-knowing," or the tolerance of uncertainty, and "bearing witness" to experience, especially the experience of suffering.[84] This attitude is what Stephen Batchelor called for in the passage quoted earlier, and it's what Francisco Varela had in mind when he talked about "staying with the open question" of what happens to consciousness at death (see the prologue).

We need to take this attitude—the tolerance of uncertainty and bearing witness—into the study of near-death experiences. What this means in pragmatic terms is to stop using accounts of these experiences to justify either neuroreductionist or spiritualist agendas and instead take them seriously for what they truly are—narratives of first-person experience arising from circumstances that we will all in some way face.

This approach calls for a more detailed phenomenological investigation of near-death experiences than has been done so far. Instead of just interviewing patients with questionnaires designed for scoring their experiences according to the Near-Death Experience Scale, we need to use interviewing methods that help individuals to recall their experiences in ways that minimize after-the-fact interpretation and memory reconstruction. One technique—the "explicitation interview"—uses open and undirected questions in order to help individuals recall implicit aspects of their experience to which they may not have

immediate cognitive access.[85] This kind of "second-person" method of investigating experience can help to distill what the person directly experienced from how the person may subsequently interpret or evaluate what she experienced. The explicitation interview has been used successfully with epileptic patients to help them gain access to subtle changes in their experience prior to their having a seizure, so that they can detect early warning signs and gain mental control over the seizure's onset and process.[86] In the case of patients who report near-death experiences, the explicitation interview can help to uncover the particularities of each person's experience as well as more subtle common factors across individual experiences that may be missed by the Near-Death Experience Scale. With this richer qualitative information, we can relate each near-death experience more precisely to the person's individual brain and body, as well as culture and life circumstances.

The advantage of this neurophenomenological approach is that it can help us to see near-death experiences from multiple physiological, psychological, cultural, spiritual, and phenomenological perspectives without reducing the experiences to any of these perspectives. It can also help us to remember that only the dying can teach us something about death, and what we're called upon to do is to bear witness to their experience.

CODA

Matsuo Bashō (1644–1694), the great poet and master of the haiku, having fallen seriously ill, was asked by his friends for a death poem. He refused, saying that any of his poems could be his death poem. Yet the next morning he called his friends to his bedside and told them that during the night he had dreamed, and that on waking a poem had come to him. He recited this poem, and died four days later.[87]

On a journey, ill:	*Tabi ni yande*
my dream goes wandering	*yume wa kareno o*
over withered fields.	*kakemeguru*

6. See Francisco Varela, Evan Thompson, and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, MA: MIT Press, 1991; expanded edition, 2015), and Franciso J. Varela and Jonathan Shear, eds., *The View from Within: First-Person Approaches to the Study of Consciousness* (Thorverton: Imprint Academic, 1991).
7. Evan Thompson and Francisco J. Varela, "Radical Embodiment: Neural Dynamics and Consciousness," *Trends in Cognitive Sciences* 5 (2001): 418–425.
8. See *The Dalai Lama at MIT*, 95–96.
9. Dalai Lama, *The Universe in a Single Atom: The Convergence of Science and Spirituality* (New York: Morgan Road Books, 2005), 125.
10. See Franz Reichle's film, *Montegrande: What Is Life?*, available on DVD from www.montegrande.ch/eng/home.php and also the Mind and Life Institute (www.mindandlife.org).

INTRODUCTION

1. In this book, I use the terms "yogic traditions" and "yogic philosophies" in a broad sense that includes Buddhism. For justification of this usage, see Stephen Phillips, *Yoga, Karma, and Rebirth: A Brief History and Philosophy* (New York: Columbia University Press, 2009), 4–5.
2. Patrick Olivelle, *Upaniṣads* (Oxford: Oxford University Press, 1996); Valerie J. Roebuck, *The Upaniṣads* (London: Penguin, 2003).
3. See Antoine Lutz et al., "Attention Regulation and Monitoring in Meditation," *Trends in Cognitive Sciences* 12 (2008): 163–169.
4. See Antoine Lutz et al., "Meditation and the Neuroscience of Consciousness: An Introduction," in Philip David Zelazo et al., eds., *The Cambridge Handbook of Consciousness* (Cambridge: Cambridge University Press, 2007), 499–553. See also James H. Austin, *Zen and the Brain: Toward an Understanding of Meditation and Consciousness* (Cambridge, MA: MIT Press, 1999), and James H. Austin, *Selfless Insight: Zen and the Meditative Transformations of Consciousness* (Cambridge, MA: MIT Press, 2009).
5. See Pierre Hadot, *Philosophy as a Way of Life: Spiritual Exercises from Socrates to Foucault,* ed. and with an introduction by Arnold Davidson (Malden, MA: Blackwell Publishing, 1995). See especially "Part II: Spiritual Exercises."

1. SEEING: WHAT IS CONSCIOUSNESS?

1. I quote from the translation by Valerie J. Roebuck, *The Upaniṣads* (London: Penguin, 2003), but I have also consulted the translation by Patrick Olivelle, *Upaniṣads* (Oxford: Oxford University Press, 1996). The dialogue between

Yājñavalkya and King Janaka occurs in the *Bṛhadāraṇyaka Upaniṣad* ("The Great Forest Teaching"), 66–76 of the Roebuck translation, 58–68 of the Olivelle translation. My presentation of this dialogue is indebted to Ben-Ami Scharfstein, *A Comparative History of World Philosophy: From the Upanishads to Kant* (Albany, NY: State University of New York Press, 1998), 62–65, as well as two books by Bina Gupta: *Cit: Consciousness* (New Delhi: Oxford University Press, 2003), chapter 2, and *The Disinterested Witness: A Fragment of Advaita Vedānta Phenomenology* (Evanston, IL: Northwestern University Press, 1998), 18–27.

2. Roebuck, *The Upaniṣads*, 67.
3. Ibid., 68–69.
4. Ibid., 69.
5. Ibid., 69.10.
6. David J. Chalmers, "Facing Up to the Problem of Consciousness," *Journal of Consciousness Studies* 2 (1995): 200–219, at 203.
7. See Roebuck, *The Upaniṣads*, 345–348, and Olivelle, *Upaniṣads*, 288–290.
8. Roebuck, *The Upaniṣads*, 347.
9. See Andrew Fort, *The Self and Its States: A States of Consciousness Doctrine in Advaita Vedānta* (Delhi: Motilal Banarsidass, 1990).
10. Ibid.
11. See Fort, *The Self and Its States*, 39. For Śaṅkara's commentary on the *Māṇḍūkya Upaniṣads*, see Swami Gambhirananda, trans., *Eight Upaniṣads, Volume Two* (Kolkata, India: Advaita Ashrama, 1958), 167–405.
12. Roebuck, *The Upaniṣads*, 72.
13. Ibid.
14. Ibid., 73.
15. Ibid., 76.
16. See my *Colour Vision: A Study in Cognitive Science and the Philosophy of Perception* (London: Routledge, 1995).
17. See Arvind Sharma, *Sleep as a State of Consciousness in Advaita Vedānta* (Albany, NY: State University of New York Press, 2004); Gupta, *The Disinterested Witness*, 79–80, 84–90; Fort, *The Self and Its States*. See also Eliot Deutsch, *Advaita Vedānta: A Philosophical Reconstruction* (Honolulu: University Press of Hawaii, 1969), 61–65.
18. See Sharma, *Sleep as a State of Consciousness in Advaita Vedānta,* 45–48 and chapter 4; Fort, *The Self and Its States*.
19. See Mark Siderits et al., eds., *Self, No Self? Perspectives from Analytical, Phenomenological, and Indian Traditions* (Clarendon: Oxford University Press, 2010). See also Chakravarthi Ram-Prasad, *Indian Philosophy and the Consequences of Knowledge: Themes in Ethics, Metaphysics, and Soteriology* (Hampshire, England and Burlington, VT: Ashgate, 2007), chapter 2.

11. Dzogchen Ponlop, *Mind Beyond Death*, 139.
12. Sogyal Rinpoche, *The Tibetan Book of Living and Dying*, 108.
13. In Greek mythology, sleep (Hypnos) and death (Thanatos) are twin brothers born of the goddess of night (Nyx). In the Old Testament, David requests, "Consider and hear me, O Lord my God: lighten mine eyes, lest I sleep the sleep of death" (Psalms 13:3, King James Version). The New Testament presents this exchange between Jesus and his disciples: "These things He said, and after that He said to them, 'Our friend Lazarus sleeps, but I go that I may wake him up.' Then his disciples said, 'Lord, if he sleeps he will get well.' However, Jesus spoke of his death, but they thought He was speaking about taking rest in sleep. Then Jesus said to them plainly, 'Lazarus is dead'" (John 11:11–14, New King James Version). For the link between sleep and death in *The Epic of Gilgamesh*, see N. K. Sandars, trans., *The Epic of Gilgamesh* (London: Penguin, 1972), 107, 114–115.
14. Dalai Lama, *Sleeping, Dreaming, and Dying*, 169–170.
15. See Ian Stevenson, *Children Who Remember Previous Lives: A Question of Reincarnation*, rev. ed. (Jefferson, NC and London: McFarland and Company, 2000).
16. See Gananath Obeyesekere, *Imagining Karma: Ethical Transformation in Amerindian, Buddhist, and Greek Rebirth* (Berkeley: University of California Press, 2002). See also Owen Flanagan, *The Really Hard Problem: Meaning in a Material World* (Cambridge, MA: MIT Press, 2007), 94–99, and Owen Flanagan, *The Bodhisattva's Brain: Buddhism Naturalized* (Cambridge, MA: MIT Press, 2011), 222–225.
17. See Ian Stevenson, *European Cases of the Reincarnation Type* (Jefferson, NC and London: McFarland and Company, 2003).
18. Ian Stevenson, *Twenty Cases Suggestive of Reincarnation*, 2nd ed. (Charlottesville, VA and London: University of Virginia Press, 1974). See also Martin Willson, *Rebirth and the Western Buddhist* (London: Wisdom, 1987).
19. See Leonard Angel, "Reincarnation All Over Again: Evidence for Reincarnation Rests on Backward Reasoning," *The Skeptic* [USA] 9 (2002): 87–90.
20. See Jonathan Edelmann and William Bernet, "Setting Criteria for Ideal Reincarnation Research," *Journal of Consciousness Studies* 14 (2007): 92–101.
21. Stephen Batchelor, *Buddhism Without Beliefs: A Contemporary Guide to Awakening* (New York: Riverhead, 1997), 37–38.
22. Dzogchen Ponlop, *Mind Beyond Death*, 174.
23. Ibid., 173–197.
24. Here I am influenced by Robert H Sharf, "Buddhist Modernism and the Rhetoric of Meditative Experience," *Numen* 42 (1995): 228–283: "In etic terms, Buddhist meditation might best be seen as the ritualization of experience: it doesn't engender a specific experiential state so much as it enacts it. In

this sense Buddhist *mārga* treatises are not so much maps of inner psychic space as they are scripts for the performance of an eminently public religious drama" (269).

25. Ibid., 16.
26. The report can be viewed at http://tvnz.co.nz/sunday-news/coming-up-june-19–4231582. It can also be seen on Youtube: http://www.youtube.com/watch?v=xRAfGkqw_cU&feature=youtu.be and http://www.youtube.com/watch?v=6ndLv8VkUjo.
27. See Dalai Lama, *Sleeping, Dreaming, and Dying*, 163–164.
28. Sogyal Rinpoche, *The Tibetan Book of Living and Dying*, 266.
29. Ibid., 266–267.
30. See "Lama Putse's Passing," http://www.rangjung.com/authors/Lama_Putse's_passing.htm.
31. See "Chogye Trichen Rinpoche's Passing," http://blazing-splendor.blogspot.ca/2007/02/chogye-trichen-rinpoches-passing.html.
32. See "The Passing of Tenga Rinpoche," http://www.benchen.org/en/tenga-rinpoche/news/231-the-passing-of.html, and "Kyabje Tenga Rinpoche's Tukdam has ended," http://www.benchen.org/en/tenga-rinpoche/parinirvana/239-simply-amazing.html.
33. See "Former Ganden Tripa Stays on 'Thukdam' for 18 Days," http://www.pha-yul.com/news/article.aspx?id=22935.
34. See Arpad A. Vass et al., "Beyond the Grave: Understanding Human Decomposition," *Microbiology Today* 28 (2001): 190–192, and Arpad A. Vass, "Dust to Dust: The Brief, Eventful Afterlife of a Human Corpse," *Scientific American* (September 2010): 56–58.
35. See Sushila Blackman, *Graceful Exits: How Great Beings Die. Death Stories of Hindu, Tibetan Buddhist, and Zen Masters* (Boston: Shambhala, 1997).
36. Bruce Greyson, "Near-Death Experiences," in V. S. Ramachandran, ed., *The Encyclopedia of Human Behavior*, Second Edition, vol. 2 (Academic Press, 2012), 669–676.
37. Raymond A. Moody, Jr., *Life After Life: The Investigation of a Phenomenon—Survival of Bodily Death* (San Francisco: Harper, 1975, 2001).
38. Kenneth Ring, *Life at Death: A Scientific Investigation of Near-Death Experience* (New York: Conward, McCann & Geoghegan, 1980).
39. Bruce Greyson, "The Near-Death Experience Scale: Construction, Reliability, and Validity," *Journal of Nervous and Mental Disease* 171 (1983): 369–375.
40. Antoine Lutz and Evan Thompson, "Neurophenomenology: Integrating Subjective Experience and Brain Dynamics in the Neuroscience of Consciousness," *Journal of Consciousness Studies* 10 (2003): 31–52.
41. Pim van Lommel et al., "Near-Death Experience in Survivors of Cardiac Arrest: A Prospective Study in the Netherlands," *The Lancet* 358 (2001): 2039–2045.

42. Sam Parnia and Peter Fenwick, "Near Death Experiences in Cardiac Arrest: Visions of a Dying Brain or Visions of a New Science of Consciousness," *Resuscitation* 52 (2002): 5–11.
43. Van Lommel et al., "Near-Death Experience in Survivors of Cardiac Arrest," and Bruce Greyson, "Incidence and Correlates of Near-Death Experiences in a Cardiac Care Unit," *General Hospital Psychiatry* 25 (2003): 269–276.
44. See Pim van Lommel, *Consciousness Beyond Life: The Science of Near-Death Experience* (New York: Harper One, 2010), and Greyson, "Near-Death Experiences."
45. Bruce Greyson et al., "'There Is Nothing Paranormal About Near-Death Experiences' Revisited: Comment on Mobbs and Watt," *Trends in Cognitive Sciences* 16 (2012): 446. Greyson et al. are responding to Dean Mobbs and Caroline Watt, "There Is Nothing Paranormal About Near-Death Experiences: How Neuroscience Can Explain Seeing Bright Lights, Meeting the Dead, or Being Convinced You are One of Them," *Trends in Cognitive Sciences* 15 (2011): 447–449.
46. See Parnia and Fenwick, "Near Death Experiences in Cardiac Arrest."
47. See Christopher C. French, "Near-Death Experiences in Cardiac Arrest," *Progress in Brain Research* 150 (2005): 351–367, and Christopher C. French, "Near-Death Experiences and the Brain," in Craig D. Murray, ed., *Psychological Scientific Perspectives on Out of Body and Near Death Experiences* (Hauppauge, NY: Nova Science Publishers, 2009), 187–204.
48. See Olaf Blanke and Sebastian Dieguez, "Leaving Body and Life Behind: Out-of-Body and Near-Death Experience," in Steven Laureys and Giulio Tononi, eds., *The Neurology of Consciousness* (London: Academic Publishers, 2009), 303–325, and Audrey Vanhaudenhuyse, Marie Thonnard, and Steven Laureys, "Towards a Neuro-Scientific Explanation of Near-Death Experiences?" in Jean-Louis Vincent, ed., *Yearbook of Intensive Care and Emergency Medicine* (Berlin: Springer-Verlag, 2009), 961–968.
49. Holly L. Clute and Warren J. Levy, "Electroencephalographic Changes During Brief Cardiac Arrest in Humans," *Anesthesiology* 73 (1990): 821–825, as reported in French, "Near-Death Experiences and the Brain."
50. Mark Crislip, "Near Death Experiences and the Medical Literature," *The Skeptic* [USA] 14 (2008): 14–15.
51. G. M. Woerlee, "Setting the Record Straight. Commentary on an Article by Pim van Lommel," http://www.neardeath.woerlee.org/setting-the-record-straight.php.
52. Jimo Borjigin et al., "Surge of Neurophysiological Coherence and Connectivity in the Dying Brain," *Proceedings of the National Academy of Sciences USA* 110 (2013): 14432–14437.
53. Ibid., 14435.

54. See Jason J. Braithwaite, "Towards a Cognitive Neuroscience of the Dying Brain," *The Skeptic* [UK] 21 (2008): 8–15, and French, "Near-Death Experiences and the Brain."
55. Pierre Gloor, "Role of the Limbic System in Perception, Memory, and Affect: Lessons from Temporal Lobe Epilepsy," in Benjamin K. Doane and Kenneth E. Livingstone, eds., *The Limbic System: Functional Organization and Clinical Disorders* (New York: Raven Press), 159–169, as reported in French, "Near-Death Experiences and the Brain."
56. Eliane Koyabashi et al., "Widespread and Intense BOLD Changes During Brief Focal Electrographic Seizures," *Neurology* 66 (2006): 1049–1055, as reported in Braithwaite, "Towards a Cognitive Neuroscience of the Dying Brain" and French, "Near-Death Experiences and the Brain."
57. Daniel Kroeger et al., "Human Brain Activity Patterns Beyond the Isoelectric Line of Extreme Deep Coma," *PLoS ONE* 8(9): e75257. doi:10.1371/journal.pone.0075257.
58. See Michael Sabom, *Light and Death* (Grand Rapids, MI: Zondervan, 1998), 37–51. See also Pim van Lommel's discussion of this case in *Consciousness Beyond Life,* 169–176.
59. See G. M. Woerlee, "Pam Reynolds Near Death Experience," http://www.neardeath.woerlee.org/pam-reynolds-near-death-experience.php. See also G. M. Woerlee, "An Anaesthesiologist Examines the Pam Reynolds Story, Part I: Background Considerations," *The Skeptic* [UK] 18 (1) (2005): 14–17, and G. M. Woerlee, "An Anaesthesiologist Examines the Pam Reynolds Story. Part Two: The Experience," *The Skeptic* [UK] 18 (2) (2005): 16–20.
60. See Peter S. Sebel et al., "The Incidence of Awareness During Anesthesia: A Multicenter United States Study," *Anesthesia and Analgesia* 99 (2004): 833–839.
61. Ibid., 835.
62. See http://en.wikipedia.org/wiki/Pam_Reynolds_case, especially http://en.wikipedia.org/wiki/Pam_Reynolds_case#Timeline, where the timeline is presented.
63. See Woerlee, "Pam Reynolds Near-Death Experience." See also Michael N. Marsh's discussion of this case in his *Out-of-Body and Near-Death Experiences: Brain-State Phenomena or Glimpses of Immortality?* (Oxford: Oxford University Press, 2010), 19–27.
64. See Marsh, *Out-of-Body and Near-Death Experiences*, 19–27.
65. Another famous case is "the man with the dentures" reported in Pim van Lommel et al., "Near-Death Experience in Survivors of Cardiac Arrest: A Prospective Study in the Netherlands," 2041. For critical examination of this case, see G. M. Woerlee, "The Man with the Dentures," http://www.neardeath.woerlee.org/man-with-the-dentures.php

66. See the evidence collected in Janice Minder Holden, "Veridical Perception in Near-Death Experiences," in Janice Minder Holden et al., eds., *The Handbook of Near-Death Experiences: Thirty Years of Investigation* (Santa Barbara, CA: ABC-Clio, 2009), 185–211.
67. Ibid., 205–209.
68. For the dying brain model, see Susan Blackmore, *Dying to Live: Near-Death Experiences* (Buffalo, NY: Prometheus Books, 1993); G. M. Woerlee, *Mortal Minds: The Biology of Near-Death Experiences* (Amherst, NY: Prometheus Books, 2003); and Braithwaite, "Towards a Cognitive Neuroscience of the Dying Brain." For the reviving brain model, see Marsh, *Out-of-Body and Near-Death Experiences.* Marsh's book combines a neuropsychological account of near-death experiences with an evaluation of their spiritual veracity from a Christian theological perspective that believes in the general resurrection of the body. In Marsh's view, near-death experiences are brain-state phenomena, not glimpses of disembodied consciousness, let alone immortality. I find his neuropsychological case compelling, but I'm utterly unpersuaded by his theological position.
69. Braithwaite, "Towards a Cognitive Neuroscience of the Dying Brain."
70. James E. Whinnery, "Psychophysiologic Correlates of Unconsciousness and Near-Death Experiences," *Journal of Near-Death Studies* 15 (1997): 231–258, at 245, as quoted by French, "Near-Death Experiences and the Brain." See also Marsh, *Out-of-Body and Near-Death Experiences*, 76–79.
71. Thomas Lempert et al., "Syncope and Near-Death Experience," *The Lancet* 334 (1994): 829–830.
72. Van Lommel et al., "Near-Death Experience in Survivors of Cardiac Arrest," 2043.
73. See Braithwaite, "Towards a Cognitive Neuroscience of the Dying Brain," Crislip, "Near Death Experiences and the Medical Literature," French, "Near-Death Experiences and the Brain," and Blanke and Diguez, "Leaving Body and Life Behind," 315–317.
74. Willoughby B. Britton and Richard R. Bootzin, "Near-Death Experiences and the Temporal Lobe," *Psychological Science* 15 (2004): 254–258.
75. Blanke and Diguez, "Leaving Body and Life Behind," 320–321.
76. See also Borjigin et al., "Surge of Neurophysiological Coherence and Connectivity in the Dying Brain."
77. My thoughts in this section are indebted to an unpublished paper by Michel Bitbol, "Death from the First-Person Standpoint."
78. Martin Heidegger, *Being and Time*, trans. Joan Stambaugh (Albany: State University of New York Press, 1996), 223.
79. Todd May, *Death* (Stocksfield: Acumen Publishing, 2009), 9. See also J. J. Valberg, *Dream, Death, and the Self* (Princeton, NJ: Princeton University Press, 2007) for an extended philosophical discussion of this theme.

80. Leo Tolstoy, *The Death of Ivan Ilyich*, trans. Anthony Briggs (London: Penguin, 2006), 56–57.
81. See Valberg, *Dream, Death, and the Self*, 170.
82. Ibid., 61–62.
83. Robert Thurman, trans., *The Holy Teaching of Vimalakīrti: A Mahāyāna Scripture* (University Park and London: The Pennsylvania State University Press, 1976), 161.
84. Halifax, *Being with Dying*, xvii–xviii.
85. See Claire Petitmengin, "Describing One's Subjective Experience in the Second Person: An Interview Method for the Science of Consciousness," *Phenomenology and the Cognitive Sciences* 5 (2009): 229–269. See also the articles collected in Claire Petitmengin, ed., *Ten Years of Viewing from Within: The Legacy of F. J. Varela*, special issue of the *Journal of Consciousness* 16 (10–12) (October–December 2009).
86. See Claire Petitmengin et al., "Seizure Anticipation: Are Neurophenomenological Approaches Able to Detect Preictal Symptoms?" *Epilepsy and Behavior* 9 (2006): 298–306, and Claire Petitmengin et al., "Anticipating Seizure: Pre-Reflective Experience at the Center of Neuro-Phenomenology," *Consciousness and Cognition* 16 (2007): 746–764.
87. Yoel Hoffman, *Japanese Death Poems: Written by Zen Monks and Haiku Poets on the Verge of Death* (North Clarendon, VT: Charles E. Tuttle, 1986), 144. The story accompanying the poem is based also on Lucien Stryk et al., *Zen Poems of China and Japan* (New York: Grove Press, 1973), xxxiv.

10. KNOWING: IS THE SELF AN ILLUSION?

1. My paraphrase is inspired by Stephen Batchelor's poetic rendering of Nāgārjuna's text; see Stephen Batchelor, *Verses from the Center: A Buddhist Vision of the Sublime* (New York: Riverhead, 2000), 115–116. For a recent scholarly translation of Nāgārjuna's Sanskrit text, including philosophical commentary, see Mark Siderits and Shōryū Katsura, *Nāgārjuna's Middle Way: Mūlamadhyamakakārikā* (Somerville, MA: Wisdom, 2013). For a translation from the Tibetan, see Jay L. Garfield, *The Fundamental Wisdom of the Middle Way: Nāgārjuna's Mūlamadhyamakakārikā* (New York and Oxford: Oxford University Press, 1995); this book also includes Garfield's extensive philosophical commentary. For an older and still valuable translation from the Sanskrit, see Kenneth K. Inada, *Nāgārjuna: A Translation of His Mūlamadhyamakakārikā with an Introductory Essay* (Tokyo: The Hokuseido Press, 1970). For a philosophical study, see Jan Westerhoff, *Nāgārjuna's Madhyamaka: A Philosophical Introduction* (New York and Oxford: Oxford University Press, 2009).