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# 1

## Introduction

**W**e are used to the everyday world being there for us, day after day, and we know from its monotonous regularity what it is that is real and what is not. At night, we sleep. And perhaps we dream. And while we dream, we think we know that what we dream is real, but upon awakening, we realize that it is not. And sometimes, while apparently we are awake, the everyday world disappears, and what we thought was real is gone, and we are confronted with that which is not supposed to be real. And afterward, perhaps we come to think that that which is not supposed to be real really is real, or we no longer know what is real and what is not.

What is real? What is imaginary? What is true? Alterations of consciousness pose fundamental questions that can challenge our ideas about the nature of reality.

### AN EXAMPLE OF ALTERED CONSCIOUSNESS

Terence McKenna had an unusual experience at dawn after a night of rumination while sitting on a flat stone by a river at La Chorrera in the Amazon. He noticed a mist at some distance from him that “split into two parts” (T. McKenna, 1993, p. 157) with each of those parts splitting again so that he was “looking at four lens-shaped clouds of the same size lying in a row and slightly above the horizon, only a half mile or so away” (p. 157).

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Then they coalesced in reverse of the manner in which they had divided. “The symmetry of this dividing and rejoining, and the fact that the smaller clouds were all the same size, lent the performance an eerie air, as if nature herself were suddenly the tool of some unseen organizing agency” (T. McKenna, 1993, pp. 157–158). The clouds grew darker, swirled inward, and formed what appeared to be a waterspout. McKenna “heard a high-pitched, ululating whine come drifting over the jungle tree tops” (T. McKenna, 1993, p. 158). He tried to shout, but no sound came out as he was gripped by fear. And then everything seemed to speed up as the cloud formed into “a saucer-shaped machine rotating slowly, with unobtrusive, soft, blue and orange lights” (T. McKenna, 1993, p. 158).

The flying saucer passed overhead and disappeared from sight. It was identical in appearance to the UFO in an infamous photograph widely assumed to be a picture of a vacuum cleaner end-cap. By having appeared “in a form that [cast] doubt on itself” (T. McKenna, 1993, p. 159), it threw McKenna off more than it would have had “its seeming alienness [been] completely convincing” (p. 159). In the end, McKenna did not know what to think. Perhaps it was a product of his imagination. After all, this early morning adventure occurred after weeks of ingesting psychedelic drugs. But what he saw “did not fall into any of the categories of hallucinated imagery” with which he was familiar. Rather, McKenna has suggested, what he saw was real, perhaps “the manifestation of something which in that instance chose to begin as mist and end as machine, but which could have appeared in any form, a manifestation of a humorous ‘something’s’ omniscient control over the world of form and matter” (T. McKenna, 1993, p. 159).

*Hallucinations* are perceptions that do not correspond to physical reality (cf. Bentall, 2000; R. K. Siegel, 1975; Simons, Garrison, & Johnson, 2017). But can such misperceptions nonetheless occasionally be perceptions of possible nonphysical events from other dimensions of reality intruding into our subjective experience? Ordinarily we are locked into a particular way of thinking about reality. Our everyday world seems so real to us. Sometimes alterations of consciousness can open us to something unusual. As McKenna suggested, sometimes, perhaps, to something that appears to manipulate ordinary physical manifestation.

I have deliberately chosen an example of an experience in altered states of consciousness whose reality is ambiguous. There will be other examples of unusual experiences that appear to be products of the imagination and still others that are arguably veridical. What does the reader think? Was McKenna’s perception a true hallucination or a sensation of something that truly exists? McKenna had recently not only been ingesting psychedelic drugs, he was also sleep deprived and emotionally aroused; he had been absorbed all night in his own thoughts; and perhaps he had entered a trance of some sort. But are such physiological and psychological factors the source of unusual experiences, or do they form a doorway into reality that is usually concealed from us? Conversely, are the physiological and psychological factors that lead

to the ordinary waking state reliable mechanisms for encountering that which is real, or are they, rather, the source of experiences that obscure the real? This book is about alterations of consciousness, the vistas that they open for us, and the questions that they raise.

## CONSCIOUSNESS

There are several things we need to do to get the conversation about alterations of consciousness off the ground. We need to define “consciousness” and “alterations of consciousness.” However, even prior to that, it is helpful to identify the perspectives from which the study of consciousness is approached. And once we get going, I want to say a bit about the neuroscience of consciousness and anomalous phenomena. As we can see from the opening example, alterations of consciousness turn out to be more interesting than perhaps we expected.

### Perspectives on Consciousness

There are three perspectives from which consciousness can be approached: the physiological, the cognitive, and the experiential. Each of these perspectives not only defines a domain of inquiry with its attendant epistemological approaches but is usually also associated with particular ways of thinking about consciousness.

The *physiological* perspective is concerned with the physiological processes involved in consciousness as studied usually within neuroscience using methods appropriate for the biological sciences. For instance, data could be gathered using brain imaging techniques to identify the parts of the brain that are involved in various cognitive tasks, including, for instance, practicing particular types of meditation. Those who engage in this type of research frequently also believe that brain processes, in some way or other, give rise to consciousness.

A somewhat separate aspect of the physiological perspective is that of *quantum mind*, a rubric for the conceptualization of possible direct links between subatomic processes and mental events as described by quantum mechanics or quantum field theory (e.g., Barušs, 1986, 2008b, 2008c, 2009; Lockwood, 1989; E. H. Walker, 2000). I will say a little bit more about this shortly but will not have an opportunity to develop it in any depth in this book.

The *cognitive* perspective is concerned with cognitive processes involved in consciousness, such as attention, perception, thinking, memory, decision making, and creativity. This perspective falls largely within cognitive science and the disciplines of psychology, philosophy, and computer science, whereby knowledge of cognitive events is acquired through the observation of behavior, including verbal behavior, and rational inquiry. Sometimes the assumption is made that cognition of any sort is the result of computational processes of a calculating device, such as the brain or a computer (cf. Ruffini, 2017).

The *experiential* perspective is concerned with the conscious experiences that people have for themselves. This perspective toward consciousness has sometimes been taken in psychology, philosophy, anthropology, and religious studies, and depends upon *introspection*, a person's examination of their own experiences, as its primary method of investigation (cf. Barušs, 2000a). This can also be regarded as a *phenomenological* perspective in that phenomena, as they are experienced, are considered as inherently meaningful events without reification necessarily into computational or neurological processes.

But such a tripartite division of discourse concerning consciousness raises questions. How do specific experiential events occur as cognitive processes? In turn, what are the physiological mechanics corresponding to specific cognitive processes? Obviously there are interconnections. For example, exposure to marijuana affects a person's brain, which in turn affects cognition and experience. But these interconnections can be quite complex given that, for example, some seasoned marijuana users can experience the effects of marijuana intoxication upon smoking marijuana cigarettes from which the main psychoactive ingredient has been removed (Jones, 1971). A person's belief that they are smoking a marijuana cigarette appears to be enough to provide them with an appropriate experience of marijuana intoxication. Our understanding of the processes in the brain corresponding to different phenomenal contents keeps improving (Havlík, 2017). Yet explanatory gaps remain between these domains of discourse. In particular, it is not clear how subjective experience could arise from computational or neural processes, a quandary that has sometimes been dubbed *the hard problem of consciousness* (cf. Chalmers, 1995; Jackendoff, 1987; Shear, 1996).

I think that it is important to engage all three perspectives, including their associated research strategies, as much as possible when trying to understand consciousness. Hence, all three approaches are used in this book. I will say more about the physiological perspective in a bit, but its inclusion in this book will be as user-friendly as possible, without assuming any knowledge of physiology on the part of readers. The experiential perspective receives more emphasis, so as to adequately document the varieties of alterations of consciousness and to open up a discussion of fundamental questions concerning their meaning, epistemology, and ontology.

### **Definitions of *Consciousness***

We use the word *consciousness*, but what do we mean by it? The word has four common meanings, which I distinguish primarily by numbering them with subscripts. Thus, *consciousness*<sub>1</sub> refers to the registration of information and acting on it in a goal-directed manner; *behavioral consciousness*<sub>2</sub> refers to the explicit knowledge of one's situation, mental states, and actions demonstrated behaviorally; *subjective consciousness*<sub>2</sub> refers to the experiential stream of events that occurs subjectively for a person; and *consciousness*<sub>3</sub> refers to the sense of existence of the subject of the experiential stream (Barušs, 1987). Let us look more closely at each of these definitions in turn.

Sometimes we are interested in distinguishing between an unresponsive state of an organism and one in which it is functioning normally within its environment. Such normal functioning is characterized by the ability to make discriminations among various stimuli, to process that information, and, at least minimally, to act in a goal-directed manner. That is the meaning of consciousness<sub>1</sub>. To avoid arguments about how minimal or extensive the processing should be, let us say that the referent of the term consciousness<sub>1</sub> is a variable, of which there can be more or less. There is also no reason to restrict the term to biological organisms, so let us apply it also to computers, mechanical contrivances, and anything else that meets the criteria (Barušs, 1987). This definition is most closely associated with both the physiological and cognitive perspectives on consciousness.

If the processing of information is so sophisticated that an organism demonstrates substantial explicit knowledge of its own situation, internal states, and actions, then we say that it has behavioral consciousness<sub>2</sub>. Ordinarily, this would apply to human beings but eventually could also apply to computers. However, this definition stems from an effort to capture from the outside the events of the experiential stream that occur on the inside, as it were, for individuals. Thoughts, feelings, and sensations occur for us in a streamlike manner within the confines of our subjective experience as noted by William James, one of the founders of modern psychology, whose ideas we will consider in Chapter 2. Subjective consciousness<sub>2</sub> refers to that experiential stream. Even though, for historical reasons, I have designated both of these definitions of consciousness as consciousness<sub>2</sub>, the referent of the behavioral definition does not necessarily coincide with that of the subjective one. In particular, it could be possible for a person or a computer to demonstrate behavioral consciousness<sub>2</sub> but not to have subjective consciousness<sub>2</sub>. The behavioral and subjective definitions belong, respectively, to the cognitive and experiential perspectives, thereby providing another way of characterizing the two sides of the explanatory gap that exists between those perspectives (Barušs, 1987, 2000a, 2008a).

The meaning of consciousness<sub>3</sub> is the most difficult to conceptualize. The word *consciousness* is sometimes used to try to capture the inimitable quality of being that one may have for oneself. This is a feeling of existence associated with being oneself that accompanies the contents of one's experience. If we use the word *qualia* to designate the feeling aspect of perception, then we could refer to the feeling of existence as *existential qualia* (Barušs & Mossbridge, 2017). The point is that this feeling is precisely not a feeling in the sense of being a content of one's experience, but rather the ground for there being any existence at all (Barušs, 1987). This referent of consciousness belongs to the experiential perspective on consciousness.

To illustrate the meanings of the word *consciousness*, we can imagine that we are driving a car when a traffic light turns red. Noticing the changed light and stopping the car would be consciousness<sub>1</sub>. If we demonstrated that we explicitly realized that the light had turned red and that we had stopped the car, for example, by saying that the light had turned red and that we had

moved our foot from the gas pedal to the brake pedal, then that would indicate the presence of behavioral consciousness<sub>2</sub>. Whatever is going on in our experiential stream at the time would be subjective consciousness<sub>2</sub>. Perhaps we are thinking about the changed light and the pedals. Or perhaps we are having a conversation about the previous Saturday's football game, and not about the light or the pedals. Consciousness<sub>3</sub> refers to the fact that we experience an experiential stream at all, irrespective of what we are thinking about. Notice that these distinctions need to be made since, for instance, from the point of view of subjective consciousness<sub>2</sub>, consciousness<sub>1</sub> is usually not conscious. When I use the word *consciousness* without subscripts in this book, I will usually mean subjective consciousness<sub>2</sub> in the context of consciousness<sub>3</sub>.

### Neuroscience of Consciousness

Now that we have definitions of consciousness, we are in a better position to state the hard problem of consciousness. The hard problem of consciousness is the inability to explain how qualia and, in particular, existential qualia, could emerge from computational or neurological processes. So, that raises the question, what is the relationship of the brain to subjective consciousness<sub>2</sub> and consciousness<sub>3</sub>? And what are the *neural correlates of consciousness* (NCC), as they have come to be called?

The obvious approach to finding the NCC is to use brain imaging techniques to see which parts of the brain are active only when consciousness is present. I will give a striking example of the power of such imaging in a bit. And the result? In my 35 years of reading the academic literature about consciousness and attending consciousness conferences, I have probably seen about 35 variations on which parts or functions of the brain are associated with consciousness, such as the front, the back, the middle, the left side, specific networks, specific frequencies of neural activity, electromagnetic activity, activity in microstructures of the brain, degree of connectivity, complexity, and so on. Let us just say that the question has not been settled (cf. Havlík, 2017; Brogaard & Gatzia, 2016; Demertzi et al., 2019; Cavanna, Vilas, Palmucci, & Tagliazucchi, 2018; Liu et al., 2017; Tabatabaeian & Jennings, 2018; Mateos et al., 2018).

I want to mention one recent candidate for the NCC, the *default mode network* (DMN). Suppose that I just sit here with my eyes closed without attending to sensory stimuli. Using brain imaging, a pattern of neural activity has been identified that appears to be “the baseline of neural activity” (Havlík, 2017, p. 75) and that is correlated to “the endogenous stream of subjective experience composed of self-directed cognitive content” (p. 76). In other words, a pattern of neural activity can be identified that corresponds to ruminations about ourselves, other people, the past, the future, and so on. We will consider this in greater detail in Chapter 2. But what, exactly, does this pattern of activity have to do with existential qualia? Good question. Note that we are looking from the outside, so the best we can ever do is to establish the neural correlates of behavioral consciousness<sub>2</sub>.

But how likely is it even that subjective consciousness<sub>2</sub> and consciousness<sub>3</sub> emerge from a neural substrate? I have seen that assumption increasingly called into question. For instance, “Subjectivity is too radically different from anything physical for it to be an emergent phenomenon” (Koch, 2012, p. 119) although it could still, somehow, be a “physical” entity or process. Maybe we are just at the wrong level. I have been talking about neural activity. Neurons are cells in the body that are specialized for transmitting a signal. Why should those chemical “signals” be associated with existential qualia? Maybe we need to go down a level, especially if we are true reductionists (e.g., Churchland, 1980). Maybe the interface of consciousness and the brain is at the quantum level (Hameroff, 1994; Penrose, 1994; E. H. Walker, 1970). But then, the lines between matter and mind start to get a little blurry, so that, rather than explaining the mind using matter, we could end up explaining matter as mind (Barušs, 2006, 2008b, 2008c; Barušs & Mossbridge, 2017).

There are practical applications of neuroscience, as shown by the following example. Suppose that we have a patient in a so-called vegetative state whereby they are alive but unresponsive in any meaningful way to sensory stimuli. Could they still, nonetheless, be aware of what is going on, but be locked-in so that they are simply unable to generate a motor response to indicate their awareness? What if we use brain imaging techniques to see what is happening in such a person’s brain when we present them with meaningful tasks? So we ask them to imagine that they are playing a vigorous game of tennis. Then we ask them to imagine that they are walking around from room to room in their residence. In a healthy person, an imaginary motor task and an imaginary navigation task are subsumed by different patterns of brain activity. That is also the case with some patients in a vegetative state! In other words, these patients can hear and understand the instructions, and comply with them. Now we could say, “Playing tennis means ‘yes,’ and walking around in your residence means ‘no.’ Are you in pain?” And we have established the presence of behavioral consciousness<sub>2</sub> and communication with the patient through the medium of the brain imaging technologies. Variations on these experiments have been carried out at several universities (Owen, 2006; Monti et al., 2010; Abdalmalak et al., 2017).

We clearly need neuroscience. But perhaps the physiological domain is not the critically important one for understanding the fundamental nature of consciousness. The journey of discovering the nature of consciousness could be more remarkable than we expected.

## ALTERED STATES OF CONSCIOUSNESS

Let us turn now from consciousness to altered states of consciousness and consider some definitions and issues that their occurrence raises. How are we to define them? Altered states of consciousness have been studied for over 50 years by Charles Tart, whose edited book *Altered States of Consciousness* has become a classic in the psychology of consciousness (Tart, 1972a). Tart (1975)

pointed out that we know what it is to be conscious in our everyday waking state. But suppose now that we were to fall asleep, or become hypnotized, or ingest psychoactive drugs, or meditate, or almost die. Our neurophysiology could change, our thinking could change, and our experience could be quite different from what it is in our everyday state. From the point of view of the person for whom it occurs, an *altered state of consciousness* is “a qualitative alteration in the overall pattern of mental functioning, such that the experiencer feels his consciousness is radically different from the way it functions ordinarily” (Tart, 1972c, p. 1203; see also Ludwig, 1966). From the point of view of an external observer, the presence of a radical shift of consciousness would have to be inferred from changes to a person’s physiology and behavior (cf. Tart, 1972b). Note that, for Tart, an altered state of consciousness has been defined as a self-determined deviation away from a person’s usual state of consciousness.

We could define altered states of consciousness more generally by specifying changes away from the ordinary waking state along some dimensions that we consider to be important. There is no single dimension or collection of dimensions that are considered to be the “correct” dimensions along which to look for the deviations (Schmidt & Berkemeyer, 2018). Here are some examples. Given that we have introduced three perspectives concerning consciousness, we can say that altered states of consciousness are stable patterns of physiological, cognitive, and experiential events different from those of the ordinary waking state. In order to be more precise, we can use our definitions of consciousness to say that altered states of consciousness are changes to the registration of information and acting upon it in a goal-directed manner (consciousness<sub>1</sub>); the explicit knowledge of one’s situation, mental states, and actions (behavioral consciousness<sub>2</sub>); the stream of thoughts, feelings, and sensations that one has for oneself (subjective consciousness<sub>2</sub>); and the sense of existence of the subject of mental acts (consciousness<sub>3</sub>).

On the basis of responses from participants in a study who had been asked how they identified a state of consciousness in which they found themselves, Tart (1975) organized the resultant “experiential criteria for detecting an altered state of consciousness” (p. 12) into 10 categories, such as sensing the body, time sense, and interaction with the environment. There have also been proposed, among others, a “componential analysis of consciousness” (Hobson, 1997, p. 383) consisting of 10 components, a phenomenological mapping whereby altered states of consciousness are to be compared along 12 dimensions (Walsh, 1995), a phenomenological inventory for measuring changes to consciousness along 12 dimensions (Pekala, 1991), and a list of 14 dimensions of consciousness within which are included, attention, perception, imagery, inner speech, memory, decision-making, problem-solving, emotions, arousal, self-control, suggestibility, body image, personal identity, experience of time, and meaning (Farthing, 1992). Given that there is no standardized set of dimensions that is used for characterizing altered states of consciousness, in this book I use whichever dimensions seem most appropriate for the phenomena that we are discussing.

### Alterations of Consciousness

Sometimes I will want to emphasize the stability and distinctiveness of specific patterns of physiological, cognitive, and experiential events, in which case I will use the terminology *altered states of consciousness*. Often, however, there is some question regarding the identification of a specific stable pattern of psychological functioning or the distinctions between apparently different states of consciousness disappear, so that I will use the looser expression *alterations of consciousness*. For example, is hypnosis a phenomenon in which there is a definite switch into a special state, or does it lie on a continuum with phenomena in the ordinary waking state (Woody, Drugovic, & Oakman, 1997)? In what state is a person who is asleep according to physiological measures but aware that they are asleep and able to communicate through observable behavior with those watching them (LaBerge & Gackenbach, 2000)? What of John Wren-Lewis (1988), who inadvertently ate poisoned candy, went into a coma, almost died, and has subsequently been in an almost continuous transcendent state of consciousness? Was his a drug-induced, near-death, or transcendent state? And what of McKenna's account given at the beginning of this chapter? In what state was he?

There is also a problem with the baseline for altered states. What is the ordinary waking state against which changes take place? If we accept Tart's definition of an altered state as subjectively different from a person's ordinary experience, then one person's ordinary waking state could be someone else's altered state. Wren-Lewis's transcendent state of consciousness is his ordinary state of being. The experiences of whole societies of people may be quite different from the experiences familiar to Western intellectual traditions. Such may have been the case, for example, with the native people who were living in parts of what are now Mexico and Central America before contact with Europeans (cf. Tompkins, 1990). We can also think of the ordinary waking state as the state of mind usually experienced in Western societies while awake. It turns out, however, that that state itself is not homogeneous but varies, sometimes dramatically, along the same dimensions that have been proposed for identifying altered states of consciousness (cf. R. Broughton, 1986). This leads to questions about whether alterations in the flux of waking consciousness, such as strong emotions or daydreaming, should be considered altered states of consciousness (cf. Farthing, 1992). In other words, the state of consciousness which is to be taken as the baseline is neither universal nor uniform but could itself be conceptualized as a collection of altered states (cf. Csikszentmihalyi & Nakamura, 2018).

It should be noted as well that the moniker *altered state* is not an explanation for psychological events but a shorthand description of the complexity of psychological processes characterizing any given altered state. In other words, the discussion is about psychological events anyway, whether or not they are labeled as "altered," so that the use of the term *altered state* is not essential. But stripping the moniker *altered state* from patterns of psychological functioning raises another point. Privileging the ordinary waking state in these definitions

appears to add unnecessary value judgments about the “normality” of the ordinary waking state relative to other states. If we think about it, were it not for these definitions, the ordinary waking state would just be one of many “altered states” (cf. Facco, Agrillo, & Greyson, 2015; but see also Revonsuo, Kallio, & Sikka, 2009).

For the reasons given here, it seems to me that it is not always necessary to try to identify discrete, stable states but enough to just talk about alterations of consciousness. Sometimes I will use the term *altered state* to emphasize the distinctiveness and stability of a pattern of psychological functioning and alteration when the pattern of psychological functioning is less well delineated or more fluid.

### **Altered States and Psychopathology**

There has been a tendency in the past, in Western cultures, to regard the ordinary waking state as the optimal state and all other states, except for that of sleep, as forms of mental illness (cf. Barušs, 2000b; Tart, 1972b). Certainly, some alterations of consciousness, such as those that occur in the mental disorder schizophrenia, fall within the pathological range, but that is quite a different matter from regarding alterations of consciousness themselves as symptoms of schizophrenia or some other pathology. For example, a shaman in an indigenous culture may undertake a soul journey in order to resolve a problem in the community. Their journey may involve the deliberate cultivation of an altered state of consciousness, separation from their body, traveling in a world different from that of ordinary reality, encountering spirits, searching for information or power that can resolve the problem, reentering their body, and implementing the results of their journey in the community (Walsh, 1995). Or at least, that is how the shaman would describe the events of their journey. We might say that these events transpire within the realm of their imagination. But in the past, we have gone further and labeled the shaman’s experiences as symptoms of “epilepsy, hysteria, [or] schizophrenia” or regarded the shaman as an “imposter or con man” (Walsh, 2007, p. 94). However, as we shall see in Chapter 6, careful comparisons between schizophrenia and soul journeying, for instance, reveal that they are not the same.

Analyses of autobiographical accounts of experiences in schizophrenia, psychedelic drug intoxication, mystical experiences, and the ordinary waking state reveal that they are more different from one another than alike and that whereas “the description of the schizophrenic experience points to a devalued, negative sense of self, both of the other ‘altered states’ are associated with a vocabulary connoting a sense of self-enhancement” (Oxman, Rosenberg, Schnurr, Tucker, & Gala, 1988, p. 406). As we examine different alterations of consciousness in the course of this book, we will frequently consider the extent to which they are pathological, since that is a question that naturally arises.

That experiences in altered states of consciousness are not to be regarded as necessarily pathological does not mean that they cannot, nonetheless,

disrupt a person's life. For example, disruption often occurs after near-death experiences (NDEs), which are events sometimes reported by a person to have occurred around the time that they were close to death. They may report having experienced a feeling of peace, separation from their body, witnessing of events occurring within the vicinity of their body, encounters with deceased relatives or spiritual beings, the presence of a loving light, and a panoramic life review. Subsequently a person may come to believe that death is not the end of life, that our usual concerns about our material well-being are unimportant, and that the purpose of life is to love one another. Despite the positive nature of most NDEs, a person may experience anger and depression at having been brought back to life, career interruptions, fear of ridicule and rejection, alienation from their relatives and acquaintances, and broken relationships including divorce. Many of these problems appear to result from the experiencer's inability to reconcile their altered sense of reality and changed values with the materialistic concerns of the people with whom they must interact (Atwater, 2007; Holden, Greyson, & James, 2009).

I think it is important to point out one more thing as we begin our discussion of altered states of consciousness, and that is their importance for understanding the psyche more generally. Consistent with what we have already been discussing, the ordinary waking state is just one of a range of alterations of consciousness, yet the academic understanding of consciousness and the psyche are almost exclusively based on what can be learned through an examination of events during the ordinary waking state of consciousness. This necessarily creates a distorted knowledge base about the psyche, which can be rectified by taking into account information gathered from alterations of consciousness (Barušs, 2012).

## **ANOMALOUS PHENOMENA**

*Anomalous phenomena* are phenomena that fall outside the explanatory range of normative beliefs about reality (cf. Barušs & Mossbridge, 2017). They are more likely to occur in the context of altered states of consciousness (Honorton, 1974; Krippner & George, 1986; cf. Luke, 2011). What reaction do you have, as a reader, to these types of phenomena? Let us look at the range of beliefs about reality that underlie our ideas about what is possible, and then consider the evidence for some of these types of phenomena more carefully.

### **Material Versus Transcendent Beliefs**

Robert Moore and I found in a survey of 334 academics and professionals, who could write about consciousness in the academic literature, that there is a material-transcendent dimension within Western intellectual traditions. The *material* or *materialist* pole is represented by the notion that reality is entirely physical in nature, apparently in the sense that the world is essentially a machine

that functions in a deterministic manner. For the materialist, all phenomena, including consciousness, result from physical processes. Transcendent beliefs had two gradations, which we labeled as *conservatively transcendent* and *extraordinarily transcendent*. For those tending toward the conservatively transcendent position, spirituality and meaning are important. They are dualists, who believe that there is a mental aspect to reality as well as a physical one. Those tending toward the *extraordinarily transcendent* position claim to have had experiences that science cannot explain, such as transcendent or out-of-body experiences. For them, the physical world is a manifestation of consciousness rather than consciousness being a by-product of physical processes. Materialists, those who believe that the world is a physical place, would likely be interested in the physiological and cognitive aspects of consciousness and think of consciousness as an emergent property of the brain or a computing device, or as information in an information-processing system. Those who would be identified with a conservatively transcendent position tend to emphasize the subjective, experiential aspects of consciousness and believe that consciousness gives meaning to reality and provides evidence of a spiritual dimension. Those identified with the extraordinarily transcendent position seem to be less interested in the ordinary waking state and emphasize altered states of consciousness. For them, consciousness is the fundamental reality to be understood through a process of self-transformation (Barušs, 1990, 2008a; Barušs & Moore, 1989, 1992, 1997, 1998; cf. Reggia, Huang, & Katz, 2015).

Moore's and my use of the word *materialist* to designate a particular empirically derived cluster of beliefs is consistent with the use of that term in philosophy (e.g., Lycan, 1987). Sometimes it appears that materialists conceptualize the world as made up of tiny colliding particles that behave in predictable patterns like billiard balls on a billiard table and believe that everything can ultimately be explained by such interactions. Such a conceptualization is *mechanistic* and *deterministic*. Others, who could be called *physicalists*, maintain that everything is physical in whatever way physicists will eventually determine that to be. Usually, there appears to be an accompanying assumption that what physicists will find will not depart too greatly from one's normative conceptions of what it means for something to be physical. A materialist position is *reductionistic* in that psychological phenomena, such as consciousness, are considered to be ultimately dependent on physical processes even if the details of such reductions, in principle, remain opaque to the investigator. These are also the *conventional* ways of thinking about the nature of reality that are widely accepted within science (cf. Barušs, 1996; 2001b; Barušs & Mossbridge, 2017). In this book, while one or another of these more specific expressions will be used when such precision is necessary, in general the term *materialist* will be used to designate the belief that the world is ultimately physical in nature, whatever the details of that conceptualization may be.

Notice that we have directly contradictory beliefs about the nature of reality—reality is entirely physical versus reality is entirely mental—with variations in between. At some point, something has to give. Historically,

within science, transcendent ideologies have given way to materialist ideologies. However, it turns out that there are a number of problems with materialist interpretations of reality, suggesting that the scales could tip in the other direction. It is materialism, in fact, that has poor goodness-of-fit to the data. The following are some of the arguments that have been made against materialism (Barušs, 1993; Barušs & Mossbridge, 2017).

First, it turns out that matter, at subatomic levels, violates our everyday intuitions about its nature and does not behave in the mechanical fashion that we might suppose that it would (Barušs, 1996). In an odd reversal of character, “the universe begins to look more like a great thought than like a great machine” (Jeans, 1937, p. 186). Second, there is a philosophical problem. All that we can ever know directly are our experiences, which appear to go on for us within our subjective domains. From our experiences, we must infer the independent existence of an objective world if materialism is to be correct. And such an inference is not automatic (Lipson, 1987). Third is a problem that we will encounter repeatedly in this book, namely, the need for any materialist theory to adequately account for anomalous phenomena (Barušs, 1993), a problem about which there has been considerable controversy (e.g., R. S. Broughton, 1991, Cardeña, Lynn, & Krippner, 2000; Irwin, 1994; Kurtz, 1985; Radin, 1997; Zusne & Jones, 1989). To illustrate the problem posed by anomalous phenomena, let me use as an example a series of studies that was done to try to detect the presence of the transfer of information through some mechanism other than sensory perception—in other words, to try to find extrasensory perception.

### **Anomalous Information Transfer**

A series of studies was conducted over the course of 6½ years in which a method called the *Ganzfeld procedure* was used in order to try to demonstrate the existence of extrasensory perception. Suppose that extrasensory perception consists of the mental detection of a weak signal that is ordinarily masked by internal somatic and external sensory stimulation. The idea behind the Ganzfeld procedure is to seek to minimize the somatic and sensory noise. This is done by having a participant in the study, the receiver, recline in a chair in an acoustically isolated, electrically shielded room. “Translucent ping-pong ball halves are taped over the [receiver’s] eyes and headphones are placed over [their] ears” (Bem & Honorton, 1994, p. 5). A red floodlight is directed toward their eyes and white noise is played through the headphones in order to produce a visually and acoustically “homogeneous perceptual environment that is called the *Ganzfeld*” (Bem & Honorton, 1994, p. 5). Before turning on the floodlight and noise, the receiver is led through a 14-minute relaxation exercise whose purpose is to lower internal somatic stimulation. Then the receiver is subjected to the Ganzfeld for 30 minutes while they report aloud their thoughts and images to the experimenter who is in the room together with them. In the meantime, there is a sender in a separate acoustically isolated,

electrically shielded room, in many cases a friend of the receiver brought along to the experimental session for the purpose of acting as sender.

Prior to the beginning of the series of Ganzfeld experiments considered here, 160 potential targets had been prepared, 80 of which were still pictures and 80 of which were video segments with sound of about 1 minute in duration. The groups of static and dynamic targets had each been arranged in 20 sets of four in such a way as “to minimize similarities among targets within a set” (Bem & Honorton, 1994, p. 9). At the time of a Ganzfeld session, a controlling computer randomly selected a target from one of the 40 sets of targets and repeatedly presented it “to the sender during the ganzfeld period” (Bem & Honorton, 1994, p. 9). Following the Ganzfeld period, the computer randomly ordered the four potential targets in the set from which the actual target had been drawn and presented them to the receiver on a television monitor to be judged by them with regard to their resemblance to the thoughts and images that had occurred for them during the Ganzfeld period. Once the receiver had judged the images, the sender came into the receiver’s room and “revealed the identity of the target to both the receiver and the experimenter” (Bem & Honorton, 1994, p. 10).

The experiment has been designed in such a way that there is no possibility that either the receiver or the experimenter could know the identity of the target that has been used, or even the target set from which it has been drawn, until the actual target has been revealed to them at the end of the Ganzfeld period by the sender. Several dozen researchers, including known critics of this type of research, have examined the automated Ganzfeld protocol and “expressed satisfaction with the handling of security issues and controls” (Bem & Honorton, 1994, p. 10). In addition, two magicians who specialize in the simulation of psychic phenomena have examined the automated Ganzfeld system and declared that it was secure from deception by subjects. In a review of methodological issues in a number of research areas, the Ganzfeld studies were found to “regularly meet the basic requirements of sound experimental design” (Bem & Honorton, 1994, p. 9). In other words, whatever the results that may be found, they should not be attributed to inattention to proper experimental procedures.

In the series of Ganzfeld studies discussed here, there were 240 receivers, 140 women and 100 men, with a mean age of 37 years, who participated in a total of 354 sessions of which 329 were used for the primary data analyses. Whereas one would expect about 25% of the targets to be correctly identified by chance, that is to say, about 82 targets, in fact 106 targets were correctly identified, giving a statistically significant hit rate of 32%. Dynamic targets proved to be more effective than static ones, with hit rates of 37% and 27% for the dynamic and static targets, respectively. In 20 sessions, 20 undergraduate students in drama, music, and dance from the Juilliard School in New York City correctly identified 10 of the 20 targets for a hit rate of 50%, thereby suggesting the presence of a relationship between creativity or artistic ability and performance on extrasensory perception tasks. The 32% overall hit rate is just below

the postulated level at which a careful observer could see the effect with the naked eye without recourse to statistical analyses. It corresponds to an observer witnessing a correct identification about every third session rather than about every fourth session, as would be the case if the results were occurring by chance. These findings demonstrate the high probability of the presence of anomalous information transfer, that is to say, extrasensory perception, when using the Ganzfeld procedure (Bem, 1994; Bem & Honorton, 1994).

Despite the apparent care with which this series of studies was carried out, the conclusions drawn from them as well as from other Ganzfeld studies have been contested on various grounds (e.g., Hyman, 1994; Milton, 1999; Milton & Wiseman, 1999). But the objections to the conclusions have also been contested (Bem, 1994; Storm & Ertel, 2001). I leave it to the interested reader to consult the details of the arguments and make up their own mind. If the results are sound, as indeed they appear to be, then they need to be explained; they pose, by their nature, a challenge to the materialist interpretation of reality.

### **Military Remote Viewing**

There is a certain luxury being an academic who can ponder whether or not something is really happening or not, in the sense that there are no direct consequences of protracted pondering. For military personnel, however, it is a different matter. There is continuous pressure to improve military capabilities. So, for instance, if there were to be ways in which intelligence gathering could potentially be improved, then it is reasonable to act quickly to research and develop them.

So it was that Hal Puthoff, a physicist at Stanford Research Institute involved in laser research, was minding his own business one day in 1972 when a couple of “visitors” from the Central Intelligence Agency (CIA) showed up (Puthoff, 1996, p. 65). The Soviet Union appeared to be funding paranormal research, and the CIA wanted to know whether the United States was missing out on anything that was really happening. This led to a secret research program at SRI by Puthoff and his physicist colleague Russell Targ, which had \$49,909 in funding. They decided that the usual monikers, such as *extrasensory perception*, carried too much ideological baggage, so they came up with the term *remote viewing* as a descriptor for the apparent perception of events that are inaccessible to the physical senses (Schnabel, 1997; cf. P. H. Smith, 2011).

Among other methods, they used a straightforward research protocol, whereby an “outbound” agent would go to a site in the San Francisco Bay area, chosen randomly from a longer list, while a remote viewer in the lab would describe whatever impressions they had (Schnabel, 1997, p. 148). Independent judges matched the descriptions to potential targets. In some cases, the CIA monitors themselves functioned as the remote viewers and were sufficiently successful to conclude that “there was something to remote viewing” (Puthoff, 1996, p. 66).

As they continued with their research, Puthoff and Targ found that some people were just better at remote viewing than others. In particular, one of their remote viewers, Pat Price, could produce strikingly accurate information. In a variation of the previous protocol, called *coordinate remote viewing*, Price was given the latitude and longitude of a target of “ongoing operational significance,” as well as being told that it was “an R&D test facility” (Puthoff, 1996, p. 69). Price had the impression that he was lying on his back, on top of a building, looking up at a large gantry crane that ran on parallel tracks, one on each side of the building (Targ, 1996). He then drew a sketch of the gantry crane. The site turned out to be a “super-secret Soviet atomic bomb laboratory at Semipalatinsk” in the northeast corner of Kazakhstan (Targ, 1996, p. 82). Price’s sketch closely matches the image of a gantry crane on a tracing of a satellite photograph of the site (Targ, 1996). It is now known that more than 110 nuclear weapons were detonated above ground at that site between 1949 and 1963, with ongoing concern about the long-term effects of radiation poisoning on the people living downwind from it (Yan, 2019).

Remote viewing research and operations continued to develop (May, 1996), with some of these activities becoming declassified in 1995 (P. H. Smith, 2011). Some of the participants wrote popular books about their experiences (e.g., Morehouse, 1996; Graff, 2000; cf. Mandelbaum, 2000). All of that led to considerable popular interest in remote viewing and the founding of the nonprofit, volunteer International Remote Viewing Association in 1999 (P. H. Smith, 2011).

Subsequently, protocols similar to the outbound remote viewing protocol were used at the Princeton Engineering Anomalies Research (PEAR) laboratory at Princeton University, where a method of scoring was devised that allowed for the assignment of a level of statistical significance to the correspondence of a description to its target. At the PEAR lab, a total of 336 formal trials resulted in highly statistically significant results ( $z = 6.36$ ,  $p < .00005$ ; Dobyns, 2015; Nelson, Dunne, Dobyns, & Jahn, 1996).

I have used the PEAR protocol a number of times as a demonstration for students by sending a research assistant to a location of their choice and having the students fill out the PEAR scoring sheets. It is an interesting experience for students to see what happens when they try remote viewing for themselves. In addition, one of my undergraduate students carried out a remote viewing research project with assistance from one of the officers who had been involved in the clandestine activities, and I have had extensive conversations with several of them to fill in the details of the nuances of these phenomena.

## THE SCIENTIFIC STUDY OF CONSCIOUSNESS

The evidence for the occurrence of at least some types of anomalous phenomena, such as remote viewing, is overwhelming. In fact, Julia Mossbridge and I wrote an entire book, *Transcendent Mind* (Barušs & Mossbridge, 2017),

in which, among other things, we carefully review the evidence for the occurrence of anomalous events and conclude unequivocally that these sorts of things really are happening. And we are not the only ones who have reached this conclusion (cf. Cardeña, 2018; Tart, 2009; Bem, 2011; Braude, 2007; Goertzel & Goertzel, 2015; Schwartz, S. A., 2015; Roe, Sonnex, & Roxburgh, 2015; Watt & Tierney, 2014). The purpose of science is to follow the evidence, but there has frequently been considerable resistance to even examining the evidence; so what is going on here (Barušs, 1996)? To understand that, we need to go back to beliefs about reality and then consider the politics of science.

### **Transcendent Beliefs**

The thrust in the past has been to characterize those who believe in the reality of anomalous phenomena as cognitively inferior to disbelievers. In a study in which undergraduate university students were required to critically evaluate favorable or unfavorable study reports of extrasensory perception, researchers found that “those participants who received a report which challenged their own *a priori* beliefs rated the study as of poorer quality than did those whose beliefs were in sympathy with or neutral towards the paper’s conclusions” (Roe, 1999, p. 92). There was no support for the contention that believers are less proficient at critical thinking than nonbelievers. Note that this is just an instance of the *confirmation bias*, whereby a person seeks out and accepts only those ideas that conform to their previously held beliefs and avoids encountering and rejects any information that could challenge those beliefs (cf. Barušs & Mossbridge, 2017).

One of my undergraduate thesis students found some evidence to suggest that, among university undergraduate students, transcendent beliefs are associated with a personality characteristic called “understanding” that is essentially concerned with interest in the pursuit of rational knowledge about the world. Furthermore, she found that those who tend toward a conservatively transcendent position are “more curious about the world, more open to experience, strive more conscientiously toward goals in life, and are less concerned about what others think of them than those with materialist beliefs” (Jewkes & Barušs, 2000, p. 97), while those tending toward an extraordinarily transcendent position “are not only more curious, open to the world, and unconcerned about others perceptions of them, but they also tend to be unorganized, adventurous, and spontaneous” (p. 97). A correspondence between transcendent beliefs and understanding was again found in a replication study at another university, although the results were weaker and were found only for a sample of undergraduate students and not for participants solicited through the internet (James, E., 2001).

However, this does raise a question. Understanding is a facet of the personality trait “openness.” And there is a known positive correlation between openness and intelligence. So, is transcendence related to intelligence? In order to test this relationship, another one of my undergraduate thesis students

administered the Beliefs about Consciousness and Reality Questionnaire, designed by Robert Moore and myself, as well as an intelligence test, the Jackson Multidimensional Aptitude Battery—II, to 39 undergraduate students from the participant pool at our university college. The result is yes. All of the statistically significant scales and subscales had positive correlations between transcendence and IQ; none was negative. In particular, a key item of the questionnaire “There is no reality other than the physical universe” had a strong negative correlation with Full Scale IQ ( $r = -.48, p = .002$ , two-tailed). For this small sample of undergraduate students, intelligence was strongly correlated with believing that there is more to reality than the physical universe (Lukey & Barušs, 2005, quotation from page 265).

### **The Politics of Science**

Science is an open-ended exploration of reality based on logical thinking about empirical observations. *Scientism*, as it has sometimes been dubbed, is the adherence to a materialist version of reality that confines investigation to those sorts of things that are permitted by materialism (Barušs, 1996). But materialism presents an obstacle to the study of consciousness. I have already noted some of the problems with materialism, described a series of studies concerning anomalous information transfer, and mentioned the ubiquity of reports of anomalous phenomena in alterations of consciousness. In other words, there are challenges to materialism that appear to become particularly pronounced with the study of consciousness. Hence it seems ill-advised that a discussion of alterations of consciousness begin with the assumption that materialism is the correct interpretation of reality.

Insistence on a materialistic approach may be due in part to the *politics of science* (cf. Kellehear, 1996), whereby “major segments of public and private policy and expenditure for research, development, construction, production, education, and publication throughout the world” are controlled by those who are “consumed with refinements and deployments of mid-20th century science” (Jahn, 2001, p. 24) so that, among other things, conventional interpretations of data are encouraged. Indeed, I myself have experienced censure for failing to conform to materialist beliefs. Yet it seems to me that in spite of political pressure to do so, it is counterproductive to insist that phenomena associated with consciousness always be reified in physical terms.

Is anything changing? Is there really a “sea change,” as Julia Mossbridge and I have suggested (Barušs & Mossbridge, 2017)? That is difficult to assess. It seems to me that materialists still get to play in the central circus ring, while those of us who challenge materialism get to be sideshows (e.g., Holvenstot, 2011; see also Sommer, 2014). This raises the question of who has the power to set the agenda. At the moment, the power still lies with materialists, so that a consciousness researcher can either opt in or be left out (Barušs & Mossbridge, 2017). There have been efforts to change that. The Academy for the Advancement of Postmaterialist Sciences was founded in 2017 for the purpose of

normalizing and promoting postmaterialism in the academy (G. E. Schwartz et al., 2018). It remains to be seen whether anything will actually create a shift in power.

There is another variation on thinking about these issues, and that is to introduce the notion of a *boggle threshold*, or “the degree to which a person is willing to deviate from normative beliefs” (Barušs & Mossbridge, 2017). Each person appears to have a boggle threshold, with some people being willing to accept the possibility of the occurrence of specific anomalous phenomena more so than others. Science appears to have little to do with this, although appeals to science are common when one insists that something is not happening, for instance, by simply labeling any research demonstrating whatever it is that is not supposed to be happening as *pseudoscience* (Barušs & Mossbridge, 2017). Ironically, forgoing actual empirical investigation in favor of preconceptions in the name of science is not science, but real “pseudoscience.” And some of those who call themselves “skeptics” are not skeptics but, more accurately, *true believers in materialism*. But these can all be seen as differences in the settings of the boggle threshold, so that there is no point in arguing with someone who already thinks they know what is and is not possible.

The problem is that we cannot have a balanced discussion of alterations of consciousness if we begin by insisting that people’s experiences cannot possibly be what they appear to be whenever they fail to conform to our beliefs about the world. Some version of materialism may yet turn out to be correct, but such an explanation has to follow from the data and cannot be insisted upon at the outset. We need to set aside personal predilections and political pressures so that we can objectively examine the evidence. The purpose in this book is not to convince the reader of any particular interpretation of reality, but rather to present for their consideration a variety of phenomena that occur during alterations of consciousness along with some of the explanations, materialist and transcendentalist, that have been proposed for them. Perhaps the reader’s boggle threshold will be challenged. But in the end, they will, of course, make up their own mind.

## OVERVIEW

We now have the context for our empirical investigation of alterations of consciousness. Before getting started on them, let me briefly give an overview of the topics that we will consider and introduce 11 thematic threads that run through the material in this book.

### Outline

We started out in this chapter by discussing the study of consciousness and circumscribed the subject area of alterations of consciousness. We noted that consciousness researchers range along a material–transcendent dimension of

beliefs about consciousness and reality. Problems with materialism, including challenges posed by anomalous phenomena, such as anomalous information transfer in the Ganzfeld studies, remind us that we need to remain open-minded when considering alterations of consciousness as required in the practice of science.

In Chapter 2, we will consider the ordinary waking state, starting with the question of access and then working our way deeper and deeper into the nature of the experiential stream of consciousness. Thus, we will start by examining introspection, then discussing the characteristics of thinking, daydreaming, mind wandering, uses of the imagination, and the pronounced interior experiences of sensory restriction. In the process of examining the ordinary waking state we will see that it already embodies some alterations and presages phenomena found in altered states. In Chapter 3, we will consider the prototypical altered state of consciousness, namely, sleep, beginning with physiological and phenomenological descriptions of the sleep stages, and then go on to discuss the remarkable benefits of sleep, the effects of drugs on sleep, and some of the sleep disorders. The study of sleep itself is relatively uncontroversial. However, such is not the case with the study of dreams, the subject matter of Chapter 4. In our discussion of dreams we will consider dream theories, dream research, working with dreams, lucid dreaming, precognitive dreaming, and shared dreaming.

The second half of the book is concerned with particularly controversial alterations of consciousness starting with Chapter 5, hypnosis. We will consider what it is like to be hypnotized, research concerning hypnosis, explanations of hypnosis, the apparent hypnotic enhancement of memory, and practical applications of hypnosis. Some of the phenomena associated with hypnosis are found again in shamanism, channeling, dissociative disorders, and alien abduction experiences, discussed in Chapter 6. In Chapter 7, we will consider drug-induced alterations, particularly those induced by the classic psychedelics, and some of the drawbacks and benefits of their use. At the end of Chapter 7, we will also discuss the Good Friday experiment as well as a follow-up replication of it. This will lead us, in Chapter 8, into various accounts of events in transcendent states of consciousness including persistent transcendent states of consciousness, along with some explanations for them and methods such as meditation aimed at inducing them. In Chapter 9, after considering alterations of consciousness associated with death, such as out-of-body experiences, near-death experiences, and past-life experiences, we will consider the possibility of the survival of consciousness after death. In Chapter 10, we will have an opportunity to reflect back on the phenomena discussed in the earlier chapters, to present an alternative theory of consciousness, to draw some conclusions, and to indicate directions for further research.

### **Thematic Threads**

There are 11 thematic threads running through the book associated with fundamental questions about the nature of consciousness, some of which reflect

some of the controversies regarding alterations of consciousness. We have already considered some of these thematic threads. The first is concerned with the perspective taken when approaching consciousness, whether that is *physiological*, *cognitive*, or *experiential*. The second is that of *material* versus *transcendent* beliefs about consciousness and reality. Both of these threads pervade the various altered states. The third thread is concerned with the question of whether events that occur in alterations of consciousness are *delusional* or *veridical*. For example, was McKenna hallucinating, or did he see something that was really present? The fourth thread is related to the third in that it is concerned with whether a phenomenon is actually *mundane* or *extraordinary* in nature. Are near-death experiences interesting but ultimately mundane in nature, or is there something extraordinary about them?

The fifth thread is concerned with whether or not a phenomenon is *meaningless* or *meaningful*. This applies, for example, to the question of dreams: Are dreams meaningful? But then, if some events are meaningful, are they meaningful in the same manner as meaningfulness is established during the ordinary waking state, or is there an increased depth of meaning such as that which apparently occurs during transcendent states? We will refer to these two dimensions constituting the sixth thematic thread as *lateral* versus *vertical*. Using the example of shamanism, we have already considered the question of whether experiences that occur during alterations of consciousness are pathological or normal. But they could also be instances of exceptional well-being. Thus we have the seventh thread of *psychopathology* versus *well-being* concerning the degree of psychopathology, normality, or exceptional well-being associated with specific experiences. Related to the seventh thread is the eighth concerning the extent to which alterations are *dangerous* versus *beneficial*. Are some altered states dangerous, such as intoxication with psychedelic drugs, whereas others are beneficial, such as sleep? The ninth thread is concerned with the *nature of the self*. For example, is the self a homogeneous aspect of our psyche as we ordinarily think of it, or is it fragmented as it appears to be in some dissociated states. Or does it even exist? The 10th thread is concerned with whether or not the psyche is *open* or *closed*. The Ganzfeld studies, among others, raise the question of whether consciousness is skull-bound or not. And, finally, with the 11th thread, *volition* versus *surrender*, we are concerned with the degree with which volition is experienced in altered states, such as during hypnosis. And surrender has sometimes been regarded as a therapeutic strategy during dysphoric psychedelic experiences, and as a prerequisite for experiencing transcendent states of consciousness.

These 11 thematic threads, sometimes identified as such, will recur as we make our way through the material in this book. My thesis is that paying attention to such fundamental questions about alterations of consciousness forces us to reconsider our ideas about the nature of consciousness and reality. Perhaps the world is a more interesting place than we usually think.