



# 1

## INTRODUCTION

We are used to the everyday world being there for us while awake, day after day, and we know from its monotonous regularity what it is that is real and what is not. At night, perhaps we dream, and while we dream we think we know that what we dream is real, but on waking, we realize that it is not. And sometimes, while apparently 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" (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" (McKenna, 1993, p. 157). 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" (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" (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" (McKenna, 1993, p. 158).

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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" (McKenna, 1993, p. 159), it threw McKenna off more than it would have if "its seeming alienness [had been] completely convincing" (McKenna, 1993, 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 event 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" (McKenna, 1993, p. 159).

*Hallucinations* are perceptions that do not correspond to physical reality (cf. Bentall, 2000; R. K. Siegel, 1975). But can such misperceptions nonetheless occasionally be perceptions of possible nonphysical dimensions of reality? Ordinarily we are locked into a particular way of thinking about our experience. Our everyday world seems so real to us. Alterations of consciousness can open us to something unusual. As McKenna has suggested, sometimes, perhaps, to something deeper that lies underneath the surface of life.

I have deliberately chosen an example of an experience in altered states of consciousness whose meaning is ambiguous. There will be other examples of experiences that appear to be clearly products of the imagination and still others that are arguably veridical. What does the reader think? Was McKenna's a true hallucination or perception of something that truly exists? McKenna had recently used psychedelics; he was 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 the psychological events that occur in such alterations of consciousness the sources of unusual experiences, or do they form a doorway into a reality that is ordinarily hidden from us? Conversely, are the psychological events that occur in the ordinary waking state reliable mechanisms for encountering that which is real, or are they 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

Let us begin by setting the framework for a study of alterations of consciousness. What does the expression "alterations of consciousness"

mean, and how does it differ from "altered states of consciousness"? In fact, what are we talking about when we talk about "consciousness"? We also need to clarify the conflation of alterations of consciousness with psychopathology. But before we do any of that, let us consider the perspectives that have been adopted in discourse about consciousness.

### Perspectives on Consciousness

There are three perspectives from which consciousness can be approached: the physiological, the cognitive, and the experiential (cf. Barušs, 2000a). Each of these perspectives not only defines a domain of inquiry but is usually 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. Questions have also been raised about possible direct relationships between consciousness and subatomic aspects of the brain, bringing ideas from physics, particularly quantum mechanics, to bear on discussions of consciousness (e.g., Barušs, 1986; Lockwood, 1989; Walker, 2000).

The *cognitive* perspective is concerned with cognitive processes involved in consciousness such as 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, as well as through rational inquiry.

The *experiential* perspective is concerned with the conscious experiences that a person has for herself. This is also known as a phenomenological perspective in that phenomena are considered as such without reification into some other way of conceptualizing them. This perspective toward consciousness has sometimes been taken in psychology, philosophy, anthropology, and religious studies, and it depends on *introspection*, a person's examination of her own experiences, as its primary method of investigation (cf. Barušs, 2000a).

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? There are obviously interconnections. For example, 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 from smoking marijuana cigarettes that have had the main psychoactive ingredient removed (Jones, 1971). A person's belief that she is smoking a marijuana cigarette appears to be enough to provide



her with an appropriate experience of marijuana intoxication. But in that case what exactly is happening in the brain? The problem is that there are explanatory gaps between the three perspectives so that it is not clear how these interconnections actually occur (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 appear throughout this book. However, the physiological perspective is somewhat downplayed because it requires for its full development more knowledge of physiology than that assumed on the part of readers, and the experiential perspective is emphasized to document the varieties of altered-states experiences 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? There are four common meanings of the word, which I will 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>3</sub> refers to the experiential stream of events that occurs subjectively for a person; and *consciousness*<sub>4</sub> refers to the sense of existence of the subject of the experiential stream (Baruś, 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. 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 (Baruś, 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. 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 stream-like 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 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 (Baruś, 1987, 2000a).

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. The point is that this feeling is precisely not a feeling in the sense of being a content of one's experience but rather of being a precursor for the possibility of there being any experience at all (Baruś, 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 have 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>3</sub>. Perhaps we are thinking about the changed light and the pedals. Or perhaps we are having a conversation and thinking about what we are talking about, not about the light or the pedals. Consciousness<sub>4</sub> refers to the fact that we experience an experiential stream at all, irrespective of what we are thinking about.

### Altered States of Consciousness

But what about altered states of consciousness? How are they to be defined? Altered states of consciousness have been studied for more than a generation by Charles Tart, whose edited book *Altered States of Consciousness*

has become a classic in the psychology of consciousness (Tart, 1972a). Tart (1975) has 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).

We can define altered states of consciousness more generally by specifying changes to the ordinary waking state along any number of dimensions. 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. We can also use our definitions of consciousness to say that altered states of consciousness are changes to the registration of information and acting on 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>3</sub>); and the sense of existence of the subject of mental acts (consciousness<sub>4</sub>).

Based on 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" (Tart, 1975, 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, 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 will 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 term "altered states of consciousness." Often, however, there is some question regarding the identification of a specific pattern of psychological functioning, or the distinctions between apparently different states of consciousness disappear. 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 she is asleep and able to communicate through observable behavior with those watching her (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 the Western intellectual tradition. 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. Roger 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 that is to be taken as the baseline is neither universal nor uniform but could itself be conceptualized as a collection of altered states.

It should be noted as well that the moniker "altered state" is not an explanation for psychological events but a short-hand 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.

For the reasons given, it seems to me that it is not always necessary to try to identify discrete 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 more amorphous.

### Altered States and Psychopathology

There has been a tendency in the past, in the Western culture, to regard the ordinary waking state as the optimal state and all other states, except for that of sleep, as a form of mental illness (cf. Baruš, 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. For example, a shaman in an indigenous culture may undertake a soul journey to resolve a problem in her community. Her journey may involve the deliberate cultivation of an altered state of consciousness, separation from her body, traveling in a world different from that of ordinary reality, encountering spirits, searching for information or power that can resolve the problem, reentering her body, and implementing the results of her journey in the community (Walsh, 1995)—or at least, that is how the shaman would describe the events of her journey. We might say that these events transpire within the realm of her imagination. But in the past, we have gone further and labeled the shaman's experiences as symptoms of schizophrenia. However, as we shall see in chapter 6, careful comparisons between schizophrenia and soul journeying reveal that they are not the same.

Analysis 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.

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, which are events sometimes reported by a person to have occurred around the time that she was close to death. She may report having experienced a feeling of peace, separation from her body, witnessing of events occurring within the vicinity of her 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 near-death experiences, a person may experience anger and depression at having been brought back to life, career interruptions, fear of ridicule and rejection, alienation from her relatives and acquaintances, and broken relationships, including divorce. Many of these problems appear to result from the experimenter's inability to reconcile her altered sense of reality and changed values with the materialistic concerns of the people with whom she must interact (Greyson, 2000).

### BELIEFS ABOUT CONSCIOUSNESS AND REALITY

The dilemma encountered by someone who has had a near-death experience reveals the importance of a person's beliefs about consciousness and reality for making sense of alterations of consciousness. This applies not only to experiencers but also to researchers who study consciousness. In this section we will consider beliefs about consciousness and reality and the challenges posed to materialism by anomalous phenomena that occur in alterations of consciousness.

### Material Versus Transcendent Beliefs

Robert Moore and I found in an empirical study that there is a material-transcendent dimension within the Western intellectual tradition. The *material* 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. The *transcendent* pole, on the other hand, consists of the notion that consciousness is ontologically primitive and that the physical world is a byproduct of consciousness. Between these two poles are various gradations of dualist thought whereby reality is considered to consist of both physical and transcendent aspects. Materialists, those who believe that the world is a physical place, would likely be interested in the physiological and cognitive aspects of consciousness and would think of consciousness as an emergent property of the brain or as information in an information-processing system. Dualists, those who

maintain what could be called 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 at the transcendent extreme of the scale are more likely to believe that they have had unusual experiences and to emphasize altered states of consciousness. For them, not matter but consciousness is the fundamental reality to be understood through a process of self-transformation (Baruś, 1990; Baruś & Moore, 1989, 1992, 1997, 1998).

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 I think 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, I think, there is the accompanying assumption that what physicists will find will not depart too greatly from one's usual 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. Baruś, 1996, 2001b). In this book, although 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.

But is materialism not correct? Is there any reason to belabor the existence of transcendent beliefs if they are misguided? Why are we even raising these questions? It turns out that there are a number of problems with a materialist interpretation of reality that must at least give us pause. 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 (Baruś, 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. Third is a problem

that we will encounter repeatedly in this book: the need for any materialist theory to adequately account for anomalous phenomena (Baruś, 1993), a problem about which there has been considerable controversy (e.g., Richard Broughton, 1991; Cardena, 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 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 [her] ears" (Bem & Honorton, 1994, p. 5). A red floodlight is directed toward her eyes and white noise is played through the headphones 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 stimulation for 30 minutes while she reports aloud her thoughts and images to the experimenter who is in the room together with her. 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.

Before the beginning of this series of ganzfeld experiments, 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

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had been drawn and presented them to the receiver on a television monitor to be judged by her with regard to their resemblance to the thoughts and images that had occurred for her 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 experiments have 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 research participants. 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 that we have been discussing, 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 results 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 it 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 & Errel, 2001). I leave it to the interested reader to consult the details of the arguments and to make up her own mind. If the results are sound, as indeed they appear to be, then they need to be explained, and they pose, by their nature, a challenge to the materialist interpretation of reality. If the results of these studies can be safely discounted, then we are back where we started, not knowing whether such anomalous information transfer occurs or not.

### Anomalous Phenomena

The thrust in the past has been to characterize those who believe in the reality of anomalous events as cognitively inferior to disbelievers. However, in a recent 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.

One of my 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 & Baruš, 2000, p. 97), whereas 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" (Jewkes & Baruš, 2000, 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 another set of participants solicited through the Internet (E. James, 2001). At the least, these data show that undergraduate students with transcendent beliefs are not necessarily cognitively inferior to those with materialist beliefs.

Anomalous events are often reported to occur in the context of altered states of consciousness. It has been suggested that the apparent occurrence

of extrasensory perception may be related to relaxation, a passive state of mind, decreases in externally directed attention, and openness to others, which could occur in various altered states of consciousness such as dreaming, hypnosis, or meditation (Honorton, 1974). It may be that anomalous events are facilitated by the disruption of ordinary states of consciousness or that "altered states function as a means of psychophysiological noise reduction" (Krippner & George, 1986, p. 352), allowing a more subtle level of reality to manifest, as theorized in the ganzfeld studies.

To explain higher than average rates of professed paranormal experiences among those reporting childhood physical or sexual abuse, it has been proposed that paranormal experiences are an expression of the capacity for a psyche's functions to dissociate, so that healthy individuals with dissociative tendencies, as well as those who have been traumatized, would be more prone to report paranormal experiences (Ross & Joshi, 1992). The possibility that anomalous events could be facilitated both by healthy and pathological conditions is reflected in the psychological characteristic of *transliminality*, an openness to images, ideas, and feelings arising from within the mind or the world outside the mind, which has been found to be common to a number of psychological variables such as "alleged experience of the paranormal, creative personality, mystical experience, . . . history of manic-like experience . . . and attitude toward dream interpretation" (Thalbourne, 1998, p. 402). Increased prominence of mental imagery, changed levels of arousal, increased expectations of anomalous experiences, and favorable characteristics of self-selected participants in altered states research have been proposed as explanations for the increased occurrence of anomalous experiences in altered states of consciousness (Krippner & George, 1986). Whatever the reason for their presence, the academic literature concerning alterations of consciousness is sprinkled with reports of anomalous experiences.

#### THE SCIENTIFIC STUDY OF CONSCIOUSNESS

I have been setting the stage for a discussion of alterations of consciousness first by defining key terms and then by indicating the important role played by beliefs about consciousness and reality in the investigation of consciousness. But this book is an empirical analysis for social scientists, and hence we must also consider the study of consciousness as a scientific enterprise. What happens when science encounters consciousness? And what are we to do as scientists when we encounter anomalous phenomena that do not readily fit a materialist interpretation of reality?

#### The Nature of Science

Science has three aspects—an essence, methodology, and world view—and two modes of practice—the inauthentic and authentic. The inauthentic mode, called *scientism*, resembles the practice of a religious faith. The world view of scientism is that of materialism, and it drives the kinds of data that can be collected. After all, there is no point in collecting data about extrasensory perception if one already believes that extrasensory perception cannot exist. The methodology of scientism consists of an idealized set of procedures based on the use of the sensory modalities for making systematic observations of objective events and drawing conclusions from those observations using one's rational faculties. This scientific method is thought by some to be complete in that nothing is thought to exist in nature that cannot in principle be explained by its application. A rigid set of procedures that can guarantee the acquisition of truth is necessary for scientism given that the essence of science is perceived to consist of the accumulation of facts, and it is important that the collection of facts not become contaminated with falsehoods (Barušs, 1996, 2001b).

In its *authentic mode*, the essence of science is not the accumulation of objective information but the acquisition of knowledge for someone. One seeks to deepen one's understanding through open-ended investigation. The methods that one uses follow from the questions that one asks, so that one is not restricted in one's epistemological approach. The results of one's investigations form the basis for one's world views. In other words, an authentic scientist seeks knowledge through open-ended investigation and forms theories on the basis of the resultant data. It is important to note that authentic science can include the collection of information, the use of specific traditional scientific methods, and the development of materialist theories as explanations for one's data. The point is that science is supposed to be authentic science, a genuine quest for truth, rather than scientism, the dutiful adherence to proscribed ideas about the world and the manner in which it is to be known (Barušs, 1996, 2001b).

This brief characterization of science does not do justice to the heterogeneity of the scientific enterprise or the ways in which science is conceptualized by scientists, but it does give us a heuristic for identifying problems with the scientific study of consciousness. Thus, adherence to rigid rules, although applicable in many cases, such as the ganzfeld studies, may, in other situations, result in the failure to acquire knowledge that may otherwise be available. In particular, to the extent that consciousness consists of that which can only be privately observed by an individual for herself, as denoted by subjective consciousness, and consciousness, it cannot meet the requirement of public observability, which is thought to be required in science.



Introspection, the method of investigation associated with the experiential perspective, has had a rocky history since it was proposed as a way of studying consciousness in psychology toward the end of the 19th century and has finally, supposedly, disappeared as a legitimate method of investigation (Lyons, 1986). However, given that 93% of 212 respondents to a survey at a major international scientific consciousness conference agreed that "introspection is a necessary element in the investigation of consciousness" (Baruś & Moore, 1998, p. 486), it would appear that introspection needs to be readmitted in some form as part of a more flexible approach to the study of consciousness.

### Methodological Flexibility

But what does the freedom of methodological flexibility do for us? To begin with, we can consider the possibility of each person developing her own ideas about the nature of consciousness on the basis of observations from her own experience. This is a strategy that has been recognized by some consciousness researchers (e.g., Dennett, 1978; Mandler, 1985). Indeed, this is what already happens, for example, when those who have had near-death experiences change their ideas about the nature of reality on the basis of what they have experienced. In a similar vein, it has been suggested that research concerning alterations of consciousness be carried out by those who have developed the relevant skills necessary for accessing and making observations in specific altered states of consciousness (Baruś, 2001b; Tart, 1972c). In fact, some states of consciousness may remain inscrutable unless a person enters those states herself to understand them. For example, transcendent states of consciousness have been alleged to be ineffable and must occur for a person to be known (Wulff, 2000). Furthermore, it may not be enough for us to remain as indifferent observers of transcendent states, but we may need to become active participants if we are to know such states (Merrell-Wolff, 1994). It is also possible that we may have available to us latent faculties of knowledge that could become activated through a process of self-transformation (Baruś, 1996). At the previously mentioned consciousness conference, 69% of 212 participants agreed with the statement that "there are modes of understanding latent within a person [that] are superior to rational thought" (Baruś & Moore, 1998, p. 486). We may have noetic resources available to us in addition to sensory perception and rational thinking with which to develop our understanding of alterations of consciousness.

But have we not now gone too far? By throwing open the epistemological doors, have we not simply encouraged "free-floating uncritical fantasies about mental life" (Hilgard, 1980, p. 15)? We need to be careful. "The difficulty with studying [altered states of consciousness] by simply experienc-

ing them is that we run as much risk of systematizing our delusions as of discovering 'truth'" (Tart, 1972b, p. 5). Whatever process of self-transformation a person may undertake for the exploration of consciousness will need to include training, to the extent that it turns out to be possible, in the ability to discriminate between that which is real and that which is delusional (Baruś, 1996). But the notion of self-transformation is not as radical as it may seem given that some self-development is already implied in becoming an authentic scientist. To understand new knowledge, a scientist must be able to set aside her preconceptions in order to follow the evidence wherever it may lead. Not surprisingly, that is not as easy to do as it may seem (Baruś, 1996; see also Olson & Zanna, 1993), so that a process of self-examination and psychological adjustment on the part of a scientist may be required (Baruś, 2001b). It should be noted that viewing self-transformation as necessary for understanding consciousness happens to be associated with the extraordinarily transcendent position of beliefs about consciousness and reality (Baruś, 1990).

We may also be aghast at the relativism implied by the prospect of unbridled self-exploration. It is one thing to criticize the fallacies of the scientific method but quite another to dispense with the notion of a shared body of knowledge agreed on by a community of scientists (cf. Bauer, 1992). However, the situation may not be as dramatic as it seems, given that those able to enter specific altered states of consciousness may be able to verify characteristics of reality found by others who have also entered those same states (Tart, 1972c). In that sense, knowledge, although individual, can nonetheless be at least potentially consensual. However, because altered states may be radically different from the ordinary waking state, those exploring such states may end up developing *state specific sciences* in that what is known about the nature of reality may depend on the state of consciousness in which a person finds herself (Tart, 1972c, 2000).

The point to emphasize is that we are not dismantling any of the strategies that are currently available for seeking knowledge in psychology but trying to expand the repertoire to access the phenomena that may be of interest to us. Indeed, as much as possible, it is beneficial to use all the methodological resources available in science when approaching alterations of consciousness. For example, in many studies of consciousness, productive use has been made of the conventional experimental format in psychology of using experimental and control conditions. Participants are randomly assigned either to an *experimental group* whose members are exposed to the *experimental condition*, which is a condition of interest to the researcher, or to a *control group*, whose members are exposed to a *control condition*, for which the condition of interest is missing but which otherwise imitates as much as possible the experimental condition (cf. Shaughnessy & Zechmeister, 1994). For example, we will consider the Good Friday experiment in

chapter 7, in which participants randomly received either the psychedelic drug psilocybin or the nonpsychedelic drug nicotinic acid before a Good Friday service. We shall see variations on this design in the course of this book with sometimes a number of experimental or *comparison conditions* being used as alternatives to single experimental and control conditions. What are needed in research concerning consciousness are more studies in which such designs are used when it is possible to use them because they allow for the ability to discriminate between contributing factors to a phenomenon.

### The Politics of Science

Materialism, as the starting point of investigation for scientism, 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.

However, what I have found in my experience is that some scientists have appeared to be unduly attached to materialism. This may in part be a result of 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" (Jahn, 2001, p. 24) 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 felt pressure to conform to materialist beliefs so as not to jeopardize my career as a scientist. 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.

The point is that we cannot have a balanced discussion of alterations of consciousness if we begin with the assumption that people's experiences cannot possibly be what they appear to be whenever they fail to conform to our beliefs about the world. That applies also to materialist beliefs. Some version of materialism may yet turn out to be correct, but such an explanation has to follow from the data and cannot be determined a priori. 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 her 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.

### OVERVIEW OF THE BOOK

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 10 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 apparent 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 authentic 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 revisiting introspection, then discussing the characteristics of thinking, definitions of daydreaming, 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 sleep need, the possible purposes 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, and precognitive dreams. In fact, much of the material in this book is controversial, both because of issues that are specific to individual altered states as well as those that are shared.

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, theories

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, possession, dissociative disorders, and alien abduction experiences, discussed in chapter 6. In chapter 7 we will consider drug-induced alterations, particularly those induced by the 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, which will lead into various accounts of events in transcendent states of consciousness in chapter 8, 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 near-death experiences, past-life experiences, and mediumship, 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 draw any conclusions, and to indicate directions for further research.

### Thematic Threads

There are 10 *thematic threads* running through the book associated with fundamental questions about the nature of reality, some of which reflect the controversies concerning alterations of consciousness. We have already considered a few 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 discussions of various altered states. The third 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 homogeneous as we ordinarily think of it, or fragmented as it appears to be in some dissociated states? Finally, the tenth 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.

These 10 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. Or perhaps not.