

The Concept of Consciousness

The first and foremost concrete fact which everyone will affirm to belong to his inner experience is the fact that *consciousness of some sort goes on*. “*States of mind*” *succeed each other in him*. If we could say in English “it thinks,” as we say “it rains” or “it blows,” we should be stating the fact most simply and with the minimum of assumption. As we cannot, we must simply say that *thought goes on* (William James 1892/1984, p. 140).

Consciousness is the fundamental fact of human existence, from the viewpoint of persons examining their own experience. Taking the viewpoint of outside observers, scientists have concentrated on studying the human brain and behavior objectively. In doing so they have largely ignored consciousness, since they cannot directly observe other people’s conscious experience. Yet the fact of consciousness remains, and no account of human life can be complete if it ignores consciousness. It is psychology’s particular responsibility, among all the sciences, to try to come to grips with the fact of consciousness. What is it? What are its forms? What does it do? What is its origin?

In their research and clinical practice, psychologists have learned a great deal about various *aspects* of consciousness, such as perception, mental imagery, thinking, memory, and emotion. But in most of the theoretical discussions of these topics, the concept of consciousness has been merely im-

PLICIT, not explicit. Though psychology originated in the late nineteenth century as the science of consciousness, consciousness *per se* was largely ignored through most of the twentieth century, until recently. This avoidance of consciousness was particularly true of experimental psychology in North America, which was dominated until recently by behaviorism, a school maintaining that psychology is about behavior, not about the mind.

The reasons why most psychologists have avoided discussing consciousness are complex and historical. They boil down to the fact that consciousness is one of the most difficult of all scientific problems. The first difficulty is the conceptual problem: What do we mean by "consciousness"? What is it that we are trying to understand? A second difficulty is the methodological problem. Since we cannot objectively observe other people's conscious experience, how can we study it? A third problem is the enormous variety of conscious experiences, both within individual persons from one moment to another, and between different persons. The methodological problems are formidable, and there are no perfect solutions. Yet the methodological problems must be faced if we are to gain a scientific understanding of the causes, and effects, of the variety of conscious states.

In recent years more and more psychologists have been willing to face the problems of studying consciousness and theorizing about it. The change has come about for a variety of reasons, including recent developments within psychology and associated areas of cognitive science, brain science, and philosophy. One factor in the change is an increased realization that the subject matter of psychology—human behavior and experience—is unique. Psychology can no longer try to model itself after classical physics, but must devise its own methods of research and theorizing.

THE PSYCHOLOGY OF CONSCIOUSNESS

The *psychology of consciousness* is the branch of psychology that is concerned with problems of consciousness. Psychologists may not agree on a *definition* of "consciousness" or of "the psychology of consciousness," but they can, to a large degree, agree on which topics and problems are included within the *domain* of the psychology of consciousness (Natsoulas 1981). Among the problems are: What do we mean by the concepts of mind and consciousness? What methods can be used for studying consciousness, and what are the advantages and disadvantages of each? What are the different forms and aspects of consciousness? What factors influence the stream of consciousness—moment to moment changes in the content of consciousness? What is the relationship between conscious and nonconscious (unconscious) mind, and what are the varieties of nonconscious processes? What is the relationship between consciousness and the brain? Between consciousness and perception? Between consciousness and behavior? Between consciousness and language? How does consciousness develop in the individual? What is the role of consciousness in the human mind/brain system?

Among the most distinctive topics of the psychology of consciousness

are the “altered states” of consciousness. Altered states of consciousness are temporary, reversible conditions in which one’s pattern of subjective experience, and sometimes the ability to control one’s own behavior, appear to be different than in one’s normal waking state. Among the altered states are sleep and dreaming, hypnosis, meditative and mystical states, and states induced by psychoactive drugs and by restricted environmental stimulation. Besides being of interest in their own right, altered states are relevant to understanding the basic nature of consciousness. Also, altered states may have practical applications, as in clinical applications of hypnosis. Altered states will be a major topic in this book.

The psychology of consciousness is concerned mainly with consciousness in normal people, though it has connections with abnormal psychology and psychopathology. Also, research on brain-damaged patients by neuropsychologists has important implications for understanding normal consciousness. In fact, the psychology of consciousness has connections with most branches of psychology, though in this book the emphasis will be on topics that are central to understanding consciousness but that are not discussed extensively in textbooks for other psychology courses. The psychology of consciousness also has important connections with the philosophy of mind, and some topics of mutual interest to the different disciplines will be discussed in this book.

Overview of This Book

In this chapter I will discuss the meaning of consciousness and related concepts, such as mind and awareness. I will present a levels-of-consciousness model to describe the relationship between conscious and nonconscious mind. Chapter 2 describes several higher-order characteristics of consciousness—such as selectivity, change, and continuity—as well as some more specific features of conscious experience—such as mental imagery, verbal thought, and volition. In Chapter 3 I will discuss introspection, the method of studying consciousness by “looking within” and trying to describe one’s own conscious experience. Several introspective methods will be discussed, along with their limitations. Chapter 4 is about the mind-body problem, an ancient philosophical problem concerning the relationship between the mind and the body or brain, which has implications for both religious beliefs and the psychology of consciousness. Chapter 4 also considers the other-minds problem: the question of how we can recognize consciousness in other beings, including animals and children that cannot speak to describe their conscious experiences.

Chapter 5 is about neuropsychological research on split-brain patients and its implications for understanding consciousness. Of special interest is the question whether split-brain patients have two minds in one body. Chapter 6 presents evidence for nonconscious information processing. It discusses dissociations between consciousness and behavior (such as “blind-sight” and amnesia) in brain-damaged subjects, as well as several types of evidence from normal subjects (such as subliminal perception).

Chapter 7 (“Introspection II”) discusses research on the question of

whether we have introspective access to the causes of our own behavior. Chapter 8 is about daydreaming and the stream of consciousness, including research on personal and situational factors that influence daydream frequency and content. Chapter 8 also discusses the effects of sensory deprivation on consciousness and behavior. In Chapter 9, I present some general considerations about altered states of consciousness, such as dimensions of subjective change in altered states, before discussing specific altered states in later chapters.

Chapters 10 through 13 are about sleep and dreaming, topics that have fascinated people for centuries, and which are favorite topics of many students of the psychology of consciousness. Chapter 10 is about sleep, including the physiological correlates of different sleep stages, the effects of sleep deprivation, and sleep disorders. Chapter 11 discusses modern sleep-laboratory research on dreaming, including the characteristics of dreams and factors that influence dream contents, including nightmares as well as normal dreams. Chapter 12 discusses some of the major theories of dreaming—from the psychoanalytic, neurophysiological, and cognitive viewpoints—and related research, including research on dreaming in children. Chapter 13 considers two special topics: the problem of dream recall and forgetting, and lucid dreaming, in which you know you are dreaming as you sleep and dream.

Chapters 14 through 16 are about hypnosis, another favorite topic among students, and currently the most active area of research and theoretical debate among the altered-states-of-consciousness topics. Chapter 14 is a general overview of the basic principles of hypnosis and factors related to individual differences in hypnotizability. It also discusses clinical applications of hypnosis, and the question of whether hypnosis is dangerous. Chapter 15 goes into more detail on recent theories of hypnosis and related research on hypnotic analgesia (pain control) and amnesia, and the controversy whether hypnosis is really an altered state of consciousness. Chapter 16 is about two special topics, hypnotic age regression and hypermnesia—the use of hypnosis in attempts to improve memory recall, which has implications for psychotherapy and criminal investigations.

Chapter 17 describes basic meditation practices and their effects on consciousness, and practical applications such as reduction of stress and anxiety. Characteristics of mystical states—sometimes reached through meditation—are also described. Chapters 18 and 19 are about psychedelic drugs and their effects on consciousness and behavior. Chapter 18 is about marijuana, a widely used minor psychedelic; Chapter 19 discusses the major hallucinogens, with emphasis on the hallucination experience.

Now, let us turn to the question of the meaning of consciousness, mind, and related concepts. Over the years philosophers, psychologists, and brain scientists have devised dozens of definitions of these terms. I do not want to get too bogged down in arguments about definitions, so I will explain how I intend to use these terms in this book and contrast my definitions with a few of the most important alternative definitions. Then I will introduce the idea of levels of consciousness, which will help to relate several important concepts to each other.

MIND

Consciousness is not the same as mind. Mind is the broader concept: it includes both conscious and nonconscious mental processes. Donald Hebb defined mind as follows:

Mind is the capacity for thought, and thought is the integrative activity of the brain—that activity up in the control tower that, during waking hours, overrides reflex response and frees behavior from sense dominance (Hebb 1974, p. 74).

Here is my definition: *Mind is the functioning of the brain to process information and control action in a flexible and adaptive manner.* Both my definition and Hebb's are *materialistic* in that they say that mind is a result of brain activity and cannot exist apart from the living brain, which is a material object.¹ Both definitions are *functional* in that they say what mind does: it processes information (including perception, memory, and thinking) and controls action. Further, they state that flexible behavior is an indicator of mind: an organism with mind does not behave in a purely reflexive manner, always reacting to the same stimulus in the same way. Rather, the creature with mind uses thought processes to adjust its behavior to suit the situation.

The concept of mind implies mental processes. A *mental process* is a more-or-less specialized program or procedure used in processing information (as in perception, memory, and thinking) and controlling speech and other actions. Mental processes use symbols or *representations* for objects, concepts, events, actions, and so on. Cognitive psychologists try to discover and describe the various types of mental processes (or cognitive processes), and the interactions between them, that are necessary to explain human perceptions, thoughts, and actions. At the psychological level, mental processes can be described in terms of their functions, including the type of information they take in, the types of transformations they effect, and the types of outputs or responses they make. Neuropsychologists and other brain scientists are concerned with discovering the specialized brain structures and processes that carry out the various mental functions. Sometimes I will use the term *mind/brain system* when I want to emphasize the point that mental processes are carried out by the brain—a biological entity.²

None of these definitions of mind or mental processes say anything about consciousness. Mind is a broader concept than consciousness. Mind includes both conscious and nonconscious mental processes.

CONCEPTS OF CONSCIOUSNESS

It is harder to define consciousness than it is to define mind. It is not possible to specify precise objective criteria for identifying consciousness. Nor can consciousness be given a clear functional definition, since its specific function within the mind system is still a matter of controversy.³

Consciousness is one of those concepts that we understand intuitively,

but it is difficult or impossible to describe it adequately in words. We can describe many conscious *contents*, such as sensory perceptions or mental images, in a fairly straightforward way. And we can talk indirectly about other conscious experiences, such as love and pain, using metaphors to liken the experience to something else. (“My headache makes me feel like I have a tight metal band around my head.”) The best we can do in trying to describe consciousness *per se* is to resort to metaphors. For example, to say that consciousness has contents is to make an analogy to a vessel or space. Julian Jaynes (1976, 1986) pointed out that much of our language for describing mind and consciousness is based on visual-spatial metaphors (“mind-space”), and mental acts are described by analogy to behavioral acts in the visual world.

We “see” solutions to problems, the best of which may be “brilliant” or “clear” or possibly “dull,” “fuzzy,” “obscure.” These words are all metaphors, and the mind-space to which they apply is generated by metaphors of actual space. In that space we can “approach” a problem and “grapple” with its difficulties. Every word we use to refer to mental events is a metaphor or analog of something in the behavioural world. And the adjectives that we use to describe physical behaviour in real space are analogically taken over to describe mental behaviour in mind-space. We speak of the conscious mind as being “quick” or “slow”, or of somebody being “nimble-witted” or “strong-minded” or “weak-minded” or “broad-minded” or “deep” or “open” or “narrow-minded.” And so like a real space, something can be at the “back” of our mind, or in the “inner recesses” or “beyond” our minds (Jaynes 1986, p. 132).⁴

But while metaphors are useful for enabling some conscious creatures to talk with each other about their conscious experiences, they are not sufficient for a good objective definition of consciousness. Consciousness isn’t really quite like anything else. Consciousness is, in a sense, the fundamental fact of human existence, as William James pointed out in the quote at the beginning of this chapter. At the same time, the concept of consciousness is a very high level abstraction: it is what all of our conscious contents and experiences have in common. We come to know the meaning of consciousness intuitively, through experience, rather than through definition.

Psychologists are more likely to agree that thinking or consciousness of some sort goes on than they are to agree on a particular verbal definition of consciousness.⁵ Nonetheless, I believe that to facilitate communication I should present a working definition of consciousness, and try to be consistent in the way I use the term in this book. In the next section I will define consciousness in terms of subjective awareness. Then I will describe two major alternative meanings of consciousness—as wakefulness and as an executive control system—and relate those meanings to my definition.

Consciousness as Awareness

As a working definition, *consciousness is the subjective state of being currently aware of something, either within oneself or outside of oneself.* In this case, being aware or having awareness refers to cognizance or knowing.

Consciousness is always about something. It concerns perceptions,

thoughts, feelings, and actions. Consciousness has contents.⁶ The variety of contents is enormous. Consciousness can include perceptual awareness of objects and events in our immediate environment, as well as body sensations such as joint pains and tummy rumblings. Consciousness can also include memories of personal past events or impersonal factual knowledge. Also imaginary scenes, as in our daydreams and night dreams, which may be either realistic or fantastic. Consciousness includes emotional feelings and inner speech, such as thoughts about personal problems and goals. But while consciousness can have an enormous variety of contents, it cannot have very many contents at one time. As we will see, the selectivity of consciousness is one of its main features.

Conscious knowledge is knowledge that is “currently present.”⁷ At any moment most of our knowledge is nonconscious; it is stored in long-term memory and we are not aware of it at that particular moment, though we could quickly recall much of it given the right retrieval cues. To remember something means to retrieve it into consciousness.

Consciousness involves *subjective* experience, which means that it is directly accessible only to the person having the experience. It cannot be directly observed by other people. In humans, at least, conscious experience typically involves some sort of self reference, either explicit or implicit.⁸

Normal adult humans can usually make some sort of verbal report about the contents of consciousness—their immediate, or past, subjective experience. The *introspective verbal report* is the primary criterion for detecting the existence of consciousness, and the main way to know about the contents of another person’s consciousness. Of course, some things cannot be described very well in words, and sometimes we forget what we were thinking before we can report it. (In Chapters 3 and 7 I will discuss the uses and limitations of introspective reports in some detail.)

The definition of consciousness in terms of awareness of content links consciousness to the problem of representation of knowledge—how knowledge is coded in memory—which is a fundamental problem for cognitive psychology. Consciousness always involves some form of representation of objects, ideas, events, and so on. But consciousness is more than just awareness of individual objects and events. It also involves comprehension, relating various objects and events to each other and to prior knowledge and past experiences. Conscious experience is not just a passive response to stimuli. It is—or results from—an active process of interpretation and construction in which we use available data from sensory inputs and memory and search for new pertinent data to produce a comprehensible view of the world (that is, our social and physical environments) or to construct imaginary worlds in which to act. (We will encounter the theme of consciousness as a product of interpretive and constructive processes in later chapters.)

An important implication of the definition of consciousness as awareness of something is that—contrary to the teachings of certain meditation systems—it is meaningless to speak of “pure consciousness” or “pure awareness” (consciousness or awareness without content). We can discuss consciousness as an abstract concept without referring to any particular content. But in actual instances of consciousness in persons, consciousness always has contents. The meditator who thinks “Wow, my mind is empty! I have reached

the state of pure consciousness!" does, in fact, have consciousness with contents. Consciousness without contents is conceivable only in an altogether different sense of the term consciousness—consciousness as wakefulness.

Consciousness as Wakefulness

One of the most common meanings of "consciousness" is in the sense of wakefulness. In this usage, a person who is awake is conscious, whereas one who is asleep, in a coma, or knocked out by a blow to the head, is unconscious.

Wakefulness, or being awake, is a region on a continuum of arousal ranging from hyper-aroused wakefulness, through normal wakefulness, to the hypnagogic state (between waking and sleep), sleep, and finally, coma. Wakefulness and sleep can be distinguished by a combination of behavioral (responsiveness to external stimuli) and physiological (brain wave) criteria, though there is a transition period in which one is neither clearly awake nor clearly asleep.

Consciousness in the sense of wakefulness is not the same thing as consciousness in the sense of awareness of something. Occurrences of consciousness in these two senses are correlated to a degree, in that when we are awake we usually are aware of something. On the other hand, being asleep does not necessarily imply an absence of awareness. The mind/brain system is intensely active during sleep. Dreaming involves awareness of something, namely visual and auditory mental images linked together in a story-like manner. Thus, consciousness as awareness of content can go with unconsciousness in the sense of being not-awake (asleep).

These two meanings of "consciousness"—as awareness and as wakefulness—can be so contradictory that I will avoid using "consciousness" in the sense of wakefulness. When I wish to distinguish the waking state from the sleeping state I will say "wakefulness" or "awake." I will reserve the term consciousness to refer to the state of being subjectively aware of something. Thus, it will be possible to ask without contradiction of terms whether there are instances in which an individual may be awake but without consciousness, that is, awake but with no subjective awareness of anything. Similarly we will be able to ask about consciousness during sleep.

Consciousness as an Executive Control System

Making decisions and initiating voluntary actions are important aspects of conscious experience. It is natural, therefore, to think of consciousness as the decision maker, the executive that chooses among various alternative goals and courses of action to reach those goals. Thus, one of the most common meanings of "consciousness" is an executive control system that supervises and coordinates the activities of the overall mind/brain system.

Consciousness as an executive control system fits well with the notion that consciousness is active. Consciousness is not merely a passive recipient of sensory input and memories, nor a passive commentator on experience. Rather, consciousness chooses goals, seeks out information relevant to those goals, and initiates actions.

The idea of consciousness as an executive control system has been particularly important in cognitive psychological theories that have developed under the influence of an analogy between the human mind and computer system. For example, Tim Shallice (1978) saw consciousness as the selector of the "dominant action system," from among a myriad of relatively independent, competing action production systems. Ernest Hilgard (1977) and John Kihlstrom (1984) emphasized two related functions of consciousness: "*Monitoring* ourselves and our environment, so that percepts, memories, and thoughts come to be accurately represented in phenomenal awareness; and *controlling* ourselves and our environment, so that we are able to voluntarily initiate and terminate behavioral and cognitive activities" (Kihlstrom 1984, p. 150). Hilgard (1977) suggested that hypnosis involves a dissociation or disconnection between monitoring and control aspects of consciousness. (His ideas will be discussed in the hypnosis chapters, particularly Chapter 15.)

Philip Johnson-Laird (1983, 1988) suggested that the mind/brain system operates as a hierarchically organized parallel-processing system whose highest level, the operating system, corresponds to consciousness. The conscious operating system controls behavior by interacting with various non-conscious, lower-level subsystems or modules. It receives processed inputs (such as percepts) from subsystems, and selects and coordinates actions (such as memory retrieval and overt responses) to be executed by subsystems, without knowing the details of the subsystems' operations. Subjective awareness corresponds to the contents of the operating system—more precisely, its working memory. Self-awareness corresponds to the systems' knowledge of its current situation, current operating status, and its capabilities, predilections, and preferences.

Whether "consciousness" is to refer to subjective awareness or to an executive control system is a matter of preference, but it is important to note that subjective awareness and control functions are not equivalent concepts. Johnson-Laird and others are probably correct in arguing that the human mind/brain system has some sort of executive control system, and that there is an important relationship between subjective awareness and the contents or activities of the executive system. The nature of that relationship is still a matter of theoretical controversy. In any case, I believe I am consistent with the most common usage of "consciousness" by restricting it to subjective awareness. For clarity, it would be best if the executive control system were given a separate, distinctive name.

I should warn you that many writers slip back and forth between two or more of the meanings of consciousness (such as awareness, wakefulness, control system), including some writers who will be cited in this book. Such oscillation can be confusing. In trying to limit the use of "consciousness" to awareness I do not mean to deny the importance of the ideas behind the other uses of the word.

Consciousness in Cognitive Psychology

Some cognitive psychologists try to avoid using the word "consciousness" due to the conceptual and methodological problems that it presents. However, the subjective fact of consciousness cannot be denied, and a satis-

factory theory of the human mind/brain system must find a place for it. In considering the place of consciousness in the human information processing system (mind system), cognitive psychologists have linked consciousness with three closely related concepts: working memory, attention, and controlled (effortful) processing (Kihlstrom 1984; Klatzky 1980, 1984).

In the multistore theory of human information processing, working memory (also called short-term memory, STM) is distinguished from long-term memory (Atkinson & Shiffrin, 1968). *Long-term memory* (LTM) is the relatively permanent storehouse of knowledge about our past experiences, the meaning of words, miscellaneous facts, and procedures for doing things. *Working memory* is a system that carries out various cognitive (mental) control processes, such as processes for solving problems, making decisions, and initiating actions. Also, working memory temporarily stores recent perceptions and retrieved memories to be used in these processes. The capacity of working memory is severely limited, and its contents are lost within a few seconds once you stop rehearsing or thinking about them. For example, if you look up an unfamiliar telephone number you have to keep rehearsing it until you dial it; if something interrupts the rehearsal process (for example, someone asking you a question), then you will probably forget the number before you can dial it.

Consciousness can be related to working memory in two ways. In terms of the definition of consciousness as awareness, the current contents of consciousness are equivalent to the current contents of working memory. In terms of consciousness as an executive control system, consciousness is largely equivalent to working memory as a general-purpose, high-level, or final-stage information processing system that makes decisions and initiates actions.

Some psychologists have argued that it is misleading to link consciousness with working memory, if working memory is thought of as a *place* in the information processing system. George Mandler argued that a content is not conscious merely because it is *in* short-term (working) memory. Rather, "consciousness is a *mode* of processing." (1984, p. 89) Conscious contents are contents that are undergoing the conscious mode of processing. The capacity of consciousness is limited because of limitations on the conscious-processing mode.

The levels-of-processing model of memory (Craik & Lockhart 1972) does not distinguish between STM and LTM, but postulates a single storage system. In terms of the levels-of-processing model, consciousness can be largely identified with *primary memory*, the currently activated contents of the memory storage system.

In a related idea, Schneider and Shiffrin (1977) explained several aspects of human performance in terms of a distinction between *controlled* (or effortful) processes (limited capacity, flexible, slow) and *automatic* processes (practically unlimited capacity, relatively inflexible, fast). Consciousness is associated with controlled processes, such as flexible thinking for solving new problems, whereas automatic processes, such as those that execute habitual responses and highly learned skills, operate outside of conscious awareness.

In everyday speech, consciousness is related to "attention." To pay at-

tention to something is to be consciously aware of it. In cognitive psychology there are two different but related meanings of attention. First, *attentional capacity* refers to a general-purpose, limited-capacity information processing resource that is critically important for carrying out many cognitive tasks, especially those that require flexibility for dealing with novel situations. If we try to do two tasks at the same time (such as listening to a lecture and writing a letter), then the tasks will interfere with each other if, together, they require more attentional capacity than is available. Kahneman (1973) identified limited attentional capacity with mental effort, whereas other cognitive processes are effortless, such as rapid pattern identification and rapid memory retrieval. Under most conditions, using attentional capacity for a task, such as reading, is associated with conscious awareness of the information being processed.

The older and more common meaning of “attention” concerns *selective attention*, which is a set of processes that determines which of the many competing stimuli get through to consciousness. The classic example of selective attention is the cocktail party situation, in which several people in the room are talking at once and you can selectively focus on one voice at a time while ignoring the others. In terms of the multistore theory, selective attention selects inputs to working memory. Because of the limited capacity of working memory, it is necessary to select inputs according to some sort of priority system.

The three cognitive psychology concepts of working memory (STM), controlled processing, and attentional capacity were developed in different theoretical and research contexts. However, for our purposes we may regard them as essentially equivalent. They have in common the characteristics of being general in purpose, limited in capacity, and necessary for tasks in which flexible information processing—thinking—is required. All three concepts are closely associated with conscious awareness, on the assumption that conscious contents (words and images, for example) refer to information currently being processed (that is, processed in working memory or with attentional capacity or controlled processing). Like its cognitive psychology counterparts, consciousness, too, is limited in capacity, general in purpose, and associated with higher-level thought processes. All three cognitive concepts allow for other types of cognitive processes—such as long-term memory and automatic processes—that occur nonconsciously, that is, outside of conscious awareness.

A LEVELS OF CONSCIOUSNESS MODEL

Figure 1.1 shows a levels-of-consciousness model that indicates the relationship between different levels of conscious and nonconscious mind. The model is based on a combination of introspection and psychological theory and research. The different levels of consciousness have to do with different degrees of *availability* or retrievability of contents from those levels to reflective consciousness and introspective reporting (Kihlstrom 1984). The levels model does not attempt to explain the different levels of consciousness. Rather, it is a descriptive model that shows what needs to be explained.

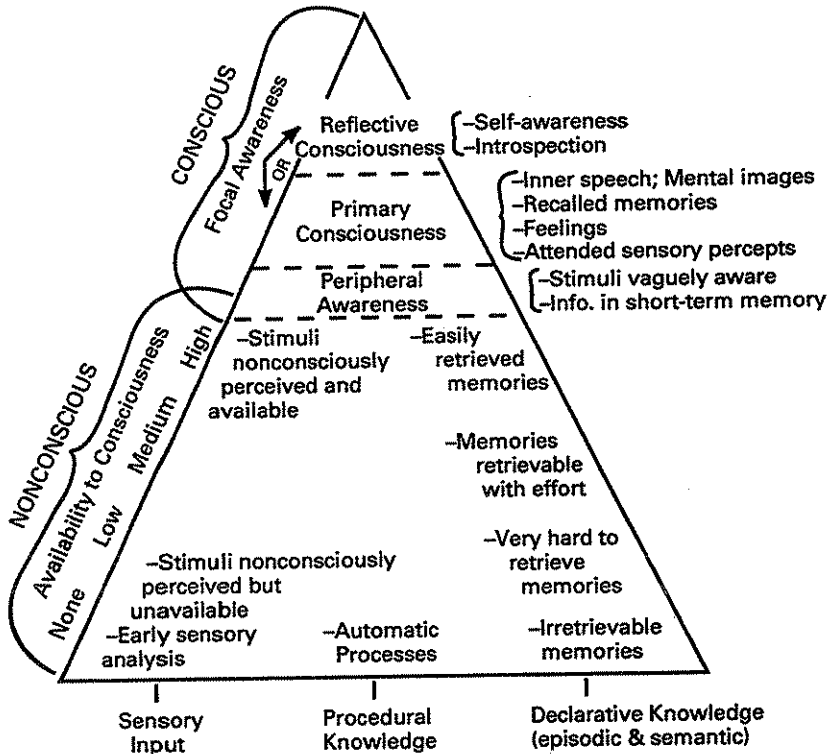


FIGURE 1.1. A descriptive model of levels of consciousness. Levels are defined in terms of the availability of contents to reflective consciousness and introspective reporting. The triangular shape of the diagram is intended to convey the idea that the total amount of content tends to decrease at successively higher levels.

As a particular content progresses from lower to higher levels it presumably undergoes different types of processing, and the content is transformed at different levels or stages of processing. However, all contents at the same level of availability are not necessarily at the same level for the same reason. For example, particular percepts (sensory perceptions of objects and events) and memories may be equally available to consciousness, but they are undergoing different types of processing. Now I will try to describe or characterize the different levels of consciousness.

Primary and Reflective Consciousness

We can distinguish two types of (adult) human consciousness: primary consciousness and reflective consciousness. *Primary consciousness* is the direct experience of percepts and feelings, and thoughts and memories arising in direct response to them. It also includes spontaneously arising memories, thoughts, and images, including dreams and daydreams. Within primary consciousness, sensory percepts and emotional feelings are the most primi-

tive aspects in that they occur in animals and preverbal children. Other aspects develop later in childhood.

Reflective consciousness consists of thoughts about one's own conscious experiences *per se*. In primary consciousness you are the *subject* who does the thinking, feeling, and acting in regard, mainly, to external objects and events. But in reflective consciousness your own conscious experiences—percepts, thoughts, feelings, and actions—are the *objects* of your thoughts. Thus, in primary consciousness you might perceive an event (such as an automobile accident) and have thoughts about that event. But in reflective consciousness you might have thoughts not about the event itself, but about your thoughts concerning the event—asking yourself, “What did I think and feel, and why?” Reflective consciousness makes it possible to judge our knowledge, to interpret our feelings, to revise and improve our thoughts, to evaluate our actions, and to plan future actions.⁹

For example, recently I had the primary conscious experiences of seeing an acquaintance's face and hearing his voice (“I hear we're going to have freezing rain tonight.”), my thoughts in direct response to his words (“It could be dangerous. I'd better go home early tonight, before it starts.”), and my reply to him (“So what else is new? Freezing rain, this must be Maine!”). In the next moment I reflected on my preceding thoughts and words: “That was a dumb thing to say. Why did I say that? It cut the conversation short. I was in a hurry. How dangerous will it get? Am I really afraid? It's kind of scary. I don't want to have an accident like Julie's. But I can't leave early, I have too much work to do.”

Reflective consciousness is necessary for an elaborated *self-awareness*. Self-awareness involves the realization that you are a unique individual, separate from others, with your own personal history and your own future. In reflective consciousness you relate your current experience to your *self-concept*, which is your concept of your personal nature, including your desires, values, goals, interests, intellectual and physical abilities, and personality traits.

Reflective consciousness includes the process of *introspection*, which means looking into one's own mind. In basic descriptive (phenomenological) introspection, you attempt merely to observe or recall your primary conscious experiences without analyzing or interpreting them. Introspection can be a purely internal process, or you may try to communicate your introspections to others through *introspective verbal reports*. Thus, you must introspect to answer questions such as “How do you feel about that?” or “Why did you say that?” But reflective consciousness can go beyond mere observation or recall to include analysis and interpretation of your thoughts, feelings, and actions. Reflective consciousness operates at a higher level than primary consciousness in that contents in reflective consciousness are more immediately available for introspective verbal reporting. In the early days of psychology it was thought that all mental contents and processes are open to introspection, but now we understand that introspection can examine only what reaches primary consciousness. Reflective consciousness is sometimes called “introspective awareness.”

The concept of reflective consciousness seems to imply at least a brief

time gap between an event in primary consciousness and reflective thinking about it. Sometimes the gap is large, as when we recall the events of yesterday and try to evaluate and interpret them. But more commonly, primary consciousness and reflective consciousness are interwoven with each other so much that we cannot easily distinguish between them. We do not necessarily feel any difference between primary and reflective consciousness. The distinction is more abstract, and sometimes the boundary between them is fuzzy.

One reason why it is hard to distinguish introspectively between primary and reflective consciousness is that whenever you try to think about your percepts and thoughts objectively as they happen, you are necessarily engaged in reflective consciousness. The distinction may be clearer if we take a more long-term retrospective view. For example, in many sports activities—such as Alpine skiing, whitewater kayaking, racquetball, and basketball—there are periods of several seconds at a time when you are totally involved in what you are doing. You concentrate exclusively on changes in the situation—the ski slope, the rapids, the position of your opponent and the ball—and on making your next move. You operate in a state of relatively pure primary consciousness. You simply perceive and react, without asking yourself why. Only later, when there is a pause in the action, do you have the opportunity to recall what happened and reflect on it and ask what you did right or wrong, and why, and how to do better next time.

Neither primary nor reflective consciousness is a fixed, clearly defined capacity. Primary consciousness evolves in children as they mature and learn: perceptual awareness and emotional feelings come first, mental imagery and verbal thinking come later. Reflective consciousness develops out of primary consciousness. The complexity of reflective consciousness increases as the child's linguistic and other intellectual abilities develop.

Humanist psychologists have emphasized the importance of reflective consciousness as a uniquely human capacity. Marian Kinget described reflective consciousness (awareness) and its significance:

Reflective awareness [is] the ability not only to know but to know that one knows—hence, the ability to engage in imagination, self-scrutiny, scientific hypothesizing, philosophical speculation, the evolution of a self-concept, and similar internal behaviors without which the existence of countless observable behaviors and products (e.g. literature, biography, ritual, and commemoration) could not be accounted for (Kinget 1975, p. 3).

Kinget quoted Rollo May on the relationship between primary and reflective awareness—the capacity to experience ourselves both as subject and object—and its significance:

We are not simply describing two alternate ways of behaving. Nor is it quite accurate to speak of our being subject and object simultaneously. The important point is that our consciousness is a process of *oscillation* between the two. Indeed, is not this dialectical relationship between experiencing myself as subject and object just what consciousness consists of? The process of oscillation

gives me potentiality—I can choose between them, can throw my weight on one side or the other. . . . It is the gap between the two ways of responding that is important. My freedom, in any genuine sense, lies not in my capacity to live as “pure subject,” but rather in my capacity to experience both modes, to live in the dialectical relationship (May 1967, p. 9).¹⁰

Thus, primary and reflective awareness are not like two minds in one brain; rather, they are different aspects of the consciousness of a single person.

Conscious experience in the normal adult human involves both primary and reflective consciousness. Some writers have defined consciousness strictly in terms of reflective consciousness, with the implication that animals and young children who are incapable of reflective consciousness are not conscious beings. But that view is too narrow. Mind exists at different levels of complexity. Some minds experience only perceptual awareness and emotional feelings, while others have a fuller primary consciousness that also includes mental images and verbal thoughts. At higher levels of complexity the capacity for reflective consciousness develops.

The entire levels-of-consciousness model (Figure 1.1) represents a still higher level of thought, meta-consciousness. *Meta-consciousness* is abstract thinking about consciousness itself, trying to understand its nature and its origin. Whereas reflective consciousness is strictly personal, meta-consciousness is an attempt to draw general conclusions about consciousness that would apply to all humans, or to all conscious beings. Meta-consciousness theorizing may draw upon one’s personal introspections, philosophy, literature, and scientific research and theory about cognitive processes and the brain. Reflective consciousness is presumably a normal characteristic of adult humans, but meta-conscious thought is characteristic of only a minority of humans, namely psychologists, philosophers, scientists, writers, and others who are interested in mind and consciousness as topics of study.

Focal and Peripheral Awareness

The mental content—percept, thought, or feeling—that dominates your conscious awareness at the moment is in *focal awareness* (focal attention). Focal awareness can shift rapidly back and forth between different percepts, thoughts, and feelings in primary consciousness, or between primary consciousness and reflective consciousness. *Peripheral awareness* includes mental contents that are on the fringe of focal awareness. They can be brought into focal awareness almost instantaneously through either voluntary or involuntary (automatic) attention-switching processes. Peripheral awareness is at the border between conscious and nonconscious mind.

Two types of content may be in peripheral awareness: (1) Stimuli of which one is vaguely aware and which are being processed automatically while focal awareness is directed elsewhere. For example, when you are driving on a highway lost in thought, visual stimuli of the road, other cars, objects, and so on, are mostly in peripheral awareness; so are voices that you can hear but are not attending to, as in the cocktail party situation. (2) Events that have been in focal awareness very recently—within the last few sec-

onds—so they are still in short-term memory and can be rapidly retrieved to focal awareness.

Nonconscious Mind

Nonconscious mind consists of knowledge and mental processes that are not currently in consciousness. That is, we are not subjectively aware of them at the moment—they are not “currently present”.¹¹ In Mandler’s (1984) terms, nonconscious contents are not currently being processed in the conscious mode, though they may be processed in various nonconscious modes. While we are awake our nonconscious mind is intensely active, doing preliminary processing of sensory inputs, retrieving information from memory, and carrying out automatic actions. Conscious mind is like the tip of the iceberg; most of our mental activity goes on nonconsciously. Yet nonconscious mind is not like an alternate, hidden consciousness, carrying out the same sort of mental activities that you do consciously. Nonconscious mental processes, to a large degree, serve different functions than do conscious ones.

Levels of nonconscious mind. Nonconscious contents and processes may be arranged on a continuum, according to how easily retrievable they are into primary consciousness and, ultimately, into reflective consciousness. Though nonconsciousness is really a continuum, it is convenient to think in terms of levels to which we can attach labels or brief descriptions. The levels range from contents that can be quickly and easily retrieved (such as many long-term memories and recently registered but unnoticed sensory perceptions), through those that can be made available with some effort (such as memories hard to retrieve and motives that become apparent through careful self-analysis), to those that cannot reach consciousness with any amount of time or effort but can be known only through inference (such as highly practiced automatic mental processes or procedures, and lower-level “subroutines”).

There is a continuous interaction between adjacent levels of conscious and nonconscious mind. It is not the case that one’s mental activity as a whole shifts between different levels of consciousness. Rather, mental activity is going on at all levels simultaneously—or in oscillation, in the case of primary and reflective consciousness. Though information may “move” between different levels of consciousness-nonconsciousness, it does not stay the same as it moves. Rather it is transformed by different mental processes at different levels.

Types of nonconscious contents and processes. Most nonconscious mental contents and processes fall into one of four major categories:

(1) *Sensory inputs registered but not attended.* The capacity of consciousness (or working memory) is limited. Selective attention processes select for consciousness the information that is most pertinent from the vast array of sensory inputs. Prior to selection these inputs are recognized nonconsciously, in the sense that they are matched to corresponding items, such as words, objects, and concepts, in long-term memory (Norman 1968). Nonconscious recognition of the meaning of a stimulus may be critically important in deter-

mining whether it is selected for consciousness. For example, you may be able to read while ignoring the voices of people who are talking nearby. But if one of them says your name you will probably notice it. Presumably all of the words were recognized nonconsciously, but only your name was important enough to your interests to be selected for consciousness. Nonconsciously registered events sometimes reach consciousness, and sometimes they don't. Sometimes nonconsciously recognized events influence our thinking and behavior even though they never reach consciousness (for example, subliminal [nonconscious] perception). (See Chapter 6 of this book and Dixon 1981.)

(2) *Declarative knowledge in long-term memory (LTM)*. Declarative (propositional) knowledge is of two types: (a) *semantic knowledge* (said to be in *semantic memory*), including the meanings of words, names of things, and miscellaneous impersonal facts and theories (including most of what you learn in college); and (b) *episodic knowledge* (in *episodic memory*), which consists of your memories of personal experiences in your life (Tulving 1983, 1985a). For example, remembering the facts and concepts that you learned in a course last semester would involve retrieval from semantic memory. But remembering your personal experiences in the course—such as how you reacted when the professor stood on the table to make a point—would involve retrieval from episodic memory.

At any moment, almost all of the thousands of things you know in semantic and episodic memory are nonconscious. You can easily retrieve much—perhaps most—of that information into consciousness (or working memory), given the right retrieval cues. But sometimes retrieval from LTM is difficult, and sometimes it temporarily fails. For example, you have probably had the experience of wanting to introduce two new friends to each other and not being able to recall one of their names. In such cases you may experience a “tip-of-the-tongue” effect, in which you know that you know the name, but you just can't retrieve it at the moment. The tip-of-the-tongue effect demonstrates the difference between not knowing something and knowing it but not being able to retrieve it from memory. In the case of *repressed memories*, people may be unable to remember the details of personally traumatic experiences, such as being the victim of a violent crime. According to Freudian theory, repressed memories are actively prevented from reaching consciousness, though they may influence our emotions and behavior even while they remain nonconscious.

In recent years psychologists have studied *implicit memory*, in which behavior is influenced by nonconscious knowledge—knowledge that is not, or cannot be, retrieved into consciousness. For example, social judgment processes—such as our judgments of people's friendliness, competence, and so forth—may be influenced by prior knowledge of which we are not currently aware. (See Chapter 7 in this book and Newman & Uleman 1989.) Also, people suffering from amnesia due to brain damage may be able to learn certain skills through practice, though they cannot remember the experience of practicing. Thus, there is a failure of recall from episodic memory, even though procedural memory (memory for skills) remains intact. (See Chapter 6 in this book; Schacter 1987; Tulving 1985a.)

(3) *Automatic cognitive and sensory-motor programs*. The knowledge of how

to perform various cognitive and sensory-motor skills is called *procedural knowledge*, and it is stored in *procedural memory* (Anderson 1983). The skill-control programs of procedural memory operate automatically and non-consciously. Such automatic processes are at the lowest level of nonconscious mind in that we *cannot* be directly aware of the processes themselves, though we may be aware of their final results or outputs (and often of results at intermediate stages, too). For example, when you read you are consciously aware of the identity of familiar words. But you are not aware of the stages of the recognition process itself, wherein printed words are analyzed and compared against various patterns stored in long-term memory until a match is found. The pattern recognition process operates rapidly and automatically, and you are aware only of its results. Nonconscious processes that produce a conscious result are sometimes called *preattentive processes*. We know about preattentive processes only through inference, not through introspection (Kihlstrom 1987).

Besides cognitive skills (such as recognition of printed or aural words), sensory-motor skills can also operate largely outside of awareness. For example, when a skilled typist copies a sentence, each word is a stimulus that elicits a rapid sequence of directed finger movements. The sequence of finger movements is controlled by an automatic process, which has been established through extensive practice. In fact, if the typist tries to type with conscious awareness of each finger movement, typing will be severely slowed. Athletic skills are another example: extensive practice—such as shooting baskets in basketball—makes execution of the movements largely automatic.

What types of cognitive or sensory-motor programs can operate automatically? Tasks can be carried out automatically when there is a consistent relationship between input stimuli and output responses—in other words, when the response is habitual in that situation (Schneider, Dumais, & Shiffrin 1984). Automatic processes must be developed through extensive practice. In the early stages of practice you have to be consciously aware of almost everything that you do, for example, in learning typing or athletic skills. With practice, some parts of the skill become automatic. Most skills involve an interaction of controlled (conscious) and automatic (nonconscious) processing. Controlled processing sets the goals and plots the strategies or sequences of actions, and automatic processes execute the actions. Then, depending on the rate of information input, you may be able to alternate attention between the task and other thoughts (daydreams). For example, while driving a car, you consciously choose your destination and the route, but you can drive largely on “autopilot” while you are lost in daydreams—provided that you are an experienced driver and the driving conditions are easy. Periodically you switch attention between driving and daydreaming.

Automatic processes may be triggered by an external stimulus. For example, when someone speaks, your speech recognition process automatically recognizes the words. Or while driving along a highway you may automatically turn off at a particular exit, if you have driven that route to work many times. Then the next time you drive that highway, intending to go beyond the familiar exit to a different destination, you may automatically—but unintentionally—turn at that exit if you are daydreaming and driving on au-

topilot. In order to get past the familiar exit you have to attend to driving and override the autopilot.

(4) *Nonconscious motives.* Freud's psychoanalytic theory was built around the idea that our conscious thoughts and behavior are influenced by unconscious motives or desires, particularly sexual and aggressive desires. According to Freud, awareness may be prevented through an unconsciously controlled repression process; or we may deliberately suppress unwanted thoughts, perhaps by turning attention elsewhere (Wegner 1989). The conceptual status of this category—nonconscious motives—is somewhat problematic. What is a motive? One could define "motive" as a need, interest, or desire that activates an organism and directs its behavior toward a specific goal. Ordinarily, when we consciously seek a particular goal, we have a consciously felt need, interest, or desire. If a consciously felt need, interest, or desire were of the essence of motivation, then it would not be appropriate to speak of nonconscious motives. But it can be argued that consciously felt needs and so forth are *not* of the essence of motivation. Rather, the essence of motivation is whatever processes—conscious or nonconscious—activate the organism and direct its behavior toward particular goals. Thus, insofar as people are unaware of the causes or processes that control their goal-directed behaviors, we can say that they are influenced by nonconscious motives. We—or they—may be able to infer their motives from their behavior, even if they cannot introspectively report them.

In later chapters I will discuss some of the research that supports the claim that much of our mental processing occurs nonconsciously. Chapter 6 will cover nonconscious processing in brain-injured patients (such as the "blindsight" and amnesia syndromes) and nonconscious (subliminal) perception in normal people. In Chapter 7 I will explore the question of whether people ordinarily have introspective awareness of the causes of their own behavior.

Subconscious knowledge. Ernest Hilgard, in his book *Divided Consciousness: Multiple Controls in Human Thought and Action* (1977), called attention to several puzzling psychological phenomena that have a family resemblance to each other, including multiple personality, fugue states, hypnotic analgesia, posthypnotic amnesia, and others. In all of these cases people have perceptual experiences or perform actions of a type that would normally occur with conscious awareness, but they are unaware of the events at the time that they occur and/or they cannot subsequently recall the events, which are of a type that ordinarily could be recalled. Kihlstrom (1984) uses the term *subconscious* to refer to the knowledge or perceptions that are unavailable to people in these situations. Subconscious knowledge can be distinguished from ordinary unperceived or unattended events because subconscious knowledge may later, under special circumstances, be retrieved to consciousness.

For example, individuals with the *multiple personality* syndrome sometimes spontaneously (nonvoluntarily) shift from their ordinary personality to an alternate personality. (In some cases there are several alternate personalities.) The alternate personality is distinctly different from the normal personality in some ways: it may, for example, have different interests and val-

ues, and be more socially extraverted than the normal personality. The alternate personality may do things that the ordinary personality would never do, such as go on a shopping spree or flirt with strangers. Hours or days later, when these individuals shift back to the ordinary personality, they will have no recollection of what they did during the time in the alternate personality. They will be amnesic for that period of time—though when they later shift back to the alternate personality, they will recall what they (the alternate personality) did earlier. A *fugue state* is a kind of functional amnesia (not involving brain damage), in which individuals, perhaps as a reaction to stress, are unable to recall their personal past (their jobs, their families, and so on), and wander away from home and start over somewhere else. Later—perhaps years later—they may again recall their earlier life, perhaps after being tracked down by their families and/or aided by psychotherapy.

Elaborating on ideas presented earlier by the French psychiatrist Pierre Janet (1889), Hilgard interpreted these phenomena in terms of a *dissociation* hypothesis, which says that there is a disconnection between certain mental subsystems—monitoring, action-control, and memory systems—that normally communicate with each other. He argued that hypnosis can produce temporary, reversible dissociations. For example, Hilgard's research suggested that during hypnotic analgesia (pain reduction) a sort of divided consciousness effect may occur, in which a "hidden observer" may be aware of pain of which the hypnotized self is not aware. Hypnosis apparently can also facilitate "automatic writing," in which subjects can write answers to questions without being aware of doing so.

In Chapter 15 (Hypnosis II) I will go into some detail on Hilgard's research on dissociation in hypnosis. We will see that—as least as far as hypnosis is concerned—the idea of dissociation processes and subconscious knowledge is controversial. Some theorists argue that "subconscious" knowledge is held out of awareness by diversion of attention, rather than by some special process such as dissociation (Spanos 1986a). But for now the main question is how subconscious knowledge fits into the levels of consciousness model.

Insofar as subconscious knowledge can, with difficulty, sometimes be retrieved into consciousness and reported, it seems that it is a variety of non-conscious knowledge. Subconscious knowledge is like many episodic long-term memories: it is hard, though not impossible, to retrieve. Bear in mind that the levels-of-consciousness model is descriptive, not explanatory, and it does not assume that contents at the same level of availability are at the same level for the same reasons. Thus, we can fit subconscious knowledge into the levels model as another type of nonconscious knowledge, and defer until later the question of whether any special processes are involved in situations—such as hypnotic analgesia—that produce subconscious knowledge.

Comparison to Freud's Levels of Consciousness

Sigmund Freud (1900/1965), distinguished between consciousness, the preconscious, and the unconscious. In his writing Freud used "consciousness" in the sense of awareness, as I do, though he defined consciousness as "a sense organ for the apprehension of psychological qualities" (p. 613), a metaphor that I find to be misleading. Freud's "unconscious" consists of re-

pressed memories, desires, and motives that cannot be brought into conscious awareness, and thus cannot be the object of introspective verbal reports. Freud's "preconscious" consists of perceptual events and memories that are not currently in conscious awareness but which can easily be brought into awareness and reported. Thus, in comparison to my levels model (Figure 1.1.), Freud's preconscious includes both peripheral awareness and all of the nonconscious contents of long-term memory that can be retrieved into consciousness. Thus, my concept of nonconscious mind—all of those contents and processes that are not currently in consciousness—is broader than Freud's concept of unconscious mind. Nonconscious mind includes Freud's unconscious and most of his preconscious knowledge. In addition, it includes procedural knowledge. Kihlstrom (1987) said that procedural knowledge is "unconscious in the strict sense of that term" in that we *cannot* retrieve it to consciousness (p. 1450). Freud's concepts of preconscious and unconscious have not been used much in cognitive psychology, since it seems more useful to talk about different memory structures and different degrees of memory retrievability (Kihlstrom 1984).

SUMMARY

I define *mind* as the functioning of the brain to process information and control action in a flexible and adaptive manner. As a working definition, *consciousness* is the subjective state of being currently aware of something, either within oneself or outside of oneself. Consciousness is always about something: it has contents (percepts, thoughts, feelings). Nonconscious mind consists of various mental processes and contents of which we are not currently aware, though many of them, such as long-term memories, can be retrieved into awareness.

The concept of consciousness as awareness is contrasted with two other common uses of the term: consciousness as wakefulness, and consciousness as an executive control system. It is suggested that consciousness can be identified with or related to some basic concepts in cognitive psychology, including working memory (short-term memory), limited attentional capacity, and controlled processing.

A descriptive levels-of-consciousness model (Figure 1.1) gives some order to the distinctions between conscious and nonconscious mind and the different levels within them. The different levels of consciousness have to do with different degrees of *availability* or retrievability of contents from those levels to reflective consciousness and introspective reporting.

At the conscious level, we can distinguish between primary consciousness and reflective consciousness. *Primary consciousness* is the direct experience of percepts and feelings, and thoughts and memories arising in direct response to them. It also includes spontaneously arising memories, thoughts, and images, including dreams and daydreams. *Reflective consciousness* consists of thoughts about one's own conscious experiences *per se*. In primary consciousness you are the *subject* who does the thinking, feeling, and acting, mainly in regard to external objects and events. But in reflective consciousness your own conscious experiences—percepts, thoughts, feelings, and ac-

tions—are the *objects* of your thoughts. *Focal awareness* (focal attention) can shift rapidly between different contents in primary consciousness or between primary and reflective consciousness. *Peripheral awareness* includes contents on the fringe of focal awareness, that can be brought into focal awareness almost instantaneously.

Levels of nonconscious contents and processes can be distinguished in terms of their retrievability to consciousness. Four major types of nonconscious contents and processes are described: (1) sensory inputs registered but not attended; (2) declarative knowledge in long-term memory; (3) automatic cognitive and sensory-motor programs (procedural knowledge); and (4) nonconscious motives. Also classified as a type of nonconscious knowledge is subconscious (dissociated) knowledge, where—in cases such as multiple personality or hypnotic analgesia—subjects cannot perceive or recall certain events, though they are of a type that ordinarily could be perceived or recalled.

ENDNOTES

¹It is a common convention of speech to say that “mind (or consciousness) is produced by the brain.” However, such a statement does not mean that mind is separate from the brain, as a factory product is separate from the machine that produced it. The idea that mind and brain are separable is due at least partly to the fact that we use psychological terminology when talking about the mind and neurological terminology when talking about the brain.

²Some brain processes sense and respond to biological information, such as the homeostatic processes that maintain optimum levels of glucose, oxygen, and body temperature. These processes are not considered to be mental processes, since they are concerned only with body maintenance and operate automatically and internally. Mental processes use symbolic representations of external objects and events, whereas biological information processing is nonsymbolic—it deals directly with chemicals, temperature, and so on. However, sometimes the distinction between mental processes and biological information processing is fuzzy, especially when conscious experience or action are directly affected by biological responses. For example, when we feel hunger due to stomach pangs or emotional excitement accompanied by a pounding heart, we make decisions and undertake actions instigated by our biological responses.

³I use the term *mind system* to emphasize the idea that mind is a constellation of specialized mental processes. Consciousness may be related to one or more of the mental processes, but not necessarily to all of them.

⁴As an interesting contrast to Jaynes (1986), Belenkey et al. (1986) made this observation in a study involving extensive interviews with women of various socioeconomic levels: “We found that women repeatedly used the metaphor of voice to depict their intellectual and ethical development; and that the development of a sense of voice, mind, and self were intricately intertwined. [This] is at odds with the visual metaphors (such as equating knowledge with illumination, knowing with seeing, and truth with light) that scientists and philosophers most often use to express their sense of mind” (p. 18).

⁵A recent dictionary of psychological terms characterized consciousness as follows: “Consciousness: The having of perceptions, thoughts and feelings; awareness. The term is impossible to define except in terms that are unintelligible without a grasp of what consciousness means” (Sutherland 1989, p. 90). Natsoulas (1978, 1983) discussed six different definitions of consciousness, taking the definitions in the *Oxford English Dictionary* as his starting point.

⁶In their technical jargon, philosophers use the term *intentionality* to refer to the directional or “aboutness” of consciousness. Conscious states (or intentional states), such as perceptions, beliefs, and desires, are said to point to or be about something other than themselves; they have contents. For example, a state of desire is a desire for some particular object or activity. Likewise,

to say that mental processes use representations of objects, events, and so forth is to say that mental processes have intentionality.

I find the term "intentionality" to be confusing, so I will often avoid it in favor of terms like "content" or "aboutness." (See Natsoulas [1981] for a discussion of intentionality from a philosopher-psychologist's viewpoint.)

⁷I am using the word "knowledge" in the broadest sense as anything that might be expressed in a propositional statement, however vaguely—for example, "Jeff is tall." "I am hungry." "My skin feels 'pringly'." "I feel like I am inside of a black sponge." "I imagine myself flying." "I am floating in a green void." "The president's term of office is five years." A propositional statement need not be true to qualify as knowledge in this sense. The point is that any knowledge—conscious or nonconscious—can, in principle, be expressed in a propositional statement, or a set of such statements, if we can find the right words. (I am assuming that mental images can, in principle, be translated into sets of propositional statements.)

⁸Several terms are used virtually interchangeably by various writers who, I believe, would be sympathetic with my working definition of consciousness. A detailed analysis shows slightly different shades of meaning or emphasis. These terms include "subjective experience" and "subjective awareness," which emphasize the *subjective* aspect (accessible only to the person having the experience). "Conscious awareness" sounds redundant, but it emphasizes conscious as opposed to nonconscious knowledge. "Phenomenal experience" (Marcel 1988) or "phenomenal awareness" (Schacter 1989) emphasizes the "raw feels" or "qualia" of sensory experience, but also includes conscious thoughts and memory images. "Experience" in these contexts (conscious experience, subjective experience, phenomenal experience) refers to any contents or events—percepts, thoughts, images, feelings—occurring in consciousness. Thus, for example, conscious experience includes things that you imagine or dream, as well as things that you do physically with your body.

⁹Some writers use the term "*reflexive* consciousness" for what I and others call "*reflective* consciousness." "Reflexive" is a particularly inappropriate word here, because it carries the connotation that the consciousness it describes is some sort of simple, automatic reaction (analogous to an eyeblink or knee-jerk reflex), whereas in fact we are talking about a complex, high level thought process. "Reflection" may be a misleading metaphor too, since it suggests that conscious contents are directly copied in reflective consciousness, whereas in fact they are selectively recalled and reconstructed. I use "reflective" consciousness because it is the more widely used term for this idea, and because its incorrect connotations seem less harmful than those of "reflexive" consciousness.

¹⁰May's "dialectical relationship" is an interactive play of thoughts that can mutually change each other.

¹¹Regarding "nonconscious" versus "unconscious": "Nonconscious" is coming to be the preferred term to refer to the broad category of mental contents and processes that are currently outside of awareness (e.g., Kihlstrom 1987; Marcel 1988). Some writers use the term "unconscious" with the same meaning. The advantage of "nonconscious" is that it avoids confusion with both (a) unconscious in the sense of coma or sleep, and (b) Freud's concept of the unconscious as repressed desires and memories that can *never* be retrieved into consciousness. I will use "nonconscious" as I defined it, though I will sometimes cite or quote writers who use "unconscious" with the same meaning. I'll make it clear if I mean unconscious in some other sense, such as the Freudian Unconscious.