Contents

Chapter 1
The Big Picture

On asking the right questions

> The emanation of the Holy Ancient One proceeds as the emanation which is the essence of all further emanations. It is the supernal, concealed wisdom which includes all that follows.... It is the inner consciousness[1] of the Holy Ancient One – a consciousness that spreads through all dimensions.
>
> (*Zohar* 3:289a, *Idra Zuta*)[2]

> [O]ne who is *compresent* with the Divine Presence is a Watcher, an Awakened One ... his degree of awakening is proportionate to his reciprocal compresence with God.
>
> (Abd Al-Karim Jili, cited in Corbin, 1976/1990, p. 152)

> The pure Brahman becomes the witnessing consciousness.
>
> (Radhakrishnan, 1953, p. 903)

For the author of the *Zohar*, consciousness is a quality of the divine. In the act of creation such consciousness gives rise to all that is, both physical and mental. Our consciousness becomes an echo of the primordial divine consciousness. In the Sufi tradition, represented here by the fourteenth-century Jili, mystics endeavour to align themselves with God, since only then do they awaken to full consciousness. Again, at the heart of such teaching is the view that there is only one consciousness – that of the divine, the essence of any power to observe. Finally, Radhakrishnan reminds us that the oldest of the world's established religions, Hinduism, continues to teach this simple message: that the seemingly human power to observe, or

witness, is nothing other than the pure divine source – *Brahman* – shining through us.

Despite the myriad shades found in particular teachings, a degree of consensus seems to be evident amongst all the spiritual traditions: whatever consciousness is, it is not *merely* human and biological. This idea constitutes the primary point of contrast with the scientific quest to understand consciousness, epitomized in Searle's assertion that:

> Consciousness ... is a biological feature of human and certain animal brains. It is caused by neurobiological processes and is as much a part of the natural biological order as any other biological features such as photosynthesis, digestion, or mitosis.
>
> (Searle, 1992, p. 90)

For Searle, as for the majority of contemporary philosophers and neuroscientists, consciousness is unequivocally a biological phenomenon.

Further diversity is introduced when we consider the views of some of the pioneers of quantum physics, for whom consciousness is not so much a biological phenomenon as a concomitant of the physical properties of our universe. Nobel prize winners Wigner (1972) and Bohm (1980), for example, insist that consciousness is intrinsic to the framework of quantum mechanics.

With views as diverse as these, how is it possible for us to advance towards a unitary discipline of consciousness studies? To those who hold consciousness to be a product of the brain alone, the notion that it is actually a *spiritual* property having a non-physical reality is simply unfounded from the evidence they deem acceptable. More than this, the spiritual perspective introduces a worldview fundamentally at odds with that of contemporary science. In the other direction, those professing belief in a spiritual view of consciousness will remain unshaken by claims that they are clinging to unsubstantiated ideas. It is incontrovertibly the case that the evidence available regarding the brain and consciousness does not necessarily contradict the view that consciousness derives from some form of *higher* realm. The fact is that, while the brain is clearly the organ of consciousness in the sense that it is responsible for the forms in our minds at any given time, there is as yet no definitive evidence that the brain itself *creates* consciousness.

Given the seeming chasm between these viewpoints, why should we endeavour to argue for a unitary discipline of consciousness studies? Those with such disparate worldviews may, at best, politely respect one another's views, but would have no basis for meaningful dialogue. Since this book explicitly seeks to integrate transpersonal, psychological and biological approaches to consciousness, it will be clear that I myself believe that there is a basis for dialogue. In part, such dialogue is necessary simply because many are seeking it. The challenge presented by the study of consciousness is central to our shared sense of *soul*, and relates to the urgency of forging a spiritual path while honouring the observations available through the tools of science. More than this, I intend to show that a sharing of insights across the various areas of study can encourage those involved to ask the right kinds of questions of the data to which they have immediate access. A discipline of consciousness studies should be *integrative*, encouraging a sharpening of interpretation within its subsidiary areas of study. Such an integrative approach is, in fact, not new. The great spiritual traditions, *the sacred sciences of the soul*, as Nasr (1993) calls them, have always sought to grapple with 'data' available from diverse sources about the nature of the mind. Indeed, these traditions were critically involved in the foundations of modern science (Griffin, 2000; Wallace, 2000; Wightman, 1972; Yates, 1964), and may be expected to continue to develop through the fruits of the scientific approach.

What, then, are the right questions to be asking about consciousness? Framing the right questions is always the key to a productive inquiry. Over recent years there have been many books on consciousness, each attempting to answer what the author had construed as *the* central questions about consciousness: What is its nature? How does it arise? What is its relation to unconsciousness? As Baars (1988, 1997) notes, this latter type of question is particularly important since it is only by pointing up features of comparison that we can generally clarify what something *is* – effectively, we know an entity by knowing what it is not. Clearly, if we had no conception of darkness, then the notion of light would be meaningless. Therefore, it is the method of *contrastive analysis* that Baars advocates in the pursuit of consciousness.

Baars employs his contrastive method to specify those features that differentiate between conscious and unconscious aspects of cognitive processes such as perception and memory. In brief, Baars

notes that unconscious processes are generally more efficient and faster than conscious ones. Unconscious processes operate in parallel, resulting in a level of multitasking absent from consciousness. I shall be exploring Baars' theory further in Chapter 5 when addressing the cognitive approach to consciousness. However, I mention Baars' method here, at the outset, since it may be taken as a paradigm for the broad range of disciplines which will concern us. The contrastive method applies on a considerably larger scale than that envisaged by Baars himself, for, in order to make any kind of meaningful claim, all approaches to consciousness demand a basis of comparison. I will therefore use an extended principle of contrastive analysis to distil central questions for each of the approaches to be considered.

At the outset we confront a problem. In employing our extended contrastive analysis paradigm, with what is consciousness to be contrasted? Clearly, the answer should logically be that the comparison is with that which is *not* consciousness – just as the comparison of light is with that which is not light, namely darkness. The problem is, however, that it is not so simple for us to name unequivocally that which is not consciousness. Indeed, the range of approaches to consciousness depends pivotally on our view of what exactly is *not* consciousness.

In the first sense, that which is not consciousness may be thought of as the material world of objects, both physical and biological. With this statement we are entering the discourse of philosophy. What is the relation of consciousness to these objects? In the starkest sense, either they are fundamentally distinct, as proposed by *dualists*; or they are in some sense part of the same realm of reality, as suggested by *monists*. In either case, the question we must confront concerns the *relationship* between consciousness and the material/biological realm.

Panpsychists would tend to deny the original premise in the previous paragraph, since they hold that mind is a property of the whole physical world, and is not limited only to brains, for example.[3] If mind is a property of the natural world, then its most elusive feature, consciousness, is to be explained in terms of properties of the natural world as a whole, and not simply as a product of the brain. Most people's general intuition is opposed to panpsychism; consciousness is one thing, rocks and seas are another. In making such an assertion, however, we emphasize *personal* consciousness. Perhaps the seed of consciousness is to be found in

the natural world, but the consciousness that we experience is tied specifically to the individual brain. This, in turn, raises the question of what it is about my own consciousness that seems to cut me off from the consciousness suggested in panpsychism as a property of the whole. This question begins to differentiate between traditional philosophy and the approach of mysticism and spirituality. Mystics have asserted the oneness between their own consciousness and that of the cosmos as a whole, usually in the theistic sense of a divine unity.

Spiritual traditions are generally concerned in one way or another precisely with this question about why we are not more aware of the continuity between ourselves and the greater whole. They present the practitioner with techniques and ways of living directed towards overcoming this sense of separateness.

A further possible comparison with consciousness enters at this point. Most people, with the exception of panpsychists, would view the physical world as constituting the appropriate contrast to consciousness. However, there is also a contrast 'upwards', as it were.[4] In many spiritual traditions, normal, or mundane, consciousness is viewed as being distinct from 'higher' consciousness. For example, *Vedic* teachings (the earliest stratum of Hinduism) underpin Sri Aurobindo's notion of a divine, or 'supramental' consciousness that contrasts with the 'lower' realm of mundane human consciousness (Cornelissen, 2001). Questions triggered by this comparison would tend to focus on the nature of such higher consciousness. What do those who claim to have had such experiences report, and how might such a view be incorporated into psychological and scientific perspectives on consciousness? An important question to consider in this context concerns any additional capacities claimed as being available to one who accesses, or reaches, higher levels of consciousness. Religious traditions condemn the kind of narcissism that simply wishes to revel in the *experience* of supposed higher states. Such experience is viewed as leading to some more tangible gain in terms of a divinely-sanctioned role in relation to others and the world as a whole. Experiences of self-transformation, and the acquisition of wisdom, are stages towards achieving that role. Inevitably, additional questions arise here – what exactly is meant by self-transformation, and what distinguishes wisdom from the ordinary accumulation of skills and information?

Retreating from the rarefied realms of mysticism, an additional

contrastive feature is given shape by Freud's topographical model of the mind. From the point of view of psychoanalysis, that which is not conscious is *unconscious*. Freud's distinctive input here lay in his analysis of the specific dynamics that distinguish the unconscious from the conscious system of the mind. In terms of our extended paradigm of contrastive analysis, it is the mode of *thought* that differentiates the two systems. Thinking that proceeds unconsciously (Freud's *primary process*) contrasts with conscious thought (the *secondary process*) in being irrational, symbolic and devoid of a normal time sense.

Central to both psychoanalytic and cognitive approaches to consciousness, and its contrast with the unconscious, is the nature of self. In simple terms, *I* (self) am the centre of my conscious world. And yet, paradoxically, I may feel most alive, most highly conscious perhaps, when I do not really have any reflective sense of self. How can we resolve this paradox? What role does self play in consciousness?

The disciplines of cognitive psychology and neuroscience – the areas Baars primarily had in mind in establishing his method of contrastive analysis – have seen the greatest level of research interest into consciousness over recent years. The critical question addressed by these disciplines concerns the features that differentiate unconscious from conscious processes. This question tends to focus on time-dependent sequences of operations. To take a perceptual example, various stages of brain processing must ensue before I become conscious of the external entity that is producing flickering energy patterns on my retina, or in my cochlea. Key operations are *preconscious* in the sense that they precede my becoming conscious of some entity or other. The question of interest, then, concerns the critical transition from preconscious to conscious. What is it that renders the former conscious?

In addition to such momentary transitions, our interest encompasses the larger scale *transformations* between different *states of consciousness*. This will be considered more fully in the next section. However, my survey of the key questions involved in approaching consciousness would not be complete without recognizing the need to ask about factors involved when there is a major transition from one conscious state to a different one. The concept of the 'preconscious' may be highly relevant here. For example, depth psychology suggests that preconscious processing can trigger insights leading to breakthroughs in therapy.[5] Similarly, the

creative leaps associated with moments of genius seem to entail suspension of normal conscious processing in favour of more preconscious activity. The problem is that it is unclear whether the term 'preconscious' means the same thing to cognitive scientists as it does to depth psychologists.

Problems of terminology haunt the study of consciousness. In the first place, the term 'consciousness' itself carries diverse meanings, thus muddying the clarity of analysis. Second, we have this problem of the 'preconscious'. In the terminology of cognitive neuroscience, processes are deemed preconscious during a brief time period prior to their reaching consciousness. In contrast to the cognitive view, the more therapeutic and spiritual branches of psychology conceive of the preconscious as a region of the mind that is largely distinct from the conscious mind. Brevity need not be a defining feature of preconscious processing. An idea may be processed 'preconsciously' even for a prolonged period. The idea is being formulated, as it were, at the margins of the mind.

For therapeutic and spiritual psychology, then, processes that are preconscious are viewed as taking place beyond the focal conscious region of the mind. They involve images, memories and thoughts which do not achieve full consciousness but are nevertheless not totally outside consciousness. James (1890/1950) seems to have had such processes in mind when writing of the 'fringe of relations' that surrounds a state of consciousness. The fringe concerns features of consciously perceived words or images that do not themselves enter directly into consciousness. These fringe features nevertheless contribute significantly to our comprehension of the words or images themselves (Mangam, 1993; Weinberger, 2000). In his later work analysing religious experience, James (1902/1960) refers to the 'transmarginal or subliminal region' (p. 462), akin to his earlier notion of the 'fringe', as being central to the kinds of transformations seen in conversion or mystical states. Mavromatis (1987) relates fringe consciousness to that state between waking and sleep known as *hypnagogia*, during which imagery is pronounced. More recently, Revonsuo *et al.* (2000) introduce the term 'peripheral consciousness' to refer to subjective experience on the borderline between the fully conscious and the nonconscious.

There is no shortage of labels for this 'twilight' conscious state. Neither is there a shortage of claims made for the role it may play in major transformations, whether they are therapeutic, spiritual

or creative. But specifying what exactly characterizes the state is not so straightforward. Why is psychological and spiritual transformation dependent on the 'dreamy subliminal', to use another of James' terms?

The major premise of this book is that an integrative approach to consciousness is critical for answering these kinds of questions. In the case of the preconscious, for example, different specialist areas can contribute to a broad understanding that will be richer than a view deriving from any one area in isolation. As I shall elaborate, the insights from cognitive neuroscience into the nature of preconscious processing can, for example, advance our understanding of transformative mystical techniques. Contemporary mysticism is enriched when the use of millennia-old transformational techniques is grounded in sound data gleaned through scientific study. But as this book will illustrate, there is also an important influence in the other direction. Interpretation of scientific data can be enhanced when viewed through a lens provided by introspective traditions.

In summary, beyond the specific questions that we seek to answer, there is one question that characterizes the value of approaching consciousness studies as a unitary discipline. What do the insights from different areas of inquiry lend to each other in advancing our quest to understand consciousness and to enrich our lives?

The significance of transpersonal psychology

> Let empiricism once become associated with religion, as hitherto, through some strange misunderstanding, it has been associated with irreligion, and I believe that a new era of religion as well as of philosophy will be ready to begin.
>
> (James, 1909/1977, p. 142)

There are two faces to transpersonal psychology. One is succinctly characterized by Parsons' phrase, 'Psychology *as* religion' (Parsons, 1999, p. 12). This face speaks to those who seek the kind of transformational paths that have traditionally been the domain of the religions, and more especially of religious mysticism. Transpersonal psychology draws on the practices developed within spiritual traditions, and attempts to classify both the practices and

their effects on the individual. It further classifies the levels of being, or of consciousness, which are encountered as the individual progresses on a path of transformation. Its strength lies in the richness of the interconnections it has established between diverse systems of thought which have historically addressed the human predicament and our spiritual potential. Its appeal lies in its attempts to transcend the cultural boundaries between all the various spiritual maps on which it is able to draw. It presents a 'way for today' – an integrated paradigm of transcendence for a world desperate to honour pluralism.

This first face is characteristically oriented towards change. Its practitioners engage with psycho-spiritual techniques in order to achieve some degree of transformation. Delineation of the levels of consciousness that might be encountered is largely presented for reasons of guidance. Just as the great spiritual traditions of the past presented stories and images depicting the ways to freedom and enlightenment, so the speculative systems of transpersonal psychology may be viewed as maps of the 'terrain' likely to be encountered on the journey to higher realization.

The other face of transpersonal psychology is oriented towards scientific psychology. It shares with the latter the goal of explaining processes and states of the mind. This second face seeks to understand features of the everyday mental landscape, including perception, emotion, memory, thinking and the construction of identity. It is not restricted to those states and processes which are related directly to 'transpersonal experiences', and, accordingly, shares common ground with cognitive neuroscience and other branches of psychology.[6]

Many works within transpersonal psychology ignore, or make only fleeting reference to, this second face. Transformative experience and higher states of knowing are the primary issues of interest. Conversely, studies into consciousness from cognitive and neuroscientific perspectives rarely have any place for an input from a transpersonal vision. Never the twain shall meet! I believe this to be an unfortunate state of affairs, which is to the detriment of progress in the understanding of consciousness. As the following pages will illustrate, the common ground between a transpersonal approach and the approaches associated with more mainstream areas of psychology is important since it enables generative dialogue between the overtly spiritual, and the mundane, study of consciousness. It provides the critical bridge between approaches

which otherwise can appear irreconcilable due to differences in their goals and the scale of their ambition.

The distinctive element that sets this second face of transpersonal psychology apart from the other branches of psychology is its implicit relation to the transformational imperative of the first face. A transpersonal approach to the study of perception, for example, is distinct from that of cognitive neuroscience in its goal of understanding the elements of transformation. What is it about the processes of perception that limits individuals in their vision of the world? How might these processes be transformed, leading to an enhanced level of functioning? In short, the second face of transpersonal psychology is that branch of psychology that studies processes of the mind within the overall context of the transformational imperative.

Seen in this light, transpersonal psychology is heir to the sacred sciences of the soul (Nasr, 1993). Islamic, or Vedic, science, for example, studied the nature of mind in all its forms because *self-knowledge is intrinsically transformational*. Knowledge of the mundane is the opening to any interest in higher realms of consciousness. And this is so for two related reasons. First, if transformation is the goal, you can only start from where you stand. Buddhist wisdom literature, for example, analyses the mind in intricate detail specifically in order that those who study it might recognize features which lock them into limiting states. Recognition is the first step towards intervention and self-mastery.

Second, in the classical statement of esoteric systems of thought, the 'microcosm' reflects the 'macrocosm'. Or, as Corbin (1958/1969) expresses it in his study of Sufism, 'to everything that is apparent, literal, external, exoteric ... there corresponds something hidden, spiritual, internal, esoteric' (p. 78). As he remarks, this concept is the 'central postulate of esotericism and esoteric hermeneutics'. In the words of the *Zohar*:

> The Holy One, blessed be He ... made this world corresponding to the world above, and everything which is above has its counterpart here below, and everything here below has its counterpart in the sea; and yet all constitutes a unity.
>
> (*Zohar* 2:20a)

The individual – as microcosm – 'is made on the model of the world above' (*Zohar* 1:186b). The correspondence extends further: even

God and man are isomorphic (Shokek, 2001), in that they 'share the same structure and are logically equivalent' (p. 6). According to this system of thought, the dynamics of the soul are mirrored in the structure and functions of the bodily organs: 'Man's soul can be known only through the organs of the body, which are the levels that perform the work of the soul. Consequently, it is both known and unknown' (*Zohar* 1:103b).

In these terms, one studies the 'organs' in order to know the 'soul'. Stripped of specific theistic content, we could read these passages as suggesting, in our present context, that the mundane realm of human mental processes operates by means of the same principles as those which operate at higher levels. Knowledge of neural and mundane psychological processes may be seen as transformational because, through this micro-macrocosmic parallelism, it gives insight into the realm of the soul. Brain function, for example, might be reflective of the dynamics of the psyche, or even of intra-divine processes. Similarly, study of the principles by which the mundane ego operates may give insight into the nature of a supposed higher self. If the 'lower' recapitulates the 'higher', then study of the 'lower' reveals the ways of the 'higher'.

Immediately, we confront terms which strain at the leash of a scientific worldview – what is the ontological status of a supposed 'higher self'; why posit differing levels, and levels of what, exactly? Is not the brain the *cause* of any dynamics of the psyche? These questions will be addressed in subsequent sections of this chapter. For now I wish to emphasize the potential for dialogue between disciplines focusing on the study of the mind from different perspectives. The central consideration is whether study of the key organizing principles at work in the mundane function of the brain can seed our understanding of deeper, transformational functions, and vice versa.

I can only give hints of an answer here, for the principles need to be studied in detail, as they will be in subsequent chapters. In brief, and by way of example, the approach of neurophysiology suggests two major operational features that are critical for the study of consciousness: *binding* and *re-entrance*. Consideration of both features will reveal correspondences with principles described in mystical systems of thought as pertaining to the relationship between human and divine levels of being. As will be analysed in more detail in Chapter 4, binding refers to the mechanisms employed by the brain for integrating neural responses. These

mechanisms establish coherence amongst the oscillating patterns of neural responses. For example, they ensure that the brain's responses to individual elements in a visual scene are organized globally in order to enable recognition. In short, binding is critical to the brain's ability to signal the presence of meaningful objects. Re-entrance refers to neural pathways originating in 'higher' brain areas, which course back to influence processing in 'lower' areas. Re-entrance plays a critical role in binding, since it enables higher-level analysis of perceptual properties to bring about appropriate ordering of lower-level systems. Without re-entrance, coherence in neural firing patterns could not develop.

Familiarity with both the physiological processes and the numerous mystical writings that bear on analogous themes suggests that binding and re-entrance may correspond to the mystical ideas of *unification* and the *reflexivity* of consciousness, respectively. Unifications are meditative practices directed towards integration of the mind and its relation to the divine. The goal of all mysticism entails recognition and realization of the unity said to lie behind all manifestation. Practices such as meditation attempt to achieve resonant, harmonious integration across a hierarchy of bodily, psychological and transcendent levels. While neurophysiological research points to the functional value of coherence in neural systems, insight gleaned through meditative unification can suggest the mystical value of coherence throughout physical, psychological and spiritual realms.

In Jewish mysticism, practices of unification take on eschatological significance, for ultimately 'there shall be perfection above and below, and all worlds shall be united in one bond' (Scholem, 1941/1961, p. 233). The Godhead is viewed as the object of these practices for it is, as it were, in need of the re-integration that can be achieved through human agency.[7]

> The drawing out of divine influence is connected with the mystery of unification, which, according to the Kabbalah, is the most important activity that men can engender within the Godhead.
>
> (Tishby 1949/1989, p. 948)

Tishby cites a source that well conveys the cosmic significance of unification:

> The righteous and the pious and the men who perform great deeds pray on their own and they unify the great name [of God]

> and tend the fire of the altar that is in their hearts. Then, out of pure thought, all the *sefirot* [divine emanations] are unified and are linked one to another until they extend to the source of the flame whose height is infinite.
>
> (p. 949)

What the neurones are doing at one level – binding parts into a meaningful whole – the soul, according to this scheme, achieves on the higher plane of emanation.

The neurophysiological concept of re-entrance relates to the more cosmic notion of *reflexivity*. Reflexivity is a keynote theme of much mystical literature, and suggests that the goal of spiritual practice is to effect a clear reflection back to the source of consciousness. Lao Tzu asks in the *Tao Te Ching*, 'Can you polish your mysterious mirror and leave no blemish?' (Lao Tzu, 1963, p. 66). The Islamic philosopher and mystic, Ibn Arabi, similarly uses the metaphor of the polished mirror to convey the idea of the meeting between the image of God and the mystic in the moment of mystical union. He writes:

> And when the real ... had brought into being
> the world entire
> as a shaped form
> without spirit
> the world was like an unpolished mirror
> ... [W]hat was required
> was the polishing of the mirror
> that is the world
> And Adam was that very polishing
> of that mirror....
>
> (Cited in Sells, 1994, pp. 72–3)

As Sells explains, the 'polishing of the mirror' is achieved by reaching completeness, at which time the ego is transcended and there is nothing to obscure the purity of divine reflection. Adam represents the paradigm of this state of purity.

As we will discuss in Chapter 4, consciousness seems to be dependent on re-entrant neural systems. In cerebral terms, neural activity from 'lower' to 'higher' regions functions to trigger the re-entrant pathways, which engender an alignment between the 'higher' and 'lower' regions, eventuating in consciousness.

Mystical perspectives on reflexivity suggest an analogous sequence. The human ('lower') effects a link to the divine ('higher'), bringing about an alignment between the two, as symbolized in the idea of consciousness as mirror for divine reflection.

While such parallels may seem tenuous at this juncture, my claim is simply that they merit further study. Such study represents the subtext of this book. My interest lies in the various approaches that have been adopted for the study of consciousness, and the extent to which they interrelate with each other and may be advancing towards a richer picture of the nature of consciousness. It is worth emphasizing at the outset that the vision of transpersonal psychology which ensues from this examination can be regarded as integrally enmeshed with all systems of psychology. According to this vision, transpersonal psychology is not to be seen as an additional layer of some kind of investigative cake, a layer that can readily be ignored when asking questions about the mechanisms of consciousness. On the contrary, it has a major contribution to make at all levels. Perhaps, to extend the metaphor, it might be thought of as the raising agent for the whole cake.

In this connection, Ferrer (2000, 2002) has made the critical point that transpersonal theory, if it is to be genuinely contiguous with the great spiritual traditions, should be concerned with ways of *knowing*, not *experiencing*. He rightly observes that 'the aim of most contemplative traditions is not "to have experiences," but rather to realize and participate in special states of discernment' (2000, p. 232). Were the subject matter of transpersonal psychology restricted to human experience, with the discipline directing itself only to the phenomenological description and classification of states of being, then it would have no role in relation to the more physically-oriented and functional approaches to consciousness. However, to the extent that its focus is *knowledge*, pertaining to the *how* as well as the *why* of systems in action, both human and non-human, it can be seen to have a bearing on all approaches to consciousness.

The point is well exemplified by a further set of correspondences, this time between some recent theorizing in neuroscience and the Buddhist understanding of mental processes. Zeki (2003) reports that his studies of the neurophysiology of vision lead him to view the visual system as comprising a series of functional nodes, each of which has a distinctive conscious correlate. He argues that the commonly-held view of consciousness as single and

unified is mistaken. Instead, visual consciousness is comprised, as he puts it, of 'many microconsciousnesses'. Zeki and Bartels (1999) have commented that many find these conclusions difficult to accept on account of the widespread belief in the unity of consciousness. However, to anyone with more than a fleeting knowledge of Buddhism, this conclusion accords strikingly with Buddhist thought. A transpersonal perspective, drawing on such spiritual tradition, may have a role to play in promoting the kind of view that Zeki has articulated.

A sophisticated analysis of perception is presented in the Abhidhamma of the Theravada school of Buddhism, a section of the *Pali* canon dealing with science and metaphysics. This tradition holds that the seemingly unbroken processes of perception and thought mask their true character, which entails a series of discrete 'moments'. In each moment, a distinctive consciousness arises, is briefly sustained, and decays (Lancaster, 1997a, 1997b). The eleventh-century *Summary of Abhidhamma* ('Abhidhammattha-Sangaha') states that when an object stimulates the visual system:

> [First] consciousness of the kind that apprehends sensations ... rises and ceases. Immediately after this there rise and cease in order – visual consciousness, seeing just that visible object; recipient consciousness receiving it; investigating consciousness investigating it; determining consciousness determining it.
>
> (Aung, 1910/1972, p. 126)

I shall leave for the present a more detailed consideration of the precise function of each of these moments, or stages, in the perceptual process. Suffice it to state that these 'consciousnesses' are all understood as arising prior to the final registering of a meaningful perceptual image, and would not be detectable to an untrained mind (untrained, that is, in the discipline of introspection through meditation). Indeed, according to Collins (1982), the Buddhist commentators calculated a figure of 1/74,642 seconds per moment of consciousness! Whatever credence we give to such a figure,[8] it is clear that the moments could realistically be equated with the kinds of preliminary analysis that Zeki ascribes to the functional nodes in the visual system. The point for our purposes is that the Buddhist position asserts categorically that individual consciousnesses are associated with these moments, and therefore Zeki's term 'microconsciousnesses' accords fully with the Buddhist

analysis. Rhys Davids' term for the Buddhist concept here, 'flashes of consciousness' (1914, p. 179), possibly captures the parallel more effectively.

It should thus be evident that a two-way dialogue between neuroscience and Buddhist introspective psychology may prove fruitful in specifying the relationship between perceptual processes and consciousness. Neuroscientists sceptical of Zeki's departure from an engrained way of thinking about consciousness (as being one and undivided) could gain from the realization that a sophisticated introspective analysis arrived at such a view hundreds of years ago. And in the other direction, modern Buddhists interested in the specification of 'moments' in thought and perceptual processes could learn enormously from the rich understanding of visual processing that neuroscience has developed. In general, as Hunt (1984, 1985) has argued, the study of states of mind associated with mysticism may be invaluable as a source of understanding which the more 'objective' methods of cognitive neuroscience cannot provide.

More fundamentally, the common ground here illustrates the ramifications of a transformational perspective to the seemingly most scientific of levels of explanatory analysis. As Goleman (1991) reminds us, Buddhism views the systematic study of the mind and its workings as being at the heart of spiritual life. A level of awareness capable of detecting relatively early stages in perceptual processing is essential if one is to transcend the possibly negative, and therefore prejudicial, labelling of sensory images. Without such awareness, one is effectively victim to seemingly automatic, perceptual processes. Writing of one of the early stages in the perceptual process, a modern commentator on the Abhidhamma system conveys the point:

> [T]here appears to be a choice or free will. If the object is determined wrongly on the false data as being permanent, of the nature of a self, with attachment or ill-will, then the ... [later] thoughts will be immoral. If the object is determined correctly as being impermanent, without self, with notions of renunciation, love and kindness, then the thoughts that follow will be moral.
>
> (Jayasuriya, 1963, p. 43)

A transpersonal perspective brings a sense of meaning and purpose into the otherwise cold world of cognitive neuroscience's picture of

the mind. Varela, Thompson and Rosch (1991) go so far as to assert that the dialogue between Buddhism and cognitive science can play a key part in the challenge 'to build and dwell in a planetary world' (p. 254). Transpersonal psychology, which is the branch of psychology most equipped to bring forward such discussions of Buddhist and other spiritual insights, should be seen as an essential component of the quest to understand consciousness at all levels. Not only does it contribute to a systematic formulation of the issues involved in transformations of consciousness (first face, discussed above), it also provides models and explanatory frameworks which may have significant bearing on the interpretation of data available from neuroscience, cognitive science and depth psychology. For these reasons, transpersonal psychology gains a scholarly entrance into the 'no man's land' (Rosch, 2000) between science and the world's meditative and contemplative traditions. As Rosch notes, both these great areas of human endeavour have developed rigorous investigative techniques and rules for constructing theories about ourselves and our world. The challenge is that of yoking the two in our quest for consciousness.

Levels of explanation

The three realms of inquiry mentioned above – neuroscience, cognitive science and depth psychology – together with that associated with spirituality and mysticism, constitute the four approaches to consciousness on which I shall be focusing. I do not claim that these approaches are exclusive, and indeed we shall encounter others (such as those deriving from modern physics and evolutionary biology). Nevertheless, these four generally cover the range of methods and explanatory frameworks that bear significantly on the challenge with which consciousness presents us.

In using the phrase 'Approaches to Consciousness' in the title of this book, I am making reference to a number of meanings. The term 'approach' has the general sense of moving towards something, and in our present context, conveys the idea that we have been moving towards consciousness as a major topic of study over the past 30 years or so. A second connotation of the phrase 'approaches to consciousness' is also significant. The phrase conveys the sense of moving inwardly to explore one's own consciousness. It is noteworthy that both these connotations have been evident in the resurgence of

interest in consciousness studies over recent times. The academic interest in consciousness has not developed independently of the more general shift in society towards inward exploration. Cultural change plays a huge role in setting the parameters through which academic inquiry operates. It not only has a bearing on relative intangibles, such as the general worldview, but also impacts on issues such as financial and institutional backing for the research projects that shape the progress of science.

Both these senses of the book's title are significant. However, I am primarily using the term 'approach' to emphasize two critical issues in the study of consciousness. First, there is the issue of methodology, which determines both the kinds of research questions that can be asked and the form of conclusions likely to be drawn from them. Second, a given 'approach' entails the use of specific terms relating to the kinds of structures and processes which are employed in attempting to explain phenomena. Table 1.1 specifies how these two issues differ across the four areas of inquiry specified above. As will be seen from the table, not only do the key methods differ across the areas but also the apposite terms for explanation differ, giving rise to what is best described as *explanatory pluralism* (Looren de Jong, 2001). Disagreements between researchers interested in the nature of consciousness arise largely through differences in their respective views of what constitutes appropriate explanatory terms. Table 1.1 makes an invaluable starting point for our inquiry since it maps the terrain, clearing the way for meaningful dialogue.

The areas of inquiry can be seen to correspond to a hierarchy of *levels*. The levels are essentially defined by the scale of organization implied in the terms adopted for explanation. The upper three levels employ non-physical explanatory concepts, and, as indicated in the table, correspond to differing types of experiences. For the moment I will leave open the question of the 'reality' of the explanatory concepts. We should simply acknowledge the diversity in our approach to explanation. An explanation for some phenomenon in terms of neural communication is clearly at a different level from an explanation couched in terms of contact with a Jungian archetype, or in terms of some kind of transcendent presence. That a person may have an experience of 'God' is beyond dispute. What must remain open is whether the appropriate route to explanation involves supernatural realms (Level 1) or some form of unusual neural activity (Level 4).

Related to the drive towards explanation is the need to understand *causation*.

Our primary interest lies with these two terms. What *causes* consciousness and how might we *explain* consciousness? Logically the terms are reciprocal: if I could demonstrate that region X in the brain is the cause of consciousness, then I would have effectively succeeded in explaining consciousness. In reality, we have no definitive evidence of the causation of consciousness, which leads some to suggest that consciousness is a primary quality of the universe; it is not *caused*, it simply *is* (Lancaster, 1991). Just as we are unable to explain what *caused* matter to exist, or life to originate, so the causation of consciousness must remain mysterious. However, as in these other cases, the ultimate mystery need not obscure our interest in studying properties of the phenomenon. We may, accordingly, seek explanations and causes for features of conscious experience.

Take the example of mystical experience. A whole area of inquiry – *neurotheology* (d'Aquili and Newberg, 1999; Newberg, d'Aquili and Rause, 2001) – has recently sprung up, which seeks to specify the brain activity accompanying religious and mystical states. Newberg defines neurotheology as that field of study which brings the sciences of neurophysiology and neuropsychology to bear on matters of religious experience and theology. Neuroscience can certainly demonstrate that the activity of certain brain systems is altered whilst an individual is meditating, for example. The question is what implications do such observations carry? Are the altered conditions the *cause* of the meditative experience, or merely a *correlate* of that experience? And reciprocally, do such observations provide us with the *explanation* of such experience?

This is where the levels of Table 1.1 come in. The following outline briefly sketches examples of the kinds of explanations for spiritual states that we find at each of the levels.

Spiritual/mystical

Throughout the world's religious traditions, discussions of the highest mystical states have invariably drawn on an understanding of God and other transcendent concepts, such as levels of the soul.[9] As far as explanation is concerned, the distinctive features of mystical experience are *explained* to the satisfaction of those sharing the Level 4 outlook by suggesting that they arise through union

TABLE 1.1 Four levels of inquiry into consciousness

Approach	Methods	Explanatory structures/ processes	Experiential equivalents
Level 4: Spiritual/ mystical	Access to revelation Contemplative and ritual practices • Meditation • Prophecy • Analysis of sacred language	Transcendent systems/ quantal systems • Higher self/soul etc. • Ground of being • Pure consciousness • Emanated principles • Godhead	Experience of • 'emptiness' • God/'All-Self'/ observing self • pure consciousness • the numinous
Level 3: Depth-psychological	Hermeneutics • Analysis of syndromes associated with psychic damage • Etymology and other analyses of linguistic meaning • Analysis of myth	Systems of the psyche • Self/ego • Conscious vs unconscious processes • Dynamic structure of the unconscious: complexes, archetypes, symbols • Affective states • Meaning-making processes	Experience of • the numinous • moments of significance • 'deep' selfhood/ archetypal self • 'therapeutic' meaning – the meaning behind overt images and words, etc.

TABLE 1.1 continued

Approach	Methods	Explanatory structures/ processes	Experiential equivalents
Level 2: Cognitive and neuro-psychological	Scientific positivism • Psychophysics: experimental study of experience • Analysis of syndromes associated with brain damage • Computer modelling	Cognitive systems/ informational systems • Self re *explicit* processing • Conscious vs nonconscious processes • Representations (schemata) • Affective states • Functional devices • IT metaphors	Experience of • 'I' • everyday meaning in memories, perceptions, emotions and thoughts • selfhood
Level 1: Neuro-physiological	Scientific positivism • Brain imaging • Electrophysiological recording • Neurochemistry • High-energy physics	Neural systems/quantal systems • Brain centre(s) for consciousness • Patterns of neural communication • Re-entrant systems (efferent/afferent) • Timing of neural responses • Sub-neuronal activity	

with God, or with the 'Absolute'. More than this, the mystical state is placed in the context of a shared and meaningful system of thought, allowing communication between fellows. Subtle distinctions between states may be recognized in the shared Level 4 outlook, a feature which forms the basis of most esoteric and mystical teaching systems. All this is lost when explanations are given solely in terms of the other, lower levels.

Consider the following example. Adapting Aristotelian and Neoplatonic terminology, Rabbi Isaac of Acre (late thirteenth to mid-fourteenth century) writes of the ascent to unity with the divine:

> If the soul of the isolated person [i.e., in isolated devotion] deserves to apprehend and cleave to the Passive Intellect, it is called Passive Intellect ... and likewise when it ascends further and cleaves to the Acquired Intellect, it becomes the Acquired Intellect; and if it merited to cleave to the Active Intellect, then it itself [becomes] Active Intellect; and if you shall deserve and cleave to the Divine Intellect, happy are you because you have returned to your source and root.
>
> (Cited in Idel, 1988a, p.133)

Each of these different terms for the intellect, that is, 'Passive', 'Acquired', 'Active', conveyed a distinctive meaning to the mediaeval mind, giving rise to a shared appreciation of Rabbi Isaac's schematization of the stages entailed in reaching the unitive state. Later, in Chapter 7, I will consider how we might understand the *Active Intellect* in psychological terms that are meaningful today. But, for the present, I wish to emphasize that the state was *explained* not only by reference to the encounter that seems to define it, but also in terms of what was involved in reaching it. The terms had *currency* and *explanatory value* for those sharing the perspective.

Depth-psychological

Whether conceived in negative or positive terms, the approach of depth psychology understands spiritual states as involving complexes of the unconscious. For Freud, the 'oceanic feeling', as he termed the oneness associated with mysticism, resulted from a regression to an infantile, narcissistic state prior to the ego's

detaching itself from the world around it (Freud, 1930/1961; see also Parsons, 1999). Moreover, Freud famously saw the *Oedipus complex* as the explanation for other, more formed, spiritual states. Although his attitude to religious and mystical states was distinct from that of Freud, Jung's explanations are similarly couched in terms of psychodynamic complexes. He posited a *transcendent function* to the psyche, which underpins the quest for higher integration. Critical to this quest is the encounter with archetypal complexes, which gives rise to the kinds of numinous feelings (Otto, 1917/1923) experienced in spiritual states. For Jung, then, as for Freud, when seeking a meaningful *explanation* of such states, we should look into the organization of the psyche.

Cognitive

A central theme in cognitive discussions of consciousness is representation, by which is meant the ability of a system to constitute itself (or a subset of itself) to correspond in some way to something other than itself. Following Hebb's classic formulation of *cell assemblies* (Hebb, 1949), we may conceive of neuronal systems as dynamically forming into integrated groupings, each of which represents some entity in the world we experience. It has been proposed that one such representation, that of *self*, plays a critical role in determining what we are conscious of (Kihlstrom, 1993; Lancaster, 1991, 1993b; Metzinger, 2000, 2003).[10] I shall discuss these ideas more fully later in Chapter 5, but for now we need to recognize how such thinking can offer explanations of mystical states (Blackmore, 1986; Brown, 1977; Claxton, 1996; Lancaster, 1997a, 1997b, 2000c). In brief, a mystical state is thought to arise following attenuation of the self-representation together with a concomitant shift towards normally preconscious processes. Again, details of the argument will be explored later, but this outline should illustrate the way in which an *explanation* of a mystical state can be couched in terms that are meaningful at the cognitive level.

Neurophysiological

Whilst the above cognitive approach to explanation makes reference to neuronal systems, its key terms of reference involve terms such as 'representation' and 'self', the meaning of which is not

advanced by further neuroscientific specification. Level 1, by contrast, is characterized by the attempt to arrive at such specification. D'Aquili and Newberg (1993) elaborate the presumed neural basis of different kinds of spiritual states. For example, passive meditation is thought to trigger intense stimulation of structures in the hypothalamus and medial forebrain bundle, which is a large fibre tract projecting from the midbrain to many regions of the forebrain. At the same time there is a total deafferentation (that is, loss of functional input) to the left and right posterior-superior parietal lobes. The authors 'believe that this results in the subject's attainment of a state of rapturous transcendence and absolute wholeness which carries such overwhelming power and strength with it that the subject has the sense of experiencing absolute reality' (p. 189). Their conviction is that, 'the principle of selective stimulation and deafferentation of various brain structures accompanied by various patterns and degrees of intensity of limbic stimulation may hold the key to explaining most, if not all, religious experiences' (p. 196). The emphasis here is clearly on neural, not cognitive (and certainly not psychodynamic) systems.

These four approaches illustrate the difference between the idea of explanation and that of reductive causation. We can explain spiritual or mystical experience at any of the levels (that is, in terms of union with the Active Intellect; activation of one or more archetype; reorganization of cognitive representations; or neural systems functioning in distinctive ways), yet the predominant scientific view would hold that only the last has the ring of authenticity about it. And that is because it indicates the material cause of the experience. The focus of debate on consciousness is essentially concerned with the legitimacy of positing forms of causation other than this reductive one (Wallace, 2000).

It should be understood that, crucially, there are two senses in which we can explain a given phenomenon. First, we can explain it in terms of constructs that convey an adequate picture for us to gain a meaningful view of the phenomenon. Second, we can explain it in terms of the real events causing it. The critical issue revolves around the meaning of the tiny word '*real*'. If, for example, I were asked to explain some event occurring in a computer game, it would probably be of little help to start discoursing on the electronic phenomena in some tiny lump of silicon. Nor, I suspect, would an elaboration of the subtleties of *machine code* (or whatever the intricacies of the

software are) be what my questioner was looking for. Perhaps something along the lines of, 'the curtain concealed an enemy alien who fired a laser gun while you were examining the mysterious scroll,' might hit the mark! As will be evident, the 'curtain', 'scroll' and so on, are not real, but constitute the appropriate explanatory terms in this case.

This example serves to illustrate the way in which a level of explanation may be appropriate even though not couched in terms of the generative cause. There is, of course, an important distinction between the computer game example and the case of consciousness. In the former we know that the images on the screen are truly caused by electronic events, because we built it that way. The final and complete explanation of the game is indeed at an electronic level. We have an *a priori* reason for understanding causation. In the case of consciousness, on the other hand, we have no such *a priori* basis for ascribing causation. In this case, therefore, to infer that the final and complete cause of consciousness lies at the level of bioelectrical events in the brain (paralleling the computer) is not legitimate in the way that it is in the case of the computer game.

Ontology and epistemology

The most challenging consideration in this discussion of causation and explanation concerns the reality of the levels indicated in Table 1.1. It is perfectly evident that the objects and beings in the computer game are not real in a fundamental sense. They clearly have value in a semantic sense, and they can *seem* all too real when the player is engaged in the game. But they have no ontological status. Is this also true of the levels in Table 1.1? Our understanding of causation in relation to consciousness will be critically influenced by our answer to this question.

Ontology refers to the status of entities in terms of their essential existence, or being. In general, if I state that some object – the table in front of me, for example – is *real*, I mean that it exists as an object in the physical world independently of me. This is an ontological statement. If I were to state that consciousness, or the realm of mind, is real in the sense that it exists separately from the physical realm – separate from the physical matter of the brain, for example – then I am an ontological dualist. This position is

famously associated with the philosophy of Descartes, who conceived of mind and matter as essentially different 'stuffs'.

In relation to Table 1.1 we may keep an open mind about ontology. For example, whether or not the Godhead at Level 1 really exists, the need for explanations of phenomena in spiritual or mystical terms may still hold, in much the same way as we need explanations of the computer game in terms of 'curtains' or 'mysterious scrolls'. To understand this, we need to introduce a second technical term, *epistemology*. Epistemology refers to the ways in which we generate knowledge and understanding. An epistemological dualist, then, holds that the mind, or consciousness, can be known in two distinctly separate ways. It can be known from within, that is, as *experience*, or it can be known from the outside by studying its correlates in the appropriate physical realm – generally, the brain, but also including wider spheres such as the environment (Abram, 1996). Whilst epistemological dualists might argue that these two routes to knowing the nature of consciousness possess quite distinct properties and dynamics, they do not claim that they depict two separate realities (Bogen, 1998). The critical claim is simply that experiential knowledge will not be understood from without, and that, in any approach to consciousness, such knowledge is an indispensable adjunct to data generated by physical science (Varela and Shear, 1999; Velmans, 2000).

Table 1.1 implies an extension of this principle to other levels. We might contend, for example, that there are distinctive properties associated with experience gained at the spiritual/mystical level, which cannot be known from any of the other levels. Or, we might take the Freudian line that religious experience is best explained in terms of an unconscious complex. This is not to imply that the complex exists (ontologically) apart from Level 1; it is simply to assert that any meaningful insight into the issue under examination depends on explication of the complex in its own terms.[11] As Freud wrote, 'The theoretical structure of psychoanalysis that we have created is in truth a superstructure, which will one day have to be set upon its organic foundation. But we are still ignorant of this' (1916–17/1963, p. 389).

When it comes to *causation*, the two kinds of explanation will give radically different pictures. If we adopt a belief that there are *ontological differences* between the levels indicated in Table 1.1, then it follows that particular kinds of experience could be caused by entities existing at one or more levels. A mystical experience

may be caused by contact with some form of higher being, such as an angel or God, for example. If, by contrast, a merely *epistemological* view of the differences between levels were assumed, then most would argue for physical causation. On this view, while recognizing that it may be valuable to discuss mystical experience in terms of angels or God, most would assign its cause to activity of the brain alone.

It is possible that entities at all levels are ontologically real. Not only are neurones real, but so also are the cognitive self and other representations, as also are archetypes and/or other unconscious complexes and the ground of being itself. Unlike dualism, which restricts its reference to the two realms of mind and body, we have here a view which might be named *ontological pluralism*, suggesting that reality consists of a hierarchy of ontologically distinct levels.

Given that dualism is criticized on the grounds that it posits the existence of an indemonstrable realm (that of 'thinking stuff'), it may be difficult to justify this extreme of ontological pluralism. Nevertheless, the question at issue concerns the grounds on which we decide that any entity constitutes an ontological reality. A view widely held today asserts that only the entities studied by physics are the basic elements of the real, a viewpoint known as *materialism*. Closely related to this view is that of *physicalism*, which asserts that the mind is determined solely by causes which are physical in nature. These two perspectives differ subtly in that a materialist denies the existence of any reality other than the physical, whereas a physicalist asserts only that we need consider no reality other than the physical in attempting to understand all features of the mind. A physicalist can remain agnostic about the possible reality of non-material entities such as a soul. It seems to me that some hair-splitting is going on here, since it is hard to imagine what a 'soul' would be were it bereft of connection to the mind.

The question is, what grounds are there for adhering to the ontology of materialism or physicalism? The post-enlightenment worldview, associated with the successes of science, holds that physical things are real, whilst the status of cognitive, archetypal or mystical entities is, at best, open to doubt. Neurones, and other structures of the brain, are seen as real because they are constituted by the entities studied by physics. 'Selves' and other psychodynamic complexes are not so constituted, and therefore have been

seen as having epistemological status only. Yet, as Radder (2001) points out, we are on shaky ground if we suggest that physics itself embraces a single unified ontology. Not only has the ontology embraced by physics changed over time, but also different physicists currently hold a range of conflicting ontologies. Writing of quantum mechanics, the root of almost all contemporary physics, Radder notes that 'The ontology of this theory – what it tells us about the basic structure of the world – has been and still is the subject of a variety of different, and often conflicting, interpretations' (p. 778). For example, some contemporary ontologies in physics support the notion of action at a distance, whilst others do not, and some advocate a role for the consciousness of the observer in determining the values of physical properties to be measured, whilst, again, some do not. Radder is led to conclude that:

> There is no reason at all why psychologists should endorse physicalism. If they do, they subscribe either to an ontology that has no positively specifiable content or to a doctrine that changes with every fundamental change in physics. Moreover, if physicalists rely on current, quantum-mechanical physics, they may well end up adhering to an ontology that is not physicalist in the common sense of exclusively referring to material objects that move, and act causally, in space and time.
>
> (Radder, 2001, p. 781)

There are, of course, a variety of ontologies that could be squared with Table 1.1. The ontological pluralist view mentioned above could assert four separate levels of reality, or it could accommodate the notion that any three are genuinely distinct. In line with threefold pluralism, for example, we might suggest that *neural* (as a subset of the physical), *psychological* (that is, combining Levels 2 and 3) and *transcendent* constitute the three ontologically distinct realms of our cosmos. According to this approach, the reason for separating Levels 2 and 3 would not be ontological but epistemological – some psychological structures are best understood in cognitive terms and others are better explicated in psychodynamic terms. Traditional dualism would see a division between Level 1 and all the higher levels. An alternative position, one in accordance with a number of mystical traditions, would assert that none of the levels are real as such, but that together they constitute veils of illusion progressively surrounding the only reality, that of spirit, which courses through all of them.

The alternatives are many, and the evidence by means of which we might choose between them seems inadequate. My interest for the present simply lies in examining the implications of the foregoing for our understanding of *causation*. The viewpoint of *materialism* allows for *upward causation* only. Any experience for which the terms employed in Levels 2, 3 or 4 may be epistemologically useful, is understood as having been caused by the only real events, namely those of Level 1. Alternatively, a viewpoint ascribing some form of existence to the other levels (ontological dualism or pluralism) could raise the additional possibility of *downward causation*. The brain events that accompany an experience would then be construed as having been caused by the experience. Downward causation can carry the added implication that a system specified at lower levels may have been structured in order to fulfil a function in relation to a reality of a higher kind.[12]

Upward causation gives rise to *reductive explanations*; downward causation implies *teleological explanations* (Figure 1.1).[13] The former are the stock-in-trade of traditional science. The latter rarely enter into mainstream scientific discourse. Teleological explanations sit at the fringe of 'new-paradigm science' with a view such as Goswami's that the physical brain evolved to meet the needs of spirit or consciousness to become known to itself (Goswami, 1993). Teleology is the term applying to the view that developments arise due to the purpose or design that is served by them. Teleology is exemplified by the creationist argument that the complexity in biological function is suggestive of intelligent design.

Emergentism, as advocated, for example, by Sperry (1969, 1995), suggests a species of downward causation devoid of any teleological implications. The term 'emergence' is used to suggest that properties evident at one level cannot be conceptually reduced to the structures apparent at the lower level. The paradigmatic example is that of *water*. A description of water may include terms such as colourless, wet, flowing and so on, which cannot be witnessed at the more reductive level of hydrogen and oxygen atoms. Sperry's theory may be classed as being physicalist without being materialist. He understands consciousness in physicalist terms, inasmuch as it can only come into being on account of the physical brain processes which cause it to arise. However, the theory is not materialist since consciousness is understood as bearing properties that cannot be reduced to the electro-chemical processes of the brain. Consciousness is a dynamic emergent

property of brain activity. The aspect of downward causation is seen in Sperry's argument that this emergent property has the power to direct brain activity – a process which has been labelled 'retroaction' (Bogen, 1998). In the terms of Table 1.1 such retroaction exemplifies a higher level causing a specific pattern of organization to arise at a lower level. Sperry, then, recognizes two levels, each with its own dynamics and each having causative effects on the other.

The appeal to the paradigm of water here can be slightly misleading, however. Our scientific understanding of the properties of hydrogen and oxygen atoms *does* provide a basis for explaining the macro properties of water. For example, liquidity arises by dint of the effect energy levels have on the properties of the bonds between the atoms. In contradistinction, there is *no* basis in current neuroscience for explaining how the macro properties, namely those of consciousness, arise from the known properties of neurones. Either we must take it as an act of faith that science will give us the basis for such emergence, or we must accept a materialist stance and reject emergence. The alternative to these viewpoints is the proposition that consciousness is not dependent solely on the physical activity of the brain. It may be ontologically separate (*dualism* or *ontological pluralism*); it may be the only ontological reality (*idealism*); or it may be a property of matter in general (*holophysicalism*).[14]

A further problem with emergentism concerns the ontological status of the emergent property. The appeal to physicalism serves to avoid awkward metaphysical claims of some kind of separate reality. But it is not clear how any emergent dynamic pattern could act in the proposed way to interact with the physical system. Again, appeals to liquidity in relation to water or any analogous example do not help since there is no downward causation involved.

In brief, emergent phenomena are clearly a feature of physical and biological systems. However, it is not exactly clear *how* the postulated downwards causation from emergent properties occurs. In biology, for example, Goodwin (1994) proposes that the healing ability of organisms to reconstitute themselves following damage is 'an emergent property of life that is not explained by the properties of the molecules out of which organisms are made' (p. 163). Again, we have not unequivocally established how the emergent property of the organism as a whole effects such healing.

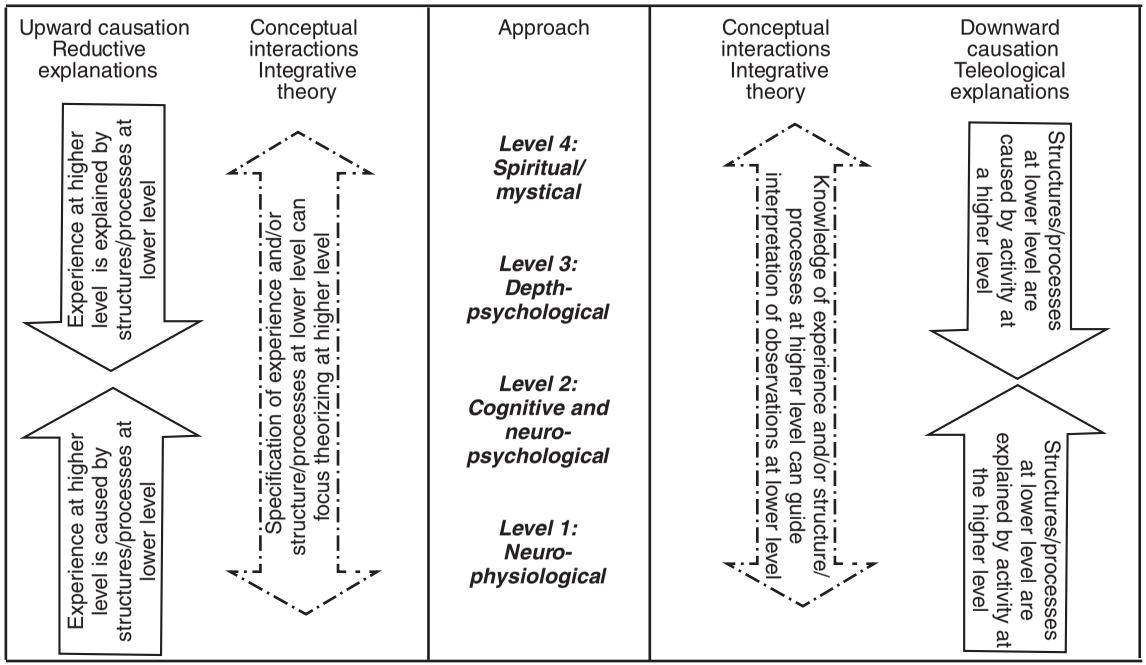

FIGURE 1.1 Approaches to consciousness and/or conscious states which involve bridging across different levels of explanation

While many suggest that emergent fields of some kind are involved, there is little by way of established fact. It is unclear, to take just one key aspect, whether such organizing fields are physical, as Goodwin proposes, or non-physical (Sheldrake, 1981).

Libet (1994) has proposed a field theory of the consciousness–brain relationship, in which consciousness is seen as constituting a field that effects changes within the structural activity of the physical brain. The exact nature of the field is left somewhat vague, on the grounds that contemporary biology and physics provide inadequate data. In Libet's view, we await the appropriate breakthrough. Another proponent of a brain field theory of consciousness, McFadden (2002), argues that we already possess adequate data. According to him, there is substantial supporting data for his proposal that electromagnetic brain fields constitute the physical substrate of consciousness. Despite the attraction of these field theories in terms of their opposition to strong reductionism, there is as yet no consensus over the means whereby downward causation from a brain field may operate. Probably the most promising approach is that offered by quantum physics. Non-local quantum effects may give rise to discrete brain states. I will examine quantum theories of consciousness and the brain in more detail in Chapter 4.

Downward causation is the 'holy grail' for those who seek integration between scientific and religious approaches. The religious categories of 'above' and 'below' would be related by a scientifically-ordained principle. Griffin (2000) notes that, 'As downward causation becomes re-established as a general fact, pervasive of nature at all levels, the notion of downward causation from God, or the universe as an inclusive individual to its parts, will no longer seem so aberrant' (p. 105). As already indicated, however, such optimism rather oversteps the current scientific position. In the study of consciousness, there are a number of mysteries awaiting solution (or maybe there is just one mystery which takes a number of guises). The basis of presumed downward causation is one such mystery.

Figure 1.1 summarizes these discussions about possible relationships among the levels pertaining to consciousness. To the extent that these levels may imply ontological differences, our concern will lie with *causation* and *explanation* (outer columns). If we assume no ontological differences, then it is *integrative theory* that will interest us (inner columns). My term 'integrative theory' is

meant to convey the principle that a full treatment of consciousness requires comparative analysis of data from the different levels in Table 1.1. For example, observations at a higher level may prove valuable in interpretation of data at a lower level, and vice versa – data from a lower level may constrain our view of the meaning of experiences at the higher level. The third logical possibility is the more esoteric notion of correspondence introduced above. According to this view (which may be understood as a species of Leibniz's *psychophysical parallelism*), each level articulates fundamental principles in its own distinctive fashion, as with the examples of binding and re-entrance discussed earlier.[15]

Table 1.1 and Figure 1.1 give us a framework for recognizing the issues involved when studies bridge the levels. Many of the promising developments in consciousness studies entail hybrid relationships in this way. For example, *neuro-psychoanalysis* (Solms, 2000; Solms and Turnbull, 2002) employs methods from both neuroscience and psychoanalysis. Moreover, it recognizes that explanatory structures from both neurological (Level 1) and psychoanalytic (Level 3) approaches may be required to fully understand psychiatric states. To take another example, *neurotheology* has both reductive and emergent aspects, which can easily be plotted against the levels of the tables. Neurotheology has demonstrated that a spiritual experience is correlated with activity in specific brain regions, thereby suggesting a role for those regions in the generation of the state (reductive). At the same time, its proponents hint towards a more ontological view of a higher reality: 'Absolute Unitary Being is a plausible, even probable possibility' (Newberg, d'Aquili and Rause, 2001, p. 171).

Levels, quadrants, and everything...

The study of consciousness touches on much that is central to our beliefs and values. As Tart remarks, 'Consciousness is not just of academic and scientific interest: consciousness is our very mode of being and the source of the values by which we live our life' (2000, p. 255). Indeed, it seems to me that the explosion of interest in consciousness research over the past decade or so is not simply about a specific topic that is yet to be understood. It is, more significantly, the latest chapter in the quest to understand ourselves, which has dignified humankind throughout many different ages.

This gives rise to what is, at one and the same time, the fascination and the Achilles' heel of consciousness studies. Perhaps the scope of the project is simply too large, and progress may be expected to arise only when we restrict ourselves to a circumscribed topic. The contrary argument is advanced by those, like me, who stress the need for integration across traditionally separate disciplines. Nevertheless, to title a book *A Brief History of Everything* (Wilber, 1996; see also Wilber, 2000a) takes some confidence! At the root of Wilber's all-encompassing approach is his rejection of the view that the basis, or generative cause, of consciousness is to be found in physical or biological systems alone, as is claimed by those advocating a more restrictive approach:

> [C]onsciousness is not located merely in the physical brain, nor in the physical organism, nor in the ecological system, nor in the cultural context, nor does it emerge from any of those domains. Rather, it is anchored in, and distributed across, all of those domains with all of their available levels.
>
> (Wilber, 1997, p. 83)

Wilber emphasizes what he calls the *spectrum of consciousness*. For him, consciousness pervades all levels in a hierarchy extending from physical matter to the Godhead:

> In simplified form, this spectrum appears to range from subconscious to self-conscious to superconscious; from prepersonal to personal to transpersonal; from instinctual to mental to spiritual; from preformal to formal to postformal; from instinct to ego to God.
>
> (Wilber, 1997, p. 81)

Wilber's ideas derive primarily from developmental theories, including those focused in psychological, astrophysical and evolutionary observations. His own theory builds connections between these developmental approaches and the more inclusive notion of the *Great Chain of Being*. The Great Chain of Being is a concept associated in the West with Aristotle and Plotinus in particular, but it is also found throughout later Neoplatonic formulations and in the teachings of various Eastern authors. Plotinus' concept stressed the continuity across diverse forms in a hierarchical series from the

most basic form of existence to the perfect form of God. In Wilber's hands, the hierarchy becomes distributed over four quadrants by introducing the dimensions of interior–exterior and individual–collective.

Wilber's hierarchical formulation has been criticized on the grounds that, without adequate justification, it privileges certain spiritual states over others (Ferrer, 2002; Helminiak, 1998; Krippner, 2000; Lancaster, 2001; Parsons, 1999); that its supposed all-inclusiveness is achieved only at the cost of distorting some of the religious traditions on which it draws (Schlamm, 2001); and that it perpetuates what is, in the eyes of his critics, an outmoded masculine orientation to development and spirituality (Heron, 1998; Wright, 1998). While not wishing to downplay the impact of these criticisms, for the present I wish to emphasize the significance of Wilber's portrayal of the 'big picture' and its importance for consciousness studies.

Wilber's concept of the spectrum of consciousness is predicated on his insistence that a number of fundamental principles recur at all levels of the cosmos, including the levels of matter, life and mind. This perspective derives from the concept of the Great Chain of Being, and strongly underpins his 'integral theory of consciousness' (Wilber, 1997, 2000b). Wilber is uncharacteristically reticent, however, when it comes to probing into the neurophysiological and neurocognitive approaches to consciousness (Wilber, 1999, p. 617). He seems to be satisfied that these young disciplines still await major progress. Consequently, he ignores the possible expression of the recurring principles in these areas, and hardly discusses interactions between these sciences and other areas, or levels, of inquiry. My own view is that the kind of integrative approach that Wilber advocates has much to gain from research evidence already available from cognitive neuroscience. This should become clear in future chapters. Wilber heroically sets a framework and an agenda, but, in relation to neuroscience, he hardly penetrates into the terrain of integration.

The framework laid out in Table 1.1 and Figure 1.1 is less ambitious than Wilber's, in that it omits reference to social and cultural domains. It focuses on the levels of explanation which are most frequently encountered in consciousness studies. More to the point, it is not intended as a map of developmental stages.[16] Its primary terms of reference are methodology and explanation. Through the latter in particular, it serves to emphasize the integrative approaches

that are increasingly important if we are to progress in consciousness studies.

In addition to its presentations of a pluralism of explanatory structures, Table 1.1 portrays a pluralism of methods. In particular, when seeking integration between the data of science and those drawn from religious mysticism, it may be misleading to attempt to fit both within a common methodological framework. Ferrer (2002) has criticized Wilber specifically for his attempt to assimilate the methods of religion to those of science. Wilber (1998/2001) proposes a *marriage* between the scientific and spiritual spheres by arguing that all authentic knowing derives from a common form of method, which is that generally viewed as 'scientific'. For Wilber, the approach of spirituality relies on the same three foundational aspects as does 'hard' science. These three are *injunction* (training in the appropriate discipline), *data* (the results obtained by following the discipline), and *falsifiability* (subjecting the theories that are derived from the data to further test). He asserts that:

> [R]eligion's great, enduring, and unique strength is that, at its core, *it is a science of spiritual experience* (using 'science' in the broad sense as direct experience, in any domain, that submits to the three strands of injunction, data, and falsifiability).
>
> (Wilber, 1998/2001, p. 169, italics original)

As Ferrer points out, the problem here is that much that is deemed authentic within the religious traditions does not submit to the falsifiability claim as readily as Wilber implies. Demarcating those elements that cannot be squared with the ways of science as not belonging to the 'spiritual core' of religions is an artificial imposition on the traditions themselves. Moreover, it is states of knowing rather than experiencing that have invariably been extolled in religious mysticism. For these reasons, the marriage we seek between science and religious mysticism may not be well served by Wilber's championing of the scientific method. Ferrer is adamant: '*Wilber's marriage not only perpetuates the dissociations of the modern era, but also renders the legitimation of spiritual knowledge hopeless*' (2002, p. 55, italics original).

In Part II, I will comment more specifically on these, and other, issues of methodology in the context of the diverse approaches to consciousness as they are encountered. For the present, it is sufficient

to note that a 'marriage' that, at the outset, places severe limitations on what one of the partners can bring to the relationship is untenable.

In summary, the 'big picture' sees the challenge to understand consciousness as being central to our aspirations at both individual and societal levels. The major terrain for approaching consciousness is mapped by the four levels of Table 1.1: the neural, cognitive, depth-psychological and mystical levels. Each level not only contributes to our conceptualization of consciousness, but also needs to be informed by the others. This dynamic of interrelationship across the levels becomes focused in the role of causation. As discussed above, both downward and upward directions of causation may need to be considered. In particular, over the following chapters I will adduce reasons for viewing consciousness as comprising elements which involve both causative directions. Each level may contribute distinctive aspects to the structural and self-related features of consciousness. However, the essence of consciousness, its distinctive ineffable quality, transcends these aspects of structure and self, and resists the claims of scientific analysis. This essential, phenomenal core of consciousness is incapable of further analysis, and might be thought of as a window into the *otherness* at the heart of things.

Author index

Subject index