

Evolution is an ascent towards
consciousness.

—P. Teilhard de Chardin

Chapter 1

*A Holonomic Approach to
Developmental Theory*

My purpose in writing this book is to formulate a noetic theory of human development, that is, a theory focusing on the unfolding of individual consciousness. Developmental psychology has treated many dimensions associated with human awareness—moral reasoning, motivation, ego development, object relations, socialization, etc.—but consciousness per se has not been directly addressed in life span theories. In fact, the very plethora of developmental schools suggests that some higher-order theory focusing on consciousness itself, rather than the content or expression of consciousness, might bring greater integration to the field of developmental psychology.

Consciousness could provide such a unifying structure because it is the basis for the various psychological phenomena already studied. Since consciousness is the ground for all the specific forms of mentation addressed in developmental theory, information about the structuring of consciousness is already implicit in accepted theory and extant research. All that is required is a diligent way of mapping underlying patterns in familiar and established venues without getting lost in the topography. The result should be a synthesis of noetic progression that is both grounded in, and congruent with, conventional theories.

A noetic approach to the literature is hardly a safe proposition, however, because any discussion of consciousness presupposes assumptions about the nature of reality. And our ideas about the nature of reality are changing. Until recently, the dominant Western tradition assumed one reality, the Newtonian world of mechanical causality and of independent material particles existing in empty space. This Newtonian model has been so taken for granted that it has become an unexamined metaphorical assumption, the “given” standard against which human perception is measured in psychological theory. A prime example is Piaget’s work, which tracks the child’s ability to construct (perhaps even accommodate consciousness to) a Newtonian reality presumed to be the end point of cognitive development.

Now, however, discoveries in the physical sciences—notably quantum physics, field and chaos theory, and holography—are introducing a new concept of reality more congruent with the Eastern and ancient mystical worldviews. The new paradigm differs from Newtonianism on the fundamentals, such as time and space, matter and mind, and science and spirituality. Nobel laureate George Wald broadly sums up the scientific tensions created by this paradigmatic shift and its ramifications for developmental psychology:

In my life as a scientist I have come upon two major problems which, though rooted in science, though they would occur in this form only to a scientist, project beyond science, and are I think ultimately insoluble as science. That is hardly to be wondered at, since one involves consciousness and the other, cosmology. . . . This is with the assumption that mind, rather than emerging as a late outgrowth in the evolution of life, has existed always as the matrix, the source and condition of physical reality—that the stuff of which physical reality is composed is mind-stuff. It is mind that has composed a physical universe that breeds life, and so eventually evolves creatures that know and create. . . . In them the universe begins to know itself. Also, such creatures develop societies and cultures—institutions that present all the essential conditions for evolution by natural selection . . . —so introducing an evolution of consciousness parallel with, though independent of, anatomical and physiological evolution. (1984, 1–2)

My intent is to explore this very idea, to examine developmental psychology within the context of the emerging paradigm, to create a theory of the individual evolution of consciousness, using a post-Newtonian perspective.

Aside from any discoveries in the physical sciences, the history of unresolved differences within psychology indicates that such a paradigmatic reconfiguration is due. First, psychology has not conformed to the traditional view of scientific progress, in which the history of a discipline is cumulative, with new discoveries or theories building on previous work (Kuhn 1970; Miller 1983). After more than a century, the field of psychology is far from cohesive; instead, the proliferation of theories—psychoanalytic, behavioral, fulfillment, cognitive, ethological, etc.—is all over the lot. Each school has its own dedicated research community carrying its theoretical foundation forward. There is disagreement about what such diversity means: Is psychology in general still in a preparadigmatic phase, or has it entered the cycle of paradigms and scientific revolutions? Is Kuhn's model of change applicable to the behavioral sciences?

Second, psychology's internecine conflicts reveal a long-standing struggle between two different paradigms, one that recognizes supraphenomenal realities and the other classical empirical Newtonianism. Theories with frankly mystical assumptions, such as those pioneered by James, Janet, Jung, and Assagioli, date back to the origins of psychology as a "science." But in the United States particularly, these theories were overwhelmed by the analytical and behavioral schools early on. It has only been in the last twenty years that an identifiable offshoot called transpersonal psychology has attempted to reconcile traditional Western and mystical psychological theory by extending the range of consciousness to include realities previously unacknowledged or discounted.¹ Transpersonal theory's overtly spiritual component and the problems it faces in working across two different paradigms have resulted in considerable conflict with the "scientific" establishment.

Third, the possibility exists that psychology per se has *never* fit the Newtonian paradigm, owing to the irreducible nature of consciousness and its suspect ontological status when conceived empirically. Few would deny that we are conscious—that we are the subjects of experience, that we perceive, that we have sensations, that we form intentions and ideas. But empirical science cannot

prove that these subjective phenomena exist. Empiricism cannot prove that we are conscious.

We lack even a clear and uncontroversial pre-theoretical description of the presumed phenomenon [consciousness]. Some have gone so far as to deny that there is anything for the term to name.

The mere fact that such a familiar feature of our lives has resisted for so long all attempts to characterize it suggests that our conception of it is at fault. (Gregory 1987, *s. v.* "consciousness")

A cosmology that accounts for the phenomena of consciousness may be the rightful paradigm of psychology, rather than the Newtonian reality of classical empiricism.

The driving reason for adopting a new paradigm in psychology is its potential ability to resolve difficulties inherent in the present epistemology, like the ones mentioned above. The persistence of such unresolved anomalies indicates that an epistemological crisis has existed in psychology almost from the beginning. Furthermore, the old way of knowing is inadequate to explain an increasing body of emergent data, which I shall be examining in this book. I hope to show in the following chapters that many historical and current tensions in psychology can be eased, and that many problematic phenomena can be rendered intelligible by placing them in a post-Newtonian framework.

Before this exploration can commence, it would be helpful to define consciousness, but as noted above, awareness is a phenomenon that has been notoriously difficult to characterize. Convergence across noetic fields, such as religion, philosophy, neurology, and psychology, centers only on four basic essentials of consciousness:

(1) Consciousness is the experience of being alive. It is inherent in living existence. For the majority of humans, the experience of being alive involves the ongoing and a priori sense of self as the agent who is aware. Subjective, self-reflective experience is believed to be different from the conscious mode of animals—with the possible exception of some higher primates and other mammals, such as whales, dolphins, and elephants—and completely lacking in inanimate objects. The 'is-ness' of awareness (and, for most people,

the 'I-ness') becomes an irreducible experience equated with living being, even in the absence of anything to be conscious of. Consciousness *is*. The essence of is-ness has been the foundation of the mystical tradition, which equates individual awareness with a facet of Cosmic Consciousness.

(2) Consciousness concerns the intersection between private, "interior," "subjective" experience and (3) the "objective" or "outside" world. Transcending this boundary is the crux of mysticism, whereas the interrelationship between "what's in here" and "what's out there" forms the thrust of conventional Western developmental models. Neuroscientist E. Roy John's definition of consciousness in *The Oxford Companion to the Mind* reflects the Western psychological perspective. He describes consciousness as

a process in which information about multiple individual modalities of sensation and perception is combined into a unified multidimensional representation of the state of the system and its environment, and integrated with information about memories and the needs of the organism, generating emotional reactions and programs of behavior to adjust the organism to its environment. (John, cited in Gregory 1987, 162)

Views of consciousness as a mediating dynamic between subjective experience and an outside environment rely on an interior modeling of the outside world held in memory. (4) Memory is an integral part of conscious experience, binding the moment-to-moment sense of awareness into a coherent pattern that provides the sense of personal continuity, the ongoing sense of self. As such, memory is the warp and woof of awareness. (Memory enables us to "recognize ourselves"; e.g., when we awaken from sleep or anesthesia, we "know" *that* we are—even if we may sometimes forget *who* we are—and we recognize the world around us.) A subjective sense of self, therefore, depends upon having a historically bound stream of consciousness and recognizing a stream of consciousness as uniquely one's own. Memory also creates the backdrop for the ongoing stream of perceptual awareness.

A succinct formulation of these four aspects of consciousness comes from Richard Restak, who writes that consciousness involves comparisons between perceptions of the outside world "and whatever

internalized images we have built up over the years regarding the nature of the world around us" (1979, 263). These images of the world around us are our personal maps of reality, our subjective paradigms, as it were. Principal constructs of these personal maps are the perception of space, time, and personal agency (the sense of self). These dimensions are roughly equivalent to the so-called "spheres of reality" used as psychological standards in clinical assessment.

Consensus concerning reference points along these fundamental dimensions has historically determined what was "real" and what was not (consensual, or "objective," reality). Until now, conventional psychological theories have postulated the bounded, three-dimensional representation of independently existing, separate objects in empty space to be the "normal," mature experience of spatialization (e.g., Piaget's Formal Operations). Clinicians routinely assess patients against this Newtonian spatial orientation, using it as the yardstick of "objective reality," the standard for normal mental functioning. Spatial perception is thought to be reliant on the sense of persistence in time. According to conventional developmental theory, the experience of temporality is fixed after early childhood, when it culminates in the "normal" historical sense of past, present, and future. As for the third reference point, personhood, clinicians focus primarily on boundaries. Clinical practitioners ask patients to identify themselves and other people and, when fine distinctions need to be drawn, to indicate the boundaries of self and other as well as the extent to which others are seen to have the same kind of individual agency as the self.

Given the fundamental importance of these three dimensions of consciousness, it is clear that any change from the Newtonian perspective of conventional psychology will radically alter our understanding of individual consciousness. New ways of constructing space and time not only change the perception of reality, they also redefine the limits of the self within the context of that reality. Before proceeding to reframe developmental theory in a post-Newtonian paradigm, however, it is important to set that emerging world view against our more familiar Newtonian heritage.

At this time, individual scientists and philosophers are beginning to articulate roughly consistent views of a post-Newtonian paradigm. In contrast to the fixed "outside" world of matter existing in empty space acknowledged in classic Western science, the new order

is envisioned as a single, seamless whole, of which the manifest world is merely one aspect. Such a cosmology is not new to psychology broadly defined; it has an ancient precedent in the metaphysics of mysticism, probably the largest and most universal body of developmental theory, and one given current advocacy by transpersonal theorists.² Although conventional psychology has resisted the recurrence of theories incorporating a physically transcendent reality, the respectability and credence accorded to paradigm discussions arising from post-Newtonian physics may create a space in which psychological theory can be reconstructed “legitimately” to resolve conflicts and account for data that the empirical world view does not explain.

My aims are exploratory and tentative. I am not attempting to build a model of noetic evolution on the new physics so much as I am trying to create a window for intellectual inquiry and speculation. I am deliberately enlarging the intersection between the new physics and mysticism in order to explore the greatest possible range of noetic development. It is not my intention to try to validate either a paradigm or mysticism (neither of which can be done). Rather, my purpose is to show how post-Newtonian thought and perennial mysticism can be brought together to deepen our understanding of noetic development.

For this book, I will be drawing specifically on physicist David Bohm’s version of a post-Newtonian paradigm (1980, 1986). His theory is comprehensive; it has been adapted to the macro level from quantum physics; it accords well with the metaphysics of mystical developmental theory; and it specifically addresses consciousness. Relevant portions of Bohm’s theory are briefly presented below to introduce the theoretical foundation for the conception of consciousness developed in this book.

Bohm postulates that the ultimate nature of physical reality is an undivided whole in perpetual flux (1980). In this fundamental reality, space is full rather than empty, a giant plenum of enormous energy in constant motion. The material world as we know it is only a small wavelike excitation on top of this immense background, a “tiny ripple on a vast sea” (1980, 191). This undivided whole comprises parts that merge and unite in a constant state of flow and change called the *holomovement*, a term signifying that reality is both dynamic and holographic in nature. Every portion of the flow contains

the entire flow, just as each small part of a hologram contains information about the entire image.³ Each subunit of the universe, such as a human being, in some sense contains the whole. The universe in turn subsumes each part. Bohm's sense of the simultaneous inter-relatedness and interpenetration of all phenomena is probably best summarized by calling his perspective the holonomic paradigm (from *holos* and *nomos*, the law of wholeness), consonant with usage by other writers, such as Pietsch (1981), Pribram (1982, 1991), and Samples (1981).

The holomovement comprises two coexisting, interpenetrating orders of reality: the physical manifestation of energy in bounded time and space (the material world as we perceive it through the central nervous system), and a physically transcendent order of pure energy, which is infinite and Absolute (Bohm 1980). The material order derives from the Absolute order. Bohm calls the Absolute order the *implicate* order, drawing on a Latin root meaning to enfold or fold inward. He believes that the material world flows out of, or is derived from, the higher implicate order, which may always be beyond direct experience.

The manifest, or explicate, order is enfolded in the implicate order. (Indeed, everything is enfolded into everything in the nondualistic implicate order.) Material reality is *unfolded* by the implicate order in the holomovement. In the material realm, things are "unfolded in the sense that each thing lies only in its own particular region of space (and time) and outside the regions belonging to other things" (Bohm 1980, 177)—that is, the explicate reality is the ordinary world of three-dimensional space and linear time perceived through our senses. Whereas the classic Newtonian view (which continues to dominate many branches of contemporary science) assumes that the explicate order constitutes the fundamental reality, Bohm, on the contrary, maintains that it is the hidden implicate order that is basic, primary, and independent. According to him, the manifest order is secondary and derivative, and *it is appropriate to treat it separately only in certain limited contexts.*

Although the holonomic paradigm may seem a radical innovation, this world view, in precursory forms, has a respectable history in accepted Western intellectual traditions. Physicists have been postulating a deep unitive reality for over fifty years, and Western

philosophers (e.g., Plato, Plotinus, Spinoza, Hegel) have been postulating such a reality for much longer.

The concept of a unitive reality has an even more venerable precedent in mystical traditions from various cultures. Bohm's explicate and implicate orders strongly resemble the emanant and the Unmanifest (Transcendent) orders, respectively, of mystical metaphysics. Both Bohm and mystics describe the Unmanifest as a single, self-organizing Matrix whose character is nondualistic, infinitely indeterminate, and Absolute: it subsumes all time and no time, all space and no space, all matter and no matter, all mind and no mind (Huxley 1945; Wilber 1990; Bohm 1980). Bohm's What Is sounds very much like the I AM or Void of mysticism.

The nondualistic structure of the holomovement means that the material order, though derivative, is not *other* than the implicate order. The material order is an expression of the implicate order. In fact, since the universe works like a hologram, both the material and implicate orders in some sense enfold each other. Any perceived difference, causality or separation between the two must be construed nondualistically: the interface between the manifest and implicate orders is both real *and* illusory, somewhat like the two "sides" of a Moebius strip as illustrated in Figure 1.

As an analogy of the relationship between the implicate and explicate orders, a Moebius strip can be grasped between index finger and thumb like any ordinary object, with each digit obviously and tactilely on opposite sides of the piece of paper. At the local level of sensory impressions, the Moebius ring behaves as an ordinary tangible three-dimensional object. But "proving" that this object has two sides by drawing a line on only one side of the ring is impossible. Likewise in the holonomic paradigm, differences between the two orders (manifest and Unmanifest) may be apparent, convenient, and useful for constructions existing at a local level, but they are not fundamental or true in the absolute sense, since the whole is a seamless totality. Speaking metaphorically again, the Moebius ring "really" has two sides at the local level—it can be manipulated as a three-dimensional object—but it "truly" exists only in one plane, which cannot be appreciated fully at the phenomenal level. In the holonomic paradigm, the material realm is the local level (the Moebius strip experienced through the senses), and at this local level, it may sometimes be use-

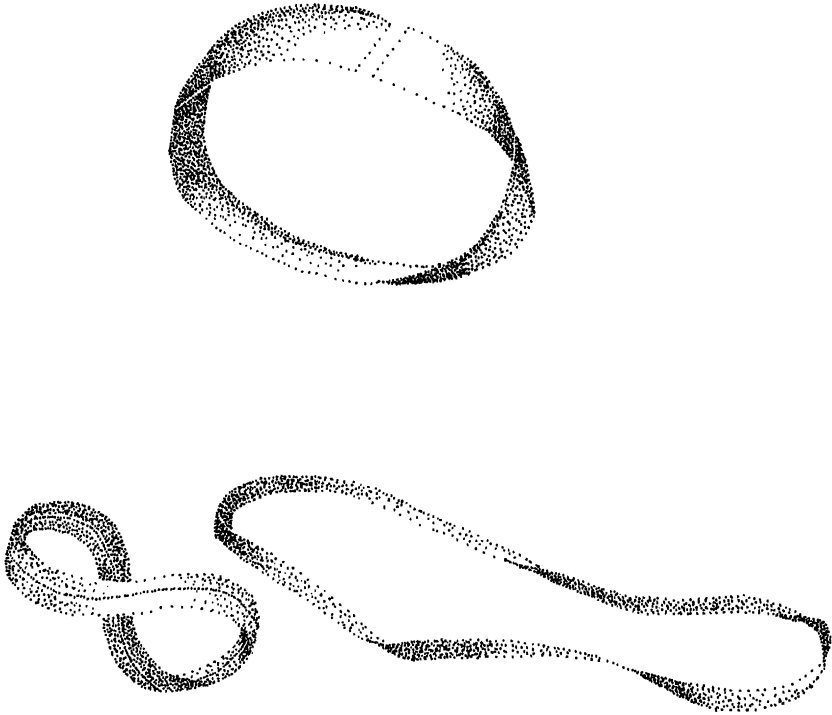


Figure 1. The Moebius Strip

A Moebius ring can be made from an ordinary strip of paper (top drawing) by giving one end of the length of paper half a twist (rotating it 180 degrees) before taping or gluing the two ends together. The resulting ring has only one side, which can be proven by drawing a line down the center of the ring (lower left). Without lifting the writing instrument at any time, the line will appear on “both sides” of the ring and connect with its starting point. If the Moebius ring is cut along this line, it does not divide the strip in two, but it does create a two-sided strip again. This is because the Moebius strip has only one edge until the cut adds a second edge, and a second side.

ful to conceive of the two orders as the two “sides” of the Moebius ring. The Moebius ring in its entirety, however, is beyond phenomenalism, and the greater truth is that there cannot be two “sides,” because the implicate order is not other than the explicate.

Looked at in this way, the fundamental Newtonian assumptions of Western developmental psychology only account for the local

level; and, useful as those assumptions may be at a local level, they are not reflective of the whole. According to the holonomic paradigm, everything in the material order has a double nature that is at once implicate and explicate. This double nature evinces a hidden order, in which patterns (“laws”) that exist in the local material realm may appear to have their own logic, but in fact derive from the hidden implicate reality whose order must be inferred (if, indeed, it can be discovered at all).

Bohm illustrates how an implicate dynamic may give rise to very different phenomena in the material realm by using two concentric glass cylinders, one fitted inside the other, with the space between the cylinders filled with viscous glycerin (1980). If a drop of ink is placed in the glycerin and the inner cylinder is turned slowly, the ink drop will be stretched out into a fine, threadlike form that becomes increasingly thinner and fainter until it vanishes altogether. But the ink drop, though lost to sight, has not been so dispersed in the glycerin that its order has been rendered random or chaotic. Instead, if the inner cylinder is rotated in the opposite direction, the ink thread will slowly reappear, darken, and compress, eventually reconstructing itself into its original droplet form again. Bohm’s analogy shows how a hidden order may be present in what appears to be randomness (similar to chaos theory and fractal geometry). The ink drop is neither lost nor disordered, but enfolded in the glycerin so that it can be reconstructed, unfolded, and rendered explicit, given the right circumstances. Thus, it is not the explicate order (the ink drop or material reality) that is primary, but the Unmanifest order (the glycerin, cylinders, and force that moves them).

Furthermore, any particular unfolding may not persist in time but may instead have the illusion of constancy as a result of the rapid and regular unfolding of similar—but not necessarily identical—projections arising from the implicate order (Bohm, 1980). For instance, a series of ink drops may be enfolded in the glycerin at roughly the same place. The first droplet is enfolded with x number of turns until it “disappears.” Then another ink droplet is put in the glycerin about the same location as the first, and the cylinders are rotated another x turns until the second drop is enfolded. The first drop is now enfolded $2x$ times. A third drop is put in the same place, and the procedure repeated, resulting in the third drop’s being enfolded x times, the second one $2x$ times, and the first one $3x$ times. The procedure may be

repeated infinitely. When the direction of the rotation is reversed, the drops unfold one at a time, apparently in the same place, but always a different droplet. If the rotation is quick enough, the effect is that of a single, stationary ink drop persisting in time in a (moving) glycerin suspension, even though the reality is quite different. Thus, the apparent stability of the material order we obtain through our senses may be merely an illusion created by constant, rapid, and regular sequences of unfoldings from the implicate order, just as a spinning airplane propeller gives the appearance of a solid disk (Keepin 1994). The material world presents a “reality,” but aspects of that reality are an illusion because the deeper “truth” is implicate.

Continuing this metaphor, Bohm speculates that a series of ink drops may be placed so that each successive drop is adjacent to the previous one (1980). When the rotation of the cylinders is reversed, the illusion created is one of a single ink drop moving along a continuous path (similar to the way “movies” are created from “stills” rapidly viewed as frames of film). Of course, the truth is that none of the ink drops is the same, and none of them moves. Bohm’s theory that material reality is partial, conditioned, derivative, and multiple offers a way to account for the discontinuous change apparent in many processes; events that have been difficult to explain because they were assumed to be features of the explicate order actually arise from the implicate order.⁴

From this explanation, it is clear that a holonomic premise forces us to alter our linear conception of human development. The holonomic paradigm changes two of traditional developmental theory’s most basic assumptions. First, it *redefines the concept of development*. The apparent evolution of an individual is no longer governed by some incremental progression over time in the material reality. Instead, human development is understood to be an enfolded heterarchy—that is, a structure whose ordering is other than it appears—in this case, *one in which the implicate order for the individual coexists with, but may not appear to be actualized in, the explicate order*. The *process* of personal development—evolution over time, as we normally think of it—is an illusory pattern limited to the material realm because time is absolute, not linear in the Unmanifest reality. Since What Is enfolds multidimensional co-present realities—including everything we perceive under the aspect of time—it con-

stitutes movement (Bohm 1980). But this is not movement of the usual sort that relates “what is” to “what was formerly but is no longer” since nothing passes out of being—rather it is a relationship of “certain phases of *what is* to other phases of *what is* that are in different stages of enfoldment” (203). Accordingly, the forward movement of individual development over the life span must be understood against the backdrop of an ever-present implicate reality.

Applying the holonomic paradigm to developmental psychology also *redefines the human being as a unit*. Bohm conceives of the person as a body/mind existing as a relatively independent subtotality of reality, with a sufficient recurrence and stability (of physical, chemical, neurological, etc. processes) to occur in a material form over a certain period of linear time (1980). Thus, any given mind/body relationship *is a lower-order, relatively temporary manifestation in explicate reality*. Personhood in a form that is neither mind nor body exists in the Absolute order, giving rise to the human being. To follow this reasoning, we must bear in mind that the Absolute order is present in its entirety, interpenetrating every point of space and time, so that all of eternity and the cosmos is wholly present right here and right now. At some level, then, *all the previous and future states of an individual*—fetus, infant, child, adolescent, adult, and corpse—*coexist with (or without!) embodiment as we usually think of it* (since embodiment can be construed as spatiotemporal representation in the explicate order) in the infinite space/time reality of the Cosmic Matrix. Just as the enfolded adjacent ink drops give the illusion of a single drop moving along a path, the potential or partially realized self may appear to evolve. But that self and its “development” derive from a greater order representing the fully actualized, unchanging, eternal Self in the Absolute reality. Furthermore, this eternal Self should not be confused with consciousness.⁵ Any non-material form of personhood, such as the implicate Self, may *seem* more like mind or consciousness, which we are accustomed to conceptualizing without three-dimensional representation, but that is not accurate, any more than the totality of cylinders, glycerin, and rotational force resemble the pattern of a “moving drop” they make manifest.

Mystical traditions have always maintained that personal consciousness co-exists at the material level with its Absolute counter-

part, which may not resemble anything knowable (cf., Guenon 1945; Huxley 1945; Kapleau 1989; Scholem 1969, 1987). Since the Vedic literature, mysticism has envisioned the developmental nature of individual consciousness as a facet of Cosmic Mind in the emanant order coexisting with its perfect unity in Cosmic Mind in the Unmanifest reality.⁶ The idea of a co-existent Absolute Self has yet to be fully developed in psychology, even in transpersonal theory.⁷

Elaborating the implicate aspects of personhood, Bohm accords consciousness a prominent role in the holomovement. He believes that consciousness can and should be comprehended in terms of the implicate order, citing Karl Pribram's theory showing that memory is not recorded in a particular cell or structure of the brain, but that information is enfolded over the whole (Bohm 1980). Pribram maintains that the brain works like a hologram, storing nearly infinite amounts of information paradoxically everywhere in the brain and yet not in any particular place (1971, 1991). According to Pribram, the brain performs transformations at rapid speeds back and forth between the material reality and the holographic, implicate order of energy operating outside the boundaries of time, space, causality, matter, and mind.

Our brains mathematically construct "concrete" reality by interpreting frequencies from another dimension, a realm of meaningful patterns, a primary reality that transcends time and space. The brain is a hologram, interpreting a holographic universe. (Pribram 1982, 5)

As a transducer of a holographic universe, the brain gives expression to a reality underlying both the brain and the mind (Bohm 1980). Bohm's and Pribram's holonomic concept is far more complex than the usual idea of body/mind interrelationship—for example, that a person's physical state can affect the content of awareness, and vice versa; a conscious intention may excite the neurological system to direct muscular movement, activate glandular secretion, etc. The holonomic mind/body relationship is nondualistic and acausal, so that even to speak of mind and body (or brain) is misleading. The (implicate) mind enfolds matter in general—and therefore the body (and brain) in particular. Brain and mind both enfold and interpenetrate each other.

The more comprehensive, deeper, and more inward actuality is neither mind nor body but [is] rather a yet higher-dimensional actuality, which is their common ground and which is of a nature beyond both. Each of these is then only a relatively independent sub-totality and it is implied that this relative independence derives from the higher-dimensional ground in which mind and body are ultimately one (rather as we find that the relative independence of the manifest order derives from the ground of the implicate order).

In this higher-dimensional ground the implicate order prevails. Thus, within this ground, *what is* is movement which is represented in thought as the co-presence of many phases of the implicate order. . . . So we do not say that mind and body causally affect each other, but rather that the movements of both are the outcome of related projections of a common higher-dimensional ground. . . . As a human being takes part in the process of this totality, he is fundamentally changed in the very activity in which his aim is to change that reality which is the content of his consciousness. . . . The easily accessible explicit content of consciousness is included within a much greater implicit (or implicate) background. This in turn evidently has to be contained in a yet greater background which may include not only neuro-physiological processes at levels of which we are not generally conscious but also a yet greater background of unknown (and indeed ultimately unknowable) depths of inwardness that may be analogous to the “sea” of energy that fills the sensibly perceived “empty” space.

Whatever may be the nature of these inward depths of consciousness, they are the very ground, both of the explicit content and of that content which is usually called implicit. Although this ground may not appear in ordinary consciousness, it may nevertheless be present in a certain way. (Bohm 1980, 209–210)

Bohm likens the apparent movement of thought not to a causal sequence, but to changes at the implicate level (1980). He describes the subjective experience of consciousness as a series of moments in which thought arises discretely but seems continuous, like the “appearance” of the successively enfolded ink drops. This rising and

falling away of thought occurs so rapidly as to give the illusion of stability and connection (continuity of self). Bohm's contention appears to be supported by the phenomenology of advanced meditation states; adepts report experiencing consciousness as discontinuous moments (Goleman, 1988). Thus, the precise character of a sequence of thoughts is dependent on the content of the implicate order in earlier moments.

Bohm believes that the explicate order becomes manifest through the consciousness of living beings (1980). Echoing mystic traditions that matter is the precipitate of a deeper field of consciousness, he maintains that the familiar physical world is co-created by the consciousness that perceives it. At some level, the Absolute order is constructed (translated) by living beings into the space/time conventions of the manifest world. Extending Pribram's theory that mind creates the explicate order via the brain, which organizes energy into the familiar four-dimensional reality (Pribram 1971, 1991), Bohm also attributes the creation of the manifest order to memory:

Keeping in mind that the word "manifest" means that which is recurrent, stable and separable, the manifest content of consciousness is based essentially on memory, which is what allows such content to be held in a fairly constant form. Of course, to make possible such constancy it is also necessary that this content be organized, not only through relatively fixed associations but also with the aid of the rules of logic, and of our basic categories of space, time, causality, universality, etc. In this way an overall system of concepts and mental images may be developed, which is a more or less faithful representation of the "manifest world". (Bohm 1980, 205)

According to Bohm, our perception of the manifest, constantly reinforced and emphasized in our thought and language, is so habitually established that we believe it to be our primary experience (1980). We maintain the predominance of the material in the way memory forms consciousness. Memory, whose content is recurrent, stable, and separable, forms the background against which the transitory, unbroken flow of experience is compared (Pribram 1971, 1991;

Ornstein 1986, 1991). By focusing our attention on the manifest, memory sustains the illusion of a material reality derived from a set of recurrent and relatively stable elements that exist independently in three-dimensional space. Bohm observes that this reification of the explicate order is learned as part of psychological development.

One can, in fact, adduce a considerable amount of scientific evidence showing how much of our conscious experience is a construction based on memory organized through thought. . . . Piaget has made it clear that a consciousness of what to us is the familiar order of space, time, causality, etc. (which is essentially what we have been calling the explicate order) operates only to a small extent in the earliest phases of life of the human individual. . . . Infants *learn* this content first in the area of sensori-motor experience, and later as they grow older they connect such experience with its expression in language and logic. . . . Piaget's work supports the notion that the experiencing of the implicate order is fundamentally much more immediate and direct [because it precedes] that of the explicate order, which . . . requires a complex construction that has to be learned. (Bohm 1980, 206)

Conventional psychology stops with the construction of Piaget's Formal Operations in a Newtonian world. As long as *unlearned* experiences of a non-Newtonian reality could be explained in the West as immature forms of awareness, before the world was "correctly perceived" (e.g., the Piagetian model), they created insufficient tension for a paradigm conflict: how they might bear upon the nature of reality was unquestioned. The experiencing of non-Newtonian realities in infancy and early childhood has in this way been viewed as an errorful, but normal part of development. Using the Newtonian reality as a standard, conventional psychologies construe later, cultivated nonordinary states as states that involve a compromising of "normal" functioning, a regression to an immature form of awareness.

But for thousands of years, esoteric practices have identified a developmental progression that systematically deconstructs the learned perception of the Newtonian world. In fact, mysticism can be viewed as a psychological stage theory in which cultivated altered

states create a progression of qualitatively more advanced forms of consciousness (such as the qualitatively different states associated with the *sephiroth* of the kabbalah, the *chakras* of yoga, the *jhanas* of Buddhism, etc.), which deliberately deconstruct spatiotemporal boundaries of all kinds, producing the insight that all perception is constructed.⁸ This realization transforms ordinary consciousness; the nature of reality is not only understood but directly experienced in ways far more complex than the Newtonian world of Formal Operations (cf., Koplowitz 1984b; Goleman 1988).

To summarize, the premises of the new physics as represented by Bohm's holonomic paradigm form a theoretical basis with profound implications for developmental psychology. In particular, they provide a way to account for consciousness, a phenomenon Newtonianism cannot explain. The convergence of holonomic theory and the metaphysics of mysticism opens up a window in which the broadest range of noetic development can be explored. In addition, two bodies of evidence compel a post-Newtonian reformulation of developmental theory. The first constitutes the data of mysticism and the impetus behind transpersonal psychology—the phenomenological experiencing of non-Newtonian realities through both learned and unlearned states of consciousness, already mentioned. Mysticism and transpersonal theory assume these experiences to be ontologically grounded. Empiricism, on the other hand, and conventional psychology, have up to this point dismissed such experiences as pure subjectivity, the “incorrect,” private, interior experiences of immature or dysfunctional brains.

The second body of evidence is a rapidly growing set of data concerning the intersection of the material and Unmanifest. This body of evidence poses a serious challenge to Newtonian assumptions because it comprises empirically validated data of human consciousness functioning *independent of a physical substrate—a source of mind without brain*. For purposes of this book, I have tried to pursue a conservative interpretation, restricting consideration of a non-materially based source of consciousness to the extremes of life when the brain is either nonexistent or nonfunctioning according to rigorous, empirical standards (see Chapters 2 and 12). I have omitted certain psi phenomena, which could be argued to represent evidence of mind operating without a material substrate, because they are demonstrated by subjects with fully functioning nervous systems.

The data considered are veridical reports pointing to the existence of awareness without a functioning brain, as measured by contemporary medicine. These results are very new, and their implications are not fully understood; nevertheless they present a consistent pattern in the aggregate, suggesting that an individual's mature consciousness predates birth—in some cases, even conception—and survives death.

If consciousness can exist without the brain, three questions arise: (1) When does consciousness enter into interaction with the brain? (2) To what extent is neurological development the basis of noetic development? And (3) to what extent does the development of consciousness transcend the brain? These questions reveal a large gap in the literature: psychological evolution has not been associated with changes in central nervous system activity in any comprehensive theory. Neurological development theory certainly exists, but it has not been integrated with developmental psychology in a systematic way to broaden either discipline. A holonomic theory of human development requires that these two disciplines be brought into closer communication.

The approach I have taken is to explore the three areas mentioned—namely, non-Newtonian phenomenological experiences over the course of life, research revealing physically transcendent sources of consciousness when brain functioning is demonstrably compromised, and neurological developmental theory. I have combined them to produce a noetic developmental theory unlimited by the explicate, embodied, neurological model of awareness that has become a psychological and medical convention. The result is a model with two different streams of consciousness for each individual. One, arising from the brain as it develops *in utero* and matures during life, is the phenomenon treated in most developmental psychology. The other, which has been treated in disparate literatures (and has significant empirical support), seems to predate a well-developed neurological system and to survive clinical death when measurable brain activity has ceased. This book traces both tracks of awareness as they arise, disappear, and converge during development, and discusses how one or the other of these tracks dominates subjective experience during different developmental stages.

To the extent that the post-Newtonian paradigm challenges Western scientific and cultural assumptions about the nature of re-

ality, clearly the idea of a source of consciousness lacking a material substrate—mind without brain—challenges prevailing medical and psychological models. The very newness of much of the research renders any such theory highly speculative. To offset some of the risk, I have drawn upon a wide range of literature, the vast majority of it empirical studies, whose cumulative weight should carry the perspective presented here beyond mere speculation. In addition to the theory and research of developmental psychology, sources include brain research (especially ethological studies), empirical studies of prenatal awareness, the near-death literature, studies of the phenomenology and neurology of altered states, and theoretical and empirical studies of mysticism.

Because consciousness *per se* is not addressed in developmental theory, I have used a circular hermeneutic, or “bootstrapping,” approach in studying the psychological literature to locate junctures at which the experiences of time, space, and personhood are developmentally restructured. The choice of space, time, and the sense of personhood as the primary dimensions of investigation was affected by the use of neurological research, since access to both literatures was critical. I elicited tentative noetic dimensions for comparison as a trial, reread the literature, and tried again. This method is not without drawbacks, but it has a respectable history in developmental psychology.⁹

In addition to time, space, and personhood, I have selected motivation as a critical dimension for consideration because it plays a key role in all organizations of consciousness. Motivation influences awareness through the agency of attention. It determines which elements in the environment are noticed, how meaning, behavior and value are organized around them, and perhaps even how events are shaped (e.g., the Heisenberg principle, Sheldrake’s morphogenetic fields [1981], etc.).

The dimensions chosen for study, including motivation, are not always explicit in the literature, so I have had to look for indicators of these dimensions. For instance, only certain aspects of personhood and motivation appear with sufficient frequency for reliable interpretation. In most instances, similarities among the aspects of conscious experience presented by one author clearly matched those of others, permitting comparison. Frequently, writers draw their own cross-theoretical comparisons.

The choice of space, time, personhood and motivation as dimensions of study limited which psychological theories could serve as sources. Stage theories were chosen as most reflective of noetic development. In stage models, development is from less to more complex; earlier levels are the basis for later ones; the continuum of change is divided into stages for convenience; and the stages are “state-specific.” That is, psychological stages match Charles Tart’s definition for discrete states of consciousness (1983b), because developmental stages are qualitatively distinct, so that the experiencer or an observer can tell that a distinguishing set of “rules” governs perception and possibility. In keeping with Tart’s definition of state-specific consciousness, the most useful material in conventional psychology comes from stage theorists who postulate quantitatively and qualitatively measurable change over the life span, such as Maslow, Kegan, Kohlberg, Loevinger, Graves, Piaget and the post-Piagetians.¹⁰ In transpersonal psychology, Wilber’s and Washburn’s theories and the stage theories of mysticism—notably several Buddhist traditions, yoga, Gnosticism, and the Kabbalah—describe qualitatively distinct stages. Of the esoteric traditions, certain Buddhist and yogic literatures most consistently provide detailed, recorded guidelines concerning the deep structures of consciousness.

The theory presented here follows other stage models in describing each developmental phase in pure, theoretical terms that hardly reflect the complexity and blurring evident in life. Each chapter discusses a qualitatively distinct stage in the ontogenetic development of consciousness. Since the mind/brain issue is central to this model, evidence from neurological development theory illuminates the psychological literature for each stage. Capping the discussion in each chapter is a profile outlining the distinct aspects of the noetic level identified in that chapter.

Finally, in considering any change model, the mechanism of transition from one stage to the next must be accounted for, particularly here since consciousness has rarely been the explicit focus of developmental studies. Transition has traditionally been linked to motivation. Crossing boundaries between different states of consciousness involves both the conditions that impel transition and those that enable it to occur. Psychology has stressed both sets of conditions, but the incorporation of neurophysiological development into this model clarifies many of the conditions that underlie and enable

stage transitions. The theory developed in these pages suggests a method of transition based on both motivational theory and neurological research to account not only for growth but also for regression, a phenomenon that most developmental theory neglects to explain.

Having postulated a holonomic paradigm, discussion nonetheless begins in the familiar way of developmental theory, tracing the chronological evolution of consciousness over an individual life in the material plane.