SCIENCE AND RELIGION—PROPOSALS FOR RECONCILIATION: AN ESSAY REVIEW OF KEN WILBER'S *THE MARRIAGE OF SENSE AND SOUL: INTEGRATING SCIENCE AND RELIGION**

Roger Walsh
Irvine, California

Science and religion, science and religion: their effects are everywhere. How to reconcile these two great forces—which together are shaping our lives, our cultures, and our planet—remains one of the great intellectual, social, and spiritual challenges of our time.

Few perspectives seem as conflictual as those of science and religion, which sometimes even try to completely deny legitimacy to each other. Some fundamentalists decry science and technology as destroyers of religious values while some scientists sneer at religion as a primitive relic of psychological and social immaturity.

The worlds they offer us seem completely different. The great religions assure us that behind apparent chaos and catastrophe there exists a deeper, truer divine realm which is our true home. Science reports that behind chaos there are only the meaningless, immutable laws of nature, or as Whitehead lamented, "merely the hurrying of material, endlessly, meaninglessly."

No surprise then that some of the greatest minds of the last few centuries have wrestled with this question: how can we reconcile the picture of a meaningless world offered us by science on the one hand, with the profound human need for meaning and religion's picture of a meaningful cosmos on the other. No surprise also that this question would appeal to Ken Wilber, who in a series of fifteen previous books spanning fields as diverse as psychology, philosophy, anthropology, sociology, ecology, religion, and physics, has always sought to integrate apparently conflicting perspectives in broad overarching syntheses.

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*Wilber, 1998 (in press).

The present book follows Wilber's usual pattern. It is broad ranging, multidisciplinary, and integrative, and offers a synthetic vision of exceptional scope. This review focuses primarily on the synthetic vision rather than on critical analysis of selected building blocks. This because the novel vision is obviously the most fascinating aspect and also because so many reviews of Wilber's previous books have focussed so much on critiquing the building blocks that the vision has been largely overlooked.

THE GREAT CHAIN OF BEING

The challenge of integrating science and religion is not made any easier by the fact that there are innumerable religions which themselves seem to contradict one another. Wilber therefore begins by pointing out that, if there is ever to be a reconciliation of science and religion, we will first have to find out if there is a common core to the world's religions.

While there is clearly enormous variation from one religion to another, there is also wide agreement among scholars that at the center of virtually all major religions there can be found The Great Chain of Being. This is a hierarchy of levels of being or existence ranging from, to use Christian terms, matter at the lower end through body, mind, soul, and Spirit (God, Goddess, Tao, Absolute, etc.). According to this view reality is multi-layered, the layers are intimately interconnected, and each embraces and contains the one below it, so that The Great Chain of Being is actually a great nest of being. Each level has a branch of knowledge which investigates it (see Figure 1).

For thousands of years the Great Chain of Being was humankind's dominant worldview and provided a meaningful picture of the cosmos to millions upon millions of people. Yet with the rise of modernity the West became the first civilization in history to discard The Great Chain. All that was retained was the lowest rung, matter, which alone was regarded as real, while other levels were regarded at best as meaningless by-products of the clashing of atoms. The result was a flattening of The Great Chain to its lowest level resulting in a materialistic worldview which Wilber calls Flatland.

PREVIOUS ATTEMPTS AT INTEGRATION

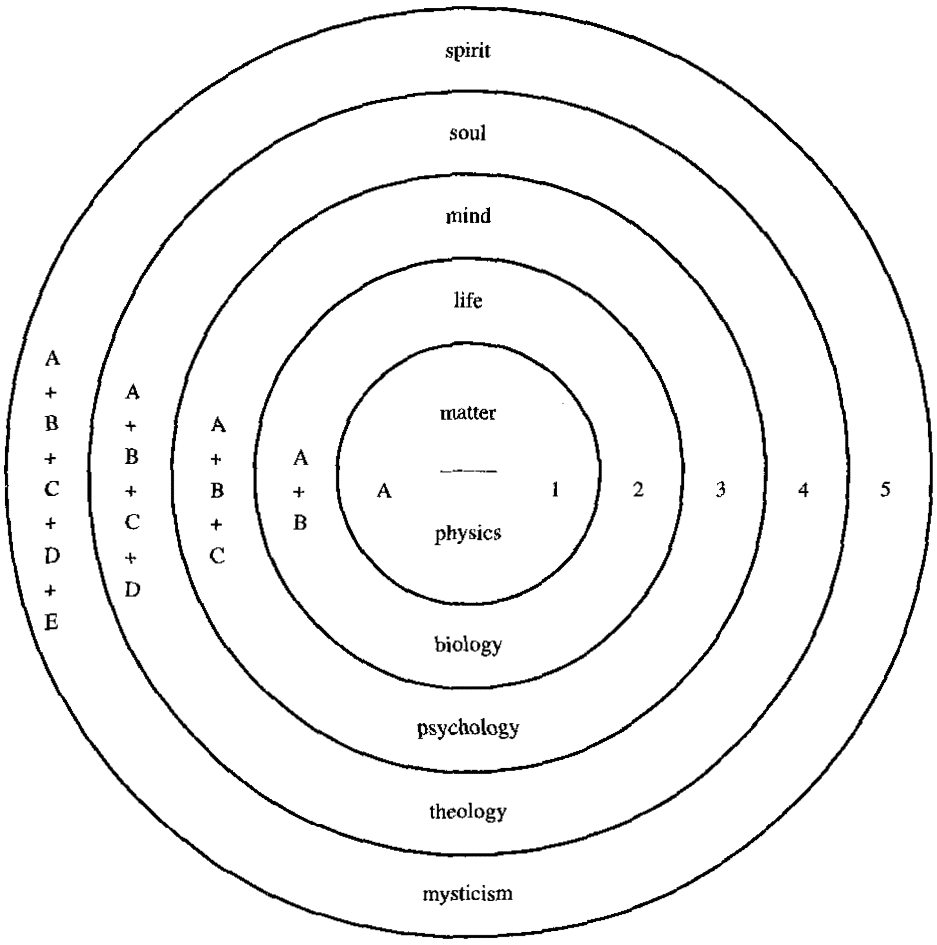
Previous attempts can be grouped into broad categories of 1) attempts by science to deny legitimacy to religion; 2) attempts by religion to deny legitimacy to science; 3) epistemological pluralism; 4) generating scientific plausibility arguments for the existence of spirit, and 5) postmodern approaches. We have already discussed the first two and Wilber next proceeds to explore the others.

Epistemological Pluralism

This argument holds that science and spirituality employ different, even complementary, modes of knowing and can therefore coexist peacefully. This has long been the

FIGURE 1

FROM K. WILBER, *A BRIEF HISTORY OF EVERYTHING* (1996c)



standard view of the great religious wisdom traditions but has been strongly denied by modern scientism (the pseudo philosophy which holds that science is the best or even the only means of acquiring valid knowledge). St. Bonaventure offered the clearest expression of the pluralism argument, and Wilber updated it in his book *Eye to Eye* (1996b).

Bonaventure argued that we all possess three "eyes" or modes of knowing which access different levels of The Great Chain of Being and generate corresponding disciplines of knowledge. The eye of flesh looks outward on the world of matter, while the eye of mind looks inward at the mental realm of thoughts, images, symbols, and feelings. The eye of contemplation looks deeper within to recognize the spiritual domains of archetypes and subtle illuminations, and beyond even these to behold pure formless consciousness, Mind or Spirit.

A contemporary way of expressing this is to say that the eye of the flesh is monological; it simply looks objectively at the things of the world. The eye of the mind on the other hand is dialogical and is concerned with interpretative, symbolic, hermeneutic knowing and mutual understanding, all of which depend on dialogue and communication. The eye of contemplation is translogical and what it looks upon cannot be seen, captured, or even adequately described by other eyes.

Epistemological pluralism argues that different disciplines employ different eyes. Science uses the eyes of flesh and mind, philosophy relies primarily on the eye of mind, while the eye of contemplation is the province of spirituality and especially mysticism. Such a claim seems balanced and logical but makes no headway against scientism which utterly denies the validity of the eye of contemplation.

Plausibility Arguments

These arguments claim that while science may not be able to prove the existence of spiritual or divine domains, it may at least be able to show that its findings suggest or even demand a great Intelligence organizing the material universe. The most dramatic contemporary example is the Big Bang in which it seems that physical laws were operating within the first trillionth of a second, long before matter could cohere out of energy. This and other examples are essentially variations on the old philosophical "argument from design."

However such arguments are essentially attempts to use the eye of mind to see or demonstrate what can only be seen by the eye of contemplation and hence are examples of what are called category errors. Indeed the attempt to use rationality for transrational proofs was devastated in the West by the philosopher Immanuel Kant and a thousand years earlier in the East by the great Buddhist sage, Nagarjuna. Rational approaches to the spiritual give no direct spiritual knowledge, no firm proof, and perhaps worst of all, no real spiritual growth or transformation.

Postmodern "New Paradigms"

Many recent attempts at reconciliation have labeled themselves as new paradigms of science. However, according to Wilber most of them rest on misunderstandings of both paradigms and science. According to the dominant misunderstanding, paradigms are major theories that *create* as much as, or even more than, *discover* facts and evidence. This creation is sometimes said to be governed more by social forces such as power, prejudice, class, and gender than by empirical factors. Science is thus alleged to be arbitrary, socially constructed, interpretive, power-laden, sexist, and nonprogressive.

Thomas Kuhn, who originally introduced the idea of paradigms into thinking about science, believed none of this. Part of what he actually meant by a paradigm was an exemplary experiment or model of how to do science in order to disclose new data, data which grounds science in the objective world and ensures that it is *not* merely arbitrary or socially distorted and is definitely progressive.

New paradigm thinkers like to claim that the basic problem with science is that it is ruled by a Newtonian-Cartesian worldview in which the world is seen as atomistic, fragmented, and mechanistic. However, so the new paradigm story continues, new sciences such as quantum-relativistic physics and systems-complexity approaches reveal the universe to be an inseparable web of intimate relations. This web of life view is then said to be compatible with spiritual views.

Wilber lists several problems with such claims. First, science is not ruled by a Newtonian-Cartesian view; this long ago yielded to a quantum-relativistic perspective. Moreover, the new sciences are still monological, relying primarily on the eye of flesh and having no use for, or even belief in, the eye of contemplation. Consequently, they can give no direct spiritual knowledge or transformation.

Even worse, they can mislead people into thinking that all that is required for a spiritual life is to adopt a new "paradigm" (theory) about science. This can therefore discourage people from actually taking up a genuine spiritual practice and thereby rob them of real spiritual understanding and transformation. In spirituality, perhaps more than any other field, direct personal experience is absolutely vital for intellectual understanding. Without it we are left only with what Immanuel Kant called "empty concepts" which harbor only superficial echoes of the higher truths that spiritual practice unveils. Worse still, we can remain unaware that we are unaware of these higher truths (truths which philosophers call "higher grades of significance") and believe we are grasping all the available meaning and wisdom.

MODERNITY: DIGNITY AND DISASTER

Historically, modernity refers to the period initiated by the renaissance which flourished in the enlightenment and continues to the present time. Today many people view modernity with a jaundiced eye and equate it with problems such as the loss of values and meaning, the brutalities of capitalism, ecological destruction, and the death of God. Yet it also gave us such blessings as democracies, egalitarianism, modern medicine, better health, and much more.

According to scholars such as Max Weber and Jurgen Habermas, what specifically defined modernity was "differentiation of the cultural value spheres," the spheres of art, morality, and science. Previously these three had been undifferentiated or fused such that church morality dominated and controlled art and science. Art or science that did not meet the Church's moral criteria was deemed both heretical and criminal, as Galileo found to his dismay.

Freed of the church's dictates, art, science, and morality could develop independently and this led to the dramatic growth of science. Unfortunately science grew so dramatically and became so besotted with its own power that it rapidly evolved into scientism and dominated and devalued the other value spheres.

Differentiation of the value spheres and the many benefits that followed constitute the dignity of modernity. The three spheres of morals, science, and art constitute Plato's Good, True, and Beautiful. The Good is morality, ethics, and justice; Beauty is the

subjective, aesthetic, evaluative domain of subjectivity; while Truth is objective validity, as for example, in science.

Each sphere has its own language or type of terms with which it is best described. The three types of terms are I, we, and it. The subjective, aesthetic evaluation that constitutes Beauty is best described in first person "I" terms (Beauty is in the eye or "I" of the beholder). Morality or Goodness involves intersubjective mutual understanding and is best described in "we" terms, whereas Truth, being objective knowledge, is embedded in objective "it" language.

As these three spheres differentiated, so that none were controlled by another, they flourished. Differentiation of morality and science, of "we" and "it," resulted in the freedom and growth of science. Differentiation of the "I" and "we" domains resulted in individual freedom and rights, democracy, and various liberation movements such as feminism and the abolition of slavery. Finally, differentiation of the "I" and "it" domains resulted in the demand for evidence. This in turn diminished the power of magical thinking and of individuals arbitrating reality according to their own mere desires or decisions.

Differentiation, Dissociation, and the Critics of Modernity

Healthy organic growth occurs by processes of differentiation and integration. A fertilized egg, for example, becomes an infant by a process of the division and differentiation of its cells into specific types and their integration into functioning organs. The failure of either differentiation or integration results in pathology.

When differentiation fails, the result is enduring fusion, fixation, and developmental arrest. However if differentiation proceeds too far, then the differentiated elements which should be integrated instead become dissociated and alienated. Perhaps the best known example involves the psyche's differentiation of the ego and the id. The ego differentiates out of the id, and ideally they function as an integrated whole. However, if integration fails, then the ego can repress and alienate the id with very painful consequences.

If the difference between differentiation and dissociation is not appreciated, then we can easily confuse growth with pathology and evolution with disturbance. According to Wilber this is exactly what many critics of modernity do. They rightly argue that we must heal the dissociations of modernity. However because they don't distinguish between differentiation and dissociation, they interpret modernity's differentiation of art, science, and morality as *only* pathological dissociation rather than as a combination of necessary healthy differentiation together with subsequent pathological dissociation.

Consequently antimodernity critics often miss the dignity of modernity and become premodern revivalists. They look backwards to an earlier, supposedly idyllic time—such as the early Greeks or the era of horticulture—prior to differentiations and proclaim this time and these peoples to be exemplars of unity and integration. But

according to Wilber these early peoples did not display problematic dissociation because they had not yet proceeded to the necessary prior and healthy stage of differentiation. Nevertheless, antimodernity critics argue that we should somehow get back to, recontact, and integrate this early idyllic state with our present ways of being. From Wilber's perspective they are actually advocating developmental and evolutionary regression.

Dissociation and Disaster

Yet critics of modernity are certainly correct in lamenting the presence and problems of dissociation in the modern world. For the three value spheres not only differentiated but became dissociated and alienated. A triumphant science overwhelmed and denigrated the other two. Science became scientism, materialism became the dominant philosophy, and higher levels of The Great Chain of Being were denied. The result was what Ken Wilber calls "the collapse of the Kosmos," Kosmos being a Greek term for the totality of reality: not just the physical universe but also the mental and spiritual domains. All that remained of accepted reality after scientism had done its demolition work was a one-dimensional ontological flatland.

According to this flatland view, interior, subjective, and intersubjective dimensions such as mind, emotions, morals, and consciousness are not really "real"; only objective "its" are real. All interior dimensions were therefore reduced to exterior surfaces or "its," and The Great Chain of Being was rejected because all levels above the first (matter) are interiors. We can therefore summarize the collapse of the Kosmos into flatland and modernity's dismissal of The Great Chain as follows. The eyes of mind and contemplation were devalued or dismissed entirely; only what could be seen and measured by the eye of the flesh was viewed as "real," and all interior dimensions and experiences were reduced to exterior "its."

According to The Great Chain of Being and epistemological pluralism, the lowest levels of matter and body were the domain of science, whereas the higher levels (mind, soul, and Spirit) transcended the body and were therefore inaccessible to science. However modern science found that actually many "higher" experiences and "realities" were clearly connected to the body and detectable in it. For example, it soon became clear that consciousness and the brain are intimately linked, a fact little known to premodern theorists.

Science therefore concluded that "higher" functions and "transcendental" domains were merely functions, or even epiphenomena, of biology and thus best investigated by science. Some scientists (or better, scientismists) and philosophers of science went even further to the extreme views of consciousness inessentialism (the idea that consciousness is not essential for cognitive function) and eliminative materialism (which argues that "psychology will simply go the way of alchemy and be replaced by neuroscience" [Flannigan, 1991]).

Any integration of science and religion will require a way to include both mind and matter, interior and exterior, transcendental and empirical.

Hierarchies have received a lot of bad press in recent times. Yet as Wilber pointed out in painstaking detail in *Sex, Ecology, Spirituality* (1995), there is no escaping them; hierarchies are part of the Kosmos and ubiquitous throughout nature. True, hierarchies can become pathological, as for example with cancer cells in biological systems or dictators in political systems. However, normal hierarchies are essential to existence and are merely orderings of phenomena according to their encompassing or wholistic capacity, e.g., organs encompass cells which encompass molecules which encompass atoms.

Hierarchies are central to both premodern religion and modern science. In religion the major hierarchy is The Great Chain of Being, whereas in science there are numerous hierarchies such as, for example, quark, proton, atom, molecule. Unfortunately, there seems little hope for a quick integration, as these hierarchies do not seem to relate to one another in any clear fashion. The resolution of this mismatch lies in the fact that there appears to be more than one type of hierarchy. Indeed Wilber claims to have found four major types which deal with four distinct domains: the interior and exterior of individuals and collectives respectively. These domains he shows diagrammatically as four quadrants (see Figure 2).

External Right-hand Quadrants

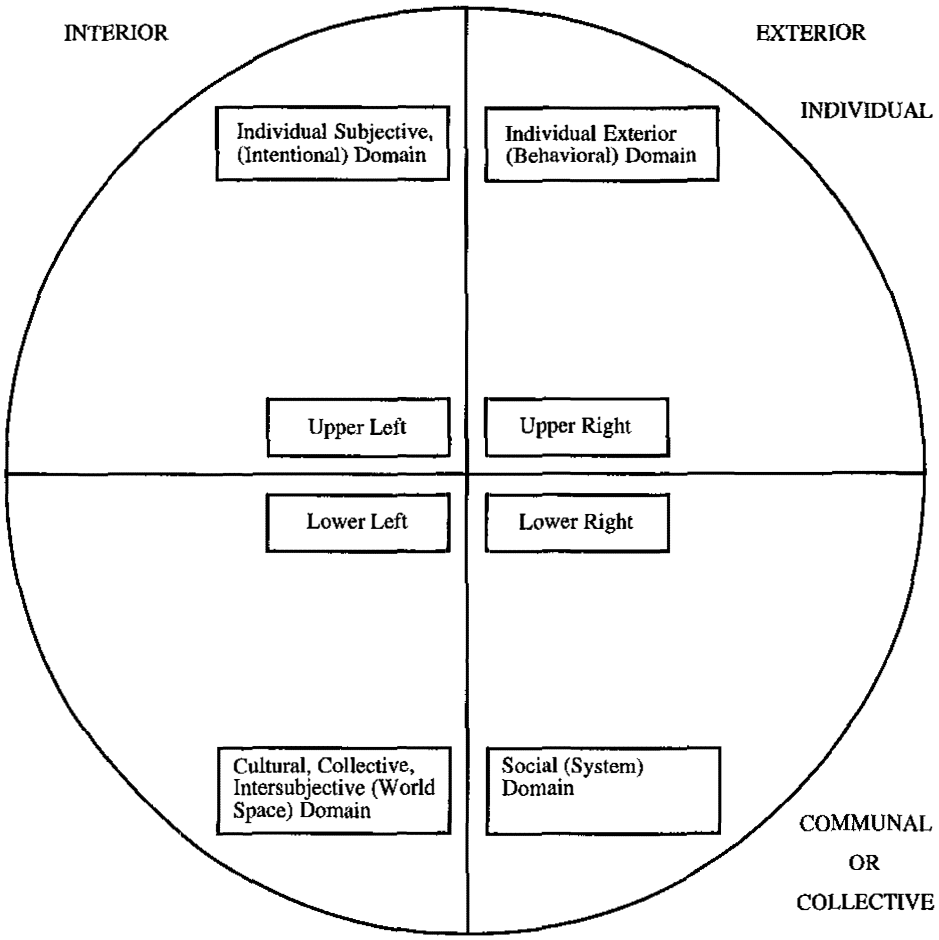
The upper right quadrant contains the exteriors of individual holons such as an atom or a person and their externally observable behavior. The lower right quadrant contains the exteriors of collective holons such as galaxies or societies and their behavioral objectifications such as social structures and institutions. These are the two quadrants and hierarchies researched by science.

Internal Left-hand Quadrants

The upper left is the quadrant of interior individual awareness. This awareness ranges across a hierarchy from primitive sensation through images, concepts, and adult cognition and beyond these to transrational, transpersonal cognition. Various aspects of this hierarchy were identified in ancient psychologies such as those of Aristotle and Plotinus and by multiple contemporary developmental psychologists such as Piaget.

The lower left quadrant portrays the interior of collectives. Individuals' subjective experiences and perceptions can be shared and thereby create a collective culture and worldview. Whereas the upper left quadrant contains interior subjective awareness, the lower left contains interior intersubjective awareness comprised of, for example, shared cultural meanings, values, and perspectives. These in turn provide the context for development of individual interior awareness. Wilber argued in *Up From Eden* (1996a) and *Sex, Ecology, Spirituality* (1995) that as individual awareness develops and deepens, so too does intersubjective culture which moves through, for example, magic, mythic, and rational worldviews as individuals center around preoperational, concrete operational, and formal operational cognitive stages respectively.

FIGURE 2



Since you can't have an inside without an outside, a plural without a singular, these four quadrants are necessarily intimately related to, and correlated with, one another. This fact turns out to be crucial to the integration of science and religion.

Relationship of the Four Quadrants to the Three Value Spheres

As we have seen, the rise of modernity centered around the differentiation of the three value spheres. These three—art, morals, and science—use "I," "we," and "it" language and correspond to Plato's Beautiful, Good, and True. In addition, these three correlate with the four quadrants as follows. The subjective "I" is the upper left, the intersubjective "we" is the lower left, and the objective "it" includes both the upper and lower right-hand quadrants, i.e., the exterior of both individuals and collectives.

The disaster of modernity was the dismissal of the left-hand quadrants. These were reduced to their right-hand objective correlates which alone were regarded as real.

This can seem reasonable because exteriors are easy to see and measure and each holon does have right-hand objective characteristics. However, left collapsed to right was a disaster, the disaster of modernity. Now all that was important or true in interior left-hand phenomena was thought to be knowable via right-hand science, and eventually internal phenomena were assumed to be *nothing but* as yet poorly understood objective right-hand events. Thus, for example, a thought came to be considered as "only" a neural discharge, *satori* merely an excessive gush of neurotransmitters.

The Disenchantment of the World

Yet in erasing left-hand interiors, modernity also erased meaning, purpose, and significance from our view of the universe, life, and ourselves. For meaning, purpose and significance, subjective value, and all other qualitative distinctions are interior left-hand events. Gone was any sense of value or purpose for life. Instead humans began to see themselves merely as meaningless blobs of protoplasm, adrift on a tiny speck of dust in a remote unchartered corner of one of countless billions of galaxies. The unhappy conclusion was what has been variously called the "disenchantment of the world" (Max Weber), "a desacralized world" (Schuon and Maslow), or "a disqualified universe" (Lewis Mumford).

POSTMODERN REVOLTS AND THE RETURN OF THE REPRESSED: ATTEMPTS TO REINTRODUCE THE SUBJECTIVE

As any psychiatrist will testify, denied aspects of one's being clamor for recognition and expression. Thus it is no surprise that several postmodern revolts soon erupted, all partly expressions of interiors crying out to be heard. Wilber divides these revolts into four main camps: Romantic, Idealist, Postmodern, and Integral.

Romanticism

The Romantics—Rousseau, Schiller, Coleridge, Keats, Wordsworth, Whitman, etc.—sought to overcome the hegemony of reason, science, technology and objectivity, and their repression of the subjective. They did this by attempting to resurrect, honor, and even glorify the subjective domains—especially aesthetics, emotion, sentiment, feeling, and self-expression—and attempting to use them to reach Spirit. They yearned for unity and wholeness, for a "unified feeling of life."

Unfortunately, in their drive to go beyond the limitations of unbalanced rationality and to recontact the vital currents of emotional life in nature and spirit, they often ended up falling headlong into what Wilber calls the pre/trans fallacy. This is the confusion of prerational regression with transrational progression. In their case this fallacy consisted of thinking that prerational impulses, feelings, moods, and motives were transrational spiritual breakthroughs. According to Wilber they therefore regressed, or at least sometimes unwittingly championed regression.

Idealism

Sometime in the nineteenth century a radical idea arose. The history of earth and humankind was not one of decline and fall from a glorious past, either once or in a series of cycles. Rather, according to this new view, the world and we are evolving, evolving even toward our own highest awakening and to God.

Immanuel Kant had shown that experience is largely constructed by the mind. His contemporary, Johann Fichte, expanded this to the idea that the entire universe is the product of mind, but of course a supraindividual or absolute Mind or Self. From this Mind issues the world, and in response to the world appears the finite self. For Fichte, self and Self are one, and liberation consists in knowing this Self and recognizing this unity. This claim is almost identical to the great Indian Vedantic tradition which arose around 800 B.C.E. and whose central cry was that "Atman (individual consciousness) and Brahman (universal consciousness) are one."

Schelling and Hegel elaborated these insights into a philosophy of spiritual unfolding. Consciousness was now seen to creatively unfold the universe, and part of philosophy's task thus became to understand this evolutionary unfolding which, idealists maintained, is the key to understanding Mind or Spirit itself.

Spirit was thought to first manifest as the world through the process of involution and to thereby become material nature. In the process it forgets its real identity or True Nature and was thus described as "slumbering spirit" (Schelling) or "God in its otherness" (Hegel).

Spirit then begins to evolve back towards self-recognition. It creates mind which is subjective spirit capable of reflecting on itself and its situation. At this stage spirit has gone from unconscious to self-conscious, and it is at this point that spiritual pathology can arise. The problem is that, as we have already discussed, subject and object, mind and nature can go beyond differentiation to dissociation. Schelling referred to this as "spiritual pathology" and Hegel as "unhappy consciousness."

The Romantics had wanted to heal this unhappy consciousness by a return to nature and to intense subjectivity and feelings. This can be valuable as an initial step towards recovery but can be destructive if it is made the final or only step.

The Idealists argued that there can be no viable going back. Rather what is called for is a continued evolution to the third great stage in which Spirit awakens to its original nondual state. Thus Spirit knows itself objectively as nature, subjectively as mind, and absolutely as Spirit. Yet Spirit is present in and as each evolutionary stage. Spirit is never apart from manifestation, only unknown to manifestation. This was a vast and uplifting vision which integrated the sacred and profane, time and eternity, the changing and unchangeable, mind and matter, nature, human, and divine.

But the idealist movement had a fatal flaw and was rapidly demolished. For while its creators had glimpses of a splendid vision, they lacked a spiritual discipline or *yoga*.

Thus they had no means by which to stabilize this vision in themselves. Worse, they also could not teach others how to develop their minds so that they too could reach the transpersonal stages where such visions can be accessed and thereby either confirmed or rejected. Therefore their ideas were soon rejected as "mere metaphysics," metaphysics in the bad sense meaning an untestable and hence unverifiable thought system. This left scientism, materialism, flatland, and disenchantment to reign supreme.

Postmodernism

The term "postmodernism" has two main meanings. The broad meaning refers to any of the major social currents following from, or reacting to, modernity. The narrow, technical, and extreme sense of the term refers to a recent philosophical movement which claims that there is no truth, only socially constructed interpretations.

This latter postmodernism recognized just how crucial interpretation is to knowing. After all, interiors such as love, fear, passion, or understanding cannot be directly observed by the senses. Whether the interiors are the mental state of a friend or the meaning of a play, they must be inferred by introspection and interpretation. Postmodernism was therefore a noble effort to escape the dominant flatland worldview by recognizing and honoring interiors and interpretations.

However, like so many movements born of reaction against a status quo, narrow postmodernism ended up going too far. Before long it lurched to the extreme claims that all we can know are interpretations and that objective truth is a mirage. Whereas the disaster of modernity had been the flatland denial of validity of left-hand subjective knowledge, postmodernism fell into the opposite trap and began to deny the validity of objective right-hand knowledge.

Yet in championing this extreme position, postmodernism fell into the trap of what is called performative contradiction. In the very act of making its claim it contradicted itself, for it claimed that it is objectively true that there are no objective truths. The logical conclusion can only be either nihilism or the narcissistic claim that all truth claims are invalid except its own. Nevertheless, despite the self-defeating extremes to which it fell, postmodernism rests on three central assumptions which Wilber feels are valid and need to be integrated into any comprehensive integral view. These three are constructivism, contextualism, and integral-aperspectivalism.

1. *Constructivism.* Knowledge is not simply given to us but rather is partly a construction and interpretation.

While this is a valid and important point, it does not prove that there is no objective component to reality or that objective truth claims are necessarily completely invalid. Rather it situates such claims within interpretations.

2. *Contextualism.* Meaning is context-dependent. For example, the word "bark" has very different meanings when situated in the phrases "the bark of a dog" and "the bark of a tree."

An important implication is that, since possible contexts are potentially infinite or endless, there is no way to give a final or ultimate meaning to any term. Unfortunately this important recognition has been pushed to extreme and self-contradictory perversions by extreme postmodernism, especially deconstructionists who deny that any meaning exists or can be communicated. These semantic terrorists deconstruct any statement by science or philosophy about the objective world by finding a context (perspective) which makes the statement seem ridiculous. (Wilber points out that concepts such as salary, tenure, and pay raise are notable exceptions.) But of course extreme contextualism falls into performative contradiction.

3. *Integral-aperspectival.* Because meaning is context dependent, any single perspective will be partial and perhaps distorted, and we therefore benefit from multiple contexts. In other words, we benefit from an integral-aperspectival view which is able to see things from multiple perspectives and integrate them into a meaningful whole. Several theorists have suggested that the ability to adopt this integrative, aperspectival view is a higher cognitive capacity beyond what is usually considered the normal ceiling of development (Piaget's formal operational thinking). This higher capacity Wilber calls "vision-logic."

Unfortunately, even the integral-aperspectival view can be confined to exteriors alone, thus collapsing interiors and further reinforcing rather than escaping the flatland view. Systems theory offers just such an example. It views objects from multiple perspectives simultaneously but pays no attention to interiors and subjectivity. Yet systems theorists frequently claim to be encompassing and mapping *all* of reality, even while omitting the subjective half of it.

Valuable as some postmodern insights are, extreme postmodernism strangled on its own success. It went from recognizing the importance of giving all perspectives their fair attention to the self-contradictory and self-annihilating belief that no perspective is better or worse than any other, except of course its own. Nevertheless, philosophical postmodernism is a crucial part of our story because of its important role in re-legitimizing interior left-hand dimensions, dimensions which are crucial to re-legitimizing religion.

SCIENCE AND INTERIORS

For Wilber, the dismissal of Spirit is actually a symptom of a larger denial. This is the denial by science—actually scientism, but the distinction is often distressingly small—of the legitimacy of the interior left-hand dimensions in general. Reconciling religion and science therefore requires relegitimizing, not just Spirit, but interiority and subjective experience in general. This in turn requires answering science's two major objections to the reality and validity of interior dimensions. The first objection claims that our experiences are nothing but neuronal activities, while the second claims that, even if these experiences were real, there would be no way to test or validate them.

The first argument is ontological and is a form of materialistic reductionism, or more precisely, neuronal reductionism. It claims that, since supposedly interior, higher, or

transcendental experiences show up as electrical brain wave activity, they are therefore *nothing but* neuronal fireworks, and in the case of mystical experiences probably disturbed fireworks at that. Perhaps the most striking example of the deranged fireworks view of religion was provided by the Nobel prize winning DNA chemist Francis Crick, who suggested that religious experiences might be due to a dangerous mutant messenger molecule which he called theotoxin. Dangerously close is Persinger's suggestion that these experiences may result from a variety of epilepsy (Persinger, 1987). (Let's all remember to take our anticonvulsant medication!) A century ago William James dismissed such pathologizing reductionism as "medical materialism," but the message does not seem to have sunk in.

Wilber offers two arguments against reductionistic claims. He first points to the huge amount of evidence—phenomenological, cross-cultural, contemplative, and empirical—for the existence and importance of all four quadrants.

Second, he points to the fact, now widely acknowledged by philosophers of science, that scientific activity itself is based on, in fact utterly dependent on, a huge array of interior conceptual and perceptual structures and operations. These include not only interior conceptual tools that scientists are explicitly aware of such as logic, mathematics, and language, but also deep and largely unconscious background filters and operators including linguistic structures and cultural contexts such as worldviews and ethical norms. In other words science is utterly dependent on the interior structures that some scientists deny validity.

Which brings us to the question: what is science? This may seem a simple question, but as Hilary Putnam, one of the twentieth century's foremost philosophers of science observed, "I don't believe there is *really* an agreement in our culture as to what is a 'science' and what 'isn't'" (Putnam, 1978).

Wilber points out that, contrary to many people's assumptions, there is nothing in the scientific method which says it can be applied only to sensory experience. Sensory empiricism is therefore not a defining characteristic of science or the scientific method.

Part of the problem lies with the fact that the terms empirical and empiricism have been used in two different ways. In its broad use empirical simply means experiential. An empirical verification means evidence by experience. This allows for sensory, mental, and spiritual empiricism, seen respectively by the eyes of flesh, mind, and contemplation.

However, empirical has also been given a very narrow meaning which confines it to sensory experience alone. Many classical empiricists use this narrow meaning to reduce the crucial idea that all knowledge claims must be based on experience to the painfully contracted claim that all knowledge must be based on, and should be reduced to, purely sensory data.

This double meaning of empirical lies at the root of one of the major confusions about the scientific method and whether or not it must be "empirical." Wilber points out that science *cannot* limit itself to narrow, sensory empiricism because that would rule out mathematics, logic, and many of the conceptual tools of science which are themselves

nonsensory interior structures and operators. Science must therefore use empirical in the broad sense meaning experiential evidence in general.

The Three Strands of All Valid Knowing

Wilber then sets out to extract the general principles of scientific method which apply to all types of empirical evidence. His hope is to provide the methodological basis for sciences of sensory experience, mental experience, and spiritual experience; sciences of the eyes of flesh, mind, and spirit; monological, dialogical, and translogical sciences. If he is successful in this, he will have effectively answered the second objection of scientists against the validity of interiors, namely that they cannot be tested and validated.

Wilber summarizes the three steps that he believes are essential for any valid knowledge, steps first presented in his earlier book *Eye to Eye* (1996b). These three steps are:

1. *Instrumental injunction.* This takes the form, "if you want to know this, then do the following." Instructions such as, look through the telescope, multiply acceleration by time, or hold attention on the breath, would be examples for the eyes of flesh, mind, and contemplation respectively.

2. *Direct apprehension.* Observe the direct experience revealed by the injunction.

3. *Communal verification.* Check the experiential data against the experience of others who have also adequately completed the first two steps in order to obtain confirmation or rejection of the data.

These three strands overlap with the requirements of the three major philosophies of science which are the schools of empiricism, Thomas Kuhn, and Karl Popper. Empiricism demands that all knowledge claims be grounded in experience or data. If we employ the broad meaning of empirical as experiential, then this requirement concurs with the second strand.

However data requires a method or injunction to detect it. This is strand number one and was Kuhn's emphasis. (Recall that as Kuhn used the term "paradigm," it referred to a method or technique.)

Popper's contribution was to emphasize the importance of falsifiability. In other words genuine knowledge must be open to possible disproof, otherwise there is no way to determine its validity. This is strand number three.

Empiricism, Kuhn's views, and Popper's falsifiability criterion have often been constricted to sensory data alone, thereby invalidating mental and spiritual knowledge and contributing to flatland scientism. However, with his arguments against the plausibility of this constriction, Wilber hopes to preserve the valid and valuable essentials of each of these three philosophies while simultaneously legitimizing the dialogical and translogical sciences of mind and spirit.

WHAT IS RELIGION?

In revisioning science, Wilber asked it to surrender its constricting and distorting allegiance to narrow scientism and sensory empiricism and to adopt instead a broader, more accurate perception and self-image. Likewise, he argues that religion must also adopt a more accurate self-image.

Science was asked to cease its reductionistic and imperialistic dismissal of other knowledge in light of data that this reductionism is inaccurate. So too Wilber asks religion to open its claims and practices to verification. Mythological claims—such as that Moses literally parted the Red Sea or that Lao Tzu was 900 years old at birth—have no evidence to support them and therefore fail the test of the three strands of genuine knowledge.

But myths account for much of what we commonly think of as religion. If these are jettisoned, what is left? Wilber answers that what remains is what is most unique and important: direct spiritual experiences and the contemplative methods or yogas for producing them. It is these experiences that illumined the great religious founders, and they in turn passed on methods (injunctions) by which their followers could recreate in themselves these very same illuminations.

As any dedicated practitioner in an authentic contemplative discipline knows, one's claims for spiritual insight and illumination are subject to rigorous appraisal through testing by teachers and peers. One of the teacher's most important tasks is to identify false or shallow illuminations, such as the Buddhist pseudo-nirvana, and to redirect the student's practice towards deeper and more accurate experiences. Thus if used appropriately, the eye of contemplation follows the three strands of knowing and can deliver valid knowledge. The heart of religion, as well as its great strength and contribution, is its contemplative core, and this is a spiritual science.

With science freed from its narrow and fallacious sensory empiricism and with religion stripped of its bogus mythologies, both are now grounded in broad empiricism and the three strands of knowledge. As such they begin to look much more compatible, and the quest for integration suddenly seems more feasible.

BROAD SCIENCE AND ITS INTEGRATION WITH RELIGION

Wilber is aiming for a broad science of all four quadrants encompassing both exteriors and interiors. The four quadrants, or big three, he therefore sees as aspects of a broad science that explores everything from atoms to culture, galaxies to mysticism, and does not reduce one to another.

Applying the three strands for acquiring valid knowledge to each quadrant in turn yields a particular type of knowledge.

> The upper right quadrant gives us the sciences of the exteriors of individual holons, sciences such as physics, biology, and behaviorism.

Applying the three strands to the lower right quadrant we get the sciences of the exteriors of communal holons. These sciences include, for example, systems theory, ecology, and sociology.

Investigating the upper left quadrant discloses the interiors of individual holons. These interiors include the personal experiences unveiled by introspective and depth psychologies, as well as the formal structures of mathematics and logic, and of course, aesthetics and art.

The lower left quadrant sciences investigate the interiors of communal holons. As such they reveal the shared cultural meanings and contexts without which individual consciousness cannot develop and objective knowledge cannot arise. Cultural sciences focus on shared meanings and values and answer the question "what does it mean?"

The Spiritual Domains

What individual spiritual traditions report and what transpersonal psychology and anthropology are finding across traditions is that there are several potential stages of psychospiritual development and consciousness beyond the conventional. Wilber's claim, which he has argued extensively in previous books, is that if these spiritual stages of illumination and mystical union are added to the stages of conventional psychological development, then what emerges is The Great Chain of Being. That is, the upper left quadrant sciences of conventional developmental psychology and of spiritual contemplation together reveal The Great Chain stretching from the most primitive, sensory apprehensions at the bottom through conventional mental stages such as concrete operational thinking through to spiritual awakening.

However in Wilber's new synthesis the scope of The Great Chain is significantly reduced. For premodern religion The Great Chain of Being constituted or covered all of reality. However in light of modernity's differentiation of the big three (the four quadrants), we can see that The Great Chain covers, not all four quadrants, but only the upper left. Thus The Great Chain gives precious little insight into the other three quadrants and so can have little to say about such things as the function of brains, societies, and cultures.

Furthermore Great Chain theorists, to whatever extent they recognized other quadrants, placed them all in the material or lowest level and so all other levels such as mind are "transcendent" to the material realm and body. The differentiation of modernity and the four quadrants model suggest that material domains are *not* the lowest rung of The Great Chain but rather *represent the exterior forms of each rung or level.* Thus the general outline of The Great Chain is vindicated, but the Chain is now situated within the differentiation of modernity and recognized as occupying only one quadrant and therefore covering only one quarter of all knowledge.

Since the religious worldview has The Great Chain of Being at its core, and modernity has the differentiation of the value spheres—the Big Three, or four quadrants—at its

core, then Wilber has effectively offered a way of integrating these two worldviews. The Great Chain, the Big Three, the scientific method, and broad sciences have all been preserved, appropriately honored, and integrated in a synthesis of enormous scope, beauty, and power. How widely accepted this synthesis will become will be determined in large part by the question of how willing scientists are to accept the Great Chain. This, of course, is no small question.

Wilber is now ready to explore some of the implications and applications of this synthesis.

IMPLICATIONS AND APPLICATIONS

For Wilber, each level of The Great Chain is not a uniform plane as was traditionally thought but rather consists of at least four dimensions or quadrants. If these are simplified for convenience to the Big Three of art, morals, and objective science, and if The Great Chain is similarly shortened to four levels—matter/body, mind, soul, and spirit—then this gives us four levels with three dimensions each: a total of twelve different domains. Each of these domains can be explored systematically, and Wilber does this by examining the different levels of art, morality, and science.

Levels of Art

The upper left quadrant of subjectivity and subjective expression is the dimension of art. Art can focus on and represent any level of The Great Chain. Each level includes and transcends lower levels and also has novel emergent properties. For example, the mental level has properties and capacities that are quite unknown to matter. Each level of art often takes these new emergent and defining features as its focus, and the result is a distinctive quality or flavor for each artistic level.

In visual arts of the sensorimotor world, the content or referent is the sensory word as perceived with the eye of flesh. This is objective or representational art of such things as landscapes and portraits and includes the schools of realism, impressionism, and naturalism.

At the mental level, the eye of mind explores and expresses the contents of the psyche. The results include, for example, the schools of surrealism as well as conceptual and abstract art.

At the subtle (soul) level, art takes for its subject subtle images, visions, archetypes, and illuminations. These enter awareness, either spontaneously in gifted subjects, or when people begin a contemplative practice. This art is a direct depiction of what is seen within with the eye of contemplation.

Such art not only represents or portrays the subtle depths of the artist but can also resonate with and evoke similar depths in an appropriately sensitive viewer. This type of art can therefore be used as a contemplative aid, and Tibetan painting offers a

striking example. Here the Buddhas and Bodhisattvas are not merely symbolic and metaphoric but rather represent our own innate potentials.

As the eye of contemplation deepens, subtle images cease to arise and there remains only formless awareness, consciousness, Mind or Spirit. Awareness is now free of limitations and can therefore take any level or object as its topic. The result can range from the utter simplicity of Zen landscapes to the complex multi-level symbolism of Tibetan archetypal figures. Again, such expressions of inner depth can temporarily evoke a similar depth and freedom in an adequately prepared mind. Therefore art can represent any level of The Great Chain, and the depth of art reflects the depth of artists and their culture.

For Wilber art is a subjective, upper-left quadrant expression of mind and Spirit. Likewise morality is an intersubjective, lower left expression. Like art it can reflect and foster any level of The Great Chain and any level of psychological, spiritual, or cultural development. However Wilber deals only briefly with morality before passing on to science.

Science

For Wilber, Spirit is not above nature; rather Spirit is interior to nature. Higher levels of The Great Chain are not "above" the objective, natural, material world but within it. If, as Wilber suggests, all interior events have external correlates, then this dramatically transforms the role of traditional objective, sensory-empirical science with regard to spirituality. Now objective science is no longer limited to investigating only the lower level of The Great Chain. Rather it can research the external correlates such as brain waves, chemical shifts, and behavioral changes that accompany or result from transcendental experiences.

However, objective measures such as brain waves can tell us very little about the subjective qualities of the transcendental experiences that evoke these brain changes. To know whether a state of consciousness is experienced as transcendental and spiritual, we must ask the person. To know if it is a *genuine* spiritual experience, we must test it against the wisdom of qualified contemplatives. In other words, we must employ deep science.

Combining both objective sensory science and deep science gives us the best of, and a union of, subjective and objective, left and right, interior and exterior, transcendental and natural. The result is what Wilber calls a transcendental naturalism or a naturalistic transcendentalism. Science thus becomes the research method par excellence of the objective right-hand expressions of spirit on every level.

Morality, science, and art—or the Good, the True, and the Beautiful—can all be seen as expressions of Spirit in the world. These expressions mirror the level of The Great Chain to which individuals and cultures have developed and can call, even across centuries, to other people and cultures to recognize and develop to these same levels.

Integral Research

What is needed now is an all-quadrant, all-level research program. Such a program would attempt to integrate subjective experience, objective behavior, objective systems, and inter-subjective structures and to intercorrelate them without reducing one to another. This can be done, not only for conventional developmental levels but for transconventional, transpersonal levels as well.

What awaits us is to take the maps of interior, higher developmental stages bequeathed us by the great religions and to explore their objective brain, body, and behavioral correlates; the cultural beliefs, worldviews, and ethics that they foster; and the social, political, educational, and economic institutions that express them. In addition we will want to explore how these cultural and social expressions feed back on and affect individual psychospiritual development. Most especially, we will want to learn what social-cultural forms best foster individual and social maturation towards what religions the world over regard as the *summum bonum:* enlightenment, salvation, liberation, *satori, wu,* or *moksha.* Transpersonal psychology, sociology, and anthropology have begun this project but much, much more remains to be done (Walsh & Vaughan, 1993).

Whatever the optimal social and cultural forms may turn out to be, they will surely be informed by an integration of the best of science and the best of religion, an integration that Ken Wilber will have helped to create.

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Requests for reprints to: Professor Roger N. Walsh, Dept. of Psychiatry and Human Behavior, University of California Medical School, Irvine, CA 92697.