Title
The worldview of Ken Wilber

Permalink
https://escholarship.org/uc/item/95w414rd

Journal
Journal of Humanistic Psychology, 34(2)

Authors
Walsh, RN
Vaughan, F

Publication Date
1994

License
CC BY 4.0

Peer reviewed
THE WORLDVIEW OF KEN WILBER

ROGER WALSH is a professor of psychiatry, philosophy, and anthropology at the University of California at Irvine. His publications include The Spirit of Shamanism and Meditation: Classic and Contemporary Perspectives, and he is the coeditor, with Frances Vaughan, of Paths Beyond Ego: The Transpersonal Vision.

FRANCES VAUGHAN is a practicing psychologist in Mill Valley, California, and the author of Awakening Intuition and The Inward Arc.

Summary

Ken Wilber has emerged as a leading contemporary thinker and theoretical psychologist. The most remarkable features of his work are the extraordinary scope and integrative capacity of his multidisciplinary syntheses, which span psychology, philosophy, sociology, anthropology and religion. The result is a coherent, comprehensive worldview for which this article provides a brief introduction.

Ken Wilber is widely regarded as one of today’s foremost thinkers and theoretical psychologists. He has won this reputation by creating syntheses of unprecedented scope among diverse schools and disciplines of psychology, philosophy, sociology, anthropology, and religion. In a world of increasing specialization, the range and

AUTHORS’ NOTE: The authors would like to thank Tom Greening for his editorial assistance and Bonnie L'Allier for her secretarial and administrative assistance.
richness of Wilber's vision, together with his ability to integrate apparently conflicting viewpoints—East and West, psychology and philosophy, science and religion—is a delight. This article is intended to offer a synoptic introduction to Wilber's worldview.

The Spectrum of Consciousness

How does Wilber see the many schools of psychology fitting together? In his initial book, The Spectrum of Consciousness, and a simplified version, No Boundary, Wilber (1977; 1981a) uses the metaphor of the spectrum, whose rich bands of colors are composed of a single underlying invisible entity: light. Likewise, he suggests that consciousness displays a spectrum of levels and states, that these are related to corresponding structures of the unconscious, and that different schools of psychology address different levels of the spectrum. The different schools are, therefore, seen not as necessarily contradictory and antagonistic but as partially true and complementary. This spectrum view of consciousness forms the infrastructure for his ontological, epistemological, developmental, and evolutionary theories.

Developmental Theories

In The Atman Project, Wilber (1980) turned his attention to developmental psychology. Here he traces development from infancy to adulthood, comparing and integrating major conventional Western thinkers such as Freud, Jung, Piaget, and Kohlberg. He then traces development through further (transconventional, transpersonal) levels using the major nonwestern schools, thus creating a developmental model that spans the full spectrum of human growth from infancy to enlightenment.

Since the personal level has been viewed as the acme of human development by most Western psychologies, a recurrent trap has been to dismiss or pathologize transpersonal levels. Indeed, because some transpersonal experiences, such as the dissolution of ego boundaries, bear a superficial resemblance to certain pathological conditions, there has been a tendency to equate the two. Thus, for example, mystical experiences have sometimes been interpreted as "regressions to union with the breast," ecstatic states viewed as "narcissistic neurosis," enlightenment dismissed as "regression to intrauterine stages," and meditation seen as "self-induced catato-
nia.” This is the trap that Wilber calls “the pre-trans fallacy,” and in his paper of the same title, he catalogs the varieties of this fallacy and the conceptual errors that have perpetuated it.

In *Transformations of Consciousness* (Wilber et al., 1986) he refined his developmental stages and linked them to specific pathologies and therapies. His spectrum of consciousness is thereby expanded to encompass spectra of development, pathology, and therapy.

Developmental stages are now linked to the appearance of corresponding basic structures, those constituents of the psyche that, once they emerge, tend to endure. For example, basic structures include the sensorimotor level (Piaget’s sensorimotor level) with its sensory data, the representational mind with its symbols and concepts, and the subtle level with its visions and archetypes. For Wilber, these basic structures of consciousness correspond to the levels of the Great Chain of Being, which is discussed below.

The key idea of his spectrum of pathology is that each stage of development is predisposed to specific types of pathology and requires corresponding treatments. These pathologies he divides into broad categories of prepersonal, personal, and transpersonal. Thus he associates what he calls the prepersonal pathologies, such as infantile psychosis and narcissistic and borderline personality disorders, with early development failures. At the personal level he includes neuroses and existential distress. Beyond these are transpersonal pathologies associated with spiritual experiences and practices, such as kundalini crises, the dark night of the soul, or the spiritual emergencies described by Stan and Christina Grof (1986, 1989, 1990, 1993).

For each of these stage-specific disorders, Wilber suggests a corresponding stage-specific treatment. Thus, for the earliest developmental failures manifesting as psychoses, he recommends pharmacological approaches. For narcissistic and borderline personality disorders, he suggests structure-building therapies; for neuroses, uncovering techniques; and for existential crises, existential therapy. For transpersonal disorders, he recommends a judicious mix of treatments developed over the centuries by contemplative traditions combined with psychotherapeutic approaches by a transpersonally sensitive therapist.

This spectrum of pathology and treatment is brilliantly articulate and logical, but some clinicians have expressed concern that
it is more theoretical than practical and does not necessarily match clinical observations (Grof & Grof, 1986). This is understandable because Wilber's background is theoretical rather than clinical.

Challenges to Wilber's Developmental Scheme

There have been two challenges to Wilber's developmental scheme based on Jungian and existential perspectives, respectively. Prior to Wilber, Jung's was the only major Western theory of transpersonal development, although of late it has been subjected to increasing criticism. Michael Washburn (1988, 1990) attempted to expand on Jung's ideas and in doing so to challenge Wilber's model. Whereas the two models differ on several points, particularly notable is Washburn's (1990, p. 86) claim that transpersonal development necessarily requires a U-turn, "a return to origins... a going back before a higher going forth." Washburn's general idea is that some sort of return to the source or ground out of which the ego initially arose is an essential component of transpersonal development.

Wilber's (1990b) argument against this idea in particular and the Washburn-Jung model in general was supported by a study of spiritual practitioners who had reached transpersonal developmental stages (Thomas, Brewer, Kraus, & Rosen, 1993). Contrary to Washburn's hypothesis, only some of them had experienced regressive crises. This study is by no means a definitive test of Washburn's and Wilber's claims, but it is suggestive and provides an inspiration for further testing of Wilber's and other transpersonal theories.

The second challenge was that of Kirk Schneider (1987, 1989) who critiqued Wilber's claims for the existence, significance, and beneficence of higher transpersonal states of consciousness and developmental stages. He argued from an existentialist perspective that such states, especially the highest, are unprovable, logically contradictory, and humanly impossible. Unfortunately, Schneider's excellent knowledge of existentialism was not matched by his understanding of transpersonal experiences, and several complex assumptions and issues were insufficiently appreciated, some of which Wilber noted in his responses (1989a, 1989c). The ensuing debate can be read in part as an example of a paradigm clash between existential and transpersonal worldviews. A similar
paradigm clash occurs, as we will see, over Wilber’s evolutionary theory and indeed is a recurring clash between some existential and transpersonal worldviews.

Evolution

Having developed schemas for comparative and developmental psychologies, Wilber (1980) turned his attention to anthropology and applied the developmental schema from *The Atman Project* to human evolution. In *Up From Eden*, Wilber (1981b) traces the evolution of human consciousness, identity, culture, and religion and their dynamic interplay from the period of the first hominids up to the current time. Different stages of evolution, he suggests, have been marked by different predominant states of consciousness and identity, and these have been reflected in culture and religion. The general trend is a progressive development and freeing of consciousness, first from exclusive identification with the body and then from various components of mind.

What he is doing here is viewing anthropological evidence of human evolution from the perspective of the perennial philosophy that lies at the heart of the great religions. Evolution, he therefore suggests, is no mere random concatenation of genetic and selective forces but rather an expression of a vast cosmological game of hide-and-seek in which consciousness creates matter (involution) and then evolves through successive physical, biological, mental, and spiritual (consciousness) levels to self-recognition.

This general pattern of consciousness manifesting as the physical universe and then evolving to self-awareness is similar to Sri Aurobindo’s view. Wilber’s additional contribution is the attempt to tie the evolution of consciousness to contemporary psychology and anthropology.

A unique feature of *Up From Eden* is that Wilber (1981b) hypothesizes two distinct lines of evolution. One is that of the average or collective consciousness, the other that of the pioneers who precede and inspire the collective. These pioneers he identifies as the shaman, yogi, saint, and sage who as evolutionary leaders plumbed successively greater depths of self and heights of consciousness. Therefore, in contrast to scholars such as Mircea Eliade, Carl Jung, and Joseph Campbell, Wilber suggests that religious adepts, as well as the techniques they use and the realizations they attain, have evolved over time (Walsh, 1990).
The great sages he regards as evolutionary forerunners who point the way to stages of development latent within us all. These stages may represent humankind's potential destiny and omega point because in them the sages claim to reawaken to our true nature of unity with the entire universe and the Universal Consciousness that created it. This reawakening or enlightenment is the source of statements at the heart of the great religious traditions such as:

The Father and I are one.
The Kingdom of heaven is within you. (Christianity)
Look within, thou art the Buddha. (Buddhism)
Atman (individual consciousness) and Brahman (universal consciousness) are one. (Hinduism)
God dwells within you as you. (Yoga)
He who knows himself knows his Lord. (Mohammed)
Heaven, earth, and human form one body. (Neoconfucianism)
By understanding the Self, all this universe is known. (The Upanishads)

As a culture, we are largely unaware of further developmental possibilities even though our collective survival may depend upon realizing them.

*Up From Eden* is the most debated of Wilber's books. Anthropological critiques of it are similar to clinician's criticisms of Wilber's map of pathology, namely, that while the theory is logical and articulate, it does not always match the data.

The most detailed critique is that of Winkleman (1990). He argues, as do others (e.g., Staniford, 1982), that the theory is ethnocentric, rooted in a Western viewpoint, and fails to obtain data from a representative sample of cultures. He also points out, as Wilber himself acknowledges, that the theory is based on synthesizing the views of other theoreticians, such as Arieti, Gebser, Cassirer, and Neumann. There is no direct review of anthropological or archaeological data, and several claims contradict widely accepted anthropological research. Wilber responds that although Winkleman challenges some of his details, these criticisms, some of which Wilber accepts, do not threaten the integrity of the overall scheme. The problem here, however, is that the enormous scope of the theory makes it unclear how conflicting data could easily disconfirm it and hence whether the theory is readily testable.

Winkleman (1993) also makes a cultural relativism critique of the value system underlying Wilber's assessment of states and
stages as more or less evolved. Cultural relativism argues that all perspectives and values are culture laden and that "because there are no culture-free frames of reference, there are no absolutely objective criteria for comparing cultures and their traditions with respect to levels of development" (Winkelman, 1993, p. 5). From this perspective, there is no way to adjudicate the state(s) of consciousness occurring in one culture, for example, shamanic, as more or less developed than those in another (e.g., Taoist).

There seem to be three possible responses to the cultural relativism critique. Cultural relativism has itself been subject to two major critiques—one theoretical and the other experimental. Theoretically, cultural relativism stands accused of what is called performative paradox: of itself doing what it claims cannot be done. While claiming that no universal culture-free value judgments can be valid, it then established its own principle as just such a valid universal rule; that is, it exempts itself from its own universal rule. Besides this theoretical critique, there now exists significant evidence for the possibility of making valid cross-cultural developmental assessments (Habermas, 1979; Wilber, 1994).

The third possible response to Winkelman's cultural relativism critique is that Winkelman does not seem to take into account Wilber's own criteria for assessing developmental stages. Wilber (1982) advances as a metaphor for development the Chinese box that encloses box within box within box. Wilber concludes that a stage can be said to be more developed when (a) it emerges later, (b) has access to the lower stage and its capacities, and (c) possesses additional capacities not available to previous stages.

It is important to note that a developmental or evolutionary sequence is not necessarily the same as a value hierarchy (i.e., a later stage is not necessarily better than an earlier stage in the same way that a 10-year-old is not necessarily better than a 6-year-old). Many people seem to react negatively to developmental and evolutionary schemas in general and Wilber's model, in particular, because they do not appreciate this distinction.

Environmental philosopher Warwick Fox (1990) criticizes Wilber's theory for being anthropocentric (i.e., regarding humans as the most important and central factor in the universe). However, Wilber's view might be more accurately regarded as cosmocentric or theocentric, as it is ultimately centered in the Whole, or Spirit, as source, context, and goal of evolution. Fox counters by arguing that such theocentric or cosmocentric views are essentially self-
serving human projections on the cosmos and hence are still anthropocentric.

Here is another paradigm clash between opposing worldviews: Wilber's view sees the universe and its evolution as purposively directed by divine intelligence. The more traditional scientific paradigm espoused by Fox regards this view as a self-serving delusion.

In addition, Fox argues that Wilber's view is too linear and hierarchical, that species cannot be placed along a single linear scale of evolution, let alone a single scale of increasing perfection. Rather, each species must be regarded as perfect exemplars of their own kind. Here again we have a paradigm clash because from a traditional, scientific (earth-centered) evolutionary view, Fox's concern may be correct. Yet from a cosmocentric evolutionary view, it may also be true that individual species, including humans, represent points on a vast purposeful developmental progression toward the good and that this good can be realized by humans.

Wilber's developmental and evolutionary themes are extended further in a massive new three-volume work, Sex, Ecology, Spirituality. Here Wilber (1994) links the evolution of consciousness to data in fields as diverse as physical, biological, and cultural evolution; psychology; anthropology; sociology; ecology; feminism; philosophy; and mysticism. The result is a synthesis of almost unprecedented scope.

Epistemology

These conflicts raise the crucial question of how we can, or even if we can, assess the relative merits of competing worldviews such as those that differ primarily in their metaphysics. Science alone seems inadequate to the task, and contemporary philosophy avoids metaphysics almost entirely, assuming that such questions are undecidable.

Wilber (1990a, 1993a) argues that contemplation must be used to complement science and philosophy. Here he examines the philosophical underpinnings of his system and grapples with the problem of proof: How can one accurately assess the nature, validity, and value of transcendental experiences and the worldviews based on them? This is especially challenging in a culture so scientific that it often believes that what cannot be determined via sensory/physical data and science is necessarily nonexistent or unknowable.
Wilber argues that there are three distinct “eyes of knowledge” or epistemological modes: the sensory, the intellectual or symbolic, and the contemplative. Each of these modes has its own unique data and facts, and each realm of knowledge only partially overlaps others. To confuse these realms, such as by believing that contemplative knowledge can be reduced to intellectual understanding, is to commit a category error and to lose the unique information of each domain.

However, each domain does possess appropriate means of assessing the validity of knowledge in its own realm. Thus traditional scientific approaches are best suited for physical phenomena. However, hermeneutics (interpretive approaches) best serve the symbolic realm (e.g., the meaning of Shakespeare’s Hamlet is determined better by hermeneutics than by scientific analysis of the ink). Likewise, contemplative understanding is best evaluated via intersubjective testing by masters of this realm. Each method is valid in its own realm but only in its own realm. Failure to realize this has produced enormous confusion and conflict between scientists, philosophers, and theologians.

Sociology

Wilber’s next excursion was into sociology, and in A Sociable God (1983), he provides what he calls “a brief introduction to a trans-ascendental sociology.” Here his goal is a sociological framework capable of encompassing transpersonal experiences and practices.

To do this, Wilber uses the model of psychological maturation postulated in The Atman Project (1980) as a developmental framework for assessing the levels of social interaction. This provides a corrective addition to current methods of sociological analysis such as phenomenological hermeneutics which have lacked criteria for differentiating between levels of social interaction. Here Wilber has carefully linked his arguments with those of the German philosopher Jurgen Habermas, whom he considers the greatest living mainstream philosopher.

Wilber’s approach provides a means for avoiding the trap of taking one level of social interaction and pathology and making it paradigmatic for all, such as Marx and Freud did by interpreting all behavior in terms of economics and sexuality, respectively. Art, philosophy, religion, and all “higher” activities were then attributed to economic oppression or sexual repression, respectively.
Our current trend toward increasing rationalization has been widely interpreted as evidence of an anti- or postreligious evolution. But Wilber reframes this whole movement as an appropriate phase specific shift as prerational worldviews yield to the rational on the way to the transrational/transpersonal. From this evolutionary perspective, our current phase is seen as antireligious only if religion is mistakenly regarded, as it often is, as consisting solely of prerational beliefs and behaviors rather than as diverse behaviors that may express any of the prerational-rational-transrational developmental levels.

This perspective also allows a method of determining what Wilber calls the “authenticity” of a religion: the degree to which it fosters development to transrational levels. This he differentiates from “legitimacy,” the degree to which a religion fills the psychological and social needs, either healthy or unhealthy, of people at their current developmental level. These different dimensions of religion have often been conflated in the past. Differentiating them allows Wilber to outline a model in *Spiritual Choices* for distinguishing religious groups that are likely to prove beneficial, problematic, or even dangerous (Anthony, Ecker, & Wilber, 1987). In these times of religious confusion, such a model can be very useful.

The distinction between authenticity and legitimacy is an example of Wilber’s ability to identify and differentiate distinct dimensions that are commonly confused. In this vein he points out that the single term religion has been used in at least nine different ways and that progress in religious studies is going to require sensitivity to these distinctions.

*Physics*

One topic of considerable contemporary confusion and conflict has been the relationship between physics and mysticism. The view that modern physics is discovering remarkable parallels to, and perhaps even proof of, ancient mystical claims has been championed by writers such as Fritjof Capra (1991) and Gary Zukav (1979). This view has become remarkably popular except among physicists.

In *Quantum Questions* Wilber (1984), therefore, collected the writings of the great physicists—Einstein, Heisenberg, Schroedinger, and others—to see what they say about this question. Their conclusion? Physics and mysticism treat different domains and
physics can, therefore, neither affirm nor deny mysticism. Indeed Einstein claimed that “the present fashion of applying the axioms of physical science to human life is not only a mistake but has also something reprehensible in it” (Wilber, 1984, p. 5). Another physicist warned that “If I were an Eastern mystic the last thing in the world I would want would be a reconciliation with modern science, [because] to hitch a religious philosophy to a contemporary science is a sure route to its obsolescence” (Wilber, 1984, pp ix-x).

In Quantum Questions (1984) and The Holographic Paradigm and Other Paradoxes (1982a), Wilber points out that there is a long history of desperate and retrospectively laughable attempts to use science in general and physics in particular to both prove and disprove religious claims. Many of these attempts have been based on the use of vague and poorly defined terms.

Physicists do not claim to have direct contact with reality. They deal in mathematical formulae that describe patterns of events that, as Sir James Jeans (1948) confessed, “never describe nature itself. . . . Our studies can never put us into contact with reality.” The focus of mysticism, on the other hand, is on spirit, consciousness, the Tao, and the ultimate reality or ground of all phenomena that mystics claim to be able to experience or know directly. Moreover, spirit is said to be beyond all qualities, concepts, descriptions, and terms, and certainly beyond the reach of mathematical formulae; that is, Ultimate Reality is radically unqualifiable and indescribable—what Buddhists call shunyata and Hindus call nirguna—and so “The Tao that can be named is not the eternal Tao.”

Wilber concludes, contrary to some other theorists such as Capra (1991) and Globus (1986), that whereas there may be some identifiable parallels between descriptions from physics and certain mystical investigations, these parallels are likely to be few, abstract, and certainly not proof of mystical claims. For Wilber then, “genuine mysticism, precisely to the extent that it is genuine, is perfectly capable of offering its own defense, its own evidence, its own claims, and its own proof . . . . The findings of modern physics and mysticism have very little in common (Wilber, 1984, p. 26).

Ontology

Clearly, one of Wilber’s central ideas is that reality is multilayered and that the levels of existence form an ontological hierarchy,
or holoarchy as he prefers to call it, that includes matter, body, mind, and spirit. This is the Great Chain of Being, which has "in one form or another, been the dominant official philosophy of the larger part of civilized humankind throughout most of its history" (Lovejoy, 1936, p. 26).

For Wilber (1993b), different levels of development involve identification with corresponding levels of the Great Chain. We first identify with the body, then with the ego-mind, and perhaps thereafter, as a result of contemplative practices, with more subtle mental realms and eventually pure consciousness itself. Development and evolution consist of movement up this hierarchy, and consciousness becomes increasingly refined, expansive, and free as this movement proceeds. Different levels tend to be associated with different worldviews, schools of psychology, philosophy, and religion, and with different psychopathologies and appropriate therapies.

Although historically dominant, the Great Chain of Being and all hierarchies (especially ontological hierarchies) now face severe criticism. Philosophically, ontological hierarchies are widely regarded as unprovable, although they are widely accepted in developmental psychology. Historically, they have also been associated with patriarchal dominance and with a devaluing of the lower end of the spectrum (e.g., the body, emotions, sexuality, and the earth). As Donald Rothberg (1986) points out in an excellent review of the topic, these criticisms are not necessarily fatal, but they do point to distortions of the perennial philosophy that any hierarchical ontology, including Wilber’s transpersonal theory, must take into account. Wilber (1994) attempts to incorporate these concerns by differentiating between natural and pathological hierarchies.

**Personal Reflections**

The majority of Wilber's writings have been theoretical. However, he has written four intensely personal pieces. The first, an article titled "Odyssey" (Wilber, 1982b), provides an excellent autobiographical overview of the development of his thought.

The second, "On Being a Support Person," (Wilber, 1988) was catalyzed by his experience of being a support person for his wife Treya, who discovered a breast cancer 10 days after their marriage. Although many of us may become a support person at some time, almost nothing has been written about the role. Wilber shares very openly his own pain, fears, conflicts, insights, and discoveries. He
describes the difficulties involved (exhaustion, suppression of feelings, guilt, anger, resentment, and lack of outside support), various ways of being skillfully supportive (offering empathy, being an emotional sponge, limiting advice giving, not suppressing the loved one’s fears), and ways of getting support for oneself (support groups, psychotherapy, and spiritual practice). This article has proven very valuable to other support people.

Treya’s last 24 hours are described in a remarkably poignant article, “Love Story” (Wilber, 1989b). The whole saga of their battle with cancer, and practice of the *ars moriendi* (the art of dying), are chronicled in *Grace and Grit* (1991). The *ars moriendi* has long been a focus of individual practice in the world’s spiritual traditions, but rarely has it been so powerfully portrayed by a couple committed to using life, death, and relationship for spiritual practice.

Wilber’s theoretical system has its limits, but it also has enormous strengths. He has forged a systematic, broad-ranging, multidisciplinary, integrative, visionary yet scholarly worldview based in psychology, grounded in philosophy, spanning sociology and anthropology, and reaching to religion and mysticism. His integrations of apparently conflicting schools and disciplines reduce conflict and sectarianism, his incorporation of Asian traditions reduces Western ethnocentricity; and his contemporary interpretation of the perennial philosophy makes its wisdom comprehensible and helps us recognize that at their contemplative core, the world’s great religions contain road maps and techniques for inducing transcendent states of consciousness. The scope of his synthesis is perhaps unparalleled.

Another of Wilber’s contributions is that his system supports a generous and uplifting view of human nature. Gordon Allport (1964) remarked that “by their own theories of human nature, psychologists have the power of elevating or degrading that same nature. Debasing assumptions debase human beings; generous assumptions exalt them.” And Wilber’s view of humanity journeying, or awakening, to universal consciousness is elevating indeed.

Lewis Mumford (1956) pointed out that the great human and social transformations throughout history stemmed in part from far-reaching transformations of human images and involved three things: a broad-ranging synthesis of knowledge, recognition of a hierarchy of existence (the Great Chain of Being), and a purposive view of humankind as evolving toward “the good.” According to
Mumford, humankind’s primary task is to align ourselves with this hierarchy and evolution. Wilber’s system seems consistent with these criteria and this task.

The importance of fostering widespread individual maturation and social evolution is difficult to overestimate. Our willingness and ability to relieve global crises such as pollution, overpopulation, oppression, war, and even to avoid destruction of the planet may depend upon it.

Wilber’s contributions are obviously prolific. Perhaps the easiest way to begin reading them is with his autobiographical article “Odyssey” or his simplest book No Boundary. Other books could be read in chronological order. His articles appear in the Journal of Humanistic Psychology, the Journal of Transpersonal Psychology, ReVision, and in the books Beyond Health and Normality (Walsh & Shapiro, 1983) and Paths Beyond Ego: The Transpersonal Vision (Walsh & Vaughn, 1993). His ideas on future directions for his work and the transpersonal field in general can be found in his article “Paths Beyond Ego in the Coming Decades” (Wilber, 1993c).

One obvious question is: How does he do it? His own answer is, “I do my homework.” He certainly does, devouring books by the hundreds and being deeply involved in his own meditative practice. He remarks that without this practice both his experiential and intellectual understanding would be severely limited.

REFERENCES


Reprint requests: Roger Walsh, University of California Medical School, Irvine, CA 92717.