

## Reviews

*Genes, Mind and Culture: The Coevolutionary Process.* By CHARLES J. LUMSDEN and EDWARD O. WILSON. Cambridge, Mass.: Harvard University Press, 1981. 428 pages. \$20.00.

For Descartes, "mind" was a nonextended substance whose interaction with the material circuitry of the human brain (animals being only sophisticated machines) gave rise to judgment and freedom in an otherwise mechanically deterministic world. While much has happened over the last two centuries to make this hard ontological separation between mind and body untenable, Cartesian attitudes linger on in contemporary discontinuities between the social and biological sciences. This book is an ambitious attempt to lay the groundwork for the eventual unification of these disciplines by interpreting man's cultural expressions as consequences of his biological nature. Although the method is reductionistic, human nature is not unduly compromised by its application. Personal choice is neither the illusory feeling of freedom overlying a mechanistic determinism nor the ineluctable consequence of social forces; rather it is the basic act of biosocial man in a selective environment and hence the precondition to all cultural evolution. The theory of gene-culture coevolution Charles J. Lumsden and Edward O. Wilson propose requires a conscious mind for its meditation.

The developmental process, intervening as it does between genes and behavior, is central to the Lumsden-Wilson theory. Development proceeds according to certain epigenetic rules that confer on an organism the stamp of its biological nature—as individual, as species-member, as part of phylogenetic history. This nature includes not only physical characteristics but also dispositions to behave in certain ways. If these dispositions are inflexible or genetically hard-wired, no "culture" is involved in their expression—culture being defined as "the sum total of mental constructs and behaviors . . . transmitted from one generation to the next by social learning" (p. 3). At the other extreme, one could at least imagine a species whose behavioral dispositions were so plastic and open to structuring by learning as to be effectively free from genetic determination—a belief held of the human species by many social scientists. This notion that "genetic evolution produced culture, but only in the sense of creating the capacity to evolve by culture" (p. 1) is rejected by Lumsden and Wilson. They argue that, while modes of behavior are transmitted through society, the possibilities for society are themselves tightly constrained by those epigenetic rules that contribute to human nature. Culture is thus conceived to be an extended and variable phenotype on a "genetic leash," and it thus is under the continual formative action of natural selection.

These are reasonable assertions. The challenge and ambition of this book is to turn them into scientific theory, in the "hard" postulational-deductive sense. The book devotes much time to the development of simplified, mathematically tractable models of gene-culture coevolution and to the drawing out of their

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predictive consequences in necessarily dense mathematical arguments. Many will find this tedious. However, while the book is not an easy read, it is important and is accessible, with effort, to the motivated nonexpert.

The analysis depends on the epistemological move of treating culture as the sum of discrete units of social practice or conceptualization called “culturgens” (e.g., methods of agriculture or modes of sexual interaction). This is not as atomistic as it sounds: since culturgens tend to be mutually interactive, with the adoption of one facilitating or obstructing the adoption of others, culture retains its holistic structure under this methodology. The advantage of this approach is that one can study inbuilt preferences for given culturgens individually and thereby gain some insight into the conformation of the genetic leash to which culture is bound. A few biases such as the avoidance of incest seem universal and quite inflexible to social modification; others are at least codetermined by social circumstances and open to learning.

Unambiguous documentation of gene-culture ties is, for the most part, difficult to establish. But beyond falsifiability requirements, theory also involves a dimension of “reasonableness,” of squaring with whatever else we know about the world. Lumsden and Wilson build a reasonable biological case for their theory by considering the character of the epigenetic rules that finally do express themselves in behavior. These are divided into two categories: primary rules, discussed in chapter 2, by which an organism processes environmental input into sensations and discriminations (e.g., the four primary colors) and secondary rules, discussed in chapter 3, which involve the ways these basic percepts are cognitively organized. An important generalization for the gene-culture interaction is that of evolutionary parsimony: epigenetic rules tend to evolve to the least degree of selectivity that will suffice for effective behavior—putting a premium on the educational process, and hence on culture, for genetically profitable decisions. The principle of parsimony expresses itself at every level of evolution and for sound thermodynamic reasons: biological hard-wiring diverts metabolic energy from the primary business of creating viable genotypes. Culture is thus thermodynamically justified by virtue of providing grounds for discriminating decisions without hard-wiring for every possible exigency. In its economy, evolution leaves to judgment those things that can be judged and hard-wires those that cannot. Whereas incestuous unions are genetically detrimental, their personal or societal costs are not apparent to the practical judgment and must accordingly be hard-wired with a minimum of social imprinting. The costs of imprudent economic decisions, in contrast, are immediately evident, and such decisions are “informed” by context and are sensitive to education.

Discussion of the gene-culture translation itself begins in chapter 4. A simple model is introduced which treats the probability of an individual moving from one culturgens to another according to epigenetic biases and the social pressure of peer adoption. The point of this development is to show that small genetic biases lie at the root of social forces and that these are amplified, rather than swamped out, by the gene-culture translation. Having established this to their satisfaction, the authors develop in chapter 5 a gene-culture adaptive landscape, where cultural choices are figured into genetic fitness. In this model gene-culture fitness is treated as the product of “absolute selective values” of certain culturgens for certain genotypes and the “usage vector biases” or innate tendencies of those individuals to adopt the culturgens. This move enables the

authors to consider general formal requirements for productive adaptive strategies in social species.

Since genes express themselves in culture through behavior-biasing epigenetic rules and since the culture of a society is the network of learned relationships or meanings on which the genetic fitness of its members is based, the epigenetic rules are themselves the product of natural selection. Chapter 6 considers the dynamics of this gene-culture "coevolutionary circuit" with its circular flow of causation from genes to developmental programs to societal behavior to natural selection. Central to this process is the structural development of the human mind as a repository and manipulator of culturally significant meanings. This treatment I found particularly interesting, because of its emphasis on the coherence of learning (development "outside the womb") with the total process of ontogenesis. Learning involves the mapping of events and concepts into broad schemata within the long-term memory, through networks of cognitive structures or "nodes" (which need not be verbally expressible). To be made part of one's subjective map, new experiences or concepts must be linked into this cognitive network—a process which invests them with personal-cultural meaning and emotional coloring. We see in this mode of information storage and processing the profound, in-principle differences between the human mind and the "artificial intelligence" of a computer. Information is not stored in value-free cells but in holistic, often emotionally charged, networks of sensation by which one makes survival sense of the environment.

The penultimate chapter, "The Biogeography of the Mind," attempts to analyze the dynamics of culturgen movement through the long-term memory, using heuristic analogies to island biogeographics with its patterns of extinction and immigration. This ultimately leads the authors to consider the intriguing question of whether culture is necessary for civilization. We are invited to imagine a purely hard-wired civilization in which "all of thought and behavior is automatically preprogrammed in the brain" (p. 331). This would indeed be an acultural civilization, since it requires none of the creative acts of world-building that characterize a culture. The authors argue against the possibility of such a civilization on the basis of information theory, according to whose tenets the unique development and ordering of the brain's neuronal circuitry could not have been uniquely specified by genomes of sizes available to the living world. This conclusion is of course consistent with the principle of parsimony, which prefers a minimum of hard-wiring. The authors elect not to speculate on the philosophical implications of the civilization-culture linkage for the ontology of mind; but implicit in their treatment is a view of consciousness as that which intervenes between circumstance and response in the absence of hard-wired automaticity. (Is consciousness in computers obviated on these grounds?) In any case, the evolution of consciousness would seem to be a spectacular example of energetic parsimony.

The final chapter seems intended in part as a prolegomenon to all future social sciences, since the authors insist that all legitimate theory have the postulational-deductive structure we associate with the physical sciences (Freudian psychology, we discover, is not legitimate theory). The theoretical prospects for the social sciences, it is argued, lie in their making eventual contact with the epigenetic rules governing behavior. This is a bold demand, commensurate with the overall flavor of the book. Whatever its methodological successes and failures ultimately turn out to be, the Lumsden-Wilson theory of

gene-culture coevolution makes the world so tightly coherent that one cannot help at least considering human nature in its light.

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*Myth, Creativity, Psychoanalysis: Essays in Honor of Harry Slochower.* Edited by MAYNARD SOLOMON. Detroit, Mich.: Wayne State University Press, 1979. 220 pages. \$10.95.

The person honored in this *Festschrift*, Harry Slochower from Austria, was educated in the United States and Germany and was a professor of literature at Brooklyn College in the 1930s. He was strongly influenced by both Karl Marx and Sigmund Freud (as was true of Wilhelm Reich and others of the time). Because of his Marxism he came under attack in the United States Congress, and lost his job, but the United States Supreme Court reinstated him. Slochower went on to become a psychoanalyst and the editor of the *American Imago*.

*Festschrifts* in general seem of dubious value. The introductory chapters are essays about the honoree—chosen to be so 100 percent favorable and flattering as to embarrass any honest man. The remainder consists of articles by various colleagues and former students supposedly influenced by the honoree; the articles extend his thoughts in various directions, of which he might or might not approve. The effect is generally to leave the reader wondering, if this man is so good, would I not be better off reading some of his own works than reading all this peripheral material?

As *Festschrifts* go this book is better than most. The accounts by past students give a vivid picture of college life in Brooklyn between 1935 and 1940. Some passable accounts of Slochower's thoughts are given, enough to whet one's appetite to read *Mythopoesis*, his major work, but we are left wishing that the key passages of *Mythopoesis* had been reprinted.

As best one can glean from the essays in this book, Slochower's message is as follows. In a mythological age people take the tales of a society as presenting concrete facts (like an inerrant Bible) or at least unquestionable moral truths, and the myths support the current social power structure. Mythopoesis comes later, when the myths are taken symbolically and a change of function takes place. Slochower is quoted, "Here, the character becomes a hero in that he challenges the stultifying order of his society as well as labors in the higher interests of his society" (p. 24). Don Quixote is cited as an example: his madness is a strategy against the pragmatic reason of his day as it recalls the Golden Age "and its anti-pragmatic values of honor, justice, equality and freedom" (p. 24). It is through the method of thesis, antithesis, and synthesis that the hero can both rebel against his society and work for its higher interests. Mythopoesis is a high act of creativity, which brings conflict to a new plane. "And mythopoesis warns against an unlimited rebelliousness which does not 'remember' its social sources and resources, and is blind to social

needs" (p. 54). The hero is "an instrument of social salvation"; he comes to a tragic end, but his task is taken up by a successor.

Kurt Eissler ably defends a thesis he has put forth since 1967: creativity and paranoia have much in common. His first sentence is so unoriginal as to be trite. "Man as constructed by nature has two functions to fulfill: self-preservation and procreation" (p. 59). But he goes on to write an interesting paper, ably advancing his thesis, although feminists will find his comments on women patronizing. John Gedo, who generally disagrees with Eissler's thesis, writes a paper on Friedrich Nietzsche, whose life fits Eissler's type. Stanley Hopper discusses ambiguity in Franz Kafka and Søren Kierkegaard. Rudolph Ekstein analyzes at length an 1892 fairy tale in terms of childhood autism. Richard and Edith Sterba discuss Michelangelo's personality and career. These papers and the others, too, are of good quality.

The only essay that deals with Marxism is by Ernst Bloch; it was written in the 1930s but has not hitherto been published. Unfortunately, it is given only in German which limits its accessibility to American readers.

While *Myth, Creativity, Psychoanalysis* is remarkably free of errors in syntax and spelling, close reading of the text shows that the London Madonna is mislabeled as the Madonna Doni and vice versa (figures 9 and 10). Also, Hopper is allowed to get away with the egregious statement that the Danish verb *løse* (English loose) "comes from" the Greek *luain*, whereas it is in fact only cognate or homologous with it. Like others of its genre, this *Festschrift* varies in content and merit; it has some excellent parts as well as some trivial ones. Your time will not be wasted in reading it. On the other hand, you might do better to read Slochower's *Mythopoesis*.

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*The Mind-Body Problem: A Psychobiological Approach.* By MARIO BUNGE. Toronto: Pergamon Press, 1980. 250 pages. \$28.00. \$13.50 (paper).

Readers of *Zygon* who are convinced of the need for more scientifically oriented literature on the mind-body problem, especially as the problem has been defined and argued in Western literature and thought, will find Mario Bunge's book a significant contribution. Identifying questions about the nature of mental experiences and their relationship to bodily experiences as the *mind-body problem*, Bunge sees it as one of the most difficult of all problems confronting the intersection of science and philosophy. In very quick order he dismisses most historical solutions, charging that "these are inadequate not only because ordinary language is imprecise and poor but also because the European languages are loaded with a preconceived solution to the problem, namely, psychophysical dualism, or the doctrine that mind and body are separate entities" (p. xiv). He proposes abandoning ordinary language as a way of avoiding reification of properties, states, or events, and adopting the state space language, which, he argues, is mathematically precise and shared by science and scientific philosophy.

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Referring to his work as a psychobiological approach, Bunge's primary goal is to transform the idea that the mind is a set of brain activities into a theoretical framework compatible with the latest results of neurophysiology and psychology. He refers to his theoretical framework as "Emergentist Psycho-neural Monism," and formulates it in the following theses: "(1) all mental states, events, and processes are states of, or events and processes in, brains of higher vertebrates; (2) these states, events, and processes are emergent relative to those of the cellular components of the brain; (3) the so-called psychophysical (or psychosomatic) relations are interactions between different subsystems of the brain, or between some of them and other components of the organism" (p. 21).

Essentially in these three theses Bunge integrates materialism, emergence, and interactionism, concluding that, while mental functions are in fact central nervous system functions, they are nonresultant functions or properties which have emerged at some point in time in the course of a long historic evolutionary process. They are not possessed by the cellular components of a central nervous system but are *systemic* properties. The physics and chemistry necessary to explain the central nervous system functions are insufficient to explain the emergent mental functions. Explanation of the latter requires new concepts, statements of laws, and theories referring specifically to the central nervous system and compatible with physics, chemistry, and biology. Scientists and scientific philosophers have yet to discover these.

Within this compact volume Bunge integrates a vast array of biological, neurological, and neuropsychological data, which he uses both in support of his theory and against other alternatives. While I highly commend the achievement and strongly agree with the argumentation and conclusions of this volume, I am disappointed that its style and form limits its accessibility, especially to the general student population, to say nothing of the general public. Highly technical works are necessary for the very scholarly. Yet, the information, the argumentation, and the conclusions developed here would be more available to us if expressed in everyday language, for which Bunge apparently has little respect, due I assume to his own orientation in linguistic philosophy.

Bunge sets the tone of his polemic by portraying two major obstacles to a solution of the mind-body problem—the inadequacy of ordinary language and the psychophysical dualism imbedded in the European languages. He believes he can overcome the difficulty by adopting the state space language which is mathematically precise.

I believe his polemic is misdirected. There is good science and there is bad science. There is imprecise, unclear, poor language in science as well as in ordinary language, which Bunge accepts as "the voice of common sense, which in turn is 'just a system of myths accepted by a community'" (p. 11). There are myths of a sort (theoretical constructs) in science as well as in common language. In fact, scientific language has had its share of preconceived dualisms. Moreover, adopting a logical, mathematically precise language to talk about neuropsychological research may well prove nothing. Constructing a system of terms, definitions, and theoretical statements may prove logically sound, but may well say little about empirical data.

The clear-cut distinction between ordinary and scientific language which Bunge would have us accept simply has not and does not exist. As Ludwig Wittgenstein noted, language is slippery. Whether in science or ordinary language, one task confronting any researcher or theorist is to state his ideas

in such a way that the preconceptions associated with his words are cleared away.

If emergentist psychoneural monism, or any other scientific discovery, is to become a believable, influential theory, it will be done not so much by substituting a new language but by “cleaning up,” redefining, and even “re-mythologizing” ordinary language. For example, after clarifying what he means by “the mental” and “the mind,” Bunge states that we may now speak of them without cautionary quotation marks. “On the other hand, we should be wary of the words ‘soul’ and ‘spirit’ . . .” (p. 81).

The timidity of Bunge, as with so many researchers, becomes evident here. His polemic actually is with preconceived psychophysical dualism, not with ordinary language. Like René Descartes in his day, modern scientists and scientific philosophers seem to shy away from “cleaning up” contemporary ordinary language in light of twentieth-century scientific advancement, not so much because of the inadequacy of ordinary language but because dualism, whether expressed by “mind,” “soul,” or “spirit,” undergirds the entire Western religious mentality. In other words, the perpetuation of psychophysical dualism may be due not so much to the inadequacy or myths of ordinary language as it is to the religio-philosophical persuasion of persons, whether they be the educated lay public or scientists as eminent as Sir John Eccles.

Exactly the same brain research data, including the “split-brain” studies of Roger Sperry, have been used by theorists to “prove” directly opposing views, as for example with Sperry and Eccles. Information from neuropsychological discoveries therefore does not need to be formulated in mathematically precise language and formal logical schemes—while that is an important and interesting project—but rather needs to be used to bring ordinary language up-to-date. When that is done, Bunge’s desire to have his theoretical framework inspire further advances in research will become a reality, for only then will the “humanity,” the self-conscious conceptual and emotional framework of the researchers themselves which is formed to a significant degree by ordinary language, begin to be shaped by the new insights into human nature.

One illustration of my concern will suffice. In the chapter on “Sensation and Perception” Bunge writes: “Definition 4.6. Let  $b$  be an animal with state space  $S(b)$ , bodily event space  $E(b)$ , and perceptual event space  $E(c)$ . Then  $(b)$ , when in state  $s \in S(b)$ , feels the events in the collection  $x \in 2^{E(b)}$  if and only if  $b$  has a body schema  $m$  such that  $m(s, x) \in 2^{E(c)}$  (i.e., if those events project on to the cortex  $c$  of  $b$ ). Otherwise  $b$  is insensitive to  $x$ ” (p. 109). My suspicion is that the adoption of this mathematically precise language—while beneficial and interesting for the mathematicians and logicians—does little to inspire further research among scientists or contribute to overcoming the psychophysical dualism imbedded in ordinary language.

In spite of my concern about the probability that Bunge’s polemic against ordinary language and his use of mathematical formulations in various parts of his book may discourage the general and even the scientific readership, I highly commend this volume. Its discussion of topics, such as sensation and perception, behavior and motivation, memory and learning, and sociality, especially within the context of neuropsychological research, bears directly on the concerns of *Zygon* for the interrelating of science and religion. The book provides essential insights and data for further scientific exploration regarding the origins and functions of values and religion within individuals and societies. Furthermore, it provides the necessary ingredients for redefining

and redirecting the linguistic constructs of our ordinary language—especially that of ethics, philosophy, and religion—in order that their essential value and meaning may be credible in a scientific age.

Reading or understanding the insertions of state space language within parts of this volume is not essential to appreciate its major value and contribution. The level of comprehensiveness of data and topics, and of argumentation makes this volume well worth reading.

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*Towards a New Mysticism: Teilhard de Chardin and Eastern Religions.* By URSULA KING. London: Collins, 1980. 318 pages. £7.95. [New York: Seabury Press, 1980. 318 pages. \$14.95.]

Many readers of Pierre Teilhard de Chardin's work will have been struck, and perhaps both bewildered and offended, by his seemingly hostile and denigrating statements about the great spiritual traditions of the East. How are these attitudes possible in someone who lived and traveled in the East during so many years, let alone in someone who believed that the human species had entered upon the convergent phase of its own evolution? From the perspective of a more recent ecumenical expansion of consciousness, Teilhard's approach seems at times to be incredibly provincial and defensively biased in favor of the Western, and especially Christian, axis of human evolution.

Ursula King has faced these questions unflinchingly and yet with great sensitivity in her superb study of Teilhard's struggle to develop a spirituality adequate to the momentous challenges which today confront the human community. Clearly the product of many years of painstaking research, the book is based upon a thorough reading of all of Teilhard's work, both published and unpublished, as well as an enormous quantity of secondary material. It traces in considerable detail Teilhard's multiple contacts with the East (beginning with the years in Cairo, 1905-1908) in terms of both his life situation and his reading. King shows that Teilhard had a greater familiarity with the East and its spiritual traditions than had previously been suspected, but she also confirms the conclusion of other scholars that his understanding of these traditions was not always adequate and was in fact often regrettably unnuanced.

However, it is important to see, and King makes the point with great emphasis, that Teilhard was not only critical of the Eastern traditions but could also be quite harsh in his treatment of Christianity in its classical form. For him none of the spiritual traditions, whether Eastern or Western, were entirely suitable any longer for the great task of "building the earth," a task which had only recently emerged in modern times. All the spiritual traditions, including Christianity, needed to be reformulated for an appropriate "religion of the future" to be forged. To be sure, it was his conviction that the Christian tradition would provide the axis for this new religious force, but only a Christianity which had been transformed by means of a long process of convergence between itself and other world religions as well as between the religious tradi-



tions and modern scientific humanism. Only from a difficult death to past forms could a new and vital religious form come into being. Teilhard was clear-sighted about the time-bound character of spiritualities.

The present phase of evolutionary creation requires a new spirituality, a new "mysticism of action," which can incorporate what is life-sustaining (because it is world-affirming) from the past at the same time it surrenders destructive forms of individualistic inwardness and otherworldliness. Undoubtedly the Eastern religions, Chinese as well as Indian, have more to contribute to this new mysticism than Teilhard generally allowed. To some extent Teilhard himself recognized this in admitting that what he termed "the road of the East" and "the road of the West" (a distinction dating from 1932) were in fact ideal types designed to illuminate tendencies (otherworldly/thisworldly) discernible within both the Western and the Eastern spiritual traditions in their actual historical realizations. In his own classic statement on spirituality, *The Divine Milieu* (New York: Harper & Row, 1960) which was written at an earlier stage of his development (1926-1927), Teilhard suggests the need for an integration of these elements in his treatment of the relationship between activity/passivity and attachment/detachment. Teilhard's obvious preference nonetheless was for a form of mysticism unambiguously theistic, personalistic, and world-transformative.

King's study, I believe, will take its place with the standard works on Teilhard's life and thought. It is a work of substance and intelligence as well as of spiritual insight. Because she appreciates both the richness and limitations of Teilhard's vision, she is able to open up new avenues for its further elaboration and effectiveness. The book is helpfully outfitted with an extensive bibliography and detailed index as well as with a delightfully personal "Foreward" by Joseph Needham.

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*The Practice of Process Meditation: The Intensive Journal Way to Spiritual Experience.*

By IRA PROGOFF. New York: Dialogue House Library, 1980. 316 pages. \$12.95.

For those who feel drawn to meditation but turned away by interminable sessions in the lotus position, flower-offerings, incense and macrobiotic diets, Ira Progoff's work is eminently refreshing. His meditative method relies on no mantras whispered in private conference at the cost of \$150, no mystifying talk of Brahmic bliss or the need for the ultimate realization, no reliance on one special spiritual master or guru who stands in a very special line of masters or gurus. Rather than whisking the seeker away for an experience of twelfth-century Japan or nineteenth-century India, this guru is interested in putting a person in touch with his or her own spirituality. Director of Drew University's Institute for Research in Depth Psychology and of Dialogue House in New York, Progoff leads workshops in using his *Intensive Journal* method, described in *The Practice of Process Meditation* along with its theoretical foundations.

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Progoff claims that the method is compatible with any belief system leading one simply to deeper levels and renewed vitality. To be sure, he does not introduce prescribed dogma; however, the practitioner must be willing to reconcile himself to essentially Jungian assumptions which are already disclosed as the *cantus firmus* of the book in the opening chapter. There Progoff recalls his ruminations at the end of World War II over the Nazi burning of books: suppose all the Bibles, all the sacred writings of the world would be burned, what would befall humankind? One night the answer came: "We would . . . simply draw new spiritual scriptures from the same great source out of which the old ones came" (p. 10). The method he offers will help us create our own "spiritual scriptures." Like Blaise Pascal, who made certain he had paper and pencil in hand as he felt himself being overwhelmed by a religious experience so that he could keep an accurate report, Progoff would have us maintain a journal of our subjective experiences, stressing the observation and notation of what occurs within: ". . . it proceeds in the spirit of science" (p. 34). The "process" in the title is personal rather than cosmic: one meditates in process rather than about it. Patterns of integration and continuity consolidating lines of inner experience are in the process surprised by emergence, by "something extra," which in turn is to be integrated into the continuing patterns.

One may wonder whether a "how to" book on meditation may be rather comparable to "brain surgery self-taught," a new ultimate for the do-it-yourselfer. In process meditation we are soon reassured. Its aim is not to transport us to some altered state of consciousness but more modestly to lead us to meaning. Meditation is defined here as "the multi-aspected spiritual activity by which human beings seek . . . to discover and experience directly the meaningfulness and the validity of their lives" (p. 39). The key to the method is the journal, developed over some fifteen years of workshop usage, offering a systematic way for beginning a process of meditation, breaking through stalemates and building on new insights. The purpose is to "re-enter the continuity of our whole spiritual history as we have personally experienced it, and by means of our methodology . . . add to it one further and deeper experience at a time" (p. 82).

Sections of the *Intensive Journal*, reproduced as an appendix, facilitate the keeping of a meditative log, and the use of effective "entrance meditations," which help quiet the spirit and center the mind so as to move easily into the "twilight range of experience." Progoff suggests how one can take the step of "spiritual positioning" to focus on the current condition of one's spiritual life and then how, through a section of the journal called "gatherings" and another titled "stepping-stones," the historical data of the inner life may be collected and those main reference points indicating one's direction identified. In times of review, "reopenings," one will note "the roads not taken" and speculate about alternate scenarios, the better to understand and possibly enrich one's actual way. In the process, one discovers a number of "MTI's" (Progoff calls them), "molecules of thought and imagery" which move at the subliminal depths of our psychological nature, continually in motion, clustering and regrouping themselves in new patterns.

Out of such materials Progoff shows us, in perhaps the most interesting section of the book, how to create our own mantras. Mantras really ought not be given by the guru; rather they ought to be organically related to one's own interior life. Thus Progoff suggests we shape our "mantra crystals," finely compressed statements which can focus the light for us. They ought to contain

seven syllables, like the "Jesus mantra," the Hesychastic prayer "Lord Jesus Christ, have mercy." The reason is in part the rhythmic possibilities of seven syllables and in part the capability for coordination with steady breathing. The prayer is to be repeated under the breath until "it prays itself," truly the "praying without ceasing." Mantra/crystals need not all be prayers: they might have originated in a particular moment to be recalled and deepened, like "watching the bird build her nest" or be more functionally oriented, "holding the stillness within."

Through such exercises the meditator becomes aware of his or her own particular spiritual patterns. Creativity is unblocked, new insights enhance long-developing points of view, new directives in terms of "transpersonal leads" open up toward new "explorations" and one writes in the "testament" section of the journal crystallizing statements from the depths of one's own spiritual experience. Thus meditators are to come "to discover and experience directly the meaningfulness and validity of their lives." It's all very appealing.

But there just might be an important element missing in all of this. Toward the end of "The Sea and the Mirror" W. H. Auden speaks of encounter with that "wholly other life" in which "all our meanings are reversed" and where among their ruins "we may rejoice in the perfected work which is not ours" (*Collected Longer Poems*, New York: Random House, 1969, p. 250). If we bring some theistic assumptions into process meditation, we will need to provide space for the intrusion of some content other than what is drawn from our own spirituality and make room for a validation other than our own. In the light of such assumptions, Progoff's method looks like the exercise Fats Waller used to sing about: "I'm gonna sit right down and write myself a letter and make believe it came from you"!

Nonetheless, in an age so out of touch with the "inner life" and so frantic in its often bizarre pursuits of what it is missing, Progoff's "way to spiritual experience" is extraordinarily helpful. Theists would do well to revise it; all would benefit in using it. As Progoff points out, "the meditative life is a cumulative reaching toward meaning that is its own goal" (p. 274).

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*Meaning and the Moral Sciences*. By HILARY PUTNAM. BOSTON: Routledge & Kegan Paul, 1978. 154 pages. \$14.00, \$4.95 (paper).

Hilary Putnam's book, *Meaning and the Moral Sciences*, concatenates his John Locke lectures, given at Oxford in 1976, with three other essays from roughly the same period. Of the latter, two ("Reference and Understanding" and "Realism and Reason," his presidential address to the eastern division of the American Philosophical Association in 1976) represent both a continuation of and a transition from the views on reference and truth expressed in the Locke lectures. The third essay, "Literature, Science, and Reflection," is a more or less nontechnical essay on the epistemic status of literature and practical knowledge.

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It is unfortunate that the last named essay is the one most likely to be of interest to readers who share *Zygon's* aims of exploring scientific grounds for understanding the origins of values and religion, since it suffers from a far too sketchy treatment of the topics it considers and only casually connects them to his remarks about the importance of empathetic understanding (*Verstehen*) in the social sciences towards the end of the Locke lectures. In this essay Putnam argues that works of literature and art serve an important function by providing us with a kind of nonpropositional knowledge involving the imagination: they invite us to imagine what it *might* be like to experience certain things or situations, particularly in the area of the emotions. Putnam further argues that such imaginative expression is a cognitively significant aspect of knowledge—namely, the “practical knowledge” that operates in moral deliberation. While one certainly can acknowledge the usefulness of this idea, the question is whether it is put forth as anything more than a claim, either in this essay or elsewhere in the book.

Putnam wants to see this volume as extending the views on realism and on the nature of language and reference defended in *Mind, Language and Reality* (Cambridge: Cambridge University Press, 1975), in order to support a view of knowledge in which ethics and the social sciences (what Putnam terms “moral sciences”) have as legitimate a claim to being part of knowledge as do exact sciences, such as physics. In fact, in his introduction Putnam acknowledges that “the sphere of knowledge is wider than the sphere of ‘science’” (p. 5), that “practical knowledge” is both indispensable and distinct from theoretical knowledge, and that it is a cultural necessity to view ourselves as both social and scientific beings. The form in which this new understanding of a broader unity of the sciences is to take place, for Putnam, is a “demythologized Kantianism, without ‘things in themselves’ and ‘transcendental egos’” (p. 6).

The problem is that Putnam delivers considerably less than his promise, and the theme just stated does not operate fully throughout the book. The six Locke lectures that comprise the bulk of the book were originally intended as an extended examination of Hartry Field’s criticism of Alfred Tarski’s theory of truth. Field had argued that Tarski’s theory required but did not supply a “physicalist” account of reference, in order to achieve the scientific legitimacy Tarski felt the notion of truth could have. According to Putnam, a “physicalist” account of reference says that a speaker refers to something when his use of a term stands in a definite causal relation (defined by empirical science) to that something (p. 5). But since reference is also an act occurring with respect to some social context, Putnam finds that his reasons for rejecting Field’s criticism of Tarski lead him into a discussion of the issue of scientism in the social sciences. That is, the issue expressed in J. S. Mill’s dictum, that “the backward state of the Moral Sciences” can only be remedied by imitating the methods of physics, is raised by a “physicalist” theory of reference, since that theory entails the analysis of social acts in terms of the scientific methods of physics (p. 66).

Those who defend the scientism advocated by Mill and others allow that, while *Verstehen* can be a source of hypotheses, those hypotheses only count as knowledge insofar as they can be supported by the scientific method, namely, the methods of physics. Putnam agrees that *Verstehen* may give less than “knowledge,” but argues that it also gives more than mere logical possibility. “It gives *plausability*—it is the source of prior probability in many judgments about people” (p. 75). What it provides, in other words, is “right opinion,” and “knowledge *depends on* a good deal of right opinion” (p. 75).

*Verstehen*, therefore, "is a source of *prior probability*" (p. 75). In the checking of any hypothesis, whether in the social sciences or in physics, that checking "is ultimately intuitive" since the decision that conditions have been approximated well in a given case typically depends on unformalized practical knowledge. The facts about what actually goes on in hypothesis testing suggest that scientific method is a formalization of only some aspects of scientific methodology. The aim of Mill, Ernest Nagel, and others was to rule out obscurantism and metaphysics in the social sciences, but to promote scientific methodology as an ideology itself only obscures a situation in which it may be at least most humane, if not ideal, that the social sciences cannot realistically hope to resemble physical science.

Putnam engages his reader in a variety of ways, and *Meaning and the Moral Sciences* contains more than enough provocative suggestions for useful reflection. Therefore, as long as the reader is forewarned that many of Putnam's ideas fall short of the extensive development one would like, it will remain a book to stimulate one's reflections on important issues, a purpose the book undoubtedly served for Putnam himself. If *Meaning and the Moral Sciences* is a book by a philosopher in transition, that transition is one worth sharing.

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*Faith, Science and the Future*. Edited by PAUL ABRECHT. Philadelphia: Fortress Press, 1979. 240 pages. \$3.95.

*Faith and Science in an Unjust World: Report of the World Council of Churches' Conference on Faith, Science and the Future*, vol. 1: *Plenary Presentations*. Edited by ROGER L. SHINN. Philadelphia: Fortress Press, 1980. 408 pages. \$12.95.

*Faith and Science in an Unjust World*, vol. 2: *Reports and Recommendations*. Edited by PAUL ABRECHT. Philadelphia: Fortress Press, 1980. 224 pages. \$6.95.

These three volumes present the material related to the World Council of Churches' conference on faith, science, and the future held at the Massachusetts Institute of Technology in Boston during 1979. *Faith, Science and the Future* presents essays that were preparatory for the conference. It sets the basic issue and the basic themes. The fundamental question addressed is the struggle to attain a just, participatory, and sustainable society. A society that is just, in which all participate, and that can be sustained in the long run with the limited resources available is the goal toward which this material invites people to work. The question then is the role of science and technology in this struggle. That question is not a simple one, because there are ways in which science and technology have contributed to the problems by giving power to the developed nations, encouraging injustice and contributing to the threats to our world, and overtaxing the resources and recuperative capacity of the earth. But science and technology also offer resources for engaging in the struggle for a just, participatory, and sustainable society that embraces the world.

*Faith, Science and the Future* also lays out the basic themes of the conference: theological and ethical evaluation of science and technology and of their world

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views; energy; resources, environment, and population; technology and science as power; and economic issues. The argument runs broadly in the direction of the question of an appropriate technology for human beings in the world. It is an interesting volume introducing the reader to the issues and the basic questions that face our world today and invites her or him to think about them.

The first volume of *Faith and Science in an Unjust World* contains the plenary presentations from the conference. It represents such a conference at its best and is a marvelous smorgasbord of longer and shorter lectures on many aspects of the issue from many points of view, with brief characterizations of the reactions by the conference participants in their discussions. The first part considers basic issues about the nature of science and of faith, the question of theology in a scientific world, and the place of science and technology as both promise and threat. The second part examines views of science and technology from the perspective of various non-Christian religions, developing countries, market-economy societies, and socialist societies. The third part treats particular areas in which problems exist: economics, energy, the biological revolution, the information system, and disarmament. The fourth part deals with the whole question of participation and power, touching questions of oppression and poverty, community involvement, and the possibility of political and personal action.

This volume offers something for everyone from more theoretical discussions of science and faith to more practical questions about how it all works out in the end. Most will find viewpoints with which they agree and those with which they disagree. All will be invited to listen with respect and to take into account the issues in a new horizon.

The second volume of *Faith and Science in an Unjust World* presents the reports of the discussion sections and recommendations for action, telling the reader something about what the majority of Christians who are sent by their churches to a conference like this think in broad outline about the issues. From that standpoint, it presents a good cross section of world-wide Christian opinion on the basic questions and the desirable direction for the future. However, I also find this volume the least satisfying, for it presses the smorgasbord toward a mold in which many may not find a place for their views. While it does represent a certain spirit of the conference and the direction it moved, it tries to do too much for the space of time that was available and for the rich variety of viewpoints present in the conference. The process of writing the conference documents itself tends to violate the participatory character of the society for which people long, and it creates a certain injustice to those whose views are voted down. A less ambitious, more focused end product of limited scope, comparable to the ancient creeds, could perhaps have been hammered out. That would indeed have represented the whole and that could have a stronger impact on the churches represented. In spite of these qualifications, this volume also is fascinating reading and adds to the impact of the entire three-volume set.

I think these three volumes are an important contribution to the question of how Christians might see our modern world, its social and technological problems, and its possibilities for the future. It helps move the reader out of a more parochial and narrow perspective on the issues and introduces a more global perspective. It has a significant impact on the reader's view of the world if one takes the material seriously. There are some things one could quibble with, like a tendency toward an antiscientific, antitechnological view in some of the

material and in much of the tone of the conference. But there are always balancing perspectives and balancing tendencies. These volumes provide a good basic orientation for people who are interested in the relation of faith, science, and the future in the quest for a more humane world.

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*The Image of Eternity: Roots of Time in the Physical World.* By DAVID PARK.  
 Amherst: University of Massachusetts Press, 1980. 159 pages. \$14.50.

This book is difficult to evaluate. It is charmingly written and presents to the layman a remarkably readable portrayal of prime doctrines of modern physics. Yet it abounds in conceptual ambiguities, undefined central terms, and philosophic confusions which may, in part, accurately reflect the world view it reports; one source, however, is the way the book was conceived.

At the outset, we are told that the book is "to show how the temporal flow of the universe runs through us all" (p. ix). This is never done; rather it is repeatedly asserted while we are being told that the time of physics has no notion of flow or event built into it (e.g., p. 106); and, at the end, we are told that just how human time relates to that of the physicist remains a mystery because the two notions of time are irreconcilable. But we also are told that the aim of the book is "to explain how the idea of time fits into a scientific description of the physical world" (p. 27). This very different task is well done—although we are not told what is to be understood by the term "time" except that it is "a sound [which] has any meaning we choose to give it" (p. 110)!

The pervasive concern with time in human experience is presented by a quick sketch of prehistoric attempts to understand it and by a brief review of the pre-Socratics. We are then taken directly to Isaac Newton, with no indication of how modern science emerged from the work of Galileo Galilei, Nicolaus Copernicus or René Descartes. The progression from Newton on is seen as a progressive revelation—totally ignoring the contentious dynamic of its development (explicated by Thomas S. Kuhn in *The Structure of Scientific Revolutions*, 2nd ed. [Chicago: University of Chicago Press, 1970]). The final chapter suggests the need for a philosophic integration and is to be commended for the questions it does raise.

An intriguing chapter (chap. 6) tries to make sense of the thesis of reversible motion, that is, because "exchanges of energy with a gas go either way" (p. 49), the distinction between future and past is in fact obliterated. The repeated example, on both a micro- and macro-level is that "if we show an astronomer a film of a planet rotating . . . he has no way whatever of knowing whether the film is being shown forwards or backwards" (p. 60). But this would apply to any measuring device aborted from its temporal context. To conclude from this statement-of-ignorance that, as a fact "all the general transactions of the world are indifferent to past and future" (p. 54) is to voice an elementary logical fallacy. It also may exemplify confusing the order of being with the order of

knowledge. The book recognizes that, taken as fact, this thesis provokes a paradox because the law of entropy “assigns a direction to events” (p. 57) from past to future. No hint of possible reconciliation is suggested.

Whatever help the philosophic tradition might yield is dismissed, because of the “thinkers who have not grasped that a statement concerned with time need not be made from some particular perspective in time” (p. 34); but, if we are looking at the world from inside of it (cf., p. 112), how can *any* statement—including this book itself—avoid its temporal perspective? The view of Gottfried Wilhelm von Leibniz that time is not a thing but the way in which we find things related to each other is blithely dismissed (p. 29); yet, how else do we “measure” temporal “distance” between things and events? Only three philosophers are taken seriously: Parmenides, who did not believe that time is real, is seen to provide the paradigm for “viewing time timelessly” (cf., p. 31); Heraclitus, who argued that temporal change pervades all physical being (the author’s thesis?), is dismissed as “psychological”; and Plato provides the title and is placed on a pedestal because of his thesis of a supratemporal reality that science is said to vindicate. Yet, oblivious to the fact that Immanuel Kant’s fundamental thesis is that no knowledge of any supratemporal reality is attainable by man, the author sees no conflict between Kant and Plato. Indeed, Kant’s argument that time is the form of all human perception (*and* thereby of all cognitive thought) is accepted but never thought through; if it were, the author would recognize that Kant could *not* have said that the legitimation of our ideas, including our perceptual forms, derives from the way “the physical world is as such” (p. 112). Rather, Kant maintained that we humans are only able to understand the world as it appears to our peculiar perspective in the ways our forms of perception and thought allow, that what it may be “as such” we have absolutely no way of knowing. Kant therefore would have dismissed the title as unwarranted dogmatism; he might have rephrased it to read: “The Image of Eternity as our Projection of Time of the Physical World Which Derives from Our Way of Seeing It.”

The conception of time implicitly employed (but never argued for) is that of a finite, if extensive, series of moments. In the end, the universe will end, and its beginning was at “a certain moment. Not a certain place, since all space was at that moment concentrated at a point” (p. 84). Leaving aside the question of validity of moment-counting as time, does this not effectively assert not the coequality of time and space (space-time) but the priority of the former? But, was there nothing *before* that first moment? Not even a matter/energy complex we do not understand, or perhaps a separate precipitating event which touched off the “big bang”? Will it, in the end, disintegrate into mere nothingness, or will it perhaps recycle? In any case, there was a “before” and will be an “after.”

We are told, at the end, that there are only two ideas of time, the “timeless time” of the physicist and the undefined “now” of individual experience. The discussion of the first might have been helped by using the distinction between “time,” “duration,” and principles of explanation, which can be found in Descartes (cf., e.g., Principle 57) and also in Kant. The discussion of duration would have been illumined by considering Aristotle’s question of whether “now” is meaningful as temporal (cf., 220a). William James, who showed that we cannot understand time-experience in this way, or phenomenologists who, taking up their predecessors, have shown that human experience presupposes temporal continuity continually fed by futurity (which *is* logically different from the past); indeed, some of these thinkers (including pragmatists) have



cogently argued that without acceptance of the idea of present futurity it is futile to comprehend the experience of human beings (including physicists) in their attempts to understand their world.

What is most distressing about this book is its narrowness of vision, its unargued but steadfastly proclaimed physicalism, and its parochial frame of reference. Nothing is said about the witness to be brought to this inquiry by biology, anthropology, psychology, or humanistic studies, all of which explicate aspects of the human experience of time. Presumably these focused studies might have something of value to say about cycles, rhythms, development and decline—aspects of the temporal structure of the world in which such concerns manifest themselves and which help to shape the human attempt to comprehend the world in which we are and its time. After all, as Werner Heisenberg noted, “Science is made by men, a self-evident fact that is far too often forgotten” (*Physics and Beyond* [New York: Harper Torchbooks, 1971], p. vii).

The most hopeful aspect of this book is the last chapter, in which fundamental questions are at least raised concerning the meaning of it all—whether as the universe is changing its enduring principles also are perhaps changing, and about the relation of time and human freedom which exhibits itself in the ways we deal with the physical aspects of the world that are allegedly timeless.

In net balance, however, this book is not reassuring. For, if the author, who surely knows better, is faithfully voicing the outlook of his colleagues, we should be fearful of the parochiality and lack of intellectual humility of some of our leading intellectuals and thereby for the future of our culture which they are helping to shape.

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