Reviews

Free Will: A Defense Against Neurophysiological Determinism. By JOHN THORP. Boston: Routledge & Kegan Paul, 1980. 162 pages. $20.00.

The subtitle is somewhat misleading, in that John Thorp does not try to refute neurophysiological determinism; indeed, he concedes that a suitably subtle determinism can account for all the phenomena of (sensory, but not moral) experience (pp. 13, 108). Rather, he is content to show that partial neurophysiological indeterminism (the necessary condition for freedom of decision) is also consistent with the phenomena. Here he relies on indeterminacy at the atomic level, which he assumes to be objective and not merely a function of necessary limitations of our knowledge, plus a brief account of how atomic indeterminacy could lead to indeterminacy at the neurophysiological level. He does not discuss hidden-variable theorists' attempts to restore determinism.

Much of Thorp's argument is directed, not against hard-line determinists but against compatibilists, those who think an act can be both free and determined. He thinks the compatibilists' strongest point is the inability, thus far, of defenders of free will to get beyond appealing to physical indeterminacy and state *sufficient* conditions for freedom. In other words, he holds that what is most needed is a coherent account (one without internal contradictions or extravagantly implausible assumptions) of what it is for a decision or action to be free, and in particular what it is for it to be free as opposed to merely random. He offers such an account, and in that limited sense a "defense" of free will.

As the reader will suspect by now, this book is written mainly for philosophers in the Anglo-American-Australasian analytic tradition and assumes some familiarity with that tradition. Within that framework it is written in a clear, direct, and lively manner without (for the most part) undue technicality. People working in other areas can read it with interest and profit, if they are prepared to take it slowly and perhaps do some judicious skipping.

For those who are not technical philosophers, the meat is mostly in the last half of the book, the first half being given over largely to preliminaries. In the first chapter Thorp formulates the problem neurophysiological determinism poses for believers in free will and makes some important distinctions, and then—in what is probably the most technically demanding section of the book—disposes of some putative formal solutions. In the second he rebuts some fashionable compatibilist arguments, and in the third he argues rather elaborately against those who try to defeat the determinists by denying that any lawlike correlation could be established between mental states and neurophysiological states. In part, the fourth chapter continues the process of clearing away unprofitable approaches to the problem: here the targets are the well-known attempts of J. R. Lucas and D. M. MacKay to show the mind's (partial) independence of the brain. (Whatever the difficulties in these au-

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thors' proposals, I do not think they can be dealt with as easily as Thorp would have it.)

Elsewhere in chapter 4, Thorp begins the exposition of his constructive proposal by laying out three problems the defender of free will must solve: (1) to show how neurophysiological indeterminacy is possible, (2) to show how brain can be dependent on mind as well as vice versa (since otherwise it is no great help to be told that some events in the brain may be undetermined), and (3) to show how freedom at the level of decision-making differs from randomness. The first is treated briefly in chapter 4, the others more fully in chapters 5 and 6 respectively. Having given answers to these questions, Thorp turns briefly in chapter 7 to questions about the freedom of acts as opposed to decisions and about the relation between freedom and responsibility.

A good deal of interesting and illuminating discussion is packed into the last two chapters, but they do not lend themselves to brief summary and I cannot undertake anything more ambitious here. The crucial fifth chapter does call for some examination, however. To set the stage for his attempt to show how there could be cases in which brain states depended (in some important sense) on mental states and not vice versa, he considers some purely physical situations that are capable of description at both macroscopic and microscopic levels. I will quote one of them: "A billiard ball is struck with a cue; here we should say that the molecules are moving in such and such a way because the ball is rolling, but not vice versa. Now imagine the case in which a tiny molecular explosion inside the billiard ball causes the molecules to move in such and such a way; here we should say that the ball is rolling because the molecules are moving in such and such a way, and not vice versa" (p. 86). As Thorp points out, the "becauses" in this example are "becauses" of explanation, not of causation. That is, we do not suppose, in the first part of the example, that the ball's rolling *causes* the molecules to move as they do; rather we *explain* their motion by referring to the ball's rolling. "Often, then," Thorp continues, "in a system of events bearing two levels of description the one description has what we might call explanatory priority over the other; that the event occurred under the explanatorily prior description explains its occurrence under the other description, but not vice versa. 'Explanatory priority' is a cumbersome expression; I shall use in its stead the term 'hegemony.'" The substitution of "hegemony" for "explanatory priority" is a dangerous step, for it invites misunderstanding. It tempts one to fall into thinking that the ball's rolling makes the molecules move as they do, and Thorp does not want to postulate direct cross-level causal relations. But with this warning, I will continue to use his preferred term.

What gives one description hegemony over the other? It is clear from the example that the hegemonic description of an event is the one for which we have a further explanation of the event at that level. "The ball is rolling" has hegemony over "its molecules are moving in such and such ways" because we know why the ball is rolling: it was struck with a cue.

Thorp offers no specific examples of how the notion of hegemony would apply in mind/brain cases, but it is easy to construct one. Suppose that neurophysiology allows us to identify a definite brain state *A* that is correlated with a person's being angry. Then we would say that a person's brain was in state *A* because he was angry, if we knew why he was angry (perhaps the neighbors' children had been trampling his flower beds), and we would say he was angry because his brain was in state *A* if that state had been produced by electrochemical stimulation.

In all these cases hegemony is a function of the state of our knowledge. If at the moment mentalistic descriptions generally have hegemony over neurophysiological ones, that is merely because we are now often able to give mentalistic explanations of a person's mental states and seldom able to give neurophysiological explanations of the corresponding brain states. Clearly the libertarians' case cannot be allowed to rest on this possibly temporary feature of our state of knowledge.

To see how mentalistic descriptions could have hegemony even in face of a fully developed neurophysiology, we need to consider what happens when we have not only descriptions of an event or state at both levels, but also explanations at both levels. In that case, Thorp suggests, the *stronger* explanation should have priority. He distinguishes three levels of explanatory strength. In the weakest, the explanation merely "renders" the phenomenon explained. For example (not Thorp's, but I do not think he would object to it), we might explain someone's taking a week off and going to the beach by pointing out that she was tired, her work was not going well, and she felt the need of a break. This sort of account will often be accepted as an explanation, but it is relatively weak in that it does not explain why the person went to the beach instead of going camping, touring Mayan ruins, and so on. A stronger explanation, which we might be able to give if we knew enough about the person's tastes and circumstances, would "render the phenomenon as unique," that is, show why just this course of action and no other was to be expected. This is the highest degree of strength that a teleological explanation (one in terms of purposes and motives) can ever attain. But there is a higher degree, where the explanation renders the phenomenon as *necessary*. (Thorp assumes that such explanations are possible, without entering into the thicket of issues surrounding the notion of necessity.)

Neurophysiological indeterminacy is thus vital to the libertarians' case. If we had determinism at the neurophysiological level, explanations at that level would have hegemony over mentalistic ones, mental events could reasonably be regarded as epiphenomena even if we had explanations for them at their own level, and hard-line determinism would triumph over compatibilism as well as libertarianism. But given neurophysiological indeterminacy, a mentalistic description of a decision will have hegemony over a physicalistic description of the correlated events in the nervous system, *provided* we can find some way of explaining the decision in mentalistic terms.

But how can we explain a decision? Interestingly, Thorp does not take the line that decisions are to be explained by reference to goals or motives. Perhaps the reason is that such explanation cannot achieve the highest degree of strength. But given partial indeterminism, neurophysiological explanations could at best achieve the lowest degree (showing that a given state of the nervous system was one of a few possibilities left open by the preceding state); thus teleological explanations could still have hegemony. In any case Thorp undertakes the harder task of looking for a causal explanation that would render the decision-event as necessary. He offers a simple answer: "The mental description of the event which is an agent's decision to divorce his wife is, say, '"divorce wife" appears as *decisum*'. What explanation renders this as a necessary occurrence? The libertarian can reply: What explains the occurrence of the event under that mental description is precisely that the agent decided to divorce his wife" (p. 94).

This sounds suspiciously like question-begging. To show that it is not really, is the object of an intricate line of argument Thorp develops in chapter 6. I

am not sure whether he succeeds; but the discussion is acute, original, and worth pondering. One salient point: on Thorp's showing we have to allow that there are two primitive and irreducible kinds of causality: event-causality and agent-causality. In rejecting the "undeclared and unexamined presupposition" of the scientific world-view, that event-causality is the only kind, the libertarian pays a price painful to lovers of parsimony (p. 104). But given the untenability of compatibilism, and given our need for the concept of free choice in moral contexts, Thorp urges that the price is worth paying (p. 106).

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Purpose and Thought: The Meaning of Pragmatism. By JOHN E. SMITH. New Haven, Conn.: Yale University Press, 1978. 236 pages. $15.00.

John E. Smith, Clark Professor of Philosophy at Yale University, the outstanding interpreter of classical American philosophy, has written a fresh and penetrating appraisal of pragmatism, which corrects a number of misunderstandings. He shows that pragmatism is not merely an extension of British empiricism, that it is not a single system but includes within its three major interpreters—Charles Sanders Peirce, William James and John Dewey—a rich diversity, and that it did not limit itself within a narrow scientism. On just this last point, the chapter on religion demonstrates the depth and insightfulness of Dewey's understanding of religion which is not often appreciated by those who dismiss his nontheistic approach; and it presents a rare sketch of the speculative and original theistic ideas of Peirce, which were traditionally dismissed even by other pragmatists as not characteristic of his logical and scientific point of view.

The pragmatists have been passed over in the ascendency of linguistic philosophy and existentialism, with the exception of the recent interest in Peirce on the part of the analysts. Smith intentionally makes available the contributions of pragmatism to those primarily familiar with linguistic analysis, existentialism and process philosophy. Long before their counterparts in Britain and on the continent, the American pragmatists had a sense of living in the time of the end of modern philosophy; they saw in the perennially unsolved problems of the knower and the known a sign that a starting point different from that provided by René Descartes must be found if the scientific way of knowing is to be understood and related to the values generated in social life.

As to the relevance of the pragmatists to the analytic tradition, Smith shows that the pragmatism of Peirce and James presents no new view of truth in opposition to coherence and correspondence theories but instead claims that what correspondence means is successful application in practice. He shows that even Dewey's notion of ideas as plans for *transforming* a problematic situation rather than as copies allows for the view of the idea as *conforming* as a stage in the process of inquiry. Smith frequently shows ways in which the pragmatists anticipated by decades the discoveries of British philosophy; before Gilbert Ryle, Dewey had made clear that inquiry does not begin with a

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mental state which then generates a response, but that intelligent response is itself inquiry.

As to those whose thinking is informed by continental philosophy, Smith skilfully describes the richness of the pragmatists' concept of experience. In James' "radical empiricism," subject and object are given as together in immediate experience and are only discriminated later in thought; those aspects of experience eventually separated as measurable and objective on one hand and as qualitative and subjective on the other are actually first encountered as intermixed in the "blooming, buzzing confusion" of immediacy. Dewey thus criticized empiricism and materialism for committing "the intellectualist fallacy" when they abstract from primary experience certain stable, recurrent, and quantifiable aspects as "real objects" and set aside quality, feeling, novelty, and spontaneity as mere appearance. All that confronts us in experience is equally "real," not just what John Locke called primary qualities (extension) but secondary (color) and tertiary (ugliness) as well, and it is illegitimate to reduce this richness of experience by treating a product of reflection such as "material object" as "the real" in contrast with other aspects of prereflective experience. It is this richer sense of experience as including subjective and objective aspects which is to be the new starting point, in place of the Cartesian subject, the empiricist's sense data, or the materialist's atoms. "The real" is all that appears to us; it is not only the eventual product of reflection, that stable and recurrent aspect of experience called "the known." Thus Dewey's attack on "the ubiquity of the knowledge relation" is presented by Smith to counteract the picture of Dewey's scientism.

For the sake of the existentialist, Smith does add that the influence of biology on Dewey led him to see inquiry as the attempt of the organism to adapt to a problematic environment through the development of true ideas as methods of controlling and reshaping the environment. Dewey was deficient in his perception of the way in which the self may become a problem to itself; to this sense of the problematic, talk about control is irrelevant. Smith here corrects Dewey's emphasis and suggests an interpretation of Dewey which is not exclusively instrumentalist.

Finally, Smith shows that Peirce's doctrine of chance, James' untidy and unfinished universe, and Dewey's denial of antecedent being establish the pragmatists as anticipating process philosophy in rejecting timeless substances and asserting the reality of time and change.

I have emphasized the way in which Smith's excellent book initiates a conversation between classical pragmatism and other ways of thought. To those of us interested in the relation of religion and science, Smith shows pragmatism as an attempt to interpret the experimental method and the scientific world view in a nonreductionist way; in this way human values, creativity, aspiration, and worship would be placed within nature as natural human activities without the tendency of reductionist materialism to diminish their reality or importance. This "nonreductive naturalism" is clearest in the section on Dewey's metaphysics.

Smith's book advances through a careful exposition of specific texts. Therefore it can be seen as a bibliographical guide to Peirce, James, and Dewey; this is especially valuable in the case of Peirce's collected papers.

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Humanism and the Physician. By EDMUND D. PELLEGRINO. Knoxville: University of Tennessee Press, 1979. 148 pages. $15.50.

Few leaders of the medical community in America are as well equipped as Edmund Pellegrino to address the theme of these fifteen essays, collected from his writings and speeches in the period 1965-79. Classic humanistic education as a practicing Roman Catholic combines in him with modern scientific medical education to shape an intellectual perspective rare on both sides of the "science and human values" dialogue. Add to this his professional experience as medical school dean, as consultant to government on public policy in medicine, and (now) as President of the Catholic University of America; and one has in a single life history an extraordinary set of competences and commitments for the writing of these essays. The book is a major harbinger of the happy day when "humanistic medicine" will be the norm of medical practice in our society.

Pellegrino's concept of medicine as "the most humane of the sciences and most scientific of the humanities" (p. 16) might, in the hands of other writers, come off as professional bravado. But the achievement of the book is its polished integration of the scientific, technical, and ethical-philosophical elements of medicine. Such an integration is so difficult and so new in the modern world that even the repetitions and overlaps of the essays serve a purpose: to convince us that Pellegrino knows what he is talking about, means what he says, and really does comprehend how for now humanistic reach must exceed professional grasp as the medical profession seeks to unite its science, its therapy, and its human relations.

Perhaps the most eloquent, concise exposition of what he means by humanism comes late in the book where he discusses the relation of technical expertise to education for the professions in universities:

> Medicine . . . comes into being not when it acts as basic or clinical science, but when it engages the existential condition of an individual person. This is an unique experiment every time, one in which all the pertinent particulars rarely can be ascertained. In science, verifiability hinges on repeated observations of the same phenomena under the same conditions. But in medicine, we cannot repeat the exact circumstances even with the same patient, let alone between patient and patient. Medicine in essence, then, is the science of the particular case—something quite different from science as developed in the last five hundred years.
>
> Very often the most essential element of the medical transaction is precisely what science must ignore: the personal nonquantifiable values and beliefs which identify the person of the patient. They are indivisible from his physiology and his anatomy. The Cartesianism of the biomedical science is inappropriate, and unequal to optimization of a course of action that involves physiology *and* values simultaneously. . . .
>
> Humanistic medicine exists when the science, technology, and craftsmanship of the physician are practiced with the deepest respect for the humanity of the patient. This means that everything is modulated by those values we call human: freedom to make informed decisions, preservation of dignity, absence of humiliation, and the responsible use of power. If medicine is indeed the science particularized in a unique way in the clinical situation, then it must, by definition, be humanistic. Otherwise it is not medicine at all, but some conglomerate of techniques, craftsmanship, science, or psychology (pp. 191-92).

In brief, as "the science of the particular case," medicine "is a humane science since it must examine man as person and object simultaneously"

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(p. 34). It does so in the synthesis of theory, technical training, and personal perception in the situation of patient treatment. Here Pellegrino speaks a word needed in all modern professions when he moves the fulcrum of "professional ethics" away from criteria internal to professional expertise on to the human object of professional work: "Professional ethics derived from the existential situation of the patient are more authentic and more human than the traditional ethics derived from the self-declared duties of the profession" (p. 127). In this connection one of the most illuminating of the essays is his assessment of the continuing worth and modern inadequacy of the Hippocratic oath as a definition of the responsible medical professional. The Hippocratic tradition is a species of intentional ethics: "not to do harm." It arose as a guide to the individual work of physicians who had to cope with little value conflict, science, or institutionalization of medicine in their society. Modern physicians must study the values of their patients and their societies, urges Pellegrino. They must be adept at detecting the multiple dimensions, the ambiguity, and the uncertainty of their medical prescriptions. Otherwise they will fail as humanists, for they will fail to involve themselves in these very elements of their patients' own human situation.

Other valuable chapters in the book abound: a description of what it means to be sick—a phenomenology of "patienthood" as deprivation in our freedom to be who we are; an interpretation of humanistic ethics in experimental medical research; and concluding essays on the meaning of all these perspectives for the construction and conduct of a medical school curriculum.

Pellegrino states his scientific and technical commitments clearly throughout, and he is not likely to be faulted by his professional colleagues for asking them to become philosophers and social activists rather than physicians. But he is likely to incur the criticism of some for asking from the individual practitioner or from the medical profession as a whole broader knowledge, awareness, and comprehensive value commitments than many will find possible or congenial. He frequently seeks to fend off this criticism by distinguishing between what should be expected, humanistically, from the individual doctor and from medical institutions respectively. The charter of values, policies, and activities is broader for the latter than for the former. Not every physician can be expected to be as aware of Greek and Latin literature as is Pellegrino, but some physicians should make it their business to be thus aware. Not all will be expert on governmental policy affecting justice and injustice in the distribution of health care in the world, but some should make this one of their lifelong concerns. The profession itself, and its institutions, must acquire a society-oriented philosophy and an associated ethic if it is not to topple from the pedestal where a science-enchanted public naively installed it in the mid-twentieth century. Indeed it is high time, says Pellegrino, for all professions to overcome their human "temptations to universality" (p. 69). Medicine in particular must continue to affirm its traditional preoccupation with care for individual patients while learning, in company with other disciplines, to address "the newer social dimensions of health in contemporary life." The cry for health in modern life has been stimulated in large measure by the successes of medical science. But medical science cannot alone provide modern humans with either the definitions or the institutions essential to the achievement of health, a humanistic notion of interest to all of us.

As a professional ethicist, I sense some unresolved tension in Pellegrino over the proper mix of patient-centered and society-centered concerns in the work of the physician, the medical educator, and the medical institution. At some points in the book he seems to opt morally for the traditional, modest

preoccupation of the physician with the welfare of the individual patient. "Each doctor must honor his traditional contract to help his own patient. He cannot allow the larger social issues to undermine that solicitude" (p. 104). Yet he acknowledges the responsibility of the profession as a whole to society as a whole (p. 114), and he regards the very idea of "profession" as implying a declaration that "the whole enterprise is ultimately founded in the need society has for [the professionals] and that, in consequence, their activities are in the public interest" (p. 182). Finally, in his critique of medical education he concedes that "decisions about the allocation of resources and the kinds of graduates a school should produce must be taken in a way that gives primacy to society's needs" (p. 195). This series of quotations seems to mark a progress away from a theory of the tragic clash between person-centered medical policy toward a theory that integrates the needs of socially related persons with the needs of societies composed of persons. Our time desperately needs a theory of *humanitas* rooted in an understanding of the social nature of "good" personhood and the personal nature of the "good" society. The person in Pellegrino's essays implicitly remains an isolated sacred object; society (especially government) remains a questionable presence in the sickroom. In fact, society is there in the patient, and patients compose society. *Analytically* speaking, one can hope that Pellegrino's future thinking about his profession will contribute more decisively to the healing of this theoretical breach which seems to haunt portions of this book.

To offer this prescription for further exploration to this eminent physician-philosopher is only to ask for a further exercise of his ability to look at the culture and social value systems that shape modern medicine for good and for ill. Analysis of culture and social values is a task belonging to all educators for the professions, if any of the professions is to be truly responsible to its society as a whole. For Pellegrino, medicine is itself a crucial case of the "growing disarticulation of technical prowess from commitment and integrity" in modern life. If doctors can overcome the fracture between technology and human values, they will set an example of professional self-healing to us all. "Medicine is only part of a cultural mosaic increasingly dominated by the colors of the technological imperative. Until very recently the Western world had made an act of faith in salvation through technology based on the powerful evidence of miracles already manifested. In a country looking at the 'bottom line,' the practical and the palpable, technicism has had all the advantages" (p. 188). It is this relatively rare excursion into cultural criticism that I would wish expanded in this or a future book. Help on its expansion Pellegrino himself expects to secure from "humanists" of other professions and disciplines. He deserves such help. He has done his part in opening his profession to it.

The book warrants two additional comments pertinent to its own call for "integrity" in the modern search for new ways to wed scientific reason and the realm of human meaning. At the behest of some responsible person or persons in the University of Tennessee Press, we are informed that "the paper on which the book is printed bears the watermark of S. D. Warren and is designed for an effective life of at least three hundred years" (p. 249). As an academic administrator charged, among many other things, with the preservation of libraries, I rejoice in this fit between words worth preserving for 300 years and the improvement of paper technology, so neglected by the publishers of almost all nineteenth-century books in their use of acidic paper stock. But the book passes another sort of acid test. If I were sick, I should like to be treated by a physician like the one whom Pellegrino describes. Indeed, I

believe that he is himself such a physician. That is why he can write a book such as this, exemplifying his own axiom that it is not what we possess in knowledge or skill that finally defines "humanism." It is what we *are* that makes possible and valid what we know, do, and write. This book is written by a good man. That is one reason it is a good book.

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Struggle and Fulfillment: The Inner Dynamics of Religion and Morality. By DONALD EVANS. Philadelphia: Fortress Press, 1979. 238 pages. $7.95.

In this insightful and rewarding essay Donald Evans, Professor of Philosophy at the University of Toronto, has employed Erik Erikson's eight stages of development (trust, autonomy, initiative, industry, identity, intimacy, generativity, and integrity) as a framework for elaborating eight "attitude-virtues" that are at the heart of religion and morality. An "attitude-virtue" (and its opposite, an "attitude-vice") is a nexus composed of human experience shaped in enduring patterns and of the reflection on that experience by which a person both claims the experience and decides how to try to modify its direction. Trust is the attitude-virtue explored at greatest length in this book. By calling trust an attitude-virtue Evans speaks of both its religious (attitude) and moral (virtue) character without requiring the reader to choose one interpretation in preference to the other. Evans is forthright about his own religious stance but argues that the eight attitude-virtues, in the dynamics of their development in experience, can be interpreted either way. Following Erikson, the other seven attitude-virtues are humility, self-acceptance, responsibility, self-commitment, friendliness, concern, and contemplation.

The "struggle" which gives this book its title is that between the life-affirming and life-destroying forces at work within the person and in a person's relationship with the world. The "fulfillment" in the other part of the book title is that which occurs when the life-affirming attitude-virtue emerges in predominance over its opposite—trust prevailing over distrust, or humility over pride and self humiliation, and so on through the list of eight.

The greater part of Evans' essay is devoted to trust and distrust. Two reasons for this choice are given: trust is basic to the other attitude-virtues (prior in time as well as fundamental), and the space available in volume is not enough for equal treatment of the other seven. (Evans hopes to develop the other parts of his plan in subsequent essays.) While the discussion of trust and mistrust occupies six chapters, the remaining seven attitude-virtues are summarized in two brief chapters. These are helpful and clear summaries to be sure, but they still leave the reader unsatisfied.

The last chapter contains "reflections concerning the attitude-virtues," in which the author considers questions of priority, criteria, the relationship of religious and moral aspects of attitude-virtues, and their relationship to belief in God. Evans holds the view that, while the stages occur in sequence (as in Erikson), they are never finally achieved or resolved, and that there is always the possibility that one can, to some degree, "make-up" for a stage which was

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poorly handled at its usual developmental level. Evans does argue that the first five attitude-virtues are prerequisites for the final three (friendliness, concern, and contemplation), which he regards as the "supreme goals" in human life. Here Evans departs from Erikson, arguing that these three life-goals are not linked to age-related stages and do not emerge in one particular order. The relationship Evans traces between moral and religious aspects of the attitude-virtues is a combination of neo-Kantian and existentialist approaches. These approaches the author argues are not logically incompatible but are different ways of reflecting on the same material. This last chapter is more philosophically developed than the preceding chapters, but it is still quite clear and readable. One of the virtues of the plan of this book and the writing style is the blend with great ease of personal, psychological, ethical, and religious materials and a sense that the whole work unfolds in a clear and natural way. There is very little jargon, and, while philosophically technical matters are clearly and accurately stated, the exposition is both lucid and engaging.

The great question which hovers over the entire essay, of course, is whether human nature is indeed universally structured by developmental stages, or whether such discernable patterns are the product of socialization in a particular culture. Evans acknowledges the impossibility of answering that question conclusively, but he believes that his inquiry points to universals. Even if one must logically conclude that these life stages are primarily Western, white, male, or middle class, Evans' analysis of them still illuminates a significant number of lives.

Related to this question of whether human nature is structured by discernable developmental stages is the question of whether Evans and others like him have faithfully honored the distinction between description and prescription. This is one of those many books that seems to have as its central thesis: "one ought to try very hard to develop in the normal and regular way." This confusion of descriptive analysis and moral imperative tends to encourage the notion that there could be such a thing as a "natural morality." While a morality cannot contravene nature, it is neither accurate nor helpful to confuse moral reasoning with natural description.

The great puzzle in this book for the reader and reviewer is the absence of any reference to Lawrence Kohlberg's research on moral development and James Fowler's research on faith development. While Kohlberg and Fowler depend more heavily on Jean Piaget than on Erikson, they surely should be important to Evans' central argument. We can hope that he will employ them in his subsequent writing on the other attitude-virtues.

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The Aquarian Conspiracy: Personal and Social Transformation in the 1980s. By MARILYN FERGUSON. Los Angeles: J. P. Tarcher, Inc., 1980. 448 pages. $15.00

You are involved in a conspiracy, according to Marilyn Ferguson, simply because you are reading this review. It is not the review, however, that makes

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you a co-conspirator, but the fact that you are reading it in *Zygon*, one of the few professional journals mentioned in the appendix as promoting the aquarian conspiracy. Simply because you are implicated in this conspiracy, if for no other reason, you should be concerned about this book. Readers of *Zygon* may find portions of *The Aquarian Conspiracy* familiar, as Ferguson depends heavily on certain movements in science as well as quoting heavily from theologians/philosophers such as Pierre Teilhard de Chardin and Alfred North Whitehead, obviously leaning toward evolutionary, process-oriented thinking. Ferguson is not out of her element here, as she is the author of *The Brain Revolution*, published several years ago, and is editor of the *Brain/Mind Bulletin*. Those who have read these publications know that Ferguson is familiar with and uses contemporary scientific research, particularly brain research, and leans toward interpreting that research in a New Age flavor. That is what *The Aquarian Conspiracy* is all about.

Ferguson argues that we are in the midst of a paradigm shift, a transformation of society in all of its aspects to a better, more person-oriented society. The transformation is widespread and encompasses virtually every important facet of American society, such as politics, health, education, economics, science, our view of work, and family and social relationships. She is arguing that the personal growth movements of the 1960s and 1970s are not simply fads that have run their temporal gamut but that they are real and deep, and have affected millions of lives in such a way that, as the individuals are transformed, so will be the society.

At its basis, then, the conspiracy depends upon personal experience. This is why she calls the movement a conspiracy, a word whose root means "to breathe together." The transformation takes place out of a "breathing together," when individuals who have transformative experiences reach a critical mass and transform society. Much as the Belgian physical chemist and Nobel Laureate, Ilya Prigogine, has urged that, when a certain level of disintegration is reached in a dissipative structure, minor fluctuations in energy can transform the structure to a higher order, so Ferguson believes that the aquarian conspiracy can effect a higher ordering of human society. The transformations that will take place in American society will not take place in the form of traditional revolutions. Other attempts at transformation have failed because they focused on attempting to change the structure of society, assuming that man would change if the structure changed or that persons did not have to change. If there is a lesson that comes out of the social movements of the late 1960s, it must be the recognition that people must be changed before there is significant change in the structures and institutions of society; and Ferguson thinks that such transformations are taking place, along with new knowledge which substantiates personal experiences. Therefore there is less emphasis on overthrow and more emphasis on the emergence of a new way of being—in which what must be changed is the self.

Ferguson interprets the new emphasis on self not as a product of narcissism but rather as a new spiritualism; here one sees Ferguson's basically spiritual or religious concerns, since it is not the isolated, mental self that is promoted in growth experiences but a deeper sense of a self which breaks personal barriers and becomes transpersonal. At the heart of her thinking is the rejection of the traditional mind/body and subject/object dualisms; and if the self is not understood in the traditional way, the charge of narcissism cannot be valid. Ferguson gives support to this view from two major sources: mysticism and science. I do not have to belabor the view of self which seems to emerge from the writings of the mystics as one in which the self seems to encompass virtu-

ally all of reality. Therefore, I will focus more on her support from science, the arguments of which should not come as a surprise to those who are readers of the *Brain/Mind Bulletin* or who have read other New Age material.

In science Ferguson sees contradictory movements. On the one hand is a movement toward specialization, which is quickly becoming overspecialization to the degree that one specialist within a discipline cannot talk to another specialist in the same discipline. On the other hand we find in science a change from the Newtonian, atomistic view of the world to a model of an interrelated universe. The thrust toward interrelationships is seen, for instance, in the way one goes about science in a systems theory approach. Further, the content of science points toward unimagined interrelationships. For instance, Bell's theorem states that, if the experimenter changes the polarity of one of a pair of particles, the other instantaneously changes its polarity, even over a spatial distance where it is not known how the one could affect the other. Ferguson also discusses in terms of the interrelationship among the parts and the whole, the holographic theory of the brain (which is certainly controversial and not universally accepted by brain researchers). As opposed to a traditional photographic negative, from any piece of the hologram the whole picture can be reconstructed. This means that in a certain sense the whole is found in each part. If one stretches this to a model of the world, as the physicist David Bohm has done in *Wholeness and the Implicate Order* (London: Routledge and Kegan Paul, 1980), one can see that all things in the universe are related in a special way. Indeed, it has become rather routine in several books over the last few years to point out the similarities between physics and traditional mysticism.

The push toward the breaking down of distinctions between the subject and object results in a more personal view of the world, and Ferguson sees transformations toward this end in a number of areas. California becomes the paradigm, as she sees the rest of the United States slowly following suit in a number of areas. For instance she views politics as being affected by this personalistic movement, becoming decentralized and localized as it assumes a more personal form. Rather than traditional bureaucratic structures, we will find networks of groups working on various problems, and it is these networks that are the source of power for political transformation. As opposed to traditional bureaucratic structures which stressed competitiveness, the networks will encourage cooperation and growth. More personalized medical practice is also being achieved with individuals assuming more responsibility toward their own health and with members of the medical profession seeing that they must practice holistically, being concerned about both the mind and body since these are not distinct entities. Education will also be a prime area of concern, as more people who view themselves as part of the transformation are engaged in education than in any other profession. As opposed to the traditional teaching paradigm which emphasizes content and product, the new paradigm will emphasize how to learn and the process of learning, focusing on internal motivation and internal evaluations of progress.

There is, of course, much that I have not touched upon, but it should be obvious from my comments that Ferguson is terribly optimistic about our future, so much so that, although I always thought of myself as an unrelenting optimist, I find myself put to shame by Ferguson's vision of the transformation in the 1980s. Such optimism will not set right with a lot of people. Further, this type of contemporary sociohistorical approach of "reading" contemporary society and then projecting the direction it is going is notoriously fraught with difficulty. The last decade has been a battleground for rather

extreme views of America being "greened" or spaceship earth crashing in destruction.

Nevertheless, I think the book is an important one to read for three reasons. First, it brings together so much diverse information. There is no doubt that Ferguson knows the territory and maps it out in all of its profusion better than I have seen done anywhere else. Second, *The Aquarian Conspiracy* practices what it preaches. It has stressed that the transformation is one toward interrelationships and connectedness, and the strength of the book is in the connections it makes in attempting to bring together a vast amount of information from a number of diversified fields. In the end, no single bit of information is terribly compelling, but the pattern that is formed is too interesting and sensitive to ignore. Third, this leads to perhaps the most important aspect of the book: although it claims to *describe* the transformation in the 1980s, the book's real impact will be as an instrument *for* the transformation. It is not a simple description of a process; it is part of the process itself. In an area (New Age) where the literature is not the best, as judged by traditional standards, this is an important and outstanding work.

I am reminded of the distinction William James made between "hard-headed" and "tender-minded" people. The former are those individuals whose search for truth is so serious they will not risk being fooled, so they are only convinced by that which is demonstrably the case. The tender-minded, on the other hand, are those people whose search for the truth is so personal they are willing to risk holding something as true which may not be true, in order to grasp some truth which they may not otherwise have been able to see taking the "hard-headed" approach. *The Aquarian Conspiracy* is for the tender-minded. It describes a risk and a hope, and it issues an invitation to become a part of the transformation. As a reader of *Zygon*, you are implicated already in the conspiracy; if you are tender-minded enough, you will recognize the challenge that Ferguson gives you.

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Cosmos, Earth and Man: A Short History of the Universe. By PRESTON CLOUD. New Haven, Conn.: Yale University Press, 1980. 372 pages. $7.75 (paper).

In the subtitle Preston Cloud's book is billed as a "short history of the universe." By any standards this is a colossally ambitious undertaking, especially when one is encumbered with the additional burden of writing for a general audience. In fact the intended scope of the book extends beyond a history of the universe; it also projects into the future by discussing such matters as the long-range geological changes on earth and the possibility of communication with extraterrestrial civilizations as well as relatively short-range population, energy, resource, and ecological problems.

When the treatment of subject matter of such vast variety and scope is attempted in some 350 pages of a lay-oriented book, it is almost inevitable that it should suffer from the faults of inadequately covering some vital topics as well as making sweepingly general statements virtually devoid of informational content. Despite the courage implicit in attempting to write such a book

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and the presence of some worthwhile portions, Cloud's work suffers from both of these faults.

Although the title is *Cosmos, Earth, and Man*, his book is divided formally into four major parts: "Cosmos," "Earth," "Life," and "Man." The first part on the "Cosmos" is pathetically shortchanged, being allotted only forty-five pages. This misfortune is compounded by a description of nuclear and atomic structure that is rather anachronistic. Cloud describes the atom in classical terms using circular electron orbits, which may have been useful in high school chemistry courses in the 1920s, but hardly today. Only once does he even mention the words "quantum mechanics." There seems little need for this since it is relatively simple to give more accurate pictures of atomic structure based on quantum mechanics through the use of well-chosen analogies and carefully devised qualitative descriptions. In several other instances in this part of the book Cloud's descriptions are incomplete, inadequate, and unnecessarily imprecise, and some of the metaphors and analogies used in his descriptions are also poorly chosen.

On the other hand, considerably more space is given the next two parts on "Earth" and "Life," which comprise the major part of the book (almost 200 pages). These sections are much more informative, undoubtedly because of Cloud's strong and very reputable background in geology, biogeology, sedimentology, and paleoecology. Although there are several tables and figures to supplement the text material, a graph showing the various geological and evolutionary ages with their names as used in the text would have been most helpful. Also Cloud uses the names of these ages (or eons) either without defining them at all or only defining them when used again several pages later. He alludes to reference material in what he calls "end papers," which do not exist (at least not in the copy this reviewer read). The "end papers" that do exist give conversion tables for length, area, volume, weight, and temperature, all of marginal use, plus a periodic table of the elements.

In the last section on "Man" only one chapter is devoted to the evolution of man. Effectively Cloud's "history of the universe" ends with this chapter. The remaining four chapters are devoted to the potpourri of futuristic subjects mentioned earlier. His chapter on extraterrestrial communication with other possible extant civilizations is readable and entertaining, although his statistical argument for the probability that such civilizations exist could be improved upon. The last three chapters are spent discussing our more immediate future with relation to population growth, mineral and energy resources, and problems of world ecology. They comprise a mixture of factual information, warnings about overpopulation and misuse of resources, and suggestions as to how to deal with these problems. None of these are bad in themselves, but they are questionable as content for a "history of the universe." Although much of the information in these chapters is interesting, especially the geological extrapolation of what the continents would be like in five million years, Cloud's explanation of exponential growth, le Chatelier's principle, and entropy are unnecessarily over developed.

In this reviewer's opinion Cloud might have done better to confine himself solely to a book about the geological evolution of the earth and the evolution of life. Perhaps he could have additionally written another shorter book on future population, resource, and ecological problems with his warnings, opinions, and suggestions. But in this particular piece of work Cloud clearly attempts too much, and that which he does do is more than occasionally subject to tangential digression and rambling. While many of his descriptions use

well-chosen analogies, many do not and are unnecessarily imprecise. The book can only be recommended to the lay reader who wants some information on the evolution of life and of the earth's geology, which are the best parts of *Cosmos, Earth and Man.*

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Emerging Cosmology. By BERNARD LOVELL. New York: Columbia University Press, 1981. 200 pages. $10.00.

Change is clearly the hallmark of the development of all things; galaxies, stars, planets, and life forms have all emerged, matured, and perished via the constant ebb and flow of matter across space and time. Change not only governs our universe, but it also affects our attempts to understand and model the universe. Indeed, cosmological models have themselves changed for as long as humans have consciously inquired of the cosmos and our relation to it.

In this volume Sir Bernard Lovell traces man's changing ideas of universal cosmology through the ages. From ancient Greek thinkers, through Renaissance natural philosophers, to twentieth-century scientists, Lovell notes that throughout recorded history cosmology has always maintained a delicate balance among observation of the natural world, philosophical disputation, and belief in the validity of theological dogma. Over the course of time emphasis has drifted from the last to the first, so that today all the world's physical cosmologists lean heavily toward one version or another of a big bang universe.

In this thin, 175-page text, *Emerging Cosmology* briefly touches most of the salient features in the history of cosmology. Lovell emphasizes, rightfully, the great leap gained by Eratosthenes' measurement and calculation of the size of the earth in the third century before Christ. He then recounts the usual story of the early geocentric models, the need for epicycles and other complexities to explain increasingly refined planetary observations, the re-emergence of the heliocentric model in Renaissance times, the discovery of the size and shape of our galaxy hardly more than a half-century ago, the more recent resolution of myriad other galaxies scattered throughout an increasingly vast universe, and the now-familiar and much-discussed big-bang evolutionary models.

Lovell is correct in stressing some aspects of his story, although I think he is considerably biased in others. For example, I am glad he reminds us that Copernicus was influenced by the Greeks' perennial search for the perfect curve and thus, even in 1543, insisted on using circular orbits in his heliocentric models; epicycles were still needed in his version of heliocentricity and were not discarded until 1609 when Johannes Kepler, using Tycho Brahe's observations, saw the immensely powerful usefulness of ellipses. Then, of course, a half-century later Newton made it all clear on first principles.

On the other hand, I found Lovell's account of John Herschel's eighteenth-century contributions engaging but overdone. Herschel laid the

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groundwork for our modern concept of our Milky Way galaxy, but Lovell places too much emphasis on what Herschel was unable to accomplish rather than stressing the Milky Way discoveries that were made thereafter, notably by Harlow Shapley in the early twentieth century. Many of us, including myself in a recent book, tend to underplay Shapley's magnificent contribution to science; by discovering our position in the suburbs of the Milky Way, Shapley did for our sun no less than what Copernicus had done for Earth centuries before. Together, these two men removed us forever from the center of the universe.

While reading *Emerging Cosmology* I found no glaring errors. Nor, however, did I gain any new insight. Not at all an expert on historical cosmology, I had hoped to grasp a better appreciation for the many subtle, odd, yet original ideas contributed by some of the world's greatest cosmologists during the past twenty-five centuries. But I found Lovell's account rather standard, much like that already published in many trade and text books. Indeed, much of *Emerging Cosmology* seems to be a slight embellishment of Lovell's recent work *In the Center of Immensities* (1978). In many ways I enjoyed this earlier book more than the work currently reviewed; *Immensities* seems richer in unorthodox detail and better balanced with sweeping breadth, though admittedly briefer in cosmic history.

Thus, while I regard *Emerging Cosmology* as a fine introduction to historical cosmology for those never having touched the subject before, I would guess many readers of *Zygon* would gain little from it. Furthermore this volume may not be of much interest to the general public. Sir Bernard's writing style is not overly lucid, and, with its total lack of illustrations, I am sorry to suggest that this book is likely to fall into the crack between lively, popular accounts for lay readers and scholarly, penetrating accounts for inquiring academics.

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