

review of how scientific communities in the West have approached over time the question of alien life in the universe. But in my view he has done something still more important. By acknowledging so candidly the personal biases that he and others in his professional world have developed about ways of looking at matters like the existence of alien life, he has helped clear away the ideological underbrush that impedes the investigation of this and other anomalous phenomena that may never yield their secrets to approaches that are limited by the epistemological strictures that still dominate Western science.

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John E. Mack, M.D., was a professor of psychiatry at Harvard Medical School and explored the ways in which perceptions and beliefs about reality shape the human condition. He was the author of a diverse range of books, including the Pulitzer Prize-winning biography of British officer T.E. Lawrence, A Prince of Our Disorder, and most recently Passport to the Cosmos: Human Transformation and Alien Encounters, which is both the culmination of twelve years of research into the effects of alien encounters upon people's lives and a philosophical treatise connecting the themes of spirituality and modern worldviews. The John E. Mack Institute (www.johnemackinstitute.org) in Cambridge, Massachusetts, is dedicated to uncovering and developing areas of inquiry that profoundly contribute to our understanding of human experience, and providing the basis for a more inclusive framework of mental health practice for generations of caregivers to come.

To our deep regret, John E. Mack died September 27, 2004. Please see page 670 for "In Memoriam."

Lonely Planets: The Natural Philosophy of Alien Life by David Grinspoon. HarperCollins, 2003. 433 pp. \$49.95 (hardcover). ISBN 0-06-018540-6.

It is no accident that David Grinspoon, an astronomer at the Department of Space Studies at the Southwest Research Institute and the University of Colorado, has taken extraterrestrial life for the subject of his book. His father, Lester, was a Professor at the Harvard Medical School and one of Carl Sagan's best friends, and Grinspoon was himself a student of Sagan at Cornell. It was hard to be around Sagan without getting enthused about exobiology.

The book is a wide ranging view of current work in astrobiology, the field that emerged from exobiology in the late 1990s with a considerably broader outlook in the sense that it includes not only research in cosmochemistry, chemical

evolution, and the origin and evolution of life, but also planetary biology and chemistry, formation of stars and planets, and expansion of terrestrial life into space. Grinspoon uses the term "natural philosophy" in his subtitle "to encourage a certain perspective on the science, an attitude where we keep ourselves honest by frequently questioning the framework of assumptions we use" (pp. xvi–xvii). Astrobiology, he says, harkens back to a time before disciplinary boundaries existed, when science was not distinct from philosophy, and when the line between science and spiritual quests was not finely drawn.

The book is divided into three unequal parts: History, Science, and Belief. The history section is brief and, by the Grinspoon's own admission, highly selective. It draws on the two standard histories of the subject, Michael Crowe's *The Extraterrestrial Life Debate, 1750–1900* (New York: Dover, 1999), and my own book *The Biological Universe: The Twentieth Century Extraterrestrial Life Debate and the Limits of Science* (Cambridge University Press, 1996). It adds little new, but serves to set the stage and to emphasize that many of today's arguments in the debate have venerable roots.

More than half the book is devoted to science, and Grinspoon covers the full range of astrobiological possibilities, ranging from the solar system to planetary systems and origin of life studies. He does not shrink from the controversies in the field. He rejects Ward and Brownlee's rare Earth hypothesis, arguing, Gaia-like, that life and Earth have shaped each other, and that the same would happen on other planets with at least the minimal conditions for life (pp. 144–145). He sympathetically discusses the Gaia hypothesis itself, which regards Earth as a giant superorganism in which life has many feedbacks with the planet integral to its functioning and evolution. He recognizes that the Gaia hypothesis is difficult to prove, and in the end characterizes it as "right on the border of science and natural philosophy" (p. 268). He is an expert on the clouds of Venus, and the science section is rounded out by a discussion of life in the Venusian atmosphere, a subject he first raised in his previous book *Venus Revealed* (Addison Wesley, 1997) and has recently received considerable publicity. Venus, he points out, is geologically active with a chemically fertile disequilibrium atmosphere. Any microbial life would have a radically different chemistry from ours, and Grinspoon is quick to say that he does not think such life actually exists there, just that it cannot be ruled out. He uses similar arguments for the geologically active Jovian moon, Io.

The final section is Belief, where Grinspoon uses "scientifically informed intuition" to tackle Search for Extraterrestrial Intelligence; UFOs; the face on Mars; and the alien abduction thesis of John Mack, who was at Harvard Medical School with Lester Grinspoon, and his lifelong friend. Despite trying to keep an open mind, and despite his belief that the galaxy is full of species, Grinspoon is skeptical about UFOs, and despite his family friendship with Mack he also rejects the reality of the abduction phenomenon. "Why?" He asks. "In short, because it feels all wrong. I reject it because it does not fit my worldview. This is the best I can do" (p. 386).

Throughout the book, Grinspoon discusses the relevance of science to religion. Cosmic evolution, he says, "carries a message of complete and profound unity, which I think can be read as a reason to care deeply for all things, especially for the living Earth and its creatures, the most highly evolved local products of matter's slow climb from formlessness" (p. 86). Cosmic evolution, he suggests, is "the greatest story ever told," and indeed others before him have called it "Genesis for the 21st century." Grinspoon describes himself as raised as a "secular humanist Jewish American," now professing sympathies with Buddhism. On the subject of God he says, "Even scientific rationalists like Sagan and Clarke, considering the capabilities of long-lived intelligences, talked themselves into the likely existence of omnipotent, godlike creatures. Yet they recoil with horror from people who express a belief in the existence of such creatures but come at it from outside science." Both possibilities are speculative, of course, but one is natural, the result of eons of evolution by natural selection or manufactured artificial intelligence, while the other is supernatural. The distinction should not be lost.

The tone of *Lonely Planets* is unabashedly irreverent, as when Grinspoon calls Kepler a "philosopherfreak" (p. 10), discusses "our sorry-ass excuse for intelligence" (p. 402), or conjures up the image of a Dalai Lama who "has to sit on the can like the rest of us" (p. 356). Some will find this approach refreshing, others too flip or even offensive. But I believe all will find the book thought-provoking.

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Harmless Naturalism: The Limits of Science and the Nature of Philosophy

by Robert Almeder. Open Court, 1998. xii + 235 pp. \$52.95 (hardcover), \$24.95 (paper). ISBN 0-8126-9379-5, ISBN 0-8126-9380-9.

According to "scientism", the only legitimately answerable questions are those that scientists can answer on the basis of scientific inquiries, which are based upon the use of scientific methods. By implication, the only legitimate claims are those that can be confirmed or disconfirmed by the methods of natural science. The author of this book, which is subtitled *The Limits of Science and the Nature of Philosophy*, contends that arguments for scientism are mistaken and that it cannot be sustained. He supports his position with rigorous arguments most readers will find persuasive.

According to the introduction, landmarks in the emergence of scientism include Hume's distinction between thoughts about relations between ideas and matters of