

dividuals, is intrinsically interesting and well described by the interviewees. But, for me, the highlights of the field work are located in the interviews with the company's ethics consultant and its in-house lawyer. The ethicist acknowledges that he believes the company has retained him primarily for public relations purposes: "It's only marketing. It has to do with public relations and marketing" (p 105). The lawyer thinks current legal and ethical standards are sufficient, and describes his job as making sure the proper paperwork—consent forms and institutional review board (IRB) approvals—have been filled out to protect the company's use of DNA samples (p 115). And it is not ethics (or science), but law and legal liability, which seems to be driving the company's research agenda. As the head of one of its research groups puts it, the type of predictive diagnostic test the company wants to produce is one that shows the need for more (never less) aggressive treatment: a genetic test "accrues value for the company only if it suggests more aggressive treatment; there are liability issues involved in using a test that might suggest less treatment" (p 170).

Readers need not appreciate Rabinow's Foucault-inspired methodology or philosophy to profit from this work. His interviews are expertly conducted and provide a rich resource that can be mined from a variety of perspectives—including scientific, business, legal, ethical, and philosophical. Whether there is a "network" among what he would describe as these heterogeneous elements, and whether this apparatus can be made to emerge, is work not attempted in this book. As the authors sum up their year at Celera: "Our chronicle has no moral, although throughout it does treat practices of ethics, understood as self-formation" (p 186). To which I would add, if Celera is representative, the practices of ethics in the land of biotechnology are primitive and self-serving. More than new predictive genetic tests, what is urgently needed is a new form of ethics governance that is sufficient to help protect our apparently genetically modifiable species from unaccountable would-be modifiers.

GEORGE J ANNAS, *Health Law, Bioethics & Human Rights*, School of Public Health, Boston University, Boston, Massachusetts

#### INFORMATION THEORY, EVOLUTION, AND THE ORIGIN OF LIFE.

By Hubert P Yockey. Cambridge and New York: Cambridge University Press. \$60.00. xi + 259 p; ill.; index. ISBN: 0-521-80293-8. 2005.

The theory of information as formulated by Claude Shannon in 1948 (*The Bell System Technical Journal* 27:379-423, 623-656) is one of the most successful

frameworks in science, even though it is most widely used in engineering, with its use in physics growing. The recent explosive rise in full genome sequencing has reemphasized the need for tools to understand genomic data, and information theory must play a fundamental role in this endeavor because, after all, genomes encode information. Thus, a thorough textbook that outlines the use of information theory applied to molecular sequences would be extremely welcome. Unfortunately, *Information Theory, Evolution, and the Origin of Life* is not that book. Rather, in this volume, the author (a retired Army physicist) chooses to continue his lifelong quixotic battle against established university researchers, who he regularly dismisses as lost in the "olive groves of academe" (p 22)—he uses this phrase at least five times in the book. In mostly self-congratulatory prose (he cites his own work 148 times), opposing points of view are quickly dismissed as "Marxist canard[s]" (p 146)—the prebiotic soup theory—or "Marxist dialectical materialism of Engels and Oparin" (p 139)—NASA's "Origins" program—while antagonists are derided either as a "longtime leftist radical . . . activist" (p 22) or "lifelong Marxist" (p 153).

These are only mild idiosyncrasies compared to the author's serious departures from accepted scientific standards of conduct. To begin with, at least half of the (poorly edited) book is a nearly verbatim copy—including typographical errors—of the author's previous volume, *Information Theory and Molecular Biology* (1992. Cambridge (UK): Cambridge University Press). This information is disclosed nowhere in the current book. The parts that are new to this volume are a mixture of historical and philosophical notes on origin-of-life research and researchers (in a section entitled *The Life of Walther Löb*, we learn the names and ages of the four daughters of the electrochemist at the time of his death), and reiterations of the same points already put forth in the older material. Even worse, some literature sources are either changed to conform or falsified. The sequence data for much of the presentation in Chapter 6—unchanged since its 1992 inception—is ostensibly from the *Protein Information Resource 2003*, but checking with the 1992 book reveals that the source is a 1986 paper. Despite its appearance as rigorous by the use of mathematical jargon, many derivations in this book (all of them already present in the 1992 version) are deeply flawed either mathematically, or by the use of inappropriate biological assumptions, or both. What is most surprising is that such a volume could pass an impartial peer review process. Cambridge University Press would do well to examine the circumstances of this and the previous book's approval and editing process.

CHRISTOPH ADAMI, *Keck Graduate Institute of Applied Life Sciences*, Claremont, California