

## SETI BOOKSHELF

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*Where can readers find the best ideas and research about life and intelligence in the universe? To answer that question, SETI BOOKSHELF describes 20 useful resources published within the past few years.*

*This list was compiled in April 2003 by Dr. Allen Tough, an Editor of Contact in Context. Additions to the earlier list (issue #1) are marked NEW ITEM. The list will be updated again in a future issue.*

**Astrobiology.** This new quarterly describes itself as "a forum for scientists seeking to advance our knowledge of life's origin, evolution, distribution, and destiny in the universe." It is edited by Dr. Sherry Cady and published by Mary Ann Liebert Inc.

Ragbir Bhathal (Guest Editor). **SETI-6: The search for extraterrestrial intelligence.** Special issue of *Acta Astronautica*, 46 (10-12), May-June 2000. Selected papers from the International Academy of Astronautics SETI sessions in 1996, 1997, and 1998.

Eric Chaisson. **Cosmic evolution: The rise of complexity in nature.** 2001. "Recent advances throughout the sciences suggest that all organized systems share generic phenomena characterizing their emergence, development, and evolution. Whether they are physical, biological, or cultural systems, certain similarities and homologies pervade evolving entities throughout an amazingly diverse Universe."

David Darling. **Life everywhere: The maverick science of astrobiology.** 2001. "This book is a report from the frontline of astrobiological research, an examination of issues, arguments and experimental results foremost in the minds of those who are spearheading this astonishing new field. Beyond that, it is an attempt to see the way ahead, to identify the concepts that may eventually unify our understanding of life in a broader context. On what may be the brink of our first encounter with an alien species, we ask: What principles govern the emergence and evolution of life throughout the cosmos? Where can we expect to find other living worlds, and what will we discover on them?"

Steven J. Dick. **The biological universe: The twentieth-century extraterrestrial life debate and the limits of science.** 1996. This insightful intellectual history shows how separate scientific disciplines eventually converged to form the new fields of SETI and astrobiology. The book spells out the biological universe as a new cosmological worldview. Steven Dick's keynote address at the 2002 SETI League Technical Symposium noted that "we may in fact live in a post biological universe, one that has moved beyond flesh and blood intelligence to artificial intelligence (AI), a product of *cultural* rather than biological evolution."

Bruce Dorminey. **Distant wanderers: The search for planets beyond the solar system.** 2002. After providing an engrossing account of the search for extrasolar planets, this book moves on to speculate on "some of the tantalizing questions that may be at least partially answered in the next few decades. What are the prospects of finding intelligent life around other Sun-like stars? Why do we live in a universe clumped into galaxies? Does life on Earth, in some small way, mirror the cycles of birth and death in our own Sun?"

Ronald D. Ekers and others (Editors). **SETI 2020: A roadmap for the search for extraterrestrial intelligence.** 2002. Excellent portrayal of the future of radio and optical searches, but fails to deal with other promising strategies, such as astroengineering projects, anomalous astronomical data, and interstellar probes.

Donald Goldsmith and Tobias Owen. **The search for life in the universe.** 2002. The third edition of a standard textbook for astrobiology and SETI courses. Includes why do we search, is Earth unique, how many extraterrestrial civilizations, interstellar spaceflight, interstellar radio messages, UFOs, and where is everybody.

Albert A. Harrison. **After contact: The human response to extraterrestrial life.** 1997. Psychological and sociological insights that can help us foresee what might happen right after contact is confirmed. Psychology professor Harrison explores not only *human* psychology but also *alien* psychology and sociology.

**International Journal of Astrobiology.** Published by Cambridge University Press. The fields listed in the statement of aims and scope include the evolution and distribution of life, experimental simulation of extraterrestrial environments, life detection in our solar system, space missions for astrobiology, intelligent life, and societal aspects of astrobiology. The first issue noted that "Astrobiology has three main themes: (1) Origin, evolution and limits of life on Earth; (2) Future of life, both on Earth and elsewhere; (3) Search for habitats, biomolecules and life in the Solar System and elsewhere. These fundamental concepts require the integration of various disciplines... We must also keep our minds wide open about the nature and limits of life... Life is tolerant, adaptable and tenacious."

**Journal of the British Interplanetary Society.** JBIS has included "interstellar studies" and SETI papers for several decades. The new editor, Dr. A. R. (Tony) Martin, is noted for his contributions in this area: he was co-editor of the 1978 report on Project Daedalus and editor of the special "interstellar studies" issues of JBIS in the 1980s.

Stuart Kingsley and Ragbir Bhathal (Editors). **The search for extraterrestrial intelligence (SETI) in the optical spectrum III: 22-24 January 2001.** (Proceedings of SPIE volume 4273). A stimulating set of papers on exobiology, optical SETI, and interdisciplinary topics. Includes Chandra Wickramasinghe's keynote paper on the unity of cosmic life.

David Koerner and Simon LeVay. **Here be dragons: The scientific quest for extraterrestrial life.** 2000. Chapter 7 focuses on SETI. Chapter 9, called "Exotica: Life as we don't know it," focuses on our rapid progress in a combination of computing capacity, the World Wide Web, artificial intelligence, robotics, and molecular manufacturing (nanotechnology). The rest of the book usefully describes the background to the search for life in the universe--the field of astrobiology, as it is commonly called today, or cosmic biology as it is called by the authors (an astronomer and a biologist).

Ray Kurzweil. **The age of spiritual machines: When computers exceed human intelligence.** 1999. Focuses on the future of artificial intelligence and robotics here on Earth. This vision provides a glimpse of what advanced extraterrestrial intelligence may be like. Another 1999 book, Hans Moravec's **Robot: Mere machine to transcendent mind**, is equally valuable for this purpose.

Guillermo A. Lemarchand and Karen J. Meech. **Bioastronomy '99: A new era in bioastronomy.** 2000. Proceedings from a meeting held in Hawaii in August 1999. Papers covering a vast range of topics within Bioastronomy. Enhanced by many photos and by Jon Lomberg's art on the cover. The volume for the 2002 Bioastronomy meeting is in progress.

**NEW ITEM!** SETI League. **Proceedings of SETICon03: The third SETI League Technical Symposium, April 25-27, 2003.** A wide range of papers from the third SETI League conference. This conference has the advantage of being devoted exclusively to SETI rather than being part of a much larger field, such as astronautics or Bioastronomy. Also **Proceedings of SETICon02.** The second SETI League Technical Symposium, April 26-28, 2002. Contains 26 papers ranging from the technical to the philosophical.

H. Paul Shuch. **Tune in the universe! A radio amateur's guide to the search for extraterrestrial intelligence.** Published by ARRL in 2001 in CD format. A good introduction to SETI by the executive director of the SETI League. The contents range from how to build your own radio receiver in your backyard to Dr. Shuch's selected memoirs and songs.

Allen Tough (Editor). **When SETI succeeds: The impact of high-information contact.** 2000 Available from the Foundation For the Future. The proceedings of a seminar on the cultural impact of extraterrestrial contact (held in conjunction with Bioastronomy '99) plus eleven additional in-depth papers. Topics include the practical information

and the answers to major questions that we might gain from another civilization, the likely changes in our view of ourselves, the role of the social sciences in SETI, cosmic humanity, the age of ET, cultural aspects of astrobiology, and what we should do next.

**NEW ITEM!** Stephen Webb. **If the universe is teeming with aliens... where is everybody? Fifty solutions to the Fermi paradox and the problem of extraterrestrial life.** 2002. A fresh, well organized exploration of a wide array of explanations for SETI's lack of success so far. The first eight solutions assume aliens are already here; for example, (2) they are here and are meddling in human affairs, (4) panspermia, (5) the zoo scenario, and (8) God exists. The next 22 solutions assume they exist but have not yet communicated; for example, (12) Bracewell-von Neumann probes, (15) they stay at home and surf the net, and (19) the signal is already there in the data. Other solutions assume that extraterrestrial intelligence does not exist.

**NEW ITEM!** Chandra Wickramasinghe. **Why alien intelligence may not be so alien.** *SearchLites* 8 (4), Autumn 2002. The recent views of the pioneer (along with Fred Hoyle) of one current theory of panspermia. Despite early ridicule, the idea of panspermia is being taken much more seriously by scientists these days, and rigorous experiments are being conducted. This paper is based on Professor Wickramasinghe's scholarly banquet presentation at the SETI League's 2002 conference. It also appears at <http://www.setileague.org/articles/chandra.htm>.