



Section VI

Participant Biographies



Ragbir Bhathal

Ragbir Bhathal, an award-winning author and astrophysicist, is Foundation President and Chairman/Director of the Australia-Singapore Centre at the University of Western Sydney, and a member of the five-year multi-beam project at the Parkes Radio Telescope. He is also Foundation President of the OZ SETI Society, a society devoted to the promotion of the scientific and social aspects of the search for extraterrestrial intelligence, and a member of the SETI Committee of the International Academy of Aeronautics and Astronautics. His observatory at UWS will be home for the dedicated Australian Optical SETI (OZ OSETI) Project. In 1998, he chaired the international committee that organized the first international conference to examine the scientific and social aspects of the search for extraterrestrial intelligence. Dr. Bhathal's many publications include *Profiles*, *Australian Astronomers*, *John Tebbutt: Australian Astronomer*, *Under the Southern Cross*, *Astronomy*, *Search for ET*, *Australian Scientists and Inventors*, and numerous papers. In 1988 he was awarded the Royal Society of New South Wales Medal for research and services to science.



John Billingham

John Billingham received his medical education at Oxford University and specialized in aviation physiology and medicine in the Royal Air Force before joining NASA's Lyndon B. Johnson Space Center in Houston, Texas. There he headed the Environmental Physiology Branch and worked on the Mercury, Gemini, and Apollo programs. In 1965 he moved to the NASA-Ames Research Center in Northern California to head the Biotechnology Division, then the Extraterrestrial Research Division, and later the Life Science Division. After a sabbatical year at Stanford, Dr. Billingham returned to Ames to become Chief of the Office for the Search for Extraterrestrial Intelligence (SETI). Upon retiring from NASA, he joined the SETI Institute as Senior Scientist to help with the now privately funded SETI program, Project Phoenix. He was elected to the Board of Directors of the SETI Institute in 1995. A visionary scientist, he helped design spacesuits for the astronauts and was a Stanford University lecturer on Life in Space from 1969 to 1995. With Dr. Bernard M. Oliver of Hewlett-Packard, he designed a system to Detect Intelligent Extraterrestrial Life, known as Project Cyclops.

**Eric J. Chaisson**

Eric J. Chaisson is Director of the H. Dudley Wright Center for Innovative Science Education at Tufts University, where he is also Research Professor of Physics and Astronomy, and Research Professor of Education. In addition, Dr. Chaisson is an Associate of the Harvard College Observatory, and Co-director of the MIT Space Grant Consortium. Trained initially in condensed-matter (atomic) physics, Chaisson obtained his doctorate in astrophysics from Harvard University in 1972. Before assuming his current position, he spent a decade as a member of Harvard's Faculty of Arts and Sciences. During his tenure at Harvard, Chaisson's research concentrated largely on the radio astronomical study of interstellar gas clouds. This work won him fellowships from the National Academy of Sciences and the Sloan Foundation, as well as Harvard's Bok Prize for original contributions to astrophysics and Harvard's Smith Prize for literary merit. He has also held research and teaching positions at MIT and Wellesley College and, before joining Tufts, was for five years senior scientist and director of educational programs at the Space Telescope Science Institute at Johns Hopkins University.

**Bob Citron**

Bob Citron, Executive Director of the Foundation For the Future, co-founded Kistler Aerospace Corporation and served as President and Chief Executive Officer from 1993 to 1995. Among successful companies he founded previously were SPACEHAB, Inc., builder of three space laboratories that routinely fly aboard the Space Shuttle, and EARTHWATCH, a worldwide scientific and educational organization. Citron spent 20 years with the Smithsonian Institution involved in many of NASA's pioneering space projects, including the Apollo lunar landing program, the Space Shuttle program, and the International Space Station program. While at the Smithsonian, he helped establish and manage the global Satellite Tracking Network (STN) and was responsible for the design and construction of satellite tracking stations around the world. He was a principal investigator on NASA's Apollo, Skylab, and Landsat programs from 1968 to 1974, and was the founder and first director of the Smithsonian Institution's Center for Short-Lived Phenomena, a global science communications network. He has written and published extensively in scientific subjects.

**Kathleen Connell**

Kathleen Connell is Director of Strategic Communications in the Astrobiology Integration office at NASA–Ames, and the lead for the Societal Implications of Astrobiology Workshop. She serves as Policy Director for the Aerospace States Association. Connell has had varied program and mission development responsibilities both at Ames and NASA headquarters. Prior to joining NASA, Connell worked throughout the Americas with several non-government organizations, enabling economic development for emerging and impoverished populations, including women of lesser developed countries, farm workers, and immigrants to San Francisco’s inner city. She is currently an advisor to the San Francisco Human Rights Commission, as well as a Ph.D. candidate with the Fielding Institute. Connell is an employee of Indiana Business, Modernization and Technology, Inc., the economic development unit of the State of Indiana, and a graduate of the University of California at Berkeley.

**Paul Davies**

Paul Davies is Visiting Professor at Imperial College London and Honorary Professor at the University of Queensland. He formerly was Professor of Mathematical Physics and Natural Philosophy at the University of Adelaide, and has held academic appointments at Cambridge and London universities, and the University of Newcastle upon Tyne. Professor Davies has published over 100 research papers in cosmology, gravitation, and quantum field theory, with emphasis on black holes and the origin of the universe. His monograph *Quantum Fields in Curved Space*, co-authored with Nicholas Birrell, remains a seminal text in the field of quantum gravity. He is also well known as an author, broadcaster, and public lecturer. Among his 25+ books are *God and the New Physics*, *The Cosmic Blueprint*, *The Mind of God*, *About Time*, and *Are We Alone?* His latest book, *The Fifth Miracle*, is about the origin of life and the possibility of life on Mars. He was a longstanding contributor to *The Economist*, and is a familiar columnist in *The Guardian*. Dr. Davies has been honored with numerous awards, including the Templeton Prize for progress in religion, awarded to him in 1995 by Prince Philip at Buckingham Palace.

**Steven J. Dick**

Steven J. Dick is the Historian of Science at the United States Naval Observatory (USNO). He studied astrophysics at Indiana University and received a Ph.D. in the history and philosophy of science there in 1977. In 1979 Dr. Dick joined the scientific staff of the Naval Observatory as an astronomer, a position he held until being named Historian of Science in 1989. In the early 1990s, Dick acted as historian of the National Aeronautics and Space Administration's High Resolution Microwave Survey-Search for Extraterrestrial Intelligence program. He is a member of the SETI Committee of the International Academy of Astronautics and its Subcommittee on Issues of Policy Concerning Communication with Extraterrestrial Intelligence. Dick has written several books, including *Plurality of Worlds: The Origins of the Extraterrestrial Life Debate from Democritus to Kant*; *The Biological Universe: The Twentieth Century Extraterrestrial Life Debate and the Limits of Science*; and *Life on Other Worlds*. Currently Dick is President of the International Astronomical Union's Commission 41 (History of Astronomy).

**Ben Finney**

Ben Finney earned a Ph.D. in anthropology at Harvard University. Since then he has taught at the University of California at Santa Barbara, Australian National University, French University of the Pacific, International Space University, and, currently, University of Hawaii. His primary anthropological work has been conducted in the Pacific Islands; he is particularly noted for his pioneering experiments in Polynesian voyaging, which revolutionized views about Polynesian migration and settlement. Since the late 1970s he has pioneered an anthropological approach to human issues involved in exploring and eventually settling space, as well as in SETI. In the mid-1980s he was awarded an NRC fellowship to work on issues of space settlement and SETI at NASA's Ames Research Center. He founded and currently chairs the Space and Society Department at the summer sessions of the International Space University, and periodically lectures in ISU's Masters of Space Studies program. Dr. Finney is co-editor of *Interstellar Migration and the Human Experience*. Among honors awarded to him are Russia's Tsiolkovsky Medal, Britain's Royal Institute of Navigation's Bronze Medal, the Medal of the French University of the Pacific, and the Regents Medal of the University of Hawaii.

**Albert A. Harrison**

Albert A. Harrison is Professor of Psychology at the University of California at Davis. He earned B.A. and M.A. degrees in Psychology from the University of California, Santa Barbara, and a Ph.D. in Social Psychology from the University of Michigan. Harrison is a member of the SETI Committee of the International Academy of Astronautics, a Director of the nonprofit organization Contact, a Regent of United Societies in Space, a member of the Science Advisory Board for the National Institute of Discovery Science, and Deputy U.S. editor of *Systems Research and Behavioral Science*. He has also been active at *Case for Mars* conferences. His current interests include the psychological, social, and political determinants of beliefs about the cosmos and the reality of extraterrestrial life. Dr. Harrison's books include *High Expectations: Human Spacefaring in the New Millennium*; *Living Aloft: Human Requirements for Extended Spaceflight* (with M.M. Connors and F. R. Akins); *From Antarctica to Outer Space: Life in Isolation and Confinement* (edited with Y. A. Clearwater and C.P. McKay); and *After Contact: The Human Response to Extraterrestrial Life*. His articles on humans in space and on the search for extraterrestrial intelligence have appeared in numerous journals.

**David Hines**

David Glenn Hines has a B.A. in English Literature and a B.F.A. and M.A. in Fine Arts, all from the University of New Mexico. He makes his living as a painter of landscapes, mostly of the western Mojave Desert and Central Valley regions of California. He is represented by galleries in Los Angeles, California, and Santa Fe, New Mexico. His work has been featured in numerous solo exhibitions and group exhibitions in California and the U.S. Southwest, including several major museum shows. In his paintings of the landscape at night, the land is almost overwhelmed by the infinitude of the space above it, a space that melds with the land in an uncertain horizon. Isolated lights denoting human presence are mirrored by stars making manifest the vast desert of the cosmos and perhaps denoting life there as well. By contrast, his daytime landscapes are close, comfortable, and familiar, with a plenitude of detail and relative abundance of life. Light plays a key role in all of his paintings, revealing by both its presence and its absence the deep love and sense of mystery the Earth and our universe inspire in him. Hines is an avid reader of science books.



Guillermo A. Lemarchand

Guillermo A. Lemarchand received his Ph.D. in physics from the University of Buenos Aires in 1991, and in 1998 received a Master's in Science and Technology Management and Policy. His achievements include being a researcher and lecturer at the Center for Advanced Studies; coordinator of the META II SETI Project at the Argentine Institute for Radioastronomy (CONICET); Visiting Fellow at the Center for Radiophysics and Space Research from Cornell University, working with Carl Sagan; co-director of the first Ibero-American School on Astrobiology, Universidad Simon Bolivar in Caracas, Venezuela; and editor of *Bioastronomy News*. He is a member of the International Academy of Astronautics (IAA) SETI Committee and of the Long-Term Dynamics of Societal Systems Study Group at the University of Buenos Aires. In 1989 he received the first National Award for the Peaceful Uses of Science and Technology. Books co-authored or edited by Dr. Lemarchand include *Inteligencia Extraterrestre*; *Scientists, Peace and Disarmament*; *El Llamando de las Estrellas Cosmos*; *The Search for Extraterrestrial Intelligence in the Optical Spectrum II*; and *Origins: From the Big Bang to the Civilizations, an Introduction to Astrobiology*.



Claudio Maccone

Claudio Maccone earned degrees in physics and mathematics from the University of Turin. A Full-bright scholarship enabled him to research the theory of stochastic processes at the Department of Electrical Engineering of the Polytechnic Institute (now Polytechnic University) of New York, and a Council of Europe Higher Education Scholarship, awarded by the British Council, led to Ph.D. studies in London. Maccone joined Space Systems Group of Aeritalia (now Alenia Spazio) in Turin as a technical expert for the design of artificial satellites. Among projects he is involved in currently at Alenia are the design of a space mission like the Quasat satellite for radioastronomy, the Tethered Satellite flown by the U.S. Space Shuttle in 1992 and 1996, and the design of a Solar Sail to reach Mars while being pushed by sunlight. Elected Corresponding Member of the International Academy of Astronauts, he is currently serving as Secretary of the Interstellar Space Exploration Committee and as a Member of the SETI Committee. Dr. Maccone has published two books, *Telecommunications, KLT and Relativity* and *The Sun as a Gravitational Lens: Proposed Space Missions*, and over 60 scientific and technical papers.

**Jill Tarter**

Jill Tarter earned a Bachelor of Engineering Physics Degree from Cornell University and a Master's Degree and Ph.D. in Astronomy from the University of California at Berkeley, where her major field of study was theoretical high energy astrophysics. In 1984 she helped found NASA's nonprofit SETI Institute. She served as Project Scientist for the SETI High Resolution Microwave Survey (HRMS) until its termination by Congress in 1993. Today she serves as the Director for Project Phoenix, the SETI Institute's privately funded continuation of the Targeted Search portion of HRMS. Among awards and recognition, Dr. Tarter received in 1989 the Lifetime Achievement Award for her contribution to the field of exobiology, and in particular to the search for extraterrestrial intelligence, from Women in Aerospace, a professional association in Washington, DC. In 1997 the Board of Directors of the SETI Institute appointed Dr. Tarter to a new endowed position: the Bernard M. Oliver Chair for SETI. Dr. Tarter has written and lectured extensively on SETI, Project Phoenix, and more conventional astrophysical topics.

**Keiko Tokunaga**

Keiko Tokunaga is a Buddhist priest in Hawaii. At the Seminar on the Cultural Impact of Extraterrestrial Contact, she presented fresh and insightful ideas, emphasizing the need for each of us to prepare for contact by enhancing our compassion, our openness to new experiences, and our ability to deal with anything alien. Tokunaga, who studies with a Zen master, suggested that one aspect of Zen is training ourselves to be more sensitive and to watch the kinds of signals we are sending, since the first impression is the one that lasts and there will be long-range impacts of whatever the first signal or contact is. Tokunaga asked what kind of signals we as a planet are sending out currently, making reference to mind-to-mind communication that occurs in the signals we send in interactions with each other. In terms of humanity right here and now, she said, how are we going to send signals to each other and make ourselves more receptive to contact? Though most people will keep on doing whatever they are doing, she put forth the hope that perhaps what we do could be done with more compassion.

**Allen Tough**

Allen Tough focuses on three interrelated issues. (1) The very-long-term future of human civilization. In addition to writing and conferences, he serves on the Foundation For the Future's Humanity 3000 Organizing Committee and the Millennium Project's Planning Committee. (2) The scientific search for extraterrestrial intelligence. He is the founder and coordinator of the Invitation to ETI, an innovative SETI project at <http://members.aol.com/WelcomeETI>. He presents papers at most SETI conferences and at the annual Contact conference, and serves on several international committees. (3) Humanity's search for meaning and purpose on the individual and societal levels. He weaves this theme into much of his writing within his other two interests. In his personal life, Dr. Tough particularly enjoys reading, walking, music, wilderness, hiking, skating, conversations, the World Wide Web, and his two grown children.

**Douglas A. Vakoch**

Douglas Vakoch, a Social Scientist with the SETI Institute, conducts and promotes research on the cultural aspects of SETI. He has a B.A. in Comparative Religion from Carleton College, an M.A. in the History and Philosophy of Science from the University of Notre Dame, and a Ph.D. in Clinical Psychology from State University of New York at Stony Brook. Vakoch's work in SETI began over 20 years ago with his creation of interstellar messages for communicating with extraterrestrial intelligence. He also conducts research on the history of the extraterrestrial life debate, policy issues related to SETI, and possible psychological and religious responses to detecting a signal from extraterrestrial intelligence. Prior to joining the SETI Institute, he conducted research on the evolution of speech perception and therapeutic communication at Vanderbilt University, funded by the National Institute of Mental Health. He is a member of the International Academy of Astronautics SETI Committee, as well as IAA Subcommittees on Issues of Policy Concerning Communications with Extraterrestrial Intelligence, Media and Education, and the Arts and Literature.

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