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PURPOSE

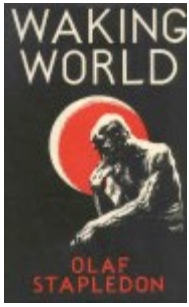


Science fiction is a twentieth-century invention. In it writers and readers try to imagine life in a context wider than our present — perhaps requiring as great a leap as members of a hunter-gatherer clan would have to make to comprehend a global, technological culture like our own. If science fiction is the literary exploration of the larger universe, religion is the body of beliefs and rituals that help to link the familiar worlds of human meaning and experience to that more sweeping and mysterious cosmos. Religion demands commitment to particular sets of stories about that world. Science fiction calls for a more self-conscious or ironic suspension of belief. The cause of religion has been served by great artists and saints (as well as villains); science fiction, so far, by rather few. Occasionally the two coalesce: what Manichaeism was, Scientology now is —

deliberate fantastic structures devised by single artists and seized by the wider populace as devices to clear or cloud their heads. Other sects and cults arise by happenstance and the unforced agreement of many romantic minds gnosticism in the first century or the religion of Star Trek today. To consider the broader issues raised by science fiction and to explore, in particular, the relation of the genre to science and to theology, ten scholars, scientists, and writers gather in London on the seventieth anniversary of the publication of *Last and First Men* (1930), the first novel of the late writer and philosopher Olaf Stapledon (1886-1950), and a book often regarded as one of the finest works of science fiction. As the Year 2000 is also the fiftieth anniversary of Stapledon's death, the conclave becomes an occasion to celebrate the author's life. A question to be explored in both private conversation and in a public discussion is the impact of the existence of the universe in which science fiction attempts to find a place for humankind, a world immensely older and at once grander and more forbidding than we usually care to contemplate, on traditional religion. Other matters of inquiry include whether the genre sometimes known as "possibility writing" has given us useful clues to what it will mean to be human in the next millennium, how science fiction and the experience of working scientists may affect each other, what sort of challenge the search for the holy, which science fiction writers often locate in the alien, may pose to familiar religious preoccupations with right behavior or secular interest in peace and prosperity, whether science fiction can, in any useful sense, prepare us for an eventual meeting with other sentient beings — and the relative value of technological gadgets and moral systems in pursuing dialogue with them. Alternately, what if all the searches for life beyond the borders of Earth ultimately fail? What implications might that have for theology? The probe for answers in the conversation in London takes place under the aegis of the John Templeton Foundation.

CHAIR

The philosopher [Stephen R. L. Clark](#) is a speculative thinker who uses reason to



understand religion. He has long been a science fiction fan, and he makes the genre sound a lot like theology in his 1993 book, *How to Live Forever*. Finding immortality an abiding theme in science fiction, he examines the ways in which science fiction writers have imagined it with a view to showing that important resources can be found in science fiction for philosophical explorations of the possibilities of unending existence. "Much of the intelligible universe is quite unintelligible to us," he tells readers, and reminds them of William Blake's observation that "what is now proved ... was once only imagined" and "what is now clearly imagined was once only a sense of something missing." A resident of the Wirral peninsula near Liverpool, where Olaf Stapledon was also born, Dr. Clark studied at Balliol College, Oxford. He took first-class honors in classics, continued his studies as a fellow of All Souls College, and received a Ph.D. in philosophy from Oxford in 1973. He was a lecturer in moral philosophy at the University of Glasgow for nine years, and in 1984, he was appointed professor of philosophy at the University of Liverpool. He has been a visiting professor at Vanderbilt University and held an Alan Richardson Fellowship at Durham University. Among many invited lectures, he has delivered the Gifford Lecture at Glasgow, the Stanton Lecture at Cambridge, the Wilde Lecture and the Aquinas Lecture at Oxford, the Read Tuckwell Lecture at Bristol University, the Scott Holland Lecture at Liverpool, the Royal Institute of Philosophy Lecture at Durham University, and the Aquinas Lecture at the Catholic University of Leuven. He has been chief editor of the *Journal of Applied Philosophy* since 1990, as well as serving as a member of the editorial board of the Cambridge University Press series entitled *New Studies in Christian Ethics*. The author of more than fifty scholarly articles, he has contributed chapters to some sixty books in addition to editing one book and writing nine others. His work on the proper understanding and treatment of animals, most recently *Animals and their Moral Standing* (1997), and of the living earth, notably *How to Think about the Earth: Models of Environmental Theology* (1993), have brought him international acclaim. In addition, he is well known for his studies of the significance of our animal natures for our lives as political and social beings, which were summarized in *The Political Animal* (1999), and for his work on Christian theism and human freedom, particularly *God, Religion and Reality* (1998). His most recent book is *Biology and Christian Ethics*, which will be published later this year by Cambridge University Press. Dr. Clark is currently writing about alien intelligence from the perspective of science fiction and philosophy.

PARTICIPANTS



Gregory Benford is a working scientist who has written twenty-three critically acclaimed science fiction novels. A professor of physics at the University of California, Irvine, he specializes in plasma physics theory and was presented with the Lord Prize in 1995 for achievements in the sciences. Over the years, he has been an advisor to the National Aeronautics and Space Administration, the United States Department of Energy, and the White House Council on Space Policy. Dr. Benford has received two Nebula awards for science fiction. His first, won in 1975, was for a novelette written with Gordon Eklund, "If the Stars Are Gods;" his second was for the novel, *Timescape* (1980). It also won the John W. Campbell Memorial Award, the Australian Ditmar Award, and The British Science Fiction Association Award. In 1992, Dr. Benford received the United Nations Medal in Literature. A Phi Beta Kappa graduate of the University of Oklahoma, he was a Woodrow Wilson Fellow at the University of California, Irvine where he earned a Ph.D. in physics in 1967. He was subsequently a post-doctoral fellow and then a research physicist at the Lawrence Radiation Laboratory before joining the Irvine faculty in 1971. He is the author of nearly 130 research papers in his field. His first book-length work of non-fiction, *Deep Time* (1999), examines the consequences of sending messages across vast reaches of space and time from a broad humanistic and scientific perspective. Dr. Benford has edited a number of anthologies of science fiction and collaborated with several well-known writers, including Sir Arthur Clarke. Questions about creation, human destiny, and the nature of godhood are posed in his most recent novel, *Cosm* (Eos, 1999), in which a young Irvine physicist discovers a wormhole that leads to an entirely new universe. In the forthcoming *Eater*, he explores a visitation by an entity that resembles the Old Testament God and discusses the imagined mechanism of its appearance—all grounded in scrupulously exact physics.

An emphasis on right conduct, among other underlying tenets of the Mormon faith, infuse the science fiction of prize-winning author **Orson Scott Card**. Born and raised in the American West, he spent two years as a missionary in Brazil before completing an undergraduate degree in theater at Brigham Young University. He earned an M.A. in English at the University of Utah in 1981 and has taught writing at

several universities and summer workshops. Mr. Card began his literary career writing short plays for audiences made up mostly of fellow members of the Church of Jesus Christ of Latter-Day Saints. His first published story, "Ender's Game," was nominated for a Hugo Award and served as the germ for his Ender saga, a serious moral tale set among the stars. The first book in the series, *Ender's Game* (1985), won both Hugo and Nebula awards for the best science fiction novel of the year, as did its sequel, *Speaker for the Dead* (1986), the first time two major science fiction prizes had been captured in successive years by a single author. Mr. Card's first sequence was the *Worthing Chronicle*, and following the Ender series, he wrote *The Tales of Alvin Maker*, whose hero is loosely based on the life of Mormon founder Joseph Smith. The series explores themes in American history. The fifth novel in the sequence, *Heartfire*, won Le Grand Prix de l'Imaginaire, France's highest science-fiction award. The author broke new ground with *The Homecoming Saga*, a retelling of the first part of the *Book of Mormon* as science fiction. Mr. Card has written a historical novel, *Saints* (1988), on the founding of Mormonism, contemporary novels, and several books on writing. His *How to Write Science Fiction and Fantasy* (1990) was awarded a Hugo for non-fiction. A new science fiction novel, *Ender's Shadow* (TOR, 1999), is the author's most recently published work. He writes a regular column for Beliefnet.com, an online religious forum.

Jack Cohen is a biologist who had helped science fiction writers in the design of alien creatures and ecologies. His present position as a consultant at Warwick University bridges the ecosystems unit of the biology department and the Mathematics Institute. With the mathematician Ian Stewart, he is inventing new ways of seeing reproduction and evolution. A graduate of London University, Dr. Cohen earned a Ph.D. in biology at the University of Hull in 1957 and spent the next two years as a Medical Research Council post-doctoral fellow at the University of Birmingham Medical School where he developed a new technique for the transplantation of the components for growing hairs and for the culture of epidermal cells. In 1959, he was named a lecturer in embryology at the University of Birmingham. He became a senior lecturer in animal reproduction in 1968, a post he held until his retirement twenty years later. In 1974, Dr. Cohen was named a fellow of the Institute of Biology and awarded the senior degree of the doctor of science. He has been a research fellow at Harvard University and the Rosi and Max Varnon Visiting Professor at the Weizmann Institute in Rehovot, Israel. His theory of sperm redundancy has provided a firm foundation for the diagnosis and treatment of a number of human infertility problems, and he has consulted on *in vitro* fertilization in the United Kingdom, Canada, and the United States. A former vice president of the Linnean Society and former chairman of the editorial board of *Biologist*, he has been the editor-in-chief of *Speculations in Science and Technology* for the past five years. Dr. Cohen is the author of some ninety scientific papers and has written seven books, including the widely used text *Living Embryos* (1963, 1967, and 1981) and two volumes (with Stewart) on the evolution of mind, language, and culture, *The Collapse of Chaos* (1994) and *Figments of Reality* (1997). His most recently published work (with Stewart and Terry Pratchett) is *The Science of Discworld*, a science tie-in with a popular science fiction television series. Upcoming books with Stewart include *Wheelers*, a science fiction novel that Time-Warner will publish in the fall, and *Stop Working and Start Thinking: A Guide to Becoming a Scientist* (with Graham Medley), which Stanley Thornes will bring out in October. Dr. Cohen also is working on a new volume on reproduction for Cambridge University Press.

Professor of evolutionary paleobiology at Cambridge University, **Simon Conway Morris** has devoted his research life to the study of the 520-million-year-old Burgess Shale, found between two peaks in the Canadian Rockies, and related fossil-rich formations. In his most recent book, *The Crucible of Creation* (1998, Oxford University Press), he re-interprets the soft-body fauna found in fissile rock as evincing the preeminent role of convergence in evolution. His demonstration that many of the fantastic Burgess Shale animals are related, albeit remotely, to modern forms supports the theory that similar solutions are found to the same kind of environmental challenges in independent lines and places and impugns as seriously incomplete the reductionist viewpoint that the present-day world arises as the result of chance past events. A graduate of the University of Bristol, where he took first-class honors in geology, Dr. Conway Morris went on to Cambridge and studied at Churchill College with Harry Whittington, the first re-interpreter of the Burgess Shale, on a Natural Environment Research Council (NERC) Studentship. He was elected a research fellow of St. John's College in 1975 and received his Ph.D. in evolutionary paleobiology the next year. Appointed a lecturer in earth sciences at The Open University in 1979, he returned to Cambridge as a lecturer four years later and was promoted to his current chair in 1995. Dr. Conway Morris is a fellow of the Royal Society. He has held research grants from the society as well as from the Nuffield Foundation, the Carlsberg Foundation, the NERC, the National Geographic Society, and the Leverhulme Foundation. He has delivered numerous invited lectures throughout the United Kingdom, Europe, Asia, Canada, and the United States and is the author of some ninety research papers. Dr. Conway Morris has served as editor of five books. The first version of his study of the Burgess Shale and

the rise of animals, *Journey to the Cambrian* (1997), was printed in Japanese and has been re-printed seven times. He contributes frequently to general magazines and encyclopedias and to radio and television programs on science.



Freeman J. Dyson, the English-born American physicist, is widely recognized for his contributions to quantum electrodynamics and the theory of interacting electrons and photons — and perhaps even better known for his creative speculations on subjects ranging from space travel to extraterrestrial civilizations. An engaging author, widely sought-after lecturer, and an unusually conscientious citizen of the world, he has been for half a century a persistent scientific and political gadfly in the most positive sense of the word. He went to Cambridge University from Winchester College, and after civilian service doing operations research at the headquarters of the RAF Bomber Command during World War II, he took his B.A. in mathematics at Cambridge in 1945. A fellow at Trinity College, Cambridge, in 1946-47, he was a Commonwealth Fellow at Cornell University and the Institute for Advanced Study in Princeton for the next two years. After another two years as a research fellow at the University of Birmingham, he became a professor of physics at Cornell in 1951. Two years later, he returned to the Institute for Advanced Study where he was a professor of physics until 1994 when he became professor emeritus. He has been a visiting professor at Yeshiva

University and the Max Planck Institute for Physics and Astrophysics. During the late 1950s, Dr. Dyson helped design the nuclear reactor, Triga, and the Orion space ship at General Atomic Laboratories in San Diego, California. He originated the idea for what is known as the "Dyson sphere," a hypothetical shell of artificial material that an advanced civilization of intelligent beings with an expanding population might build around a parent star. The "colonists," he suggested, would be able to capture almost all of the energy released by the star in the form of electromagnetic radiation, which would then be re-radiated as infrared radiation making the star visible to infrared telescopes. Dr. Dyson served as chair of the Federation of American Scientists in 1962-63 and was a member of the National Research Commission on Life Science from 1989 to 1991. The recipient of honorary degrees from seventeen American and European colleges and universities, including Princeton, Oxford, and the Federal Institute of Technology (ETH) in Zurich, he is a Fellow of the Royal Society and a member of the U.S. National Academy of Sciences, as well as a foreign associate of the French Academy of Sciences and an honorary fellow of Trinity College, Cambridge. Among his other honors are a dozen major science prizes, including the Enrico Fermi Award of the U. S. Department of Energy. Last month, he was awarded the Templeton Prize for Progress in Religion. The author of nearly 300 scientific papers, he also has been a frequent contributor to *The New Yorker*, *The Atlantic Monthly*, and *The New York Review of Books*. His capacity for luminous exploration of the intellectual challenges and moral dilemmas of modern science first came to the attention of the general public in 1979 when the Alfred P. Sloan Foundation commissioned him to write a memoir of his life in science, *Disturbing the Universe*. He won the National Book Critics Circle Award for Non-Fiction in 1984 for his powerful plea for international control of the world's nuclear arsenal, *Weapons and Hope*. In his probing *Origins of Life* (1986), he suggested careful scrutiny of the notion that life began twice. *Infinite in All Directions* (1988), an explanation of what past and recent scientific theories tell us about the beginning of the universe, its present state, and its likely destiny, won the Phi Beta Kappa Award in Science. His latest book is *Imagined Worlds* (Harvard University Press, 1997).

A medievalist who edits the flagship journal, *Foundation: The Review of Science Fiction*, **Edward James** is a professor of history at the University of Reading where he directs the university's master's degree program in science fiction. A graduate of Solihull School, he studied at St. John's College, Oxford, and took first-class honors in history. He continued his education at Oxford's Institute of Archaeology and was awarded a Ph.D. in archaeology in 1975. Dr. James began his teaching career at University College, Dublin, as a lecturer in medieval history. He joined the faculty of the University of York in 1978 and was named senior lecturer in 1986. He served as co-director and then director of York's Centre for Medieval Studies before accepting his Reading professorship in 1995. A fellow of both the Royal Historical Society and the Society of Antiquaries, Dr. James is also a member of the York Archaeological Trust and Council of the Science Fiction Foundation. He is the author of six books, including *Science Fiction in the Twentieth Century* (1994), the editor or co-editor of three others, most recently *The Parliament of Dreams: Confrerring on Babylon 5* (Science Fiction Foundation, 1998), the translator of an early medieval Latin text, and has contributed chapters to more than thirty volumes, as well as publishing numerous articles in academic journals. He has just completed *Britain in the First Millennium*, a book for Edward Arnold's

series, Britain in Europe. A Leverhulme Research Fellowship enabled him to begin research on a gazetteer of Merovingian burial sites in France, which he plans to finish next year and publish on the World Wide Web. He is also working on a study of utopian thought in modern science fiction.

James P. Mackey, the Thomas Chalmers Professor Emeritus of Theology at the University of Edinburgh, approaches dominant movements in contemporary Christian theology from the perspective of contemporary philosophy. He also has been deeply involved in research on Celtic Christianity for more than a decade. A graduate of the National University of Ireland, where he took first-class honors in philosophy and received a Bachelor of Arts degree, he earned a licentiate in philosophy, a bachelor of divinity degree, a licentiate in sacred theology, and a doctor of divinity degree from the Pontifical University in Maynooth, Ireland. He received a Ph.D. in the philosophy of religion from The Queen's University of Belfast in 1965. Beginning his academic career as an assistant lecturer in Hebrew and Old Testament at Maynooth, he went on to teach philosophy at the Queen's University and then dogmatic theology at St. John's College, Waterford. Appointed associate professor of systematic and philosophical theology at the University of San Francisco in 1969, he was promoted to professor in 1973, a post he held until accepting the Chalmers Professorship at Edinburgh six years later. Dr. Mackey was formerly dean of Edinburgh's Faculty of Divinity and, from 1995 to 1998, founding director of its Graduate School in Divinity. He has been a visiting professor at The Catholic University of America, the University of California at Berkeley, and Dartmouth and delivered numerous invited lectures in the United Kingdom, the United States, Europe, China, Australia, and South Africa. The founding editor of *Studies in World Christianity: The Edinburgh Review of Theology and Religion* and a member of the advisory editorial board of *Cosmos*, he also has served as an associate editor of *Herder Correspondence*, *Concilium*, and *Horizons*. He was general editor (with J.D.G. Dunn) of the SPCK monograph series *Biblical Foundations of Theology* (1985-1991). The author of some sixty journal articles, he has contributed chapters to twenty-two books, edited five volumes, and is the author or co-author of a dozen other books. His scholarly work has been translated into six languages. Dr. Mackey's most recent study, *The Critique of Theological Reason*, will be published by Cambridge University Press in the autumn.

The moral philosopher **Mary Midgley** read classical greats at Oxford and holds an honorary doctor of letters degree from the University of Durham. She was appointed a lecturer at the University of Reading in 1949. After her marriage the next year to fellow-philosopher Geoffrey Midgley, an interest in animal behavior, together with observations she made about the behavior of her own children, led her to a decade-long study of evolution, including the new literature in sociobiology and ethology, in an effort to understand the continuity between human beings and the rest of nature. She took up teaching again in 1960 at the University of Newcastle upon Tyne, where she became a senior lecturer. Her first book, *Beast and Man* (1978), has been hailed as a classic analysis of humanity's place in the order of things. It defends a philosophical conception of human nature and criticizes narrowly scientific explanations of why people act the way they do at the same time it attacks moral theories that ignore the relations of ethics to nature and fail to evaluate scientific discovery. A subsequent series of eight books, written after her retirement in 1980 and concerned with such issues as the relations of men and women to their non-human environment, the sources of morality, and the distortions afflicting science when put into the place of religion, have won Dr. Midgley a wide readership. Her latest study, *Utopias, Dolphins and Computers* (Routledge, 1996), proposes a use for philosophy in solving a range of contemporary problems involving education, feminism, animal rights, and artificial intelligence. In all her work, Dr. Midgley takes a wholly practical, common sense approach leavened by a deep respect for imaginative vision.

Mary Doria Russell is a paleoanthropologist whose science fiction novels, *The Sparrow* (1996) and *Children of God*, have won six major awards. The books, set in the twenty-first century and concerned with the first contact between human beings and intelligent extraterrestrial life, weigh the risks and benefits of a belief in God and examine the role of religion in the lives of people, from atheist to mystic. Drawing on both the Catholicism of her youth and her knowledge of science, Dr. Russell, a convert to Judaism, writes about a Jesuit expedition to an alien culture on Alpha Centauri that turns into a spiritual odyssey for the lone survivor of the failed mission. *The Sparrow* was a book-of-the-month selection of two American book clubs and garnered the Arthur C. Clarke Prize, The British Science Fiction Association Award, and The James Tiptree, Jr. Memorial Award. *Children of God* won the Cleveland Council for the Arts Literature Prize, the John W. Campbell Award, and the American Friends of the Library Readers' Choice Award. Before turning to writing, Dr. Russell taught a variety of anthropology courses at two of her alma maters, Northeastern University and the University of Michigan, and a clinical gross anatomy course at Case Western Reserve University. Her research included work on craniofacial biomechanics and

the archeological sequelae of cannibalism. A graduate of the University of Illinois, she earned a master's degree in social anthropology from Northeastern in 1976 and a Ph.D. in biological anthropology from Michigan in 1983. She is now completing a third novel, a historical thriller about the Jewish underground in Genoa during the Nazi occupation of Italy. *A Thread of Grace* will be published by Villard/Ballantine in 2001.



A panel discussion, open to the public and featuring Gregory Benford, Stephen R. L. Clark, Jack Cohen, and Freeman Dyson, takes place at half after six o'clock on Monday evening, the 26th, at the Royal Society for the encouragement of arts, manufacture & commerce. Andrew Sawyer, science fiction librarian at the University of Liverpool, has put together an exhibit of manuscripts and memorabilia related to the life of Olaf Stapledon, which is on view at the RSA.

The Humble Approach Initiative

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