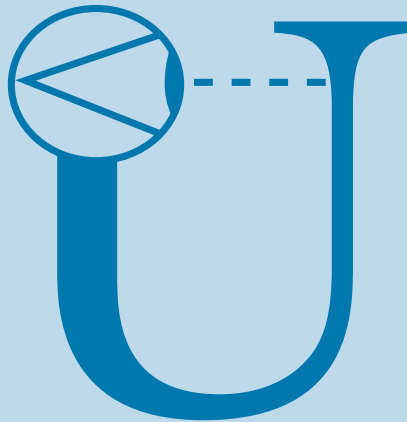


FROM STARS TO BRAINS

PATHWAYS TO CONSCIOUSNESS IN THE NATURAL WORLD



'We were meant to be here.' Paul Davies, 1998

*A conference organised by Manning Clark House in honour of Professor Paul Davies
Shine Dome, Australian Academy of Science, Gordon Street, Acton
Tuesday June 20 and Wednesday June 21, 2006*



Australian Academy of Science



THE AUSTRALIAN NATIONAL UNIVERSITY

Generously supported by the Australian Academy of Science and The Australian National University

CONFERENCE RATIONALE

This conference is convened to pay tribute to the work of Paul Davies, following the occasion of his 60th birthday (22.4.2006). Davies' publications explore pathways starting from the Big Bang, subatomic particles, atoms and molecules, through to the origin of life and intelligence, realms of human consciousness and spiritual dimensions, and leading to the motto '*We were meant to be here.*' (Davies, 1998). Inherent in human perception is an anthropic self-referential paradox: can the conscious mind explore its own *raison d'être*? Has *Homo sapiens* evolved a level of cerebral sophistication allowing it to resolve the deepest questions in the natural world? Is the Universe '*biofriendly*', as espoused by George Ellis' philosophy, or is it indifferent to life? Is this Universe unique among *parallel universes* and do the initial conditions of the *Big Bang* contain the blueprint for galaxies, stars, planets and the emergence of life? In Stephen Hawking's (1988) words, '*Why does the universe go to all the bother of existing?*' Major scientific insights achieved into *how* the universe behaves leave open questions as to *why* it behaves the way it does. In a world consisting of a hierarchy of levels, where strands of upward (base-to-top) causality are explained, how can downward (top-to-base) causality be understood? Does consciousness pervade nature in degrees, as required by pantheistic philosophy, or is it restricted to the higher life forms? Does *Homo sapiens* represent nature's own intelligent eyes, as expressed in John Wheeler's U symbol, and how can the reality of Carl Sagan's perception, '*starstuff pondering the stars; organised assemblages of ten billion billion billion atoms considering the evolution of atoms*', be comprehended? Where do art and music arise from and what is their value in the process of natural selection? Attempts at tackling such questions need to consider not only the probing capacity of the human brain but also its blind spots, including the denial of realities that contradict consciousness and threaten the survival of the species. Whereas the origins of life and of consciousness remain elusive, their emergence may be traced through exploration of links between natural systems of different scale and complexity. This multidisciplinary conference will examine links between astronomy, planetary science, physical principles and information theory relevant to the evolution of biogenic molecules, and the emergence of living systems — culminating in creative artistic and spiritual expressions of human consciousness.

Andrew Glikson

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TUESDAY 20 JUNE, 2006 — NATURE

- 9.00 Introduction: *Sebastian Clark (Manning Clark House)*
9.10 Origin of life in the Universe. *Paul Davies.*

Session A From nebula to life. Chair: Duncan Steel

- 10.10 Dark energy or cosmic complexity? *David Wiltshire (University of Canterbury, New Zealand)*
10.35 From interstellar space to planets: building the chemistry and conditions for Life. *Michael Dopita (RSAA, Australian National University)*
11.00 Deep time, deep earth: the formation, early history, and large scale geochemical evolution of the earth. *Vickie Bennett (RSES, ANU)*
11.25 Morning tea
11.40 Earth mantle-crust processes and the evolution of continent-ocean patterns. *Richard Arculus (DEMS, ANU)*
12.05 The Early Earth. *Allen Nutman (DEMS, ANU)*
12.30 Extraterrestrial asteroid and comet impact connections of planetary evolution. *Andrew Glikson (DEMS, ANU)*
12.55 Lunch

Session B Early life and perception. Chair: Elizabeth Truswell

- 14.00 Why RNA? Why 4 nucleotides? Why proteins? *David Penny (Massey University, New Zealand)*
14.25 Geochemical cycles and the late rise of complex life. *Jochen Brocks (RSES, ANU)*
14.50 The foundation of perception. *Peter Robinson (University of Sydney)*
15.15 Small brains, perception, learning and 'cognition' in honeybees. *Mandyam Srinivasan (RSBS, ANU)*
15.40 The cerebral hardware of mammalian and human brains. *Greg Stuart (JCSMR, ANU)*
16.05 Tea break

Session C Natural laws and the phenomenon of life. Chair: Paul Davies

- 16.20 Is information processing a physical phenomenon? *Gerard Milburn (University of Queensland)*
16.45 Complexity theory, the mind, self awareness and consciousness. *Terry Bossomaier (Charles Sturt University)*
17.10 Mathematic principles underlying genetic structures. *Matthew Berryman (University of Adelaide)*

17.40—18.40 Panel Discussion (Sessions A, B and C)

19.30 Conference dinner (University House).

Speakers: *Paul Davies, George Ellis*

WEDNSDAY 21 JUNE, 2006 — CONSCIOUSNESS

- 9.00 Introduction. *Penny Ramsay (Manning Clark House)*
9.10 The emerging nature of the mind: intellect, emotions, values.
George Ellis (University of Capetown, South Africa)

Session D Brains to minds. Chair: David Penny

- 10.00 The philosophy of human consciousness. *David Chalmers (ANU)*
10.40 Tea break
11.00 Emerging consciousness of prehistoric humans. *Iain Davidson
(University of New England)*
11.30 Consciousness and theology: the creation of gods and myths in the
human mind. *Rev. Paul Collins*
12.00 Religious faith versus free will and biological determinism.
Lucy Tatman (ANU)
12.30 Lunch
13.30 Mass consciousness and George Orwell's *Newspeak*. *Phillip Adams*
14.00 New science and old Wisdom — minds in and of the world.
Geoff Davies (RSES, ANU)
14.30 Homo Icarus as nature's intelligent eyes: consciousness and denial on
the eve of the Plutocene. *Andrew Glikson (DEMS, ANU)*
15.00 Tea break

Session E Imagination and creativity. Chair: Sebastian Clark

- 15.20 Art and developing consciousness: reviewing the speculations. *Elizabeth
M. Truswell (DEMS, ANU)*
15.50 Invisible links – conscious and subconscious expressions through poetry.
Mark O'Connor
16.20 Is human-like intelligence a convergent feature of cosmic biological
evolution? New astronomical and biogeographical inputs to the Drake
Equation. *Charley Lineweaver (RSAA and RSES, ANU)*
16.50 Epilogue: Poems of the Universe. *Ann Edgeworth*

17.00 Panel Discussion (Sessions D and E)

- 17.40 Concluding words. *George Ellis*
17.50 Concluding words. *Paul Davies*

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